1977 FISHER BODY SERVICE MANUAL

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IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all motor vehicles. The service procedures recommended by Fisher Body and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various Warnings and Cautions which should be carefully read in order to minimize the risk of personal injury to service personnel or the possibility that improper service methods will be followed which may damage the vehicle or render it unsafe. It is also important to understand that these Warnings and Cautions are not exhaustive. Fisher Body could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Fisher Body has not undertaken any such broad evaluation. Accordingly, anyone who uses a service procedure or tool which is not recommended by Fisher Body must first satisfy himself thoroughly that neither his safety nor vehicle safety will be jeopardized by the service method he selects.

1977 FISHER BODY SERVICE MANUAL

FOR ALL BODY STYLES

(EXCEPT "T" BODIES)

This publication contains the essential removal, installation, adjustment and maintenance procedures for servicing all U.S. and Canadian built 1977 Fisher Body Styles except "T" Bodies. New body service information for 1977 "T" Bodies is contained in a separate supplementary manual which includes chassis service information. 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.

When reference is made in this manual to a brand name, number, or specific tool, an equivalent product may be used in place of the recommended item.

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 section title. A more detailed table of contents precedes each section, and an alphabetical index is included in the back of the manual.

TABLE OF CONTENTS

SECTION	TITLE
1	GENERAL INFORMATION
2	WINDSHIELD WIPER SYSTEM
3	UNDERBODY
4	FRONT END
5	DOORS
6	REAR QUARTERS
7	REAR END
8	ROOF
9	SEATS
10	ELECTRICAL
11	STATIONARY GLASS
12	INDEX

FISHER BODY DIVISION
PART NO. 9632838

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LITHO IN U.S.A.
SEPTEMBER, 1976

SECTION 1

GENERAL INFORMATION

TABLE OF CONTENTS

SUBJECT	PAGE
Manual Description	1-1
Model Identification Chart	1-2
Model Identification	1-4
Body Number Plate	1-4
Vehicle Identification Number	1-4
Metric Parts and Specifications	1-5
Lock Cylinder Coding	1-5
Adhesive Body Side Moldings	1-8
Wood Grain Transfer	1-11
Lubrication	1-13
Body Sealing	1-14
Metal Replacement Parts Finishing	1-14
Interior Plastic Trim Parts Finishing	1-14
Special Tools	1-17

MANUAL DESCRIPTION

INTRODUCTION

This publication contains essential removal, installation, adjustment and maintenance procedures for servicing all 1977 Fisher Body Styles except the "T" Body Styles. This information is current as of time of publication approval.

INDEX

The preceding page contains a Table of Contents which lists the section number and subject title of each main body area section. The first page in each main body area section has a table of contents of the subjects included in that section. An alphabetic index covering entire manual is located in Section 12.

PAGE AND FIGURE NUMBERS

All page numbers and figure numbers consist of two sets of digits separated by a dash. The digits preceding dash identify main body area section. Digits following dash represent consecutive page number or figure number within the particular body area section.

REFERENCE TABS

The first page of each section is marked with a ready reference black tab corresponding with table of contents page.

TEXT

Unless otherwise specified, each service procedure covers all body styles. Procedures covering specific styles are identified by style number, body series number, body type letter or similar designation. A description of these designations is covered in this section under Model Identification.

ILLUSTRATIONS

Where possible, illustrations are placed in close proximity to accompanying text and should be used as part of the text.

MODEL IDENTIFICATION CHART

Division	Sales Name	Body Type	Series	Styles
Chevrolet	Chevelle Malibu	A	1AC	29-35-37-80
	Chevelle Malibu Classic	A	1AD	29-35-37-80
	Monte Carlo "S"	A	1AH	57
	Bel Air	B	1BK	35-47-69 (Canada only)
	Impala	B	1BL	35-47-69
	Caprice Classic	B	1BN	35-47-69
	Camaro	F	1FQ	87
	Camaro Type LT	F	1FS	87
	Vega	H	1HV	11-15-77
	Monza	H	1HM	27
	Monza 2+ 2	H	1HR	07
	Nova	X	1XX	17-27-69
	Nova Concours	X	1XY	17-27-69
	Chevette	T	1TB	08
	Scooter	T	1TJ	08
Pontiac	LeMans	A	2AD	29-35-37
	LeMans Sport Coupe	A	2AF	37
	Grand LeMans	A	2AG	29-37
	Grand Prix "SJ"	A	2GH	57
	Grand Prix	A	2GJ	57
	Grand Prix "LJ"	A	2GK	57
	Catalina	B	2BL	35-37-69
	Bonneville	B	2BN	35-37-69
	Bonneville Brougham	B	2BQ	37-69
	Firebird	F	2FS	87
	Firebird Esprit	F	2FT	87
	Firebird Formula	F	2FU	87
	Firebird Trans Am	F	2FW	87
	Astre	H	2HC	11-15-77
	Sunbird	H	2HM	07-27
	Ventura	X	2XY	17-27-69
	Ventura "SJ"	X	2XZ	17-27-69
Oldsmobile	Cutlass "S"	A	3AG	29-37
	Vista-Cruiser	A	3AH	35
	Cutlass Supreme	A	3AJ	29-35-57
	Cutlass Salon	A	3AK	29-57
	Cutlass Brougham	A	3AM	29-57
	Delta 88	B	3BL	37-69
	Delta 88 Royale	B	3BN	37-69
	Custom Cruiser	B	3BQ	35
	Ninety Eight Luxury	C	3CV	37-69
	Ninety Eight Regency	C	3CX	37-69

MODEL IDENTIFICATION CHART (Contd)

Division	Sales Name	Body Type	Series	Styles
	Toronado XSR	E	3EW	57
	Toronado Brougham	E	3EZ	57
	Starfire	H	3HT	07
	Starfire SX	H	3HD	07
	Omega F-85	X	3XS	27
	Omega	X	3XB	17-27-69
	Omega Brougham	X	3XE	17-27-69
Buick	Century	A	4AD	29-37
	Century Custom	A	4AH	29-57
	Century Special	A	4AE	37
	Regal	A	4AJ	29-57
	Century Custom	A	4AK	35
	LeSabre	B	4BN	37-69
	Estate Wagon	B	4BR	35
	LeSabre Custom	B	4BP	37-69
	Riviera	B	4BZ	37
	Electra "225"	C	4CV	37-69
	Electra Limited	C	4CX	37-69
	Skyhawk	H	4HT	07
	Skyhawk	H	4HS	07
	Skylark	X	4XB	17-27-69
	Skylark "SR"	X	4XC	17-27-69
Cadillac	Fleetwood Brougham Sedan	C	6CB	69
	DeVille	C	6CD	47-69
	Fleetwood Limousine	D	6DF	23
	Fleetwood Formal Limousine	D	6DF	33
	Eldorado	E	6EL	47
	Seville	K	6KS	69
GM of Canada	Laurentian	B	7BK	35-37-69
	Parisienne Brougham	B	7BL	37-69
	Acadian	T	7TB	08
	Acadian "S"	T	7TJ	08
GM Coach	Sprint	A	5AC	80
	Sprint Classic	A	5AD	80

MODEL IDENTIFICATION

BODY SERIES NUMBER

The body series number identifies the following:

1. First Position - Division (ex. 1, Chevrolet; 2, Pontiac, etc.).
2. Second Position - Body Type (ex. 1A, Chevrolet "A" Body; 2A, Pontiac "A" Body, etc.).
3. Third Position - Division Series (ex. 1AC, Chevrolet "A" Body Chevelle Malibu; 2AD, Pontiac "A" Body LeMans, etc.).
4. The last two digits of the body series number indicate body style type as follows:

STYLE	DESCRIPTION
07	2-Door - Coupe - Hatch Back
08	2-Door - Sedan - Hatch Back
11	2-Door - Sedan - Notch Back
15	2-Door - Station Wagon - 2 Seat
17	2-Door - Coupe - Hatch Back
23	4-Door - Limousine with Auxiliary Seat
27	2-Door - Coupe - Notch Back
29	4-Door - Sedan - 6 Window Notch Back
33	4-Door - Limousine with Auxiliary Seat and Center Partition Window
35	4-Door - Station Wagon - 2 Seat
37	2-Door - Coupe - Notch Back
47	2-Door - Coupe - Notch Back
57	2-Door - Coupe - Notch Back
69	4-Door - Sedan - 4 Window Notch Back
77	2-Door - Hatch Back
80	2-Door - Pick-Up Delivery
87	2-Door - Coupe - Plain Back

BODY NUMBER PLATE

The body number plate identifies the model year, car division, series, style, body assembly plant, body number, trim combination, modular seat code, paint code and build date code (Figs. 1-1 and 1-2). On all bodies except "K and X" styles, I.D. plate is located on upper horizontal surface of shroud. On "K and X" bodies, plate is located on front vertical surface of shroud.

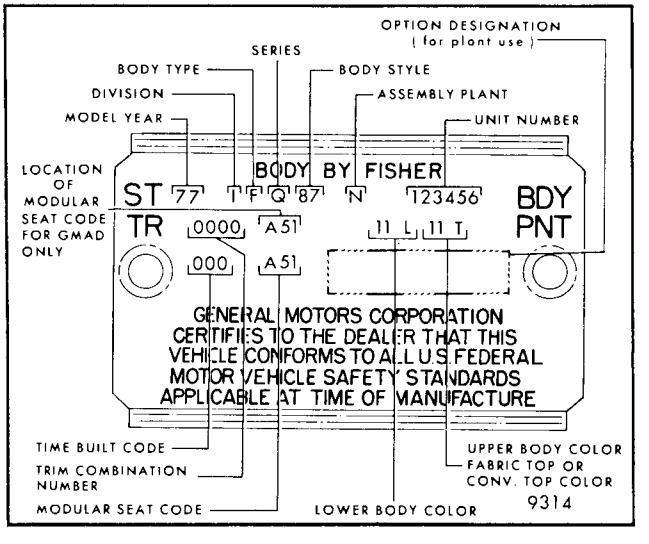


Fig. 1-1-Body Number Plate - U.S. Models

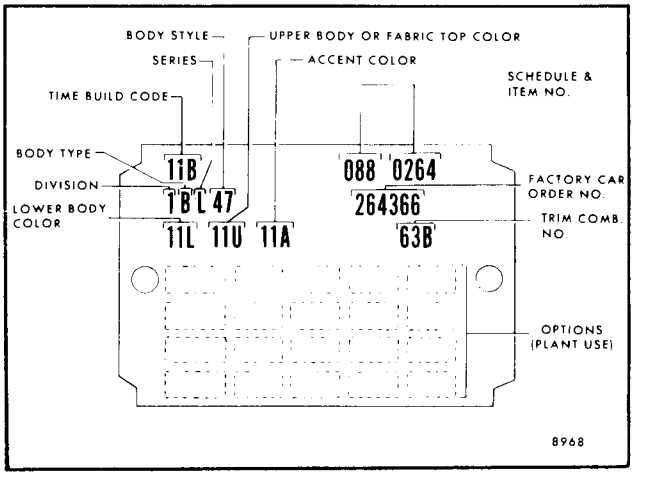


Fig. 1-2-Body Number Plate - Canadian Models

VEHICLE IDENTIFICATION NUMBER

The Vehicle Identification Number (serial number) is located on left front horizontal surface of instrument panel which is visible from outside the car.

METRIC PARTS AND SPECIFICATIONS

METRIC SPECIFICATIONS AND NOTATION

In this manual, metric specifications (with customary units in brackets) will be used in conjunction with metric body styles. For all other body styles, only customary specifications (inches, pounds, gallons, etc.) will be used.

Metric specifications with corresponding customary specifications have been rounded off to practical working levels. More precise conversions may be obtained from the tables at the back of this manual or from other readily available conversion charts and formulas.

Metric threaded fastener specifications differ slightly from customary specifications. For example, a 1/4 - 20 customary screw specification defines a 1/4" diameter screw with 20 threads per inch. A comparable M6.3 x 1 metric screw specification defines a 6.3 mm diameter screw with 1.0 mm distance between threads.

METRIC FASTENER USAGE

All "B, C and D" body styles will be assembled predominantly with metric fasteners.

"E and K" body styles will use metric fasteners in certain hardware systems. These may include door hinges, seat and shoulder belts, seat adjuster attachments, windshield wiper motor mounts, and body mounts (on "E" styles).

All "A, F, H, and X" body styles will be assembled predominantly with customary fasteners.

> **CAUTION:** *Metric machine threaded fasteners (nuts, bolts, studs, machine screws, etc.) differ from similar customary (inch) parts and in most cases are not interchangeable. Metric fasteners must therefore be replaced with equivalent metric parts, and customary fasteners must be replaced with equivalent customary parts.*

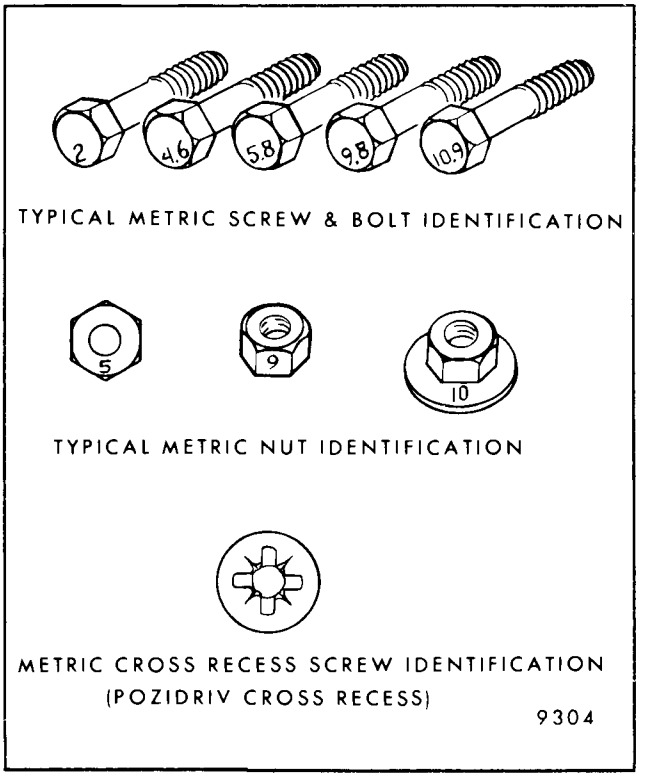


Fig. 1-3 - Metric Fastener Identification

METRIC FASTENER IDENTIFICATION

Metric fasteners will generally be identified by numerical markings on the bolt head and nut face as shown in Figure 1-3. These numbers indicate the fastener material property class. Higher numbers indicate higher strength material.

NOTE: The numeral 2 on tapping screws indicates metric design and is not related to material properties.

Conventional (inch) bolts are identified by radial lines on the bolt head indicating the strength class.

Metric cross-recess drive machine and tapping screws can be identified by four radial indentations (Fig. 1-3).

LOCK CYLINDER CODING

KEY IDENTIFICATION AND USAGE

All models are equipped with new lock cylinders in which the keyway has been revised so that other model keys will not enter current model lock cylinders.

Two noninterchangeable keys are used on all styles. One key, identified by a square head, is used in all ignition lock cylinders. The second key, identified by an oval head, is used in front doors, instrument panel

compartment, console compartment, rear compartment and station wagon rear floor compartment lock cylinders. The square ignition key will not fit into the door lock cylinder and the oval key will not fit into the ignition lock cylinder.

Specific key identification is obtained from the four character key code stamped on the knockout portion of the key head and an identification letter stamped on the key shank.

After code number has been recorded by owner, plugs should be knocked out of key head. From these numbers, lock combination can be determined by use of a code list (available to owners of key cutting equipment from equipment suppliers). If key code numbers are not available from records or from the knockout plug, lock combination (tumbler numbers and position arrangement) can be determined by laying key on diagram in Figure 1-4.

CUTTING KEYS

After the special code has been determined, either from code list or Key Code Diagram (Fig. 1-4), cut blank key to the proper level for each of six tumbler positions, and check key operation in lock cylinder.

REPLACEMENT LOCK CYLINDERS

New lock cylinders are available from Service Parts Warehouses with new lock cylinder locking bar staked in place. Tumblers are also available and must be assembled into cylinder according to procedure outlined below.

ASSEMBLING AND CODING LOCK CYLINDERS

All Lock Cylinders Except Glove and Console Compartments

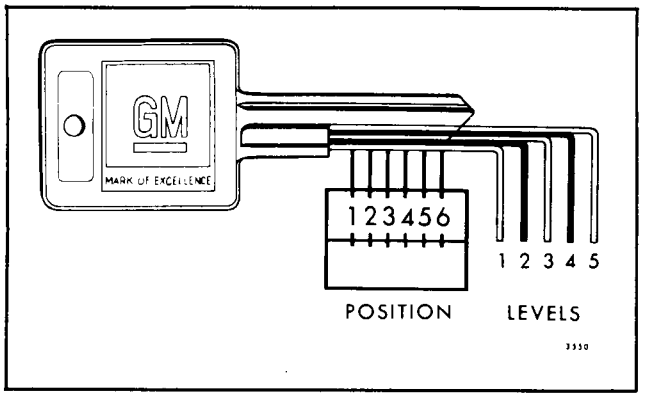


Fig. 1-4-Key Code Diagram

Tumblers for all locks except glove and console compartments are shaped exactly alike with the exception of notch position on one side. As the key is inserted in lock cylinder, tumblers are raised to correct height so that notches on each tumbler are at same level. When the notches on all six tumblers line up, side bar is pushed into the notches by two small springs, allowing cylinder to turn in its bore. Five types of tumblers are used to make all various lock tumbler combinations and each is coded according to a number, 1 through 5, stamped on its side.

1. Determine lock cylinder tumbler numbers and tumbler arrangement by use of numerical key code lock cylinder code list. Code lists are made available to owners of key cutting equipment by equipment suppliers.

   NOTE: To determine which tumblers should be installed in what position for a given key when a code list is not available, proceed as follows:

   a. Lay key on Key Code Diagram (Fig. 1-4) with key outlined by diagram as accurately as possible.

   b. Starting at head of key blade, determine and record lowest level (tumbler number) that is visible in position number 1 and subsequent position numbers 2 through 6. After tumbler numbers and arrangement have been determined, assemble as outlined in following steps.

2. Starting at open end (head) of cylinder, insert tumblers in their proper slots in the order called for by the code, as shown in Figure 1-5.

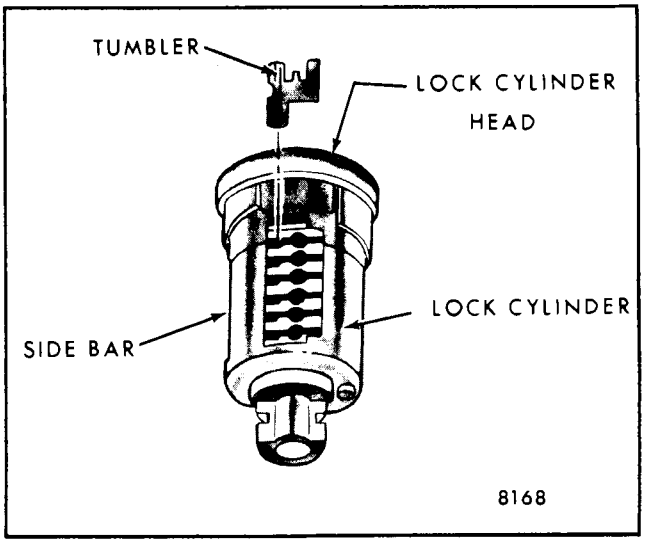


Fig. 1-5-Installing Tumblers

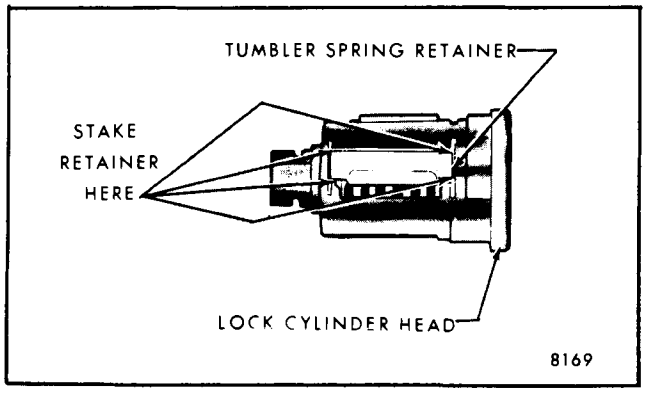


Fig. 1-6-Installing Spring Retainer

3. Pull out side bar with fingers so that tumblers will drop completely into place (Fig. 1-5). Insert one tumbler spring in space provided above each tumbler.

   CAUTION: *If the springs become tangled, do not pull them apart - unscrew them.*

4. Insert spring retainer so that two end prongs slide into the slots at either end of cylinder. Press retainer down (see Fig. 1-6).

5. To determine if tumblers have been properly installed, insert key into lock cylinder. If tumblers are installed properly, side bar will drop down. If bar does not drop down, remove key, spring retainer, springs and tumblers and reassemble correctly.

   CAUTION: *If tumblers have not been assembled correctly, they can be removed from cylinder by holding cylinder with tumbler slots down, pulling side bar out with fingers and jarring cylinder to shake tumblers out. This procedure is necessary because once tumblers have been pressed down into the cylinder they are held in their slots by side bar.*

6. If, after checking, it is found that lock cylinder is assembled properly, remove key and secure cylinder in a vise with spring retainer exposed.

   CAUTION: *Use leather or wood at each vise jaw to prevent damage to cylinder.*

7. Using suitable staking tool, stake spring retainer securely in place by staking cylinder metal over retainer at each end. Refer to Figure 1-6.

8. Lubricate cylinder with WD-40, 3M 4-way, or equivalent spray lubricant.

Assembling and Coding Glove and Console Compartment Lock Cylinders

All styles utilize a lock cylinder with snap-in tumblers for all glove and (if so equipped) console compartment locks. These lock cylinders have five positions and four tumblers. The number 1 position (closest to cylinder head) is a brass retainer "tumbler". The 2 through 5 positions are standard tumbler positions.

The snap-in type cylinder is used only for the glove or console compartment. Therefore, lock cylinder components, including cylinders, tumblers, retainer "tumblers" and tumbler springs are not interchangeable for any other lock cylinder application. All individual components for servicing the snap-in cylinder are available separately from the Service Parts System.

1. Determine lock cylinder tumbler numbers and tumbler arrangement by use of numerical key code lock cylinder code list. Code lists are made available to owners of key cutting equipment by equipment suppliers.

   NOTE: To determine which tumblers should be installed in what position for a given key when a code list is not available, proceed as follows:

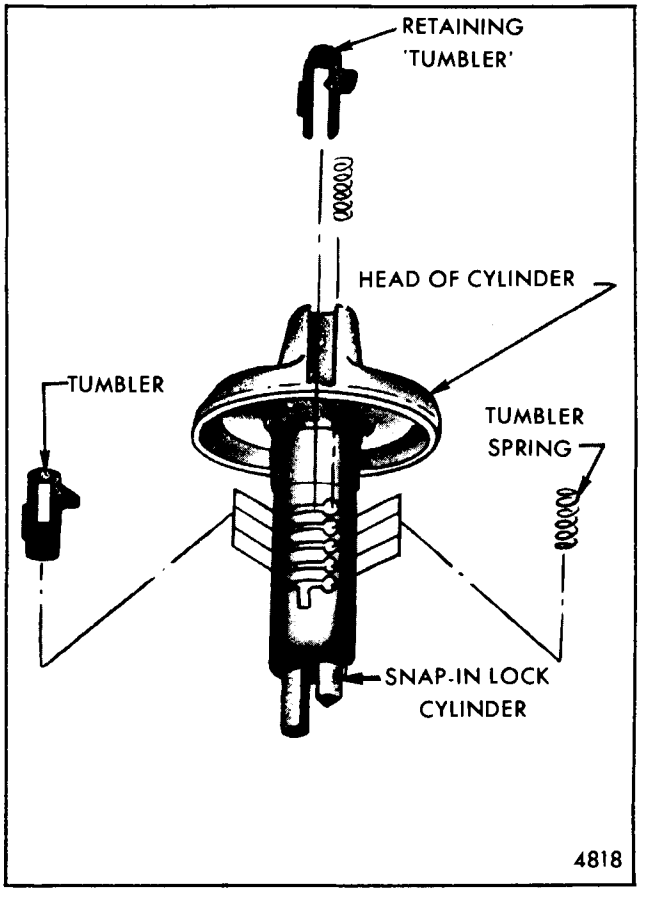


Fig. 1-7-Installing Tumblers

a. Lay key on Key Code Diagram (Fig. 1-4) with key outlined by diagram as accurately as possible.

b. Starting at head of key blade, determine and record lowest level (tumbler number) that is visible in position number 1 and subsequent position numbers 2 through 5. After tumbler numbers and arrangement have been determined, assemble as outlined in following steps.

2. Starting at open end (head) of cylinder, insert tumbler spring and retainer "tumbler" in first position, then proceed to insert tumbler springs and tumblers in their proper slots in the order previously determined by code, as shown in Figure 1-7.

3. Place cylinder in vise, tumblers up, using leather or wood at each vise jaw to prevent damage to cylinder.

4. Place small wooden block flat on exposed tumblers and tap tumblers down flush with cylinder as shown in Figure 1-8.

5. Lubricate cylinder with WD-40, 3M 4-way, or equivalent spray lubricant.

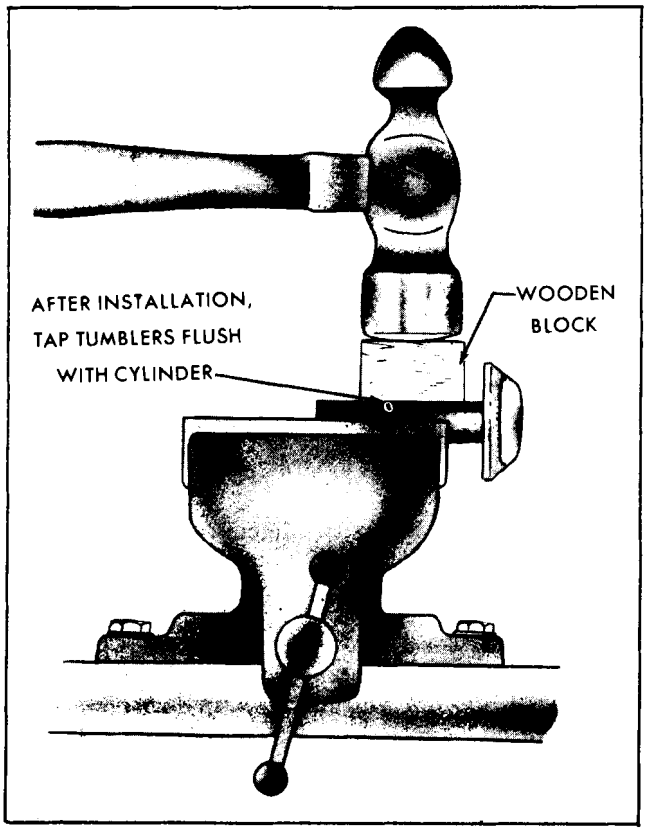


Fig. 1-8-Locking Tumblers in Place

ADHESIVE BODY SIDE MOLDING

Most body side moldings (except on Cadillac styles) are attached to body panels with foam adhesive tape. To insure a quality molding repair installation (with new or old moldings) the panel surface should be warm (70 to 90 degrees F), clean and free of any wax or oil film. Separate procedures are included for attaching loose molding ends and completely removed moldings.

On some styles moldings are bonded to the body panels with a urethane and hot-melt adhesive system in place of the foam adhesive tape. The listed repair procedures may be used for these moldings except that, as a first step, all traces of the hot-melt adhesive should be removed from the molding and panel with naphtha.

MOLDING END LOOSE

1. Wash affected area with detergent and water and wipe dry. Wipe panel and adhesive side of molding with oil-free naphtha or alcohol.

2. If needed, apply a length of tape as a molding guideline. A suitable straightedge may also be used in most situations.

   NOTE: If molding has separated from adhesive backing (tape remains on body panel), do not remove tape from body. Naphtha or alcohol wipe back of molding and tape on body and proceed with step 3.

3. Apply adhesive to back of molding and press in place.

   a. If Loctite 414 adhesive (part no. 1051910) or equivalent is used, apply constant pressure to molding for 30 seconds until adhesive develops sufficient holding strength.

   b. If 3M Super Weatherstrip Adhesive (or equivalent) is used, tape molding in place for 15 minutes. Use naphtha for clean-up.

c. If 3M Plastic and Emblem Adhesive (or equivalent) is used, follow package instructions for applying adhesive and tape molding in place for 30 minutes.

MOLDING COMPLETELY REMOVED

1. Wash affected panel area with detergent and water and wipe dry. Wipe panel and adhesive side of molding with oil-free naphtha or alcohol.

2. Mark proper alignment position with a length of tape, using adjacent moldings as a guide, if applicable (View "A", Fig. 1-9).

   NOTE: If separation occurs between adhesive backing and molding (tape remains on body panel), do not remove tape from body. Naphtha or alcohol wipe back of molding and tape and proceed with step 3.

3. Hold molding in position with cloth or masking tape strips applied every 150 to 200 mm (6" to 8") as shown in View "B", Figure 1-9.

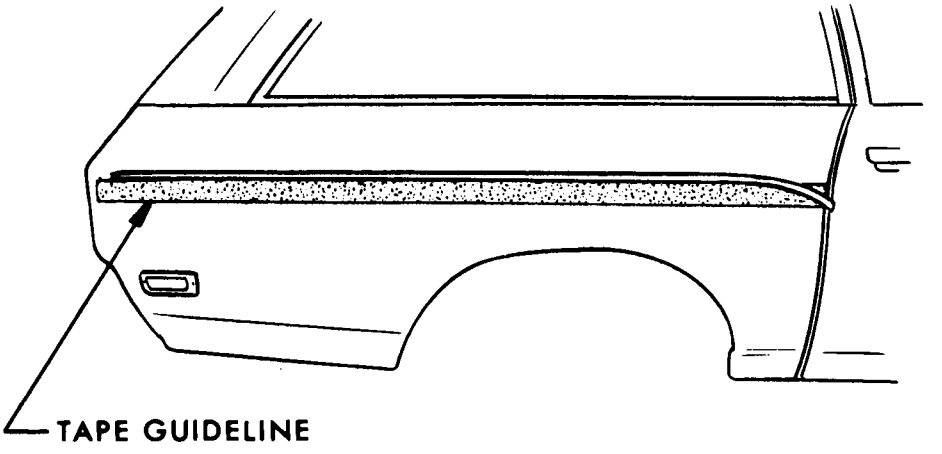
4. If body is significantly below 70 degrees F due to shop temperature or prior environmental temperature, warm body panel with heat lamp or heat gun while proceeding with step 5.

5. Loosen top of tape strips holding molding in position. Hinge molding downward to gain access to back of molding (View "C", Fig. 1-9), then using a circular motion, quickly apply a thin film of 3M Super Weatherstrip Adhesive (or equivalent) to the adhesive portion of the molding.

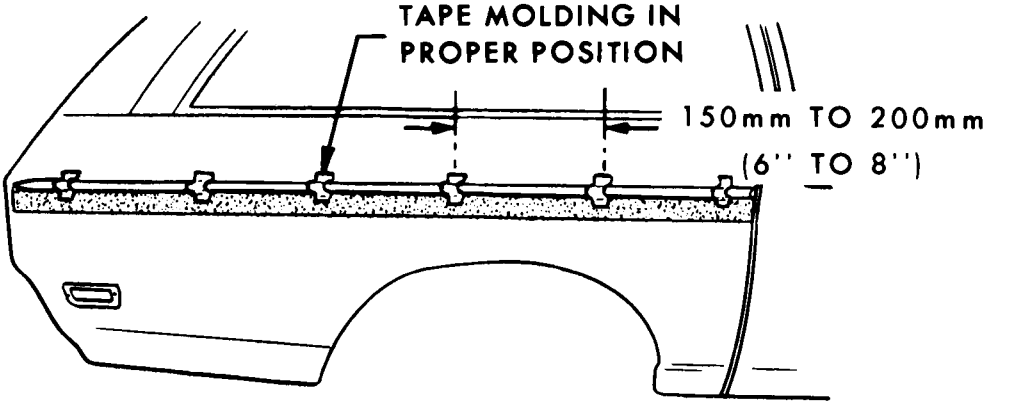
6. Immediately align molding to previously installed tape guideline and firmly press in place. Hold in place with tape strips.

7. Allow to set 15 minutes. If clean up of cement squeeze-out is required, use a cloth dampened slightly with naphtha; then remove tape strips and tape guideline.

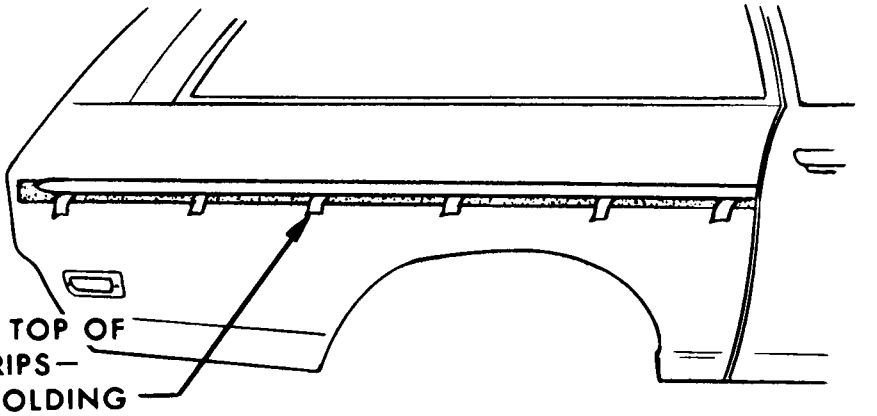
   NOTE: Although adhesive cures sufficiently to retain molding after 15 minutes, total cure requires 24 hours. Vehicle should not be subjected to high pressure car washes, etc., for a 24 hour period.



VIEW A



VIEW B



VIEW C

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Fig. 1-9 - Adhesive Body Side Molding Repair

WOOD GRAIN TRANSFERS (STATION WAGON STYLES)

Wood grain transfers on station wagon styles are of all vinyl construction and are designed to secure to an acrylic painted surface by means of a pressure sensitive adhesive. The vinyl transfers are partially translucent and allow a degree of body color to show through and possess a 50 degree or semi-gloss finish.

Service replacement transfers are available through service warehouses in roll stock form of suitable size. When placing orders for transfers, carefully indicate Division, Model Year, Body Style and applicable car panel usage.

Use of wetting solution aids the repairman to lift and to position the transfer during installation. Wetting solution also ensures a better bond between transfer and body.

Prepare wetting solution, called out in procedure, by adding 1/4 ounce of detergent (Joy, Vel or equivalent) to one gallon of clean water.

Vinyl transfer replacement involving collision damage, or damage to underlying acrylic paint finish requires that metal repair and/or refinish operations be carried to completion before transfer is installed.

For quality results, the temperature of transfer, panel surface and work room should be at least 65 degrees or warmer. Transfers should not be replaced in temperatures below 65 degrees F. Transfers lose workability features in cold temperatures and may crack in these temperatures.

A proper squeegee sequence is of utmost importance. Start at top center of transfer. Progress to right and left from center to establish alignment across top. Then squeegee downward from this position in small increments all the way across transfer as described in Figure 1-10 and in this procedure.

Use firm, short, overlapping squeegee strokes to drive out all water and air while achieving maximum bond of transfer.

Removal of all blisters and proper attention to edge detail makes for a quality installation.

Use of heat is sometimes required at specific locations. This should be done with extreme care. Never use heat until all surrounding sections of a transfer are secured. Heat softens and stretches the transfer.

The following equipment and materials are necessary in making a quality transfer installation. Equivalent products can be used.

1. Wetting solution - prepare by mixing water and liquid detergent (Joy, Vel or equivalent).
2. Wax and silicone remover - Prep-Sol, Pre-Kleano, Acrylic-Clean or equivalent.
3. 3M Vinyl Trim Adhesive or equivalent; brush or spray can.
4. Squeegee - 3" to 4" wide, plastic or hard rubber. Deburr sharp and rough edges to prevent scratching.
5. Water bucket and sponge.
6. Sandpaper, no. 360 or no. 400, wet-or-dry type.
7. Infrared heat bulb and extension cord.
8. Clean wiping rags or paper towels.
9. Sharp knife.
10. Scissors.
11. Fine pin or needle.

Removal

1. Remove necessary moldings. For molding removal procedures refer to the following section of this manual:
   a. Front End - Section 4 (Front Fenders - "H" Bodies only)
   b. Doors - Section 5
   c. Rear Quarters - Section 6
   d. Rear End - Section 7
   e. Roof - Section 8
2. Wash and clean repair surfaces, adjacent panels and openings as required.
3. Remove transfer finishing moldings, molding attaching clips, handles, side marker lamps and/or other transfer overlapping parts.
4. Remove affected transfer by starting at one edge and by peeling transfer as sheet from surface. Application of heat to affected transfer at point of removal aids removal operation.

CAUTION: *Do not use pointed or sharp instrument during transfer removal. Avoid gouging underlying paint finish.*

Installation

1. Scuff-sand acrylic painted surface with no. 360 or no. 400 sandpaper by dry sanding. Freshly painted surfaces must be allowed to dry thoroughly. Residual solvents in fresh paint can lead to subsequent blistering problems.

2. Clean acrylic painted surface with wax and silicone remover, such as Prep-Sol, Pre-Kleano, Acryli-Clean or equivalent. Wipe surface with clean cloth, and allow to dry. Use compressed air to blow away loose dirt from area of repair.

3. Prepare transfer for installation from paper template to be made as follows:

   a. Tack-tape a suitable sheet of paper at top to outer panel aligning top of paper with centers of upper horizontal molding attaching clip holes. This represents the final upper trim line.

   b. With template flush to panel, mark front, rear and bottom edges of panel on template.

   c. With template on table, draw another line outboard of front, rear and bottom panel edges approximately 5/8" to 3/4" from panel edges. Remove excess paper beyond front, rear and bottom trim line.

   d. Punch small hole at front vertical edge of template to denote front. Also mark inner side on underside of template.

4. Unroll and position service transfer on table with backing paper on top and with outer woodgrain pattern running from left to right.

5. Position prepared template on service transfer and mark perimeter cut line on backing of service transfer. Be sure that inner side of template is up and that woodgrain pattern runs from left to right before marking trim line on service transfer.

6. Cut out service transfer along trim line as required.

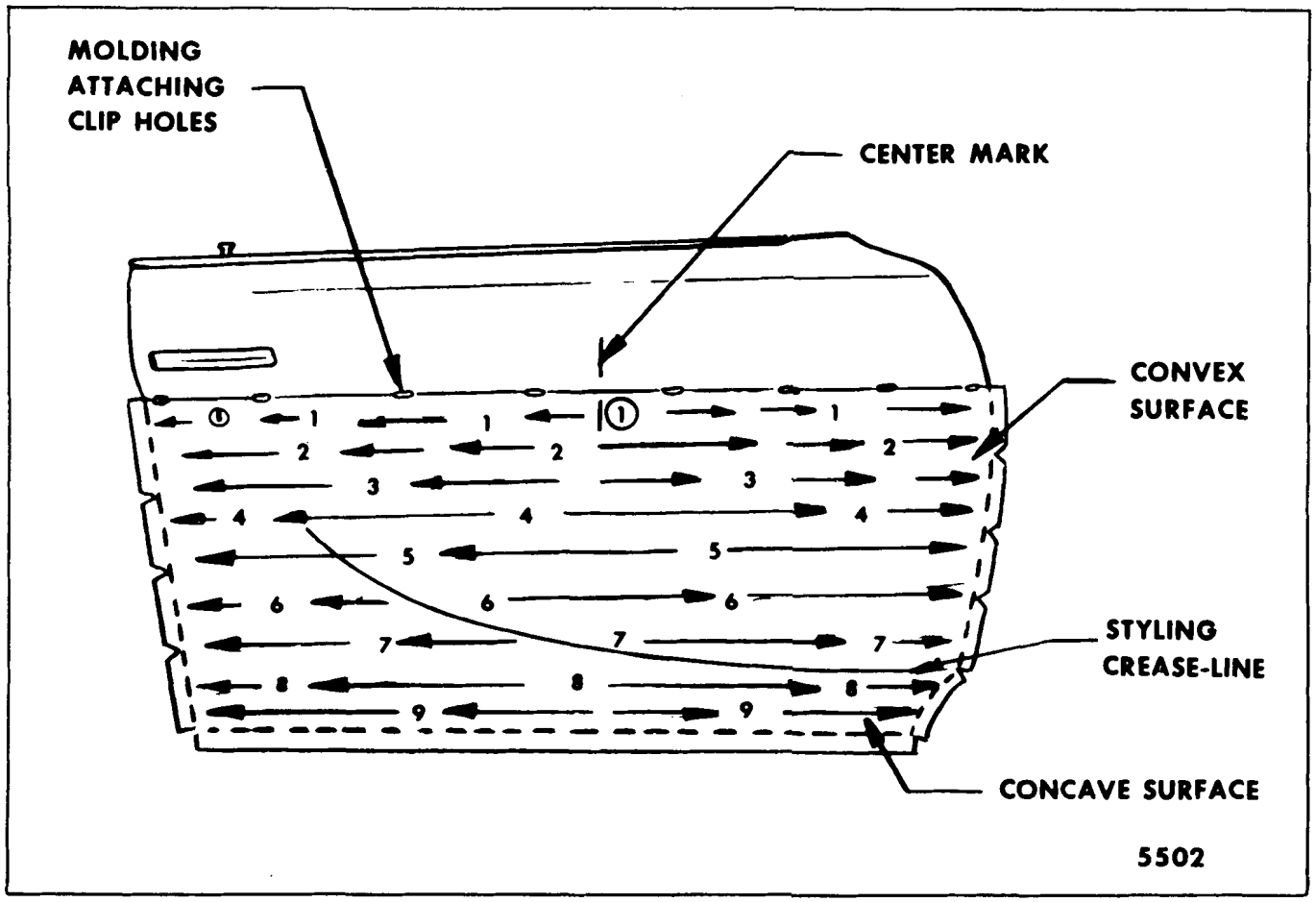

Fig. 1-10-Transfer Installation Sequence (Right Front Door Shown)

7. Position transfer to repair panel, centering transfer for proper vertical and lateral alignment. Center-mark transfer and panel accordingly (Fig 1-10).

8. Peel paper backing from transfer and lay transfer, face down, on clean table.

9. Using clean sponge, apply ample wetting solution to transfer adhesive and to repair panel surface.

10. Center and align upper edge of transfer with center of upper horizontal molding clip holes and press down lightly across top. Squeegee transfer firmly at center for distance of three to four inches (width of squeegee). Then squeegee upward over same spot.

11. Raise one side of transfer from panel up to secured spot at top-center. Position transfer close to panel along clip attaching holes and, working from center, squeegee transfer into place. Use firm, short, overlapping strokes. Squeegee laterally first and then up when working across top. Complete securing opposite, upper edge of transfer in similar fashion.

12. With one hand, lift the unsecured lower area of transfer from panel. If transfer sticks prematurely, break bond with fast, firm pull. Position transfer close to panel at center and squeegee downward for short distance (approximately 2"). Then squeegee laterally over same spot. Repeat this operation working toward each end of panel. Continue bonding of transfer with firm, overlapping strokes. Example of squeegee progression is shown in Figure 1-10.

13. Apply soapy wetting solution periodically to panel to facilitate raising and positioning transfer during squeegee operations.

14. Work progressively downward in small increments completely across transfer as shown in Figure 1-10.

15. Cut 90 degree notches in transfer edges at lower corners as required. Cut "V" notches in transfer sides where necessary.

16. Apply light coating of vinyl trim adhesive to door hem flanges and to rear body lock pillar facing where surface is covered by transfer. Avoid use of excessive adhesive.

17. With heat lamp, heat inboard side of door hem flanges (or body lock pillar facing, etc.) and edges of transfer film (to approximately 90 degrees F).

18. Fold ends of transfer over door hem flanges (or over corners at panel ends) and press to secure edges of transfer to panel surfaces. Avoid undue pulling or stretching at ends as tearing could result.

19. Apply heat to transfer at door handle holes, side marker lamps and other depressions. Press transfer uniformly into depressions to obtain formed bond.

20. With sharp knife, carefully cut out excess transfer at side marker lamps, door handle holes, and other openings in panel.

21. Inspect transfer installation from critical angle using adequate light reflection to detect any irregularities that may have developed during installation. Remove all air or moisture bubbles by piercing each at an acute angle with a fine pin or needle and by pressing the bubble down.

22. Install previously removed parts and clean car as required.

LUBRICATION

GENERAL MAINTENANCE

Mechanical parts having contacting surfaces in relative motion with other body parts are lubricated during assembly. To maintain ease of operation, it is recommended that these parts be lubricated at the basic service interval shown in the Vehicle Maintenance Schedule with lubricants as follows:

1. All door and tailgate hinges are to be lubricated with engine oil (30 weight preferred). Apply lubricant to roller and hinge pin bushings but do not lubricate hold-open link and roller contacting surfaces.

2. All locks (door, tailgate, lid), compartment lid hinges and torque rod to hinge surfaces and "B-35" tailgate torque rod assist link to body retainer are to be lubricated with Auto-Lube "A", part no. 1050110, Spray-Lube "A", part no. 1050520, 3M Lithium Spray Lube no. 8915, or equivalent.

3. The lubrication requirements for seat mechanism, door window hardware, tailgate

hardware, sun roof and windshield wipers are covered in the specific body area sections in this manual.

4. Lubricate lock cylinders with WD-40, 3M 4-way or equivalent spray lubricant.

BODY SEALING

Information

Sealers are applied at major and/or subassembly panel joints and prohibit foreign substance (water, noise, exhaust gases, etc.) from entering the interior of the vehicle. If during service operations a particular sealing area is disturbed, it must be resealed using an appropriate sealer which is applicable for that location.

METAL REPLACEMENT PARTS FINISHING

Metal service replacement parts (or assemblies) are painted with a black, high-bake factory primer. For proper adhesion of color coats in service, the following refinish steps are necessary.

Procedure

1. Wash part with paint finish cleaning solvent.
2. Scuff sand panel lightly with no. 500 sandpaper, dry. Avoid cut-thru's. Rewash part.
3. Apply best sealer available. Apply according to label directions.
4. If necessary, apply primer-surfacer and sand smooth for required surface.
5. Apply color coats as required.

Prior to replacing exterior body parts or assemblies, check condition of paint on all covered or hidden interior panels. If powder or scale rust is encountered in these areas, proceed as follows:

1. Remove rust with suitable wire brush, abrasive or liquid rust removing agent. Follow directions.
2. If necessary, wash with detergent, rinse and dry.
3. Apply a heavy coating of anticorrosion compound (G.M.P.D. part no. 1051685, 16 gal.; 1051686, 55 gal.; or 1052096, aerosol or equivalent) to all cleaned hidden surfaces before installing exterior body parts. Also, apply anticorrosion compound to entire inner surfaces of exterior body parts being installed.

INTERIOR PLASTIC TRIM PARTS FINISHING

Paintable plastic trim components as used on General Motors interiors can be divided into three general types:

1. Polypropylene Plastic
2. ABS Plastic
3. Vinyl Plastic

It is important for a painter to be able to identify each plastic in order to paint it satisfactorily. Painting of complete soft seat cushion and seat back trim cover assemblies of vinyl construction is not approved by the factory. Excluding the soft seat cushion and seat back trim cover assemblies, the plastic used most widely on the interior of bodies is POLYPROPYLENE.

Tests for Plastic Identification

The purpose of the following tests is to determine the identity of a given plastic so that proper paint procedures and materials can be used.

Test for Polypropylene and ABS Plastic

To determine if a service part to be painted is polypropylene or ABS plastic, perform the following burn test:

1. From a hidden backside portion of the part, remove a sliver of plastic with a sharp blade.

2. While holding the sliver of plastic with tweezers or laying it on a clean noncombustible surface, ignite the plastic.

3. Observe the burning plastic closely:

   a. Polypropylene burns with no readily visible smoke.

   b. ABS plastic burns with a readily visible black smoke residue which hangs temporarily in the air.

Test for Vinyl Plastic

To determine if a part to be painted is vinyl plastic (polyvinyl chloride), a copper wire test may be performed as follows:

1. Heat a copper wire in a suitable flame such as provided by a propane or equivalent torch until the wire glows (turns red).

2. Touch the heated wire to the backside or hidden surface of the part being tested in a manner so as to retain some of the plastic on the wire.

3. Return the wire (and retained plastic) to the flame and observe for a green, turquoise blue flame. A flame in this color range indicates that the plastic being tested is vinyl.

PROCEDURE FOR PAINTING POLYPROPYLENE PLASTIC PARTS

The system for painting polypropylene parts involves the use of a special primer. Since polypropylene plastic is hard, it can be color coated after prime with conventional interior acrylic lacquer.

> **CAUTION:** *It is essential that the service part be primed with a coating of special polypropylene primer according to factory recommendations. Failure to use the required primer as directed will result in color coat lifting and/or peeling problems. Use G.M.P.D. Polypropylene Primer, part no. 1051497, or equivalent.*

Procedure

1. Wash part thoroughly with paint finish cleaning solvent, such as Acryli-Clean, Pre-Kleano, Prep-Sol or equivalent. Follow label directions.

2. Apply a thin, wet coat of polypropylene primer according to label directions. Wetness of primer is determined best by observing gloss reflection of spray application in adequate lighting. Be sure primer application includes all edges. Allow primer to flash dry one minute minimum and ten minutes maximum.

3. During the above flash time period (1 to 10 minutes), apply conventional interior acrylic lacquer color as required and allow to dry before installing part. Application of color during above flash time range promotes best adhesion of color coats.

PROCEDURE FOR PAINTING RIGID OR HARD ABS PLASTIC PARTS

Rigid or hard ABS plastic requires no primer. Conventional interior acrylic lacquers adhere satisfactorily to hard ABS plastics.

Procedure

1. Wash part thoroughly with a paint finish cleaning solvent, such as Acryli-Clean, Pre-Kleano, Prep-Sol or equivalent.

2. Apply conventional interior acrylic lacquer color according to trim combination (see paint supplier color chart for trim and color code).

3. Allow to dry and then install part.

   NOTE: Apply only sufficient color for proper hiding to avoid washout of grain effect.

PROCEDURE FOR PAINTING VINYL AND FLEXIBLE (SOFT) ABS PLASTIC PARTS

The outer cover material of flexible instrument panel cover assemblies is made mostly of ABS plastic modified with PVC or vinyl. The same is true of many padded door trim assemblies. The soft cushion padding under ABS covers is urethane foam plastic.

The most widely used flexible vinyls (polyvinyl chloride) are coated fabrics as used in seat trim, some door trim assemblies, headlinings and sun visors. Most head restraints are covered with flexible vinyls. Examples of hard vinyls are door and front seat back assist handles, coat hooks and exterior molding inserts.

The paint system for vinyl and flexible ABS plastic involves the use of interior vinyl color and a clear vinyl top coat.

NOTE: No primer or primer-sealer is required.

Procedure

1. Wash part thoroughly with a vinyl cleaning and preparation solvent, such as Vinyl Prep, Vinyl Prep Conditioner or equivalent. Wipe off cleaner while still wet with clean, lint-free cloth.

2. Immediately after wiping surface dry, apply interior vinyl color in wet coats allowing sufficient flash time between coats. See label directions. Use proper vinyl color as designated by interior trim combination.

3. Before color flashes completely, apply one, wet double coat of vinyl clear top coat. Use top coat with appropriate gloss level to match adjacent similar components. When painting instrument panel covers use nonglare clear vinyl. The clear coat is necessary to control the gloss requirement and to prevent crocking (rubbing-off) of the color coat after drying.

4. Allow to dry according to label directions before installing part.

   NOTE: Apply only sufficient color for proper hiding to avoid washout of grain effect.

AVAILABILITY OF COLORS FOR PAINTING INTERIOR PLASTIC PARTS

Interior colors are color keyed to trim combination numbers located on the body number plate.

Conventional interior acrylic lacquer colors are designed for use only on hard trim parts, such as:

1. Steel parts (primer or sealer required on new service parts)

2. Hard ABS plastic (NO primer necessary)

3. Hard polypropylene plastic ("special primer" required)

Each major paint supplier provides an interior color chart which identifies the stock number, color name, gloss factor and trim combination number for each conventional interior color.

Vinyl interior colors are designed for soft trim parts such as instrument panel cover assemblies, upper door trim assemblies and head restraints. These colors require a final top coat of clear vinyl. Instrument panel covers require a nonglare final top coat. Other trim parts require a degree of gloss to match similar adjacent parts. Use interior vinyl colors and clear vinyl finishes such as Ditzler Vinyl Spray Colors, American Jetway UR-1 Vynicolor or equivalents.

SPECIAL BODY TOOLS

The illustrations on the following pages list special body tools that are recommended as aids in servicing the various body components. Equivalent tools may be substituted.

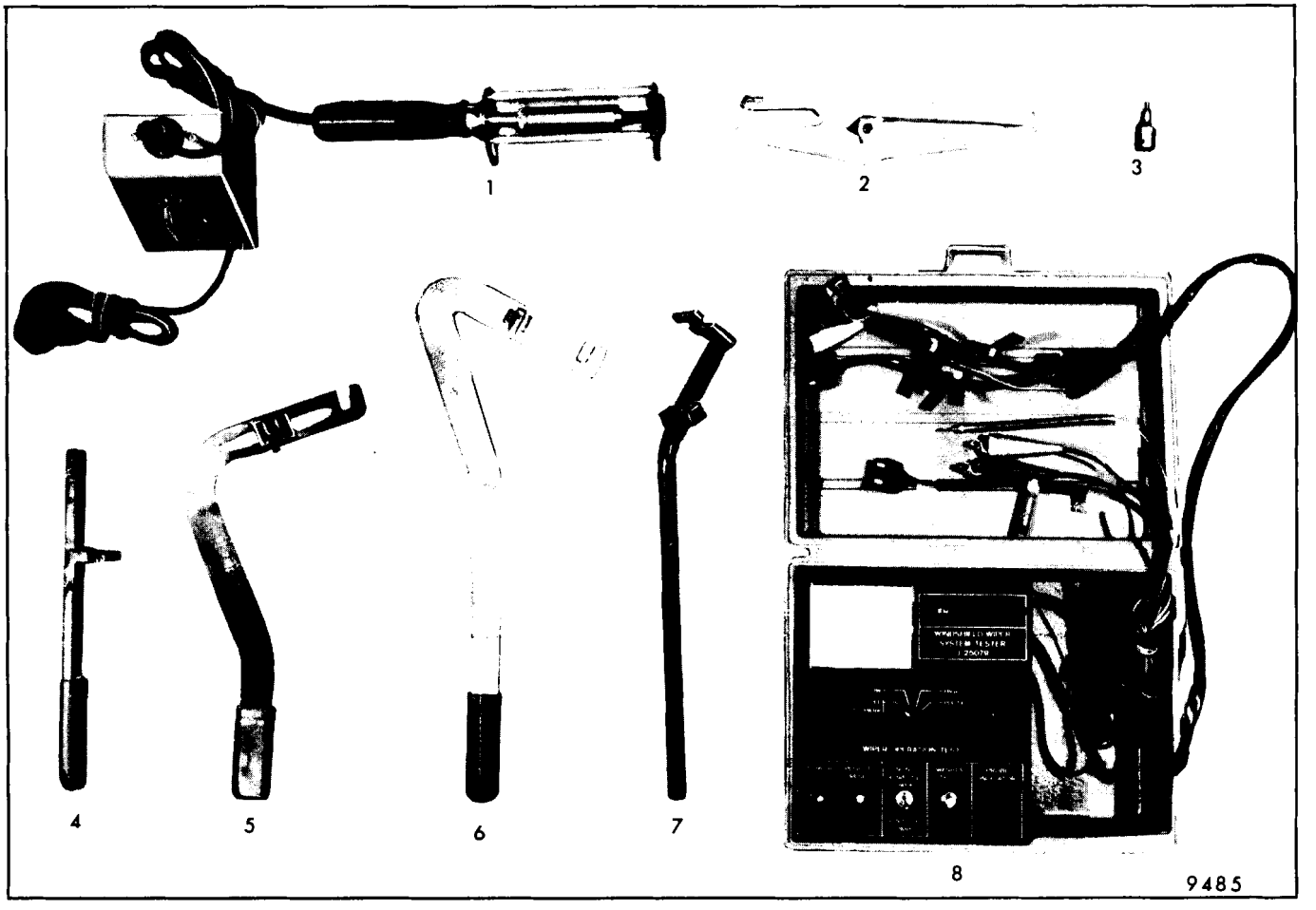

Fig. 1-11-Special Body Tools

1. J-23091 - Fabric Roof Cover Repair Tool
2. J-23497 - Door Hinge Spring Compressing Tool - "X" Styles
3. J-23457 and BT-7107 - Seat Belt Anchor Bolt Removing Tool
4. J-21412 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - "X" Styles
5. BT-7102 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - Oldsmobile "E" Styles
6. J-25476 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - Cadillac "K" Styles
7. J-23722 - Rear Compartment Lid Torque Rod Removal and Adjusting Tool - Cadillac "E" Styles
8. J-25079 - Windshield Wiper System Tester - All Styles

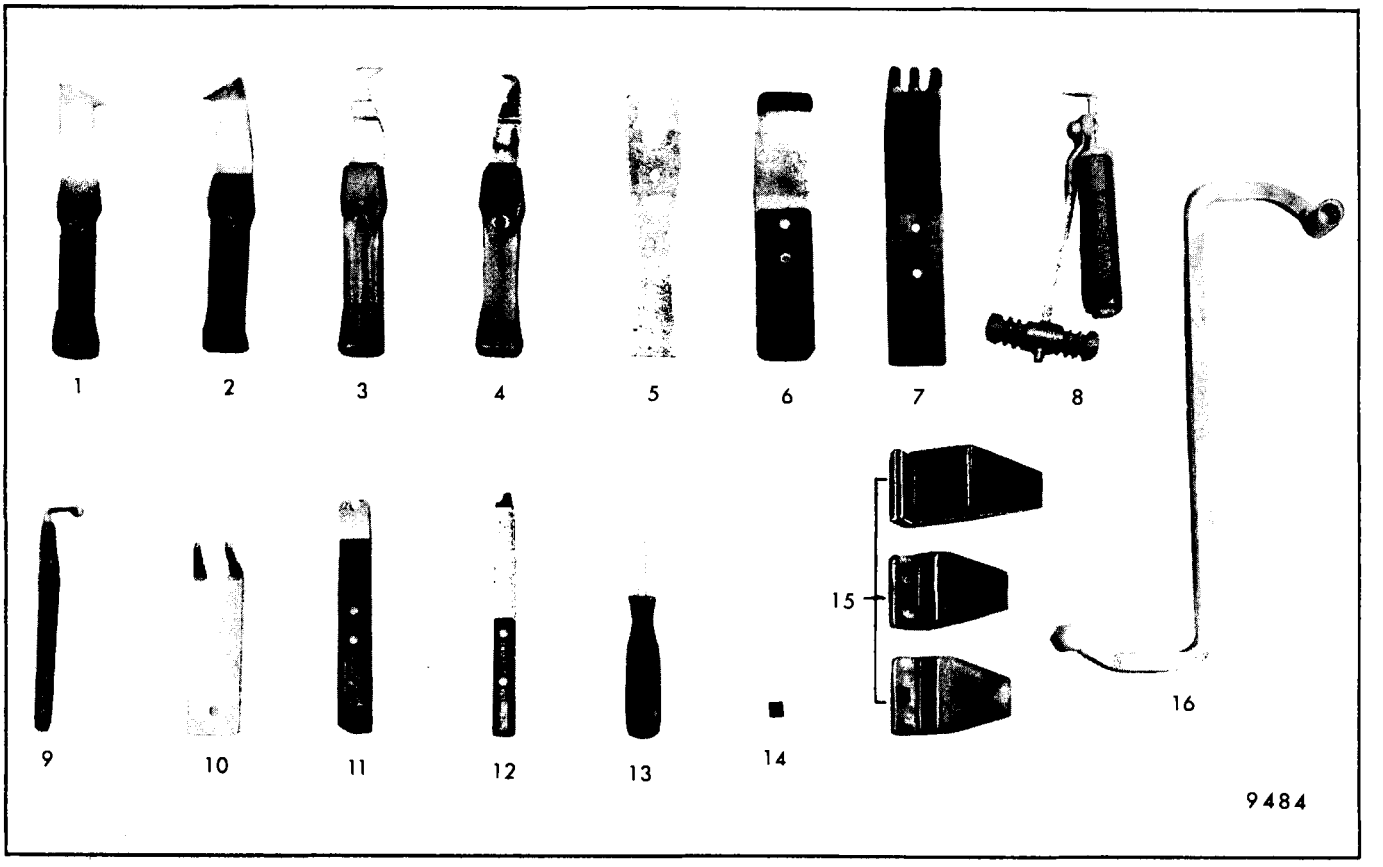

Fig. 1-12-Special Body Tools

1. J-21549-10 - Reveal Molding Remover - "B, C, D, E, F and H" Styles (Left Hand Operation)
2. J-21549-11 - Reveal Molding Remover - "B, C, D, E, F and H" Styles (Right Hand Operation)
3. J-21549-5 - Reveal Molding Remover (Left Hand Operations) - "A and X" Styles
4. J-21549-6 - Reveal Molding Remover (Right Hand Operations) - "A and X" Styles
5. J-9886 - Door Handle Clip and Trim Pad Remover (Nail Retention) - All Styles
6. J-2772 - Headlining Installer - All Styles
7. J-24416 - Side Garnish Molding Remover - "A" Styles
8. J-24402 - Stationary Glass Remover
9. J-8966 - Windshield Wiper Arm Removing Tool - All Styles
10. J-22128 - Windshield Wiper Arm Removing Tool - All Styles
11. J-21104 - Weatherstrip Removing Tool - All Styles
12. J-21092 - Fabric Roof Cover Trim Knife - All Styles
13. J-23554 - Door Trim Pad Applique Remover - All Styles
14. J-22055 - Window Nut Remover - All Styles
15. Glass Alignment Gauge Block Set: J-23394-"F" Styles; J-23711-"E" Styles; J-24792-1-"A" Styles
16. Door Hinge Wrench: J-24353 - "A and F" Styles; J-26614 - (Metric) "B, C, E and K" Styles

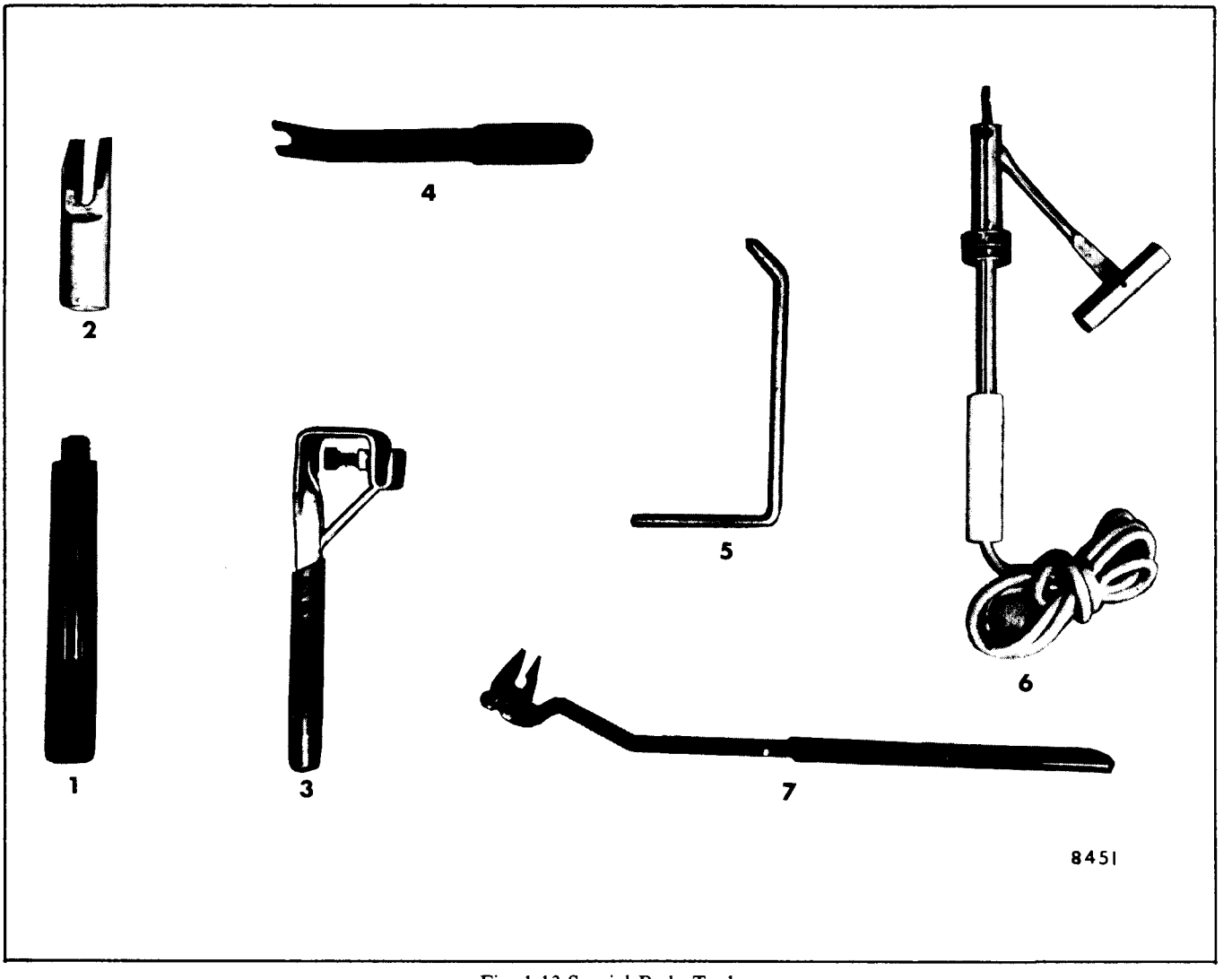

Fig. 1-13-Special Body Tools

1. J-8092 Handle - "H" Styles
2. J-23568 Door Hinge Pin Remover - "H" Styles
3. J-24854 Rear Compartment Lid Torque Rod Removal Tool - "H-11" Styles
4. J-24595 or BT-7323 Trim Pad Remover - All Styles
5. J-23581 Auxiliary Hood Release Tool - "H" Styles (Less "07" Styles)
6. J-24709-1 Stationary Glass Remover (750 Degree Hot Knife)
7. J-24877 Back Door Torque Rod Removal and Adjusting Tool - "H-15" Styles

SECTION 2

WINDSHIELD WIPER SYSTEM

TABLE OF CONTENTS

SUBJECT	PAGE
Windshield Wiper System	2-1
Control Switches	2-1
Pulse Control	2-1
Diagnosis - Pulse Control	2-2
Two-Speed Rectangular Motor	2-2
Diagnosis - Wiper on Car	2-3
Diagnosis Chart - Wiper on Car	2-5
Diagnosis Chart - Wiper Off Car	2-6
Wiper Motor Removal and Installation	2-6
Wiper Arm Removal and Installation	2-7
Wiper Arm Adjustment	2-7
Wiper Blade Removal and Installation	2-7
Wiper Transmission Removal and Installation	2-10
Disassembly and Assembly Procedure	2-11
Two-Speed Round Motor	2-14
Diagnosis - Wiper on Car	2-17
Diagnosis Chart - Wiper on Car	2-20
Diagnosis Chart - Wiper Off Car	2-21
Wiper Motor Removal and Installation	2-25
Wiper Arm Removal and Installation	2-28
Wiper Arm Adjustment	2-29
Wiper Blade Removal and Installation	2-30
Wiper Transmission Removal and Installation	2-31
Motor Disassembly and Assembly Procedure	2-32
Gearbox Disassembly and Assembly Procedure	2-33
Modified Pulse Wiper System	2-37
Diagnostic Procedures	2-44
Motor Disassembly and Assembly Procedures	2-61
Washer Systems	2-64
Jar Mounted Washer System	2-64
Diagnosis Chart	2-65
Round Motor Washer System	2-67
Diagnosis Chart	2-69
Removal of Washer Pump from Wiper Motor	2-70
Modified Pulse Washer System	2-71
Diagnosis Chart	2-79
Windshield Wiper System Tester - All Styles	2-89

WINDSHIELD WIPER SYSTEM

DESCRIPTION

A two-speed wiper motor is standard equipment on all models.

The nondepressed park system uses a rectangular-shaped motor with wiper blades that are visible above the hood line when in the park position. A bottle mounted washer motor and pump assembly is used in conjunction with the rectangular motor on "F, H and X" styles. Refer to Washer Systems in this section for complete information.

NOTE: The bottle mounted washer motor and pump assembly is also used with the two speed round depressed park motor on "F" styles.

The depressed park system uses a round motor and wiper blades that park below the hood line.

Both systems use a tandem wipe pattern, however, on "E" styles, the depressed park system incorporates an articulated arm and blade on the left hand (driver's) side.

CONTROL SWITCHES

For service information on dash mounted control switches, refer to appropriate chassis service manual.

PULSE CONTROL

An optional pulse system is available on all "X" styles. It consists of a separate dash mounted control

that ranges from off to maximum delay and operates in conjunction with the regular dash switch, rectangular motor and jar mounted pump and motor assembly.

The pulse control is a variable timer which allows direct control of the amount of time delay between wipe strokes by varying the resistance in the feed circuit to the wiper motor. When the control is turned on, current is supplied to a capacitor. When the capacitor reaches a certain level of charge, it turns on a S.C.R. (Silicone Controlled Rectifier) which acts as an electrical switch to provide a path to ground for the wiper motor circuits and the motor begins to operate. As the motor output shaft and gear assembly rotates, the internal parking switch closes and shunts the S.C.R. (switch) circuit which turns the timer off. However, the motor continues to operate until the parking switch opens. When the switch opens, the motor stops in the park position and current is again supplied to the variable timer which is the start of another pulse or delay sequence.

When the control is in the minimum delay position, the timer will recycle approximately every three seconds. In the maximum delay position, recycling occurs approximately every thirty seconds. The windshield wipers make one wipe cycle each time the timing circuit turns the wiper motor on.

Once the wipers are operating in Hi or Lo speed, the pulse mode is bypassed. Selecting a pulse mode at this time will not affect wiper operation.

Depressing the control switch to obtain washer pump operation causes the wipers to operate in Lo speed, overriding the pulse mode if previously activated. Moving the washer-wiper control switch to the off position will result in the wipers reverting to the pulse mode. To turn the wipers completely off, both the washer-wiper and pulse control switch must be in the off position.

The pulse control unit is serviced as a complete assembly.

DIAGNOSIS - PULSE CONTROL

CONDITION	APPARENT CAUSE	CORRECTION
1. Wipers inoperative in pulse mode but operate normally in HI and LO speed	a. Open in red or black wire between dash switch and pulse control. b. Defective pulse control unit.	a. Repair as required and recheck wiper operation in pulse mode. b. Replace pulse control unit.

TWO-SPEED RECTANGULAR MOTOR

DESCRIPTION

The system consists of a compound-wound, rectangular-shaped motor (Fig. 2-1) attached to a gearbox containing a parking switch in addition to the gear train. The gear train consists of a motor armature helical gear shaft which drives an intermediate gear and pinion assembly. The pinion gear of the intermediate gear and pinion drives an output gear and shaft assembly (Fig. 2-13). A rectangular motor application chart is shown in Figure 2-2.

Turning the wiper switch to the LO speed position completes the circuits from wiper terminals 1 and 3 to ground. Current then flows from the battery through wiper terminal no. 2 through the series field and divides: (1) part passes through the armature to ground through wiper terminal no. 1 to the wiper switch and (2) part passes through the shunt field to ground through wiper terminal no. 3 to the wiper switch (Fig. 2-3).

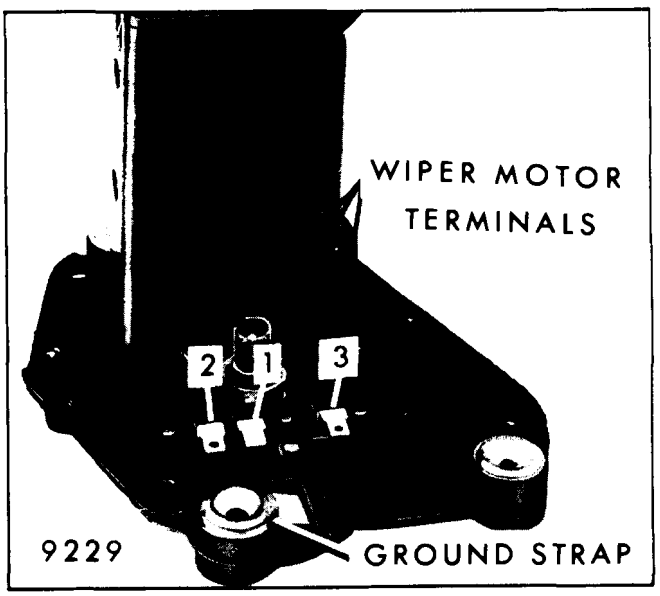

Fig. 2-1-Rectangular Motor

RECTANGULAR MOTOR APPLICATION CHART		
SERIES	GEAR RATIO	CRANKARM LETTER
H	36:1	AE
F	36:1	AA
X	36:1	B

8275

Fig. 2-2-Rectangular Motor Application Chart

NOTE: The wiper switch must be securely grounded to body metal.

Moving the wiper switch to the HI speed position opens the shunt field circuit to ground at the switch. However, the shunt field is connected to a 20 ohm resistor which is connected across wiper terminals 1 and 3. The shunt field current then flows through terminal no. 3 through the resistor to terminal no. 1 to the switch, to ground (Fig. 2-4).

The parking circuit covers that portion of wiper operation when the wiper switch is turned OFF and the wiper blades have not reached the park position.

When the wiper blades are not in the normal park position, the parking switch contacts are still closed. The wiper will continue to operate until the wiper output gear is turned to a position where its cam opens the park switch. Referring to Figure 2-5, it can be seen that the wiper motor circuits are completed to ground through the park switch.

NOTE: The wiper motor must be securely grounded to body metal.

The shunt field circuit is completed from terminal no. 3 through the wiper switch to terminal no. 1 through the park switch to ground. The series field and armature circuit is also completed from terminal no. 1 through the park switch to ground.

NOTE: The shunt field is connected direct to ground bypassing the resistor. This results in LO speed operation during the parking operation.

When the output gear cam opens the park switch contacts, the wiper is OFF.

DIAGNOSIS - WIPER ON CAR

1. Inspect for the following items:
   a. Wiring harness is securely connected to wiper and switch.
   b. Wiper motor is securely grounded to body.
   c. Wiper switch is securely mounted and grounded.
   d. Check fuse.
2. If items in step 1 check out, try operating wiper in both LO and HI speeds, then turn wiper off (blades should return to park position). If wiper fails to operate correctly, proceed to step 3.
3. Disconnect wiring harness from wiper and try operating wiper as shown in Figure 2-6.
   a. If wiper operates correctly independent of

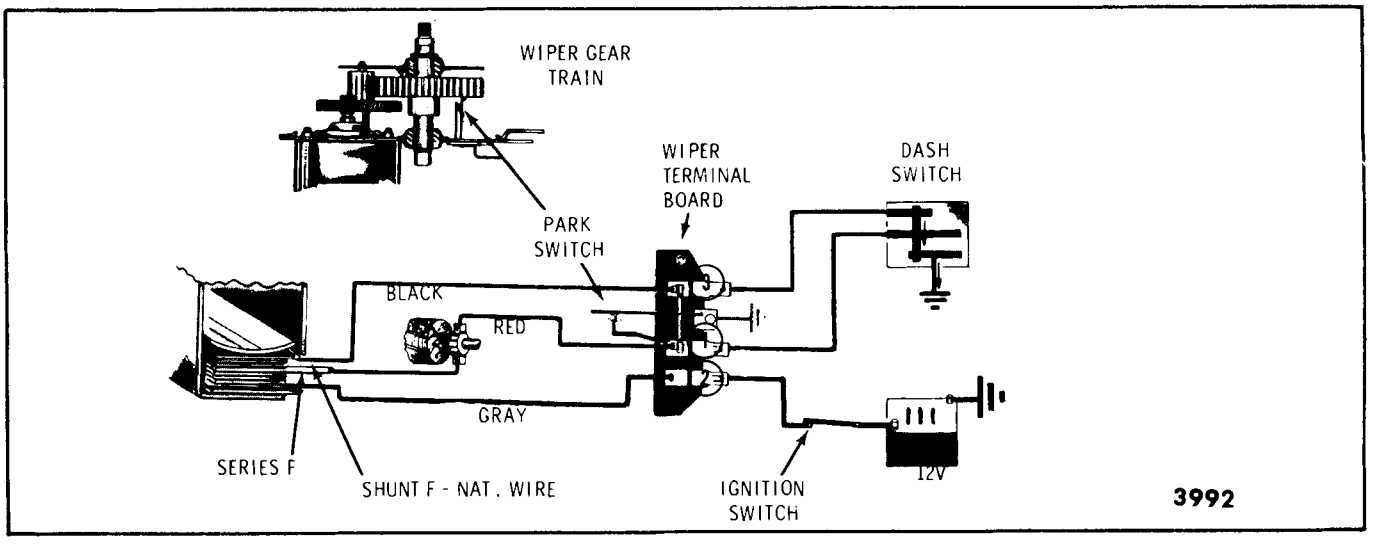

Fig. 2-3-LO Speed Circuit

switch and car wiring, refer to the DIAGNOSIS CHART - WIPER ON CAR.

b. If wiper still fails to operate correctly in step 3, disconnect wiper linkage from motor crank arm and try operating wiper again. If wiper operates correctly independent of linkage, check linkage for cause of wiper malfunction.

c. If wiper fails to operate correctly independent of linkage, remove wiper motor from car and refer to DIAGNOSIS CHART - WIPER OFF CAR.

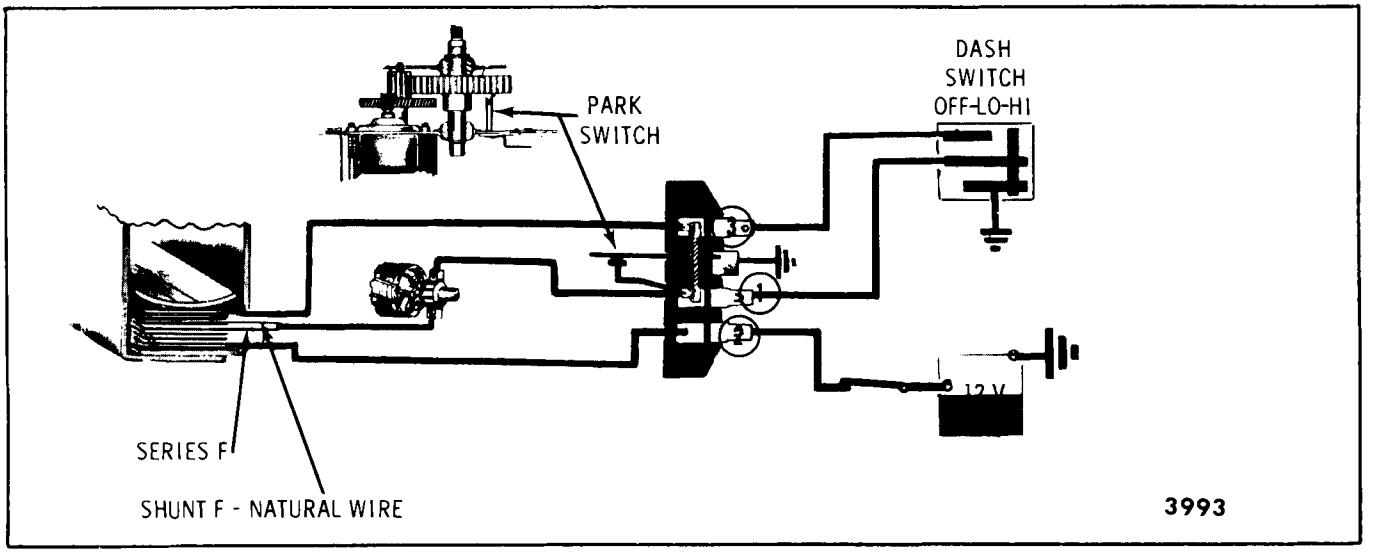

Fig. 2-4-HI Speed Circuit

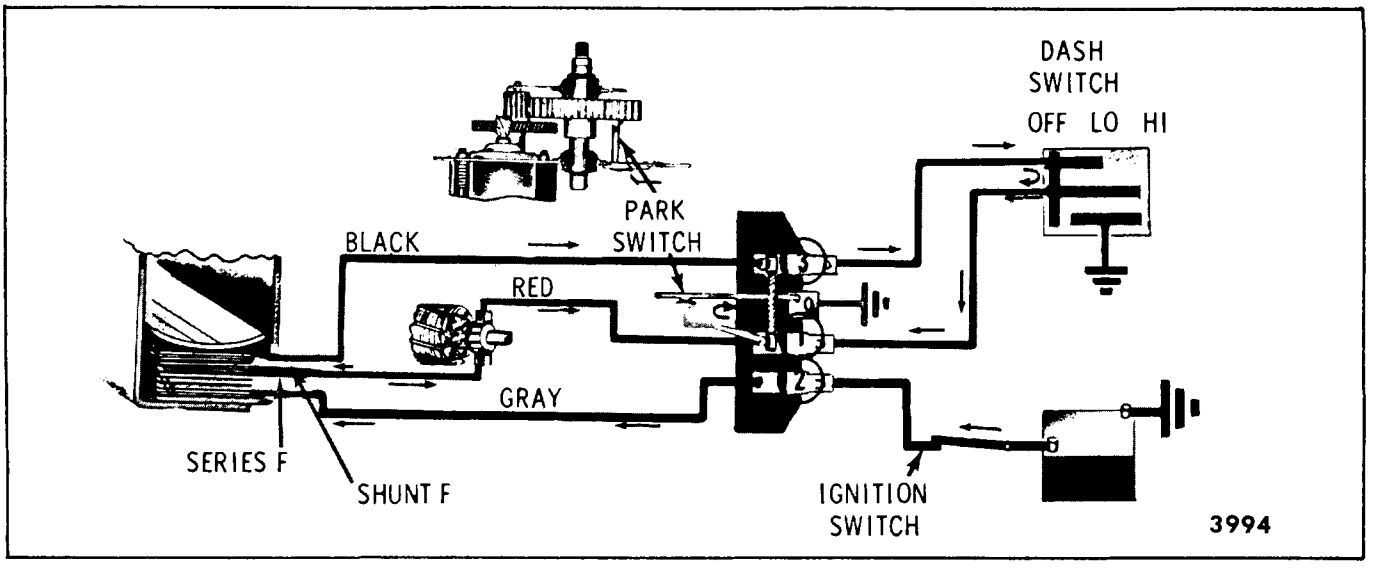

Fig. 2-5-Parking Circuit

DIAGNOSIS CHART - WIPER ON CAR - Figures 2-3, 2-4, and 2-5

NOTE: If wiper operated correctly independent of car wiring and switch, perform following electrical tests with ignition ON.

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper inoperative or intermittent	a. Blown fuse	a. Locate short circuit and repair; replace fuse
	b. Open circuit in feed wire (no. 2 terminal on wiper motor)	b. Locate broken wire and repair
	c. Loose mounting of wiper switch	c. Tighten switch mounting
	d. Defective wiper switch	d. Replace switch
	e. Open circuit in wire to wiper switch (no. 1 terminal on wiper motor)	e. Locate broken wire and repair
2. Wiper will not shut off: a. Wiper has both LO and HI speeds	a. Grounded Wire (no. 1 terminal on wiper motor) to wiper switch	a. Locate short circuit and repair
3. Wiper has LO speed only	a. Defective wiper switch	a. Replace wiper switch
	b. Grounded wire (no. 3 terminal on wiper motor) to wiper switch	b. Locate and repair short circuit
4. Wiper has HI speed only	a. Defective wiper switch	a. Replace wiper switch
	b. Open circuit in wire (no. 3 terminal on wiper motor) to wiper switch	b. Locate and repair broken wire
5. Blades do not return to full park position	a. Loose wiper ground strap connection	a. Tighten strap connection

DIAGNOSIS CHART - WIPER OFF CAR - Figures 2-6, 2-11 and 2-12

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper inoperative or intermittent	a. Broken or damaged gear train (only if inoperative)	a. Replace gears as required
	b. Poor solder connections at terminal board	b. Resolder wires at terminals
	c. Loose splice joints at brush plate	c. Recrimp or solder splice joints
	d. Brushes binding in brush holder	d. Clean holder or replace brush, spring or brush plate assembly
	e. Open circuit in armature	e. Replace armature
2. Wiper will not shut off: a. Wiper has normal HI and LO speed	a. Defective park switch	a. Replace terminal board assembly
	b. Grounded red lead wire	b. Repair short circuit in red wire
b. Wiper has LO speed only	a. Grounded shunt field coil	a. Replace frame and field assembly
	b. Grounded black wire	b. Repair short circuit in black wire
c. Wiper has HI speed only	a. Open circuit in shunt field coil	a. Replace frame and field assembly
	b. Open circuit in black wire	b. Repair broken wire or poor solder connection
3. Wiper shuts off - but not in park position	a. Park switch defective or contacts dirty	a. Replace terminal board assembly or clean contacts
4. HI speed too fast	a. Resistor defective	a. Replace terminal board assembly

WIPER MOTOR

Removal and Installation

1. Raise hood and remove cowl screen or grille on "F and X" styles.
2. Disconnect wiring.
3. Reaching through cowl opening, loosen (do not remove) the transmission drive link attaching nuts to motor crank arm (Fig. 2-8).
4. Disconnect transmission drive link from motor crank arm.
5. Remove three motor attaching screws.
6. Remove motor while guiding crank arm through hole.
7. To install, reverse the removal procedure.

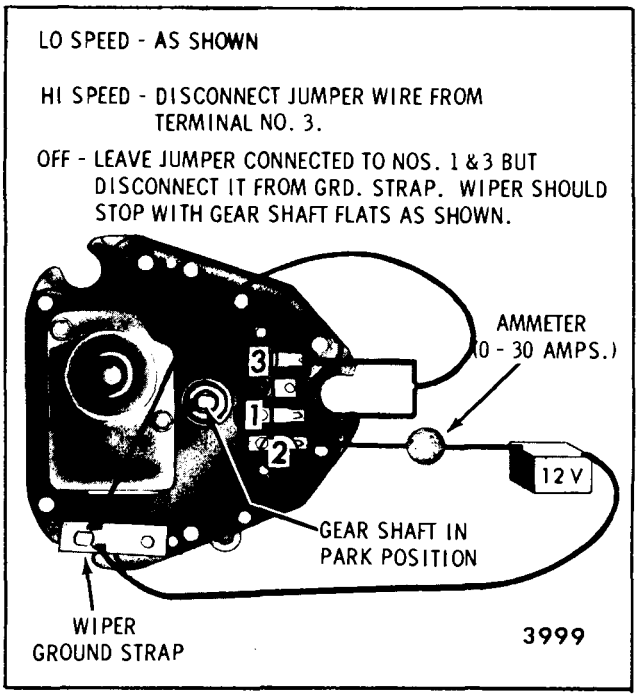

Fig. 2-6-Jumper Wire Connections

WIPER ARM

Removal and Installation

1. To remove the wiper arm and blade assemblies use tool J- 8966 or equivalent to minimize the possibility of windshield or paint finish damage during removal operation (Fig. 2-7).

2. To install the wiper arm and blade assemblies, with the wiper motor in the park position, install the wiper arm on the serrated transmission shaft in a position where the wiper blades will rest in the proper parked position. The same tool used for arm removal may be used to install the arm.

   The parked position for "F" styles is indicated in Figure 2-8. On "X" styles, the tip of the left blade should rest 1.50" and the tip of the right blade 1.25" above top edge of windshield lower reveal molding. On "H" styles the tip of the left blade should rest approximately 2.00" and the tip of the right blade within 2.00" of top edge of lower windshield reveal molding. The outwipe dimension shown in Figure 2-8 is as follows:

   a. All "F" styles - 0.50" minimum to 2.25" maximum.

   b. "X" styles - 1.00".

   c. "H-07, 11, 15, 27" styles - 2.00" plus 0.66" or minus 1.00".

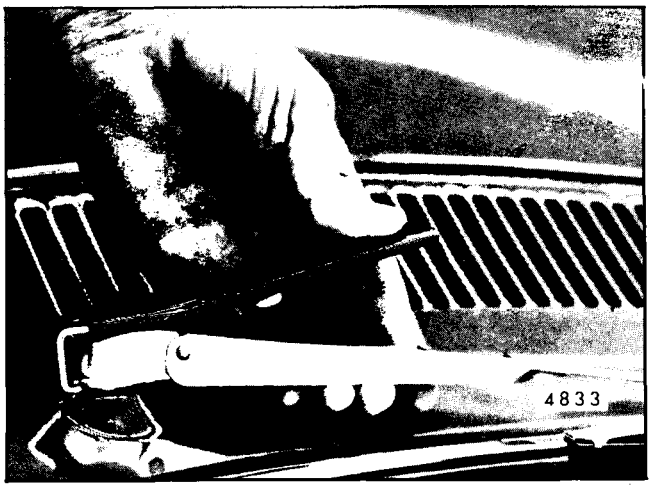

Fig. 2-7-Wiper Arm Removal Tool J-8966 (or Equivalent)

   d. "H-77" styles - 3.00" plus 0.66" or minus 1.00".

   NOTE: The correct park position and outwipe dimension is determined with the wipers operating at LO speed on a wet glass.

Adjustment

The only adjustment of the wiper arm(s) is to remove the arm(s) from the serrated transmission shaft, rotate the arm(s) the required distance and direction and reinstall to transmission shaft. Wiper arm removal tool J-8966 or equivalent may be used for arm removal and installation while making adjustments (Fig. 2-7).

NOTE: Wiper motor must be in park position.

WIPER BLADE

Removal and Installation

Two methods are used to retain wiper blades to wiper arms on "F and X" styles. A third method is used to retain wiper blades on "H" styles.

One method for "F and X" styles uses a press-type release tab. When the release tab is depressed, the blade assembly can be separated from the arm (Fig. 2-10).

The other method for "F and X" styles uses a coil spring retainer. A screwdriver must be inserted on top of the spring and the spring pushed downward (Fig. 2-10). The blade assembly can then be separated from the arm.

To install the blade assembly to the arm on "F and

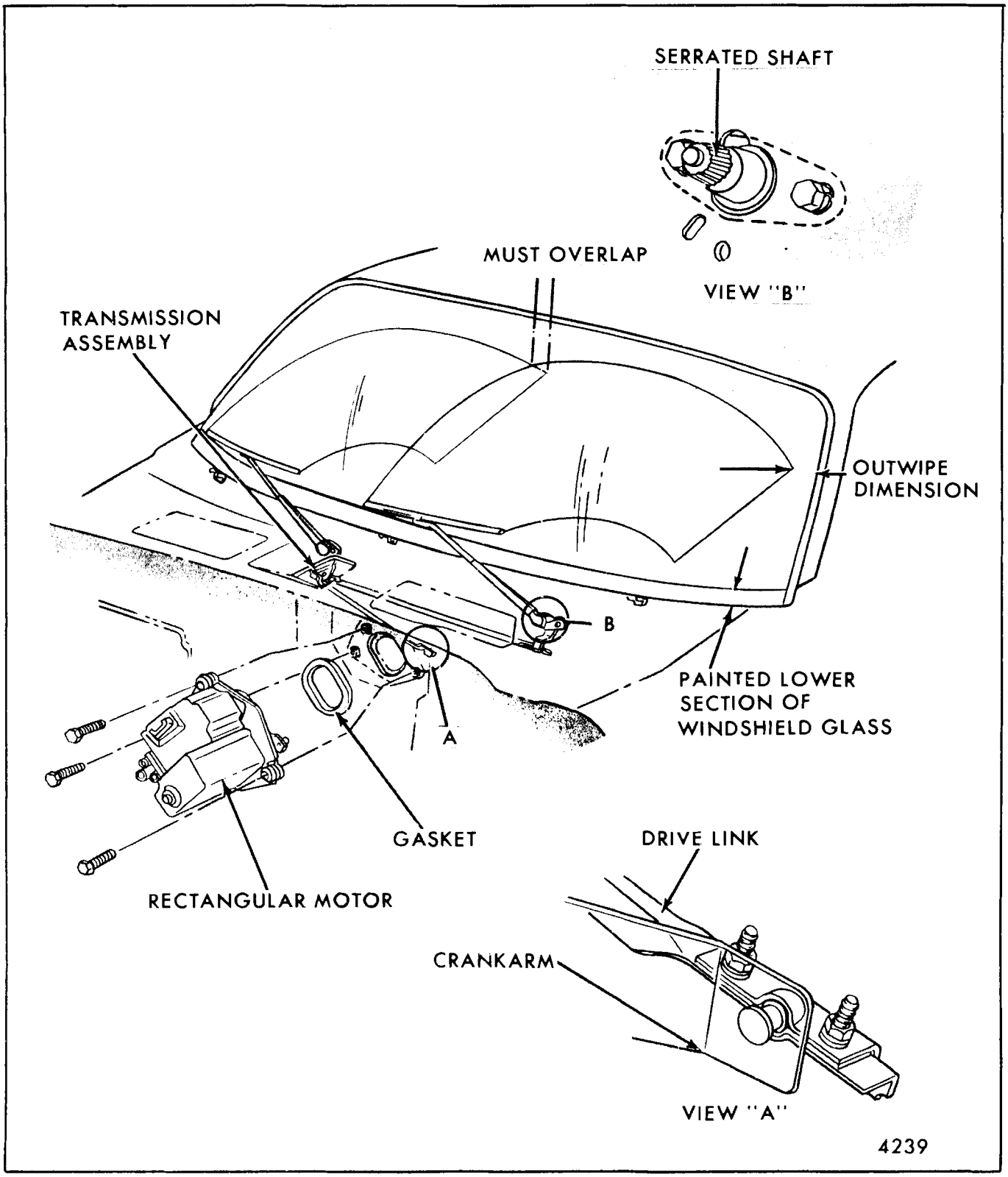

Fig. 2-8-Wiper Installation and Wipe Pattern - "F" Styles

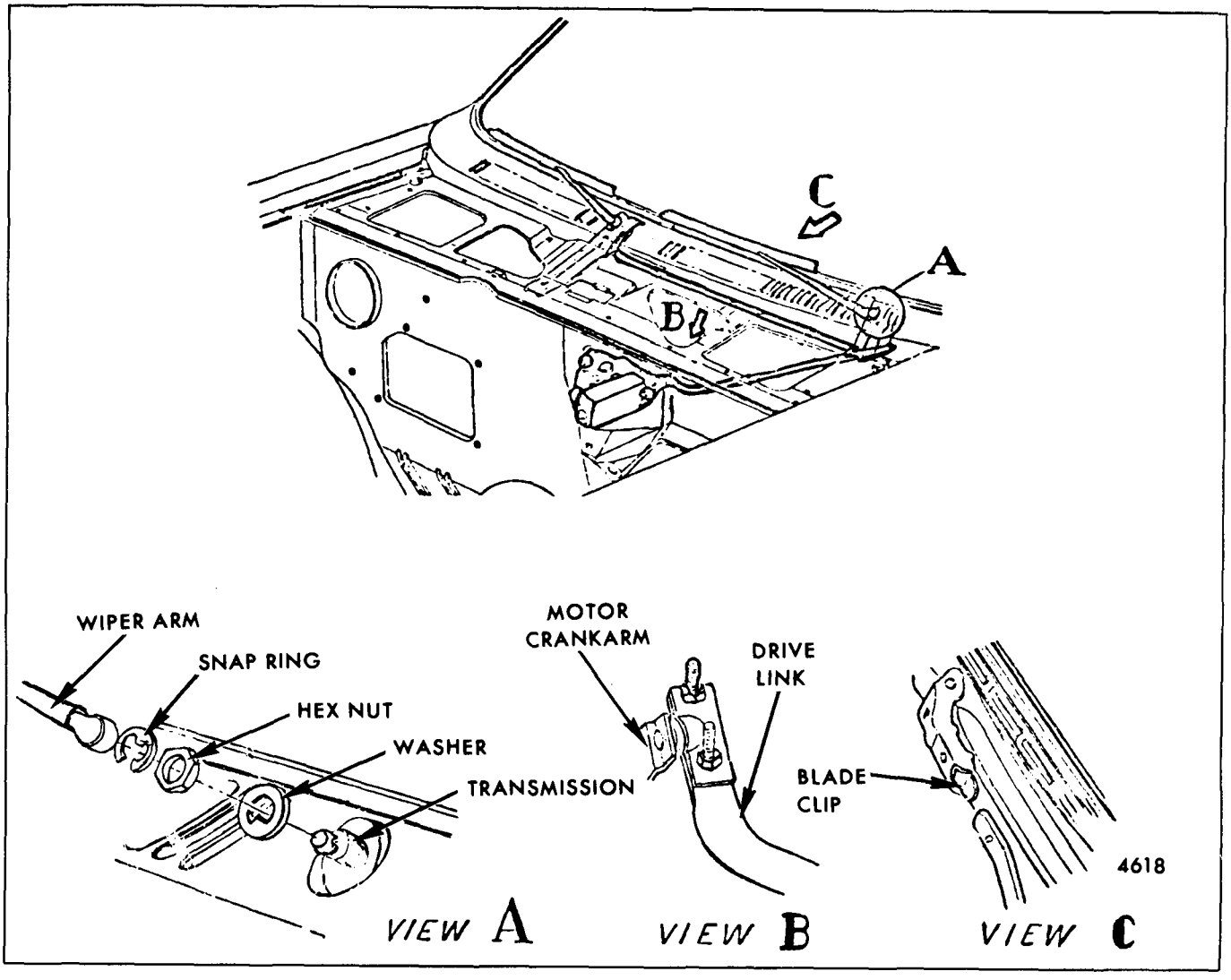

Fig. 2-9-Wiper Installation - "H" Styles

X" styles, insert blade over pin at tip of arm and press until spring retainer engages groove in pin.

On "H" styles, to remove the wiper blade from the wiper arm depress the spring type blade clip (Fig. 2-9) away from the underside of the arm and slide arm out of blade clip.

To install wiper blade to wiper arm, slide tip end of arm into blade clip until pin on tip end of arm engages hole in clip.

Two methods are used to retain the blade element in the blade assembly (Fig. 2-10).

One method uses a press-type button. When the button is depressed, the blade assembly can be slid off the blade element.

The other method uses a spring-type retainer clip in the end of the blade element. When the retainer clip is squeezed together, the blade element can be slid out of the blade assembly.

When installing a blade element into a blade assembly, be certain to engage the metal insert of the element into all retaining tabs of the blade assembly.

NOTE: When properly installed, the element release button or the spring type element retaining clip should be at the end of the wiper blade assembly nearest the wiper transmission.

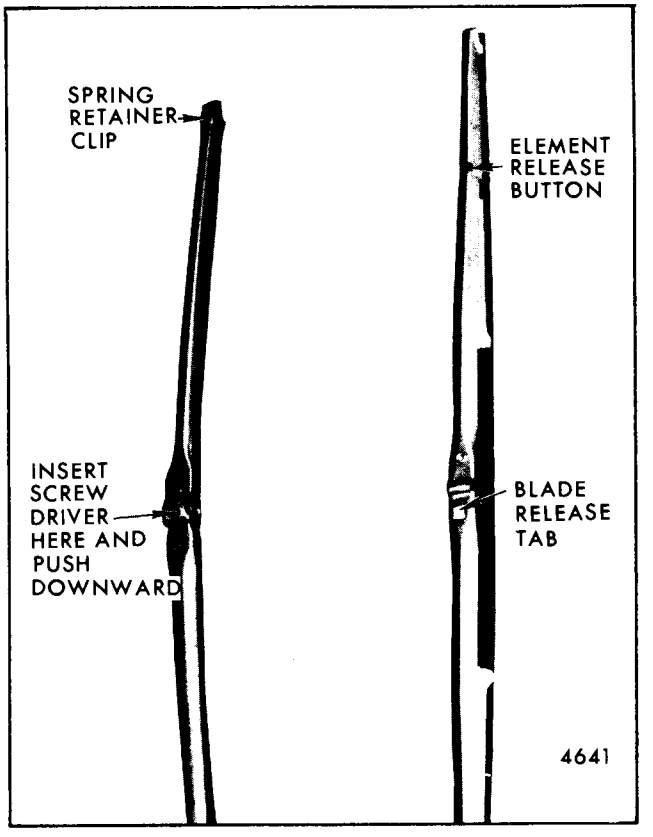

Fig. 2-10-Wiper Blade Assemblies - "F, H, X" Styles

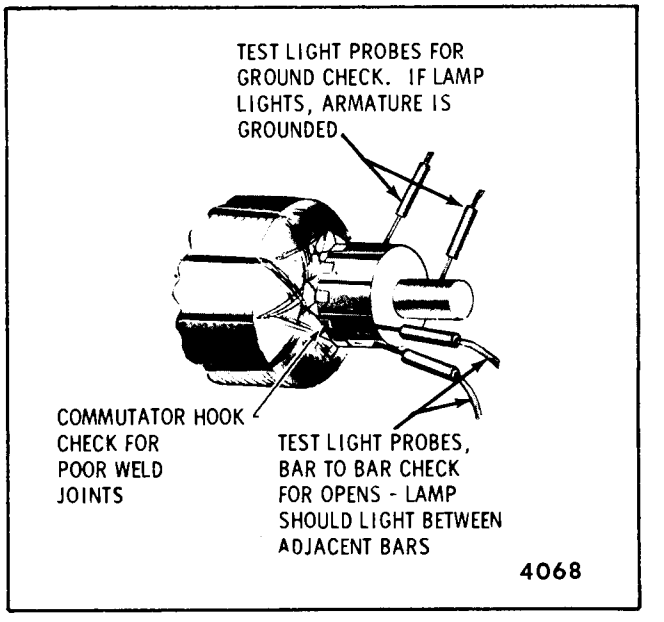

Fig. 2-11-Checking Armature

WIPER TRANSMISSION

Removal and Installation

1. Remove wiper arms and blades as described under Wiper Arm Removal and Installation.
2. Raise hood and remove cowl vent screen or grille on "F and X" styles.
3. Disconnect wiring from wiper motor.
4. Loosen, do not remove, transmission drive link to motor crank arm attaching nuts (Fig. 2-9) and disconnect drive link from motor crank arm.
5. On "F and X" styles, remove right and left transmission to body attaching screws. On "H" styles, also remove transmission snap ring, hex nut, washer and guide transmissions and linkage assembly out through cowl plenum chamber opening.
6. To install, on "F and X" styles, place transmissions and linkage assembly in plenum chamber and install transmission to body attaching screws loosely.
7. To install "H" style transmissions and linkage assemblies, place the assembly in the plenum chamber with the transmission shaft extending through attaching opening.

   a. Using a Loctite/75 Adhesive Kit or equivalent, spray both hex head nuts with primer supplied in the kit and allow primer to dry approximately five minutes.

   b. Apply one drop of Loctite/75 adhesive or equivalent to the threaded portion of one of the hex head nuts and install flat washer over transmission shaft. Hand start hex head nut two full threads to avoid cross threading and then tighten nut to a torque of 144 to 216 in-lb.

   NOTE: Nut must be tightened within three minutes after applying adhesive.

   c. Repeat step 7b on the remaining transmission shaft.

   d. Install snap ring retainer on shaft of right and left transmission assemblies.

8. Connect transmission drive link to motor crank arm and tighten attaching nuts (25 to 35 in-lb torque).

   NOTE: Wiper motor must be in park position.

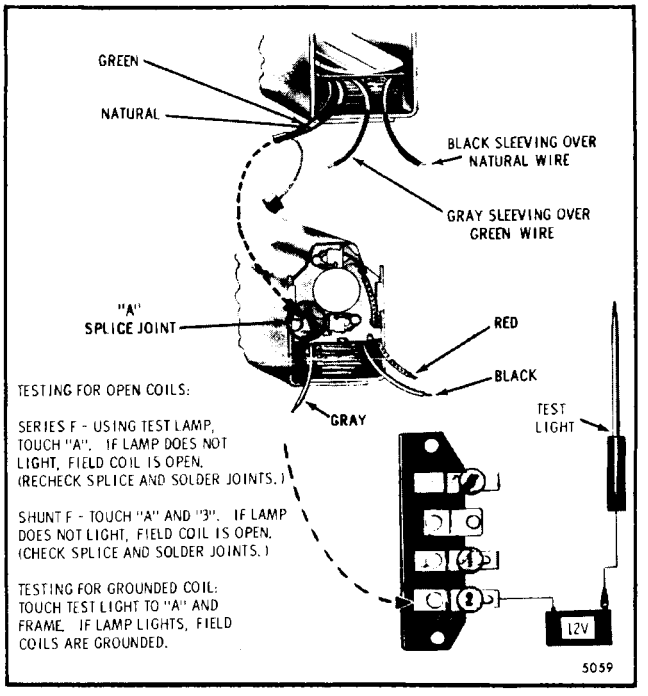

Fig. 2-12-Testing Field Coils

9. On "F and X" styles align transmission assemblies and tighten transmission to body attaching screws.

10. Connect wiring to wiper motor.

11. Install cowl vent screen or grille on "F and X" styles and close hood.

12. Install wiper arms and blades and check wiper operation, wipe pattern and park position of blades.

DISASSEMBLY-ASSEMBLY PROCEDURE

The disassembly-reassembly procedures for the wiper are broken down into two major areas: the motor section and gearbox section.

Gearbox Disassembly

1. Remove rubber cap from wiper gear shaft.

2. Clamp crank arm in a vise and remove crank arm retaining nut.

   CAUTION: *Failure to clamp crank arm may result in stripping of wiper gears.*

3. Remove crank arm, seal cap, retaining ring and end play washers (Fig. 2-13).

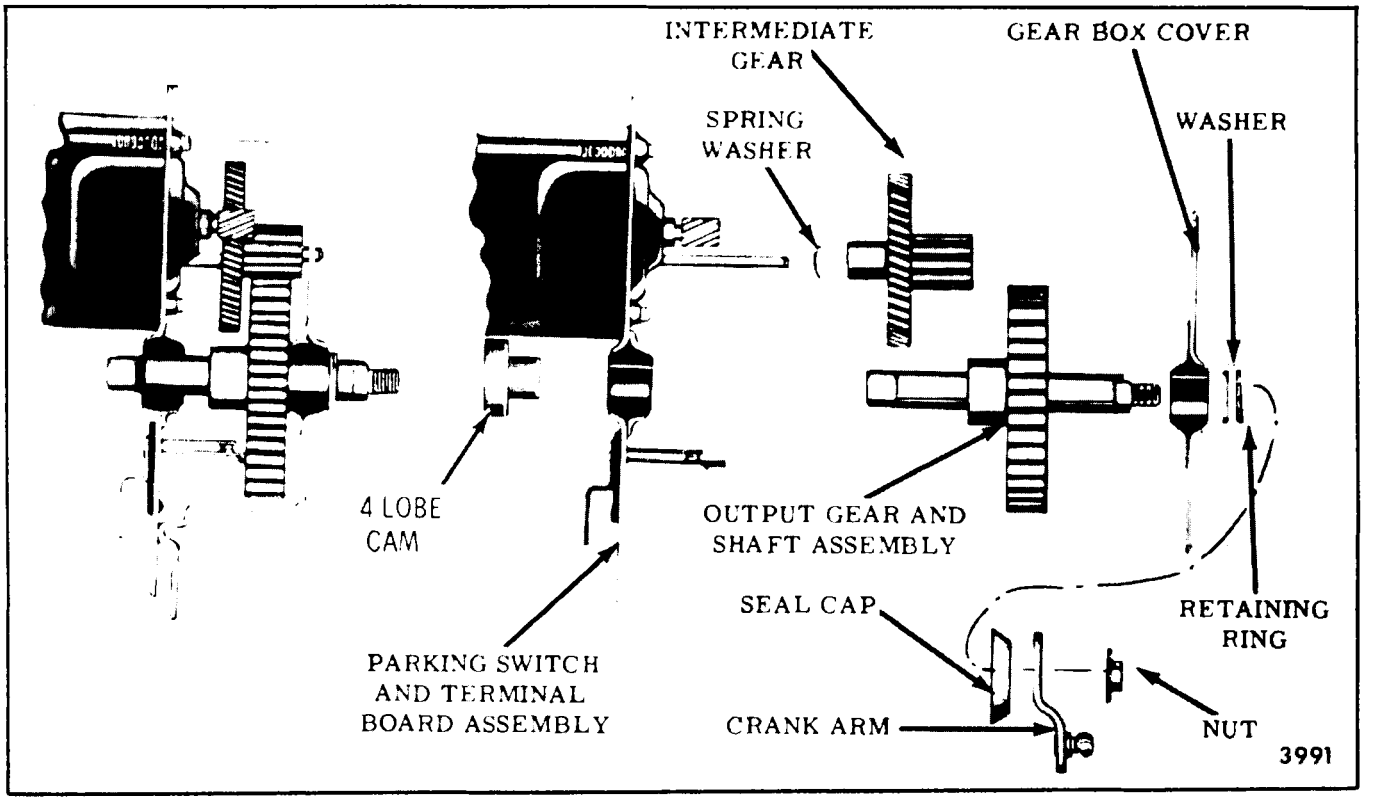

Fig. 2-13-Gearbox

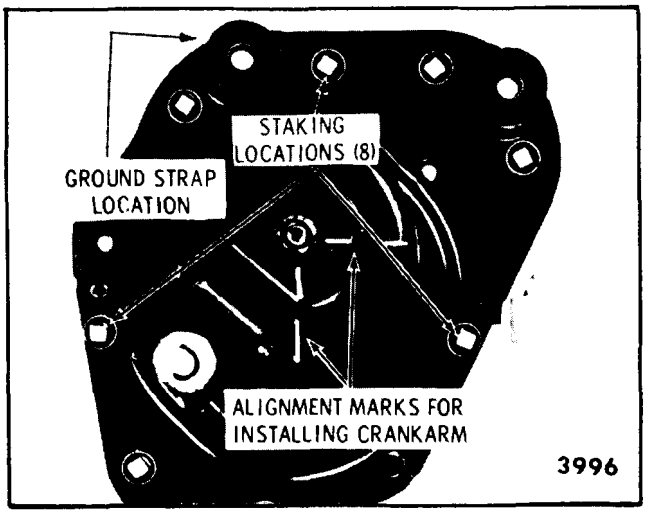

Fig. 2-14-Staking Locations

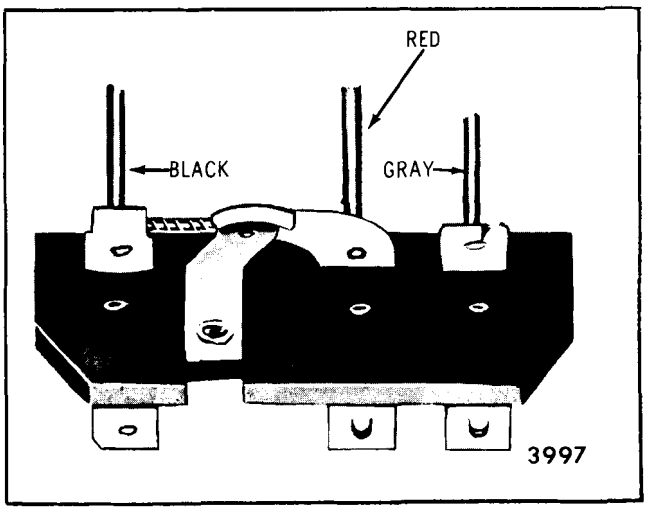

Fig. 2-15-Parking Switch and Terminal Board

CAUTION: *Seal cap should be cleaned and repacked with a waterproof type grease before reassembly.*

4. Drill out staking that secures gear box cover (Fig. 2-14). Use a 9/32" drill.

   NOTE: Mark ground strap location and save ground strap for reassembly.

5. Remove output gear and shaft assembly, then slide intermediate gear and pinion assembly off shaft.

6. If required, remove terminal board and park switch assembly as follows:

   a. Note position of motor leads on terminals, then unsolder.

   b. Drill out rivets that secure terminal board and park switch ground strap to plate. Use a 7/64" drill.

      NOTE: Screws, nuts and washers for attaching a replacement terminal board park switch assembly are included with a replacement assembly.

Gearbox Reassembly

CAUTION: *Lubricate all gear teeth with lubricant noted on Specifications Chart, Figure 2-19.*

1. If park switch and terminal board assembly were removed, reinstall replacement assembly using the attaching screws and nuts included in the service package. Resolder leads to terminals (Fig. 2-15).

2. Install wave washer and intermediate gear on intermediate gear shaft.

3. Install output gear and shaft assembly with cam at least 90 degrees away from park switch (Fig. 2-16).

4. Assemble gearbox cover to wiper. Be careful to locate cover over locating dowels and intermediate gear shaft.

5. Secure cover to gear mounting plate over dowels. Be sure to reinstall ground strap.

   NOTE: Screws, nuts and lock washers for reassembling cover to wiper are contained in a Service Repair Package.

6. Reassemble end play washers and retaining ring over output gear shaft (Fig. 2-13). Use end play washers as required to obtain .005" maximum end play.

7. Install seal cap.

8. To reassemble crank arm in proper position, operate wiper to park or off position (Fig. 2-6) and install crank arm so that index marks on crank arm line up with those on the gearbox cover (Fig. 2-14).

   CAUTION: *Clamp crank arm in vise before securing the retaining nut.*

9. Operate wiper (Fig. 2-6) and check performance per data in specification chart (Fig. 2-19).

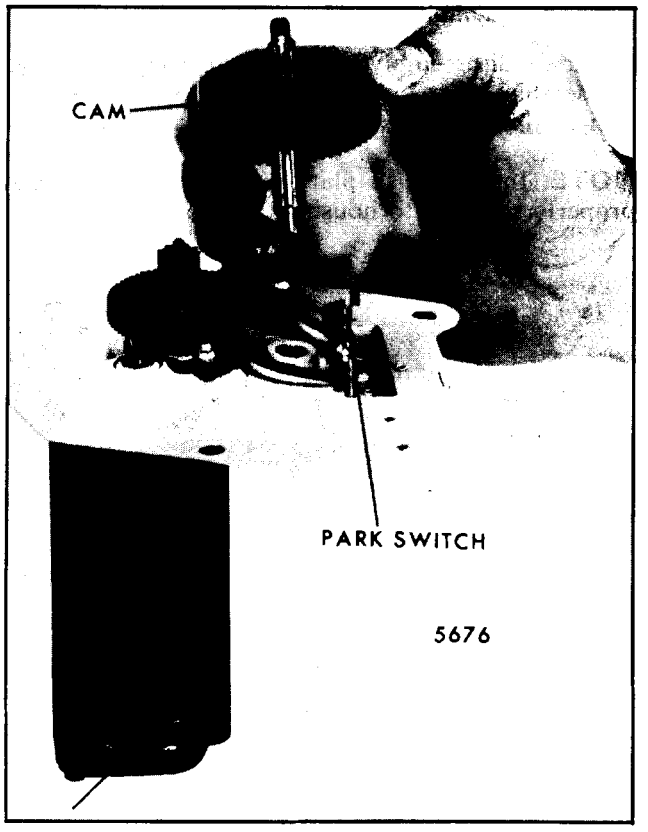

Fig. 2-16-Gear Installation

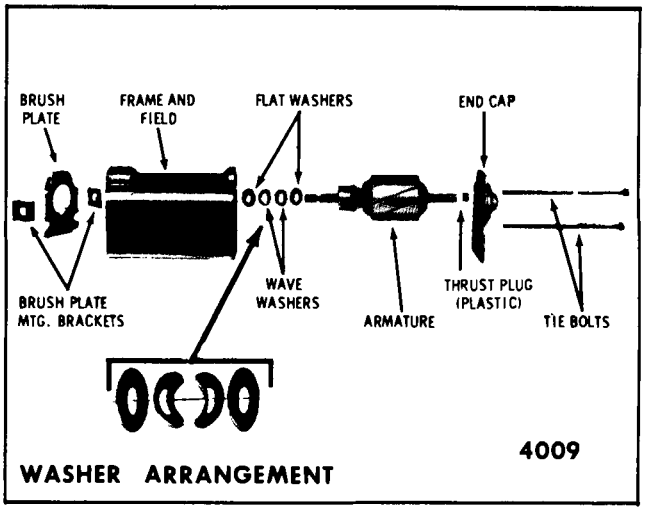

Fig. 2-17-Wiper Motor - Exploded View

Motor Disassembly

1. Disassemble gearbox as required to gain access to internal solder connections at wiper terminal board and unsolder motor leads from terminals.

   NOTE: Step 1 necessary for frame and field replacement only.

2. Remove motor tie bolts (Fig. 2-17).

3. Hold end cap against frame and field and disengage complete motor section from gearbox.

4. Turn motor section as required to gain access to brush plate assembly and release brush spring pressure against brushes (Fig. 2-18).

5. Move brushes away from armature commutator and remove armature and end cap from frame and field assembly.

6. Remove end cap from end of armature shaft.

   CAUTION: *Be careful not to lose the plastic thrust plug in end of armature.*

7. Remove end play washers from commutator end of armature shaft. When reassembling armature in wiper, install washers as shown in Figure 2-17.

8. To replace brushes, cut brush pigtail approximately 1/4" from splicing clip. Splice the new brush pigtail to the 1/4" of pigtail left from the original brush.

   NOTE: Splicing clips are provided in the replacement brush packages.

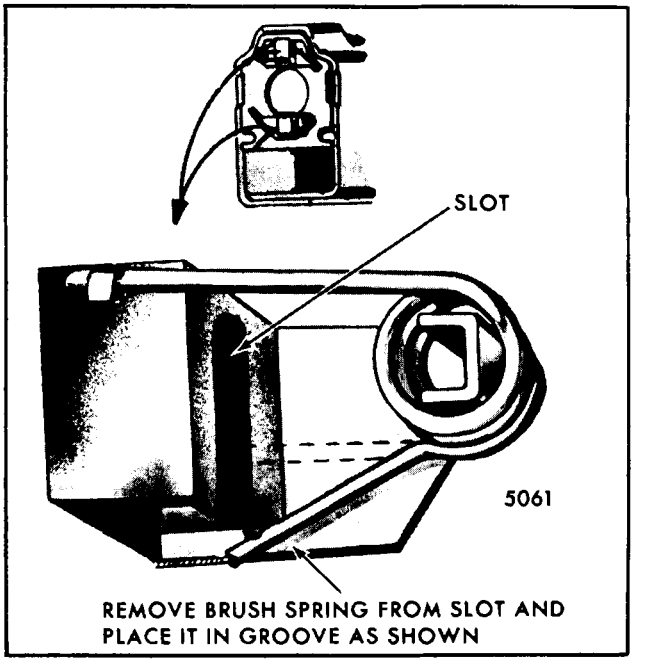

Fig. 2-18-Removing Brush Spring Tension

SPECIFICATION CHART

Operating Voltage	12 Volts D.C.	
Current Draw (No Load)		
"Lo" Speed	4.0 AMPS MAX.	
"Hi" Speed	3.5 AMPS MAX.	
Stall (Cold Motor)	12.0 AMPS MAX.	
Crankarm Speed (RPM's)		
"Lo" Speed	31 Min.	12 V
"Hi" Speed	55 Min.	12 V
Torque	Inch Pounds	
Washer Pump Mounting Screws	18	
Motor Tie Bolts	30	
Motor Crankarm Attaching Nut	100 - 130	
Motor Crankarm to Transmission Drive Link	25 - 35	
Motor to Body Attaching Bolts	30 - 45	
Transmission to Body Attaching Bolts	48 - 72	
Transmission Hex Head Nut	144 - 216	
Lubrication		
Armature Shaft, Bearings, Gear Teeth, Seal Cap (Inside)	Multifak EP-1 Or Equivalent	5366

Fig. 2-19-Specification Chart - Rectangular Motor

Motor Reassembly

Reverse disassembly steps 1 through 7 and reassemble gear. Lubricate the motor assembly as indicated in Specification Chart, Figure 2-19.

NOTE: Insure brush plate mounting brackets are properly seated into housing.

TWO-SPEED ROUND MOTOR

DESCRIPTION

The round motor (nonpulse) used on "A, B, C, D and E" styles is approximately 114 mm (4-1/2") in length (Fig. 2-20). The motor uses a drive gear with a gear ratio of 51:1.

The round motor used on "F" styles is approximately 102 mm (4") in length (Fig. 2-20). The motor uses a drive gear with a gear ratio of 45:1.

The motor and gearbox assembly has concealed electrical leads. The leads (black and black with pink stripe) are routed internally through a casting cavity in the gearbox assembly (Fig. 2-20). These leads were formerly exposed on the past model design and routed through a grommet in the motor casting.

Styles with the modified pulse system will be equipped with the same size motor assembly but the electrical leads to the motor windings will still be exposed and routed through the grommet in the motor casting.

CAUTION: *Past model design washer pump assemblies cannot be used with the new design nonpulse motor and gearbox assembly.*

NOTE: The new design washer pump assembly can be used with both the new design and past model design nonpulse motor and gearbox assemblies.

NOTE: An optional pulse system is available on "F" styles that uses the depressed park 4" round motor. This pulse system is identical to the modified pulse used on "A, B, C, D, E and K" styles. For complete service and diagnostic procedures refer to Modified Pulse Wiper and Modified Pulse Washer Systems in this section.

A round motor application chart is shown in Figure 2-21.

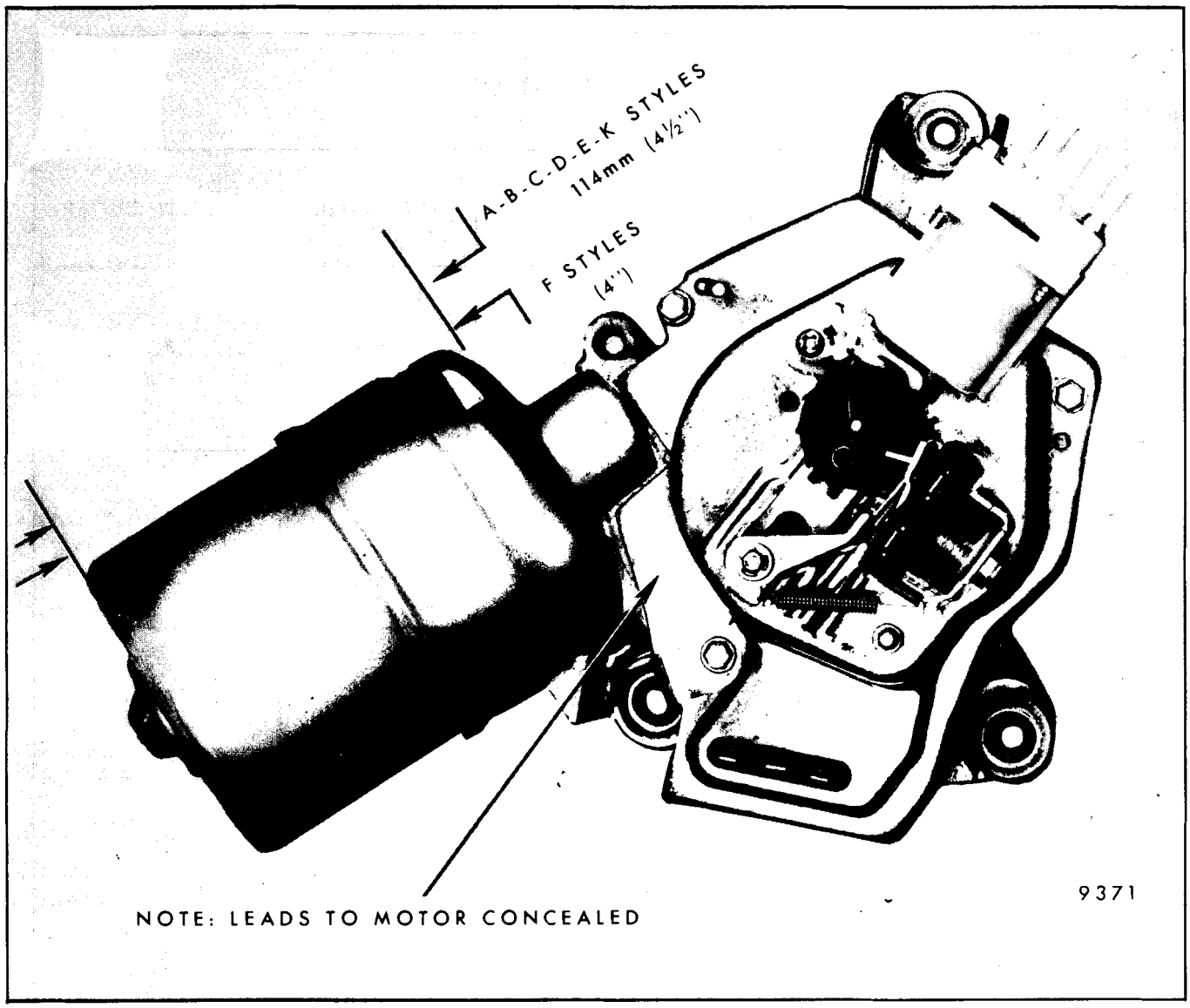

Fig. 2-20 - Round Wiper Motor and Pump Assembly (Internal Leads)

In the round two speed motor the brush plate and circuit breaker assembly is attached to a field assembly that is staked into the end cap. The end cap and field assembly will be serviced as a unit (Fig. 2-43). The brush plate and circuit breaker must be detached from the field assembly in order to replace the armature. The motor has only two external leads.

The 12 volt circuit to the center terminal of the switch and terminal board is completed through the ignition switch and fuse.

Moving the wiper switch to the LO speed position (Fig. 2-22) completes the relay switch and terminal board coil circuit to ground at the wiper switch.

ROUND MOTOR APPLICATION

CAR DIVISION	SERIES	MOTOR LENGTH	GEAR RATIO	CRANKARM LETTER
CHEVROLET PONTIAC OLDSMOBILE and BUICK	A	4-1/2"	51:1	AG
CHEVROLET and PONTIAC	B F	4-1/2" 4"	51:1 45:1	AC Y
OLDSMOBILE and BUICK	B-C	4-1/2"	51:1	AC
OLDSMOBILE	E	4-1/2"	51:1	AL
CADILLAC	C-D-E	4-1/2"	51:1	AL

9384

Fig. 2-21-Round Motor Application Chart

With the coil energized, the relay switch contacts close completing the 12V circuit to the motor windings. Current then flows through the series field coil and divides, part passing through the shunt field coils to ground at the wiper switch, the other through the armature to ground through the internal circuit breaker.

Moving the wiper switch to the HI speed position (Fig. 2-23) maintains the relay switch and terminal board coil circuit to ground at the wiper switch, but opens the shunt field circuit to ground at the switch. The shunt field current then flows through the resistor located on relay switch and terminal board to ground. With a weakened shunt field, the motor runs faster.

Moving the wiper switch to the MED speed position (Cadillac only) connects a 13 ohm resistor, located in the switch, in parallel with the 20 ohm resistor from the shunt field circuit. These two resistors, connected in parallel, provide slightly less than 8 ohms resistance in the shunt field. The difference in resistance results in medium speed.

Turning the wiper switch off (Fig. 2-24) is the first step in shutting the wiper off. The wiper motor itself actually completes the shutting off operation. When

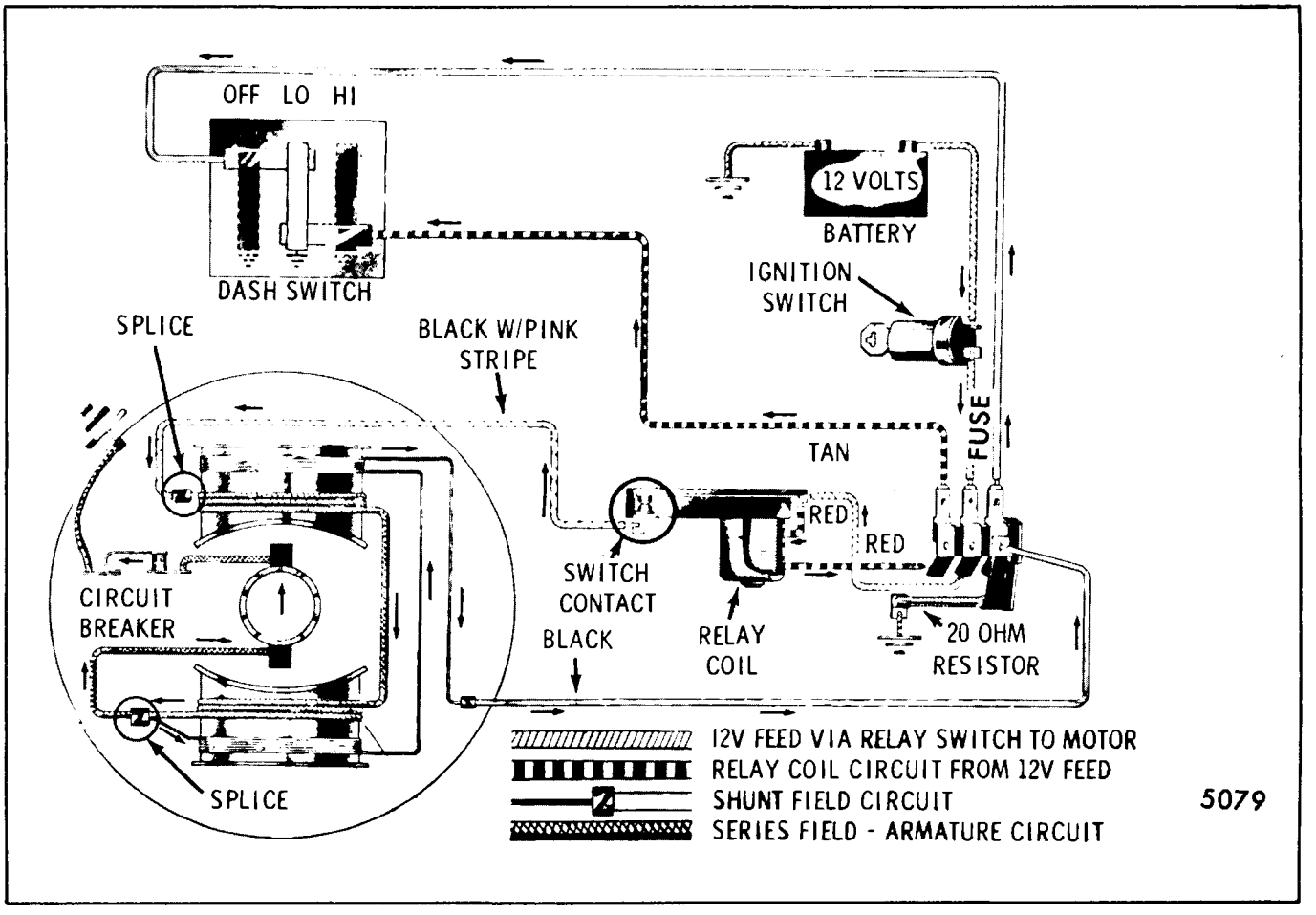

Fig. 2-22-LO Speed Circuit

the wiper switch is moved to the OFF position, two functions are accomplished:

1. The relay switch coil circuit is opened and this allows the spring-loaded latch arm to move out into the path of the gear drive pawl. The relay switch contacts, however, are still closed at this stage of operation and the wiper motor continues to run (Fig. 2-25).

2. The shunt field circuit is connected to ground at the switch and the wiper operates in LO speed during this stage.

The wiper gear mechanism completes shutting off the wiper as follows:

Since the wiper motor continues to run when the switch is first turned off, the continuing rotation of the gear causes the drive pawl to engage the latch arm (Fig. 2-26). This action unlocks the gear from the drive pawl, lock pawl and the drive plate and output shaft assembly. With the drive plate and output shaft unlocked from the gear, and since the output shaft extends through the gear shaft off center, the continuing rotation of the gear at this point causes a cam action between the output shaft and the gear shaft. This cam action causes the gear drive pawl to move into the relay switch slot. As the drive pawl moves into the switch slot, it pushes the latch arm against the relay switch contact. This action opens the relay switch contacts which cuts the 12V feed to the motor windings (Fig. 2-27).

DIAGNOSIS - WIPER ON CAR

1. Make a preliminary check of the following items:

   a. Body wiring properly connected to relay switch and terminal board and wiper switch.

   b. Wiper motor to dash mounting screws tight.

   c. Wiper switch securely mounted.

   d. Fuse.

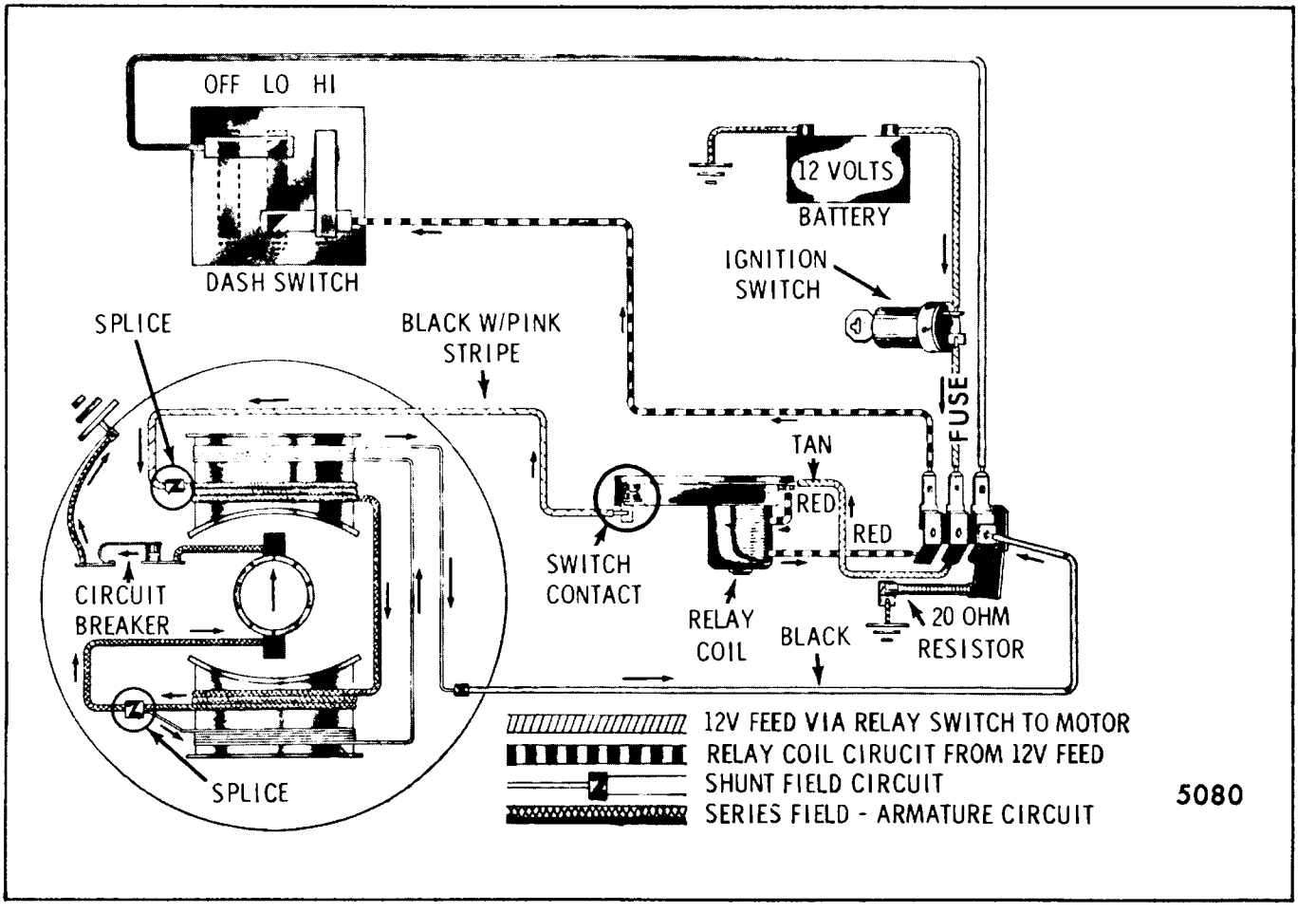

Fig. 2-23-HI Speed Circuit

e. With ignition switch turned ON, there is a 12-volt supply at center terminal of relay switch and terminal board.

2. When checking wiper operation, operate wiper independently of the car wiring or wiper switch as shown in Figure 2-31. Check wiper operation in OFF, LO and HI positions.

   a. If wiper operates correctly, see DIAGNOSIS CHART-WIPER ON CAR.

   b. If wiper still fails to operate correctly, disconnect wiper linkage from wiper motor and recheck for proper wiper motor operation.

      1. If wiper motor operates correctly, check linkage for severe binding condition or breakage.

      2. If wiper fails to operate correctly, remove wiper motor from car and check DIAGNOSIS CHART - WIPER OFF CAR.

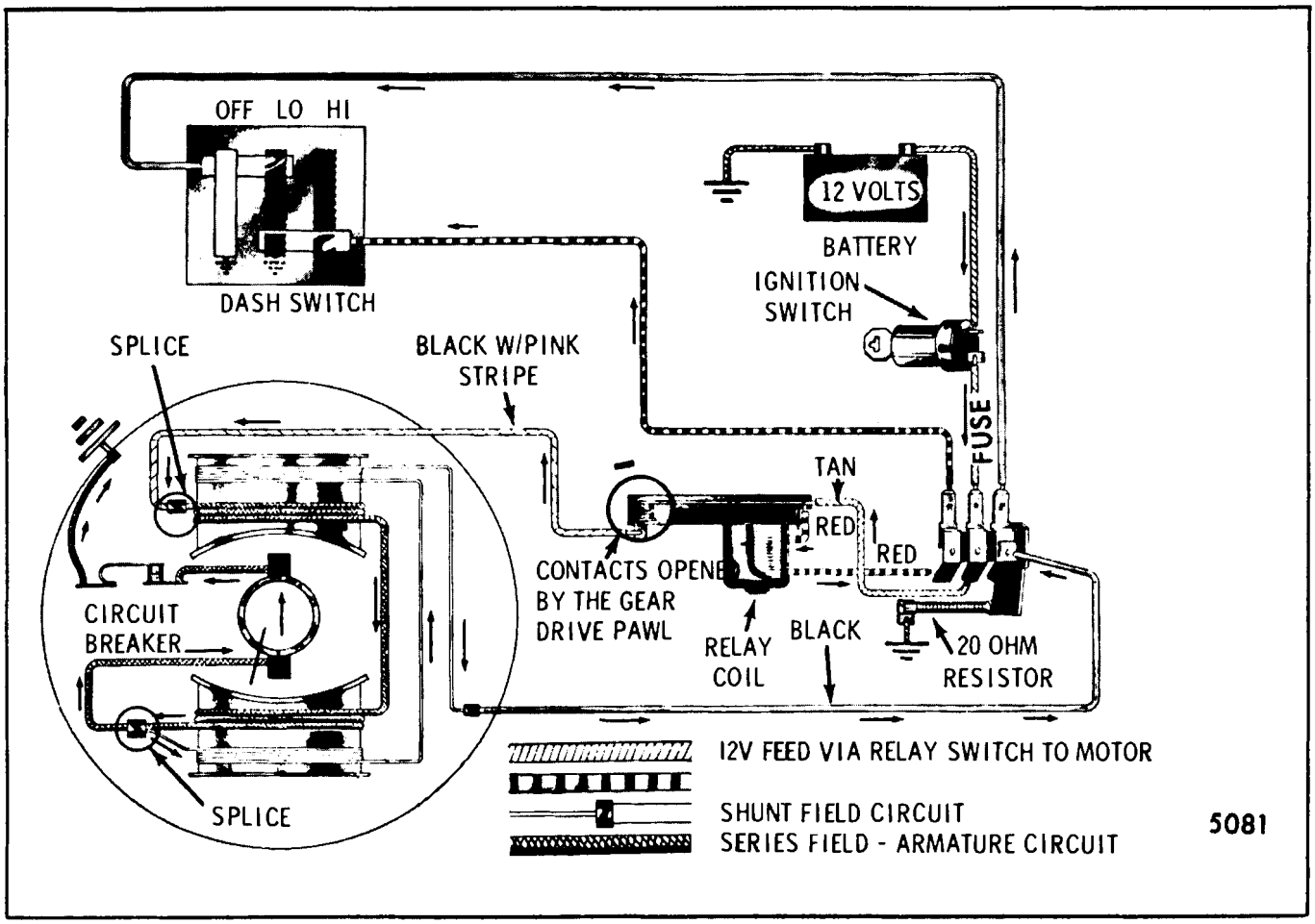

Fig. 2-24-Parking Circuit

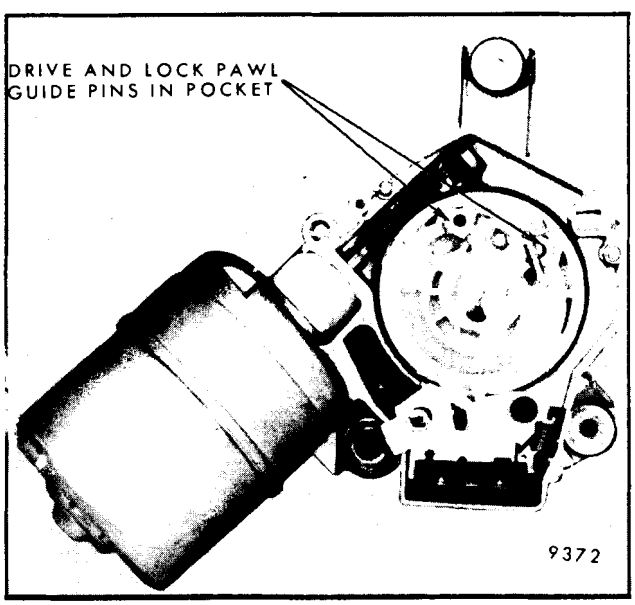

Fig. 2-25-Gear in Normal Run Position

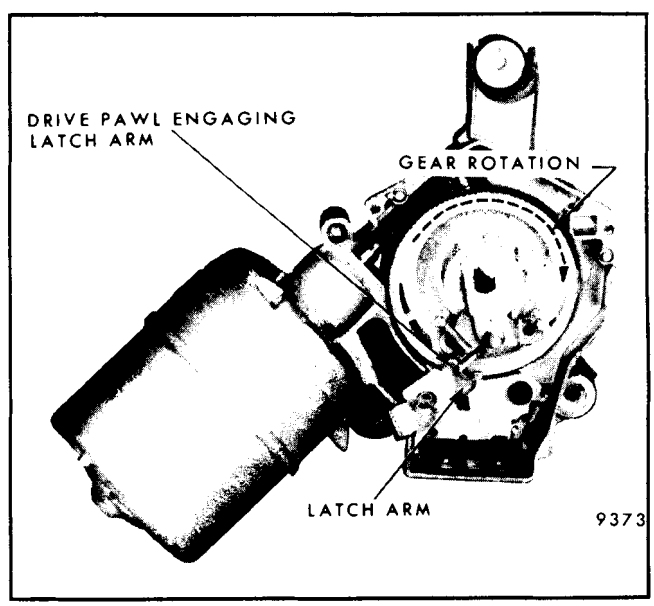

Fig. 2-26-Wiper Shutting OFF

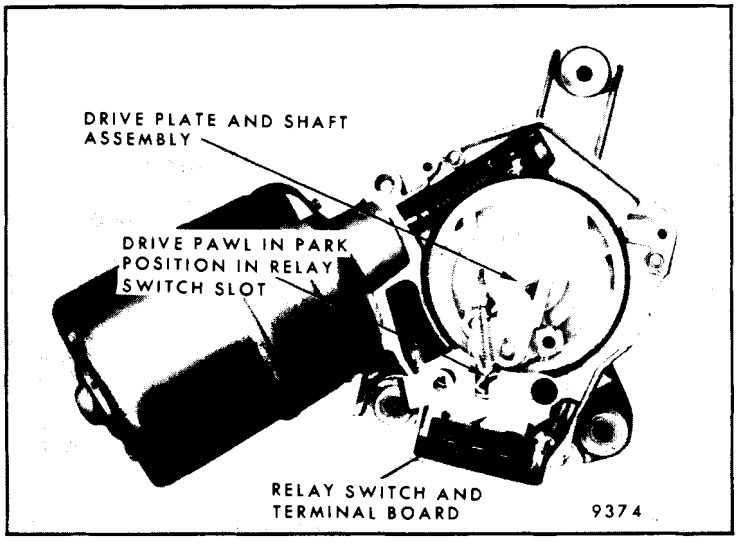

Fig. 2-27-Wiper Shut OFF in Park Position

DIAGNOSIS CHART - WIPER ON CAR

NOTE: Ignition switch must be ON for all electrical tests.

CONDITION	APPARENT CAUSE	CORRECTION
1. Wiper inoperative or intermittent	a. Open lead wire from wiper terminal no. 1 to wiper switch.	a. Repair broken wire.
	b. Wiper switch not securely mounted.	b. Tighten switch mounting.
	c. Wiper switch defective.	c. Replace wiper switch.
2. Will not shut off (blades make full wipe stroke)	a. Grounded lead wire from wiper terminal no. 1 to wiper switch.	a. Tape uninsulated portion of wire.
	b. Corroded wiper terminals.	b. Clean terminals.
	c. Defective wiper switch.	c. Replace wiper switch.
3. Will not shut off (blades move up and down about 15 degrees from park position.	a. Open in lead wire from wiper terminal no. 3 to wiper switch.	a. Repair broken wire.
	b. Wiper switch mounting loose.	b. Tighten switch mounting.
	c. Wiper switch defective.	c. Replace wiper switch.
4. HI speed only.	a. Open lead wire from wiper terminal no. 3 to wiper switch.	a. Repair broken wire.
	b. Wiper switch defective.	b. Replace wiper switch.

DIAGNOSIS CHART - WIPER ON CAR (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
5. LO speed only	a. Grounded lead from wiper terminal no. 3 to wiper switch. b. Defective wiper switch.	a. Tape uninsulated portion of wire. b. Replace wiper switch.
6. HI speed in MED position (Cadillac only)	a. Open medium speed resistor.	a. Replace wiper switch.

DIAGNOSIS CHART - WIPER OFF CAR

NOTE: Before using chart, try operating wiper as shown in Figure 2- 31. Check if wiper has LO and HI speeds and shuts off correctly. Match the trouble found with the trouble shown in the chart. Use checking procedure following this chart by letter as indicated to locate cause of trouble.

CONDITION	APPARENT CAUSE	CHECKING PROCEDURE
1. Wiper inoperative (motor does not run)	1. Open relay switch coil 2. Circuit breaker open 3. Open armature 4. Motor series field open 5. Brushes sticking 6. Defective solder joints-relay switch 7. Binding condition-relay switch latch arm	Procedure A
2. Wiper will not shut off (crank arm rotates through 360 degrees)	1. Relay switch coil grounded 2. Relay switch latch arm spring disconnected or broken 3. Latch arm binding	Procedure B
3. Wiper will not shut off (crank arm moves back and forth in a horizontal plane accompanied by a loud knock)	1. Relay switch contacts shorting together 2. Drive pawl spring disconnected 3. Wiper has one speed, HI, caused by open shunt field	Procedure C
4. Wiper has one speed, HI	1. Shunt field open 2. Defective soldering at terminal no. 3 on relay switch and terminal board	Procedure C
5. Wiper has one speed, LO	1. Shunt field internally grounded 2. Shunt field lead to relay switch and terminal board (black) grounded 3. Shorted armature	Procedure D

DIAGNOSIS CHART - WIPER OFF CAR (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
6. Wiper has excessive speed in HI, LO speed normal	1. Open speed resistor 2. Poor resistor ground connection	Procedure E
7. Wiper stops at random (crank arm stops rotating immediately and does not return to full park position.)	1. Relay switch contacts dirty or broken	Clean or replace relay switch and terminal board assembly as required
8. Intermittent operation	1. Defective circuit breaker (weak) 2. Circuit breaker tripping because of shorted armature and/or fields causing motor to draw excessive current	Procedure F
9. No apparent trouble on bench test but fails occasionally on car.	1. Armature end play tight 2. Gear assembly end play tight 3. Loose solder or weld joints	See Wiper Motor Adjustments

PROCEDURE "A" (WIPER INOPERATIVE)

1. Remove washer pump to gain access to relay switch and terminal board assembly.

2. Connect 12-volt source to wiper, feed side to center terminal, ground side to gear housing (Fig. 2-31). Do not connect jumper to terminal 1 and 3.

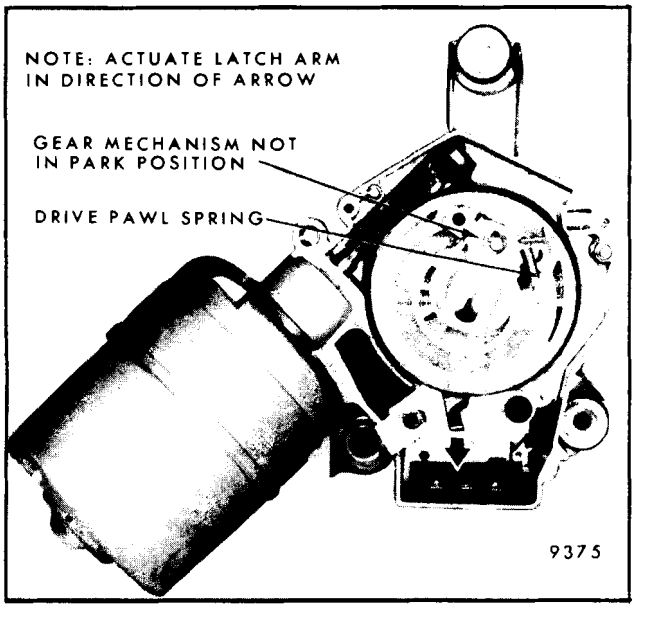

Fig. 2-28-Testing Relay Switch

3. To determine if relay switch coil is open, connect test lamp to wiper terminal no. 1. Test lamp should light.

4. Test relay switch as follows:

   a. If gear mechanism is in full park position, insert a small screwdriver into the switch slot (between the drive pawl and the latch arm) and push latch arm downward and toward the relay switch coil in direction of the arrow in Figure 2-28. Next, remove washer pump assembly and probe (penetrate insulation) black with pink stripe wire with 12V tester.

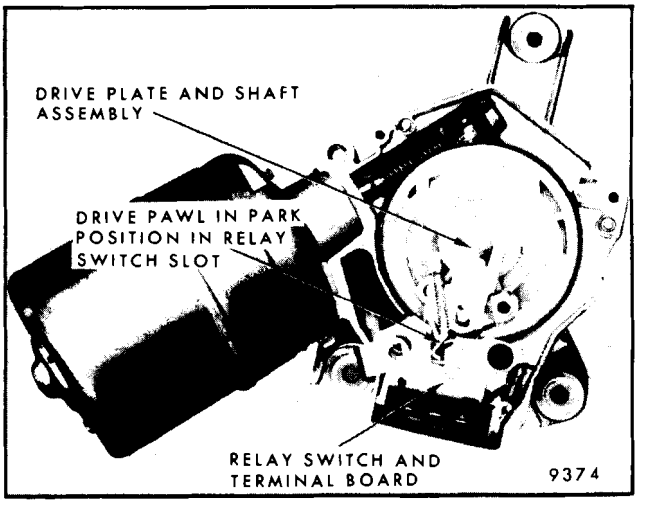

Fig. 2-29-Latch Mechanism

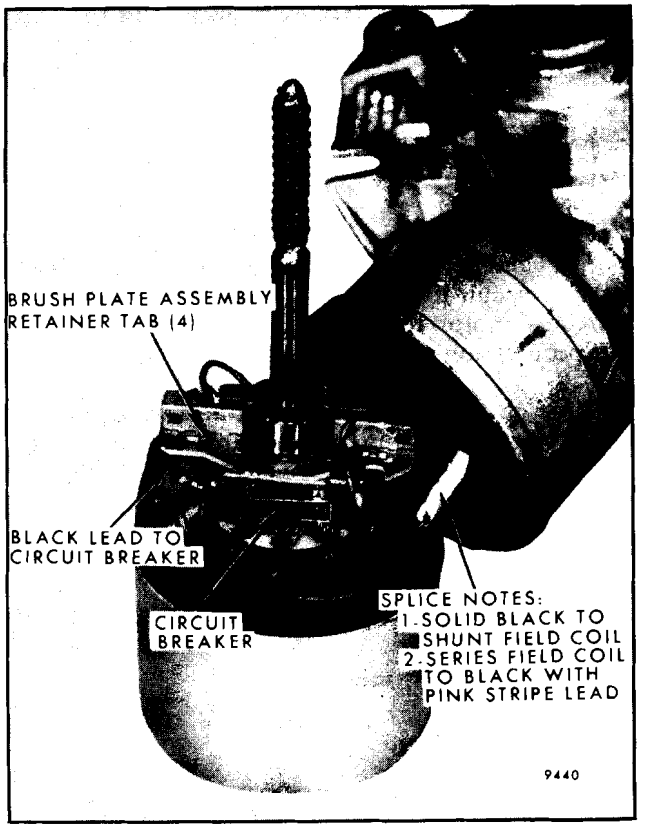

Fig. 2-30-Brush Plate Assembly

b. If test lamp lights but motor does not run, proceed to step 5.

c. If test lamp does not light, relay switch and terminal board are defective.

5. Disassemble motor section and check the following:

   a. Hung brush.

   b. Solder connections at brush holders.

   c. Splice joints at field coil connections to leads.

   d. Open armature.

   e. Circuit breaker ground connection on field lamination.

   f. Visually inspect the circuit breaker for dirty or burned contacts or solder connections to circuit breaker terminals (Fig. 2-30).

PROCEDURE "B" (WIPER WILL NOT SHUT OFF - CRANK ARM ROTATES 360 DEGREES)

1. Observe if latch arm spring is connected properly.

2. Manually operate latch arm to check it for possible binding condition.

3. If items 1 and 2 check out, connect power source to wiper and connect jumper wire from terminal no. 3 to wiper housing. DO NOT make any connections from terminal no. 1. Wiper motor should start to run as soon as connections are made. If this happens and wiper motor continues to run, the coil is internally grounded and the relay switch and terminal board assembly should be replaced.

PROCEDURE "C" (WIPER WILL NOT SHUT OFF - RECYCLES)

NOTE: Crank arm oscillates in a somewhat horizontal plane and is accompanied by a loud knock with each revolution of the gear.

1. Check that drive pawl and latch arm springs are properly connected (Fig. 2-29).

2. Check wiper for LO speed operation (Fig. 2-31). If wiper has HI speed only, check the following items:

   a. Solder joint at no. 3 wiper terminal.

   b. Splice joint - field coil crossover splice (Fig. 2-43).

   c. Splice joint - black lead to field coil.

3. Check relay switch and terminal board as follows:

   a. Remove washer pump assembly to gain access to black with pink stripe wire. Ground 12V test lamp to wiper housing and probe (penetrate insulation) black with pink stripe wire with 12V tester.

   b. Connect positive side of power source to terminal no. 2 and negative side to motor case. Install jumper wire from terminal no. 1 to motor case. Observe if test light goes out once for each revolution of gear or if light glows steadily. If light glows steadily, relay switch contacts are not opening and switch is defective. If light goes out each time drive pawl moves into relay switch slot, switch is functioning correctly.

PROCEDURE "D" (WIPER HAS ONE SPEED, LO)

1. Check for grounded condition in the internal black lead that connects to wiper terminal no. 3. Refer to Figure 2-31 for terminal no. 3 location.

2. Disassemble motor section of wiper and check for grounded shunt field coil (Fig. 2-42).

PROCEDURE "E" (WIPER HAS EXCESSIVE SPEED IN HI BUT LO SPEED IS NORMAL)

Check for open 20 ohm resistor.

PROCEDURE "F" (INTERMITTENT OPERATION)

1. Check solder connections at relay switch and terminal board.

2. Connect wiper to operate in LO speed (Fig. 2-31). Connect ammeter (range 0-30 amps.) in feed wire circuit to wiper and observe current draw. Allow motor to run until it becomes hot (see Specification Chart, Fig. 2-52).

   a. If current draw is normal and wiper cycles on and off, a weak circuit breaker is indicated. Replace brush plate assembly.

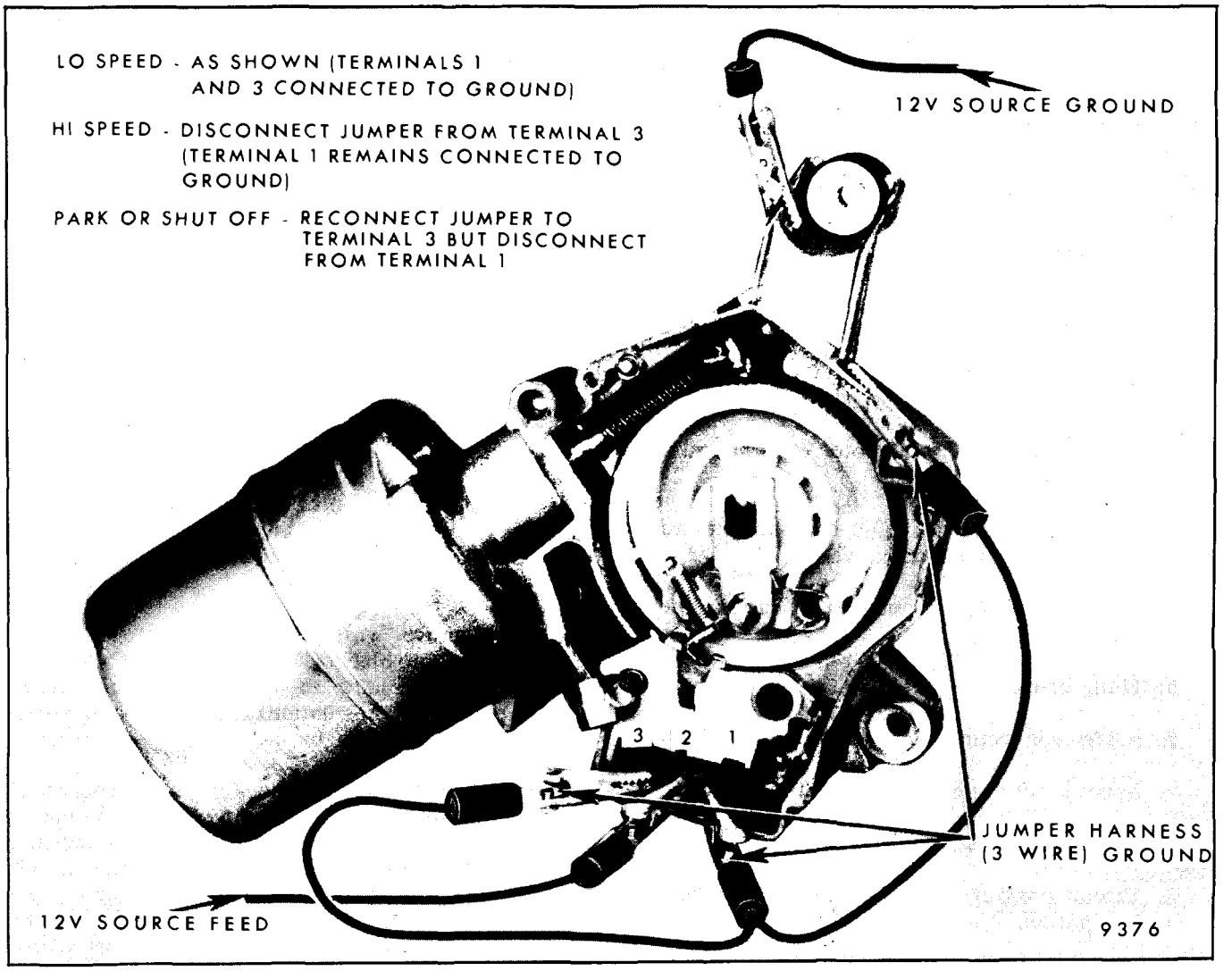

Fig. 2-31-Bench Checking Wiper Motor

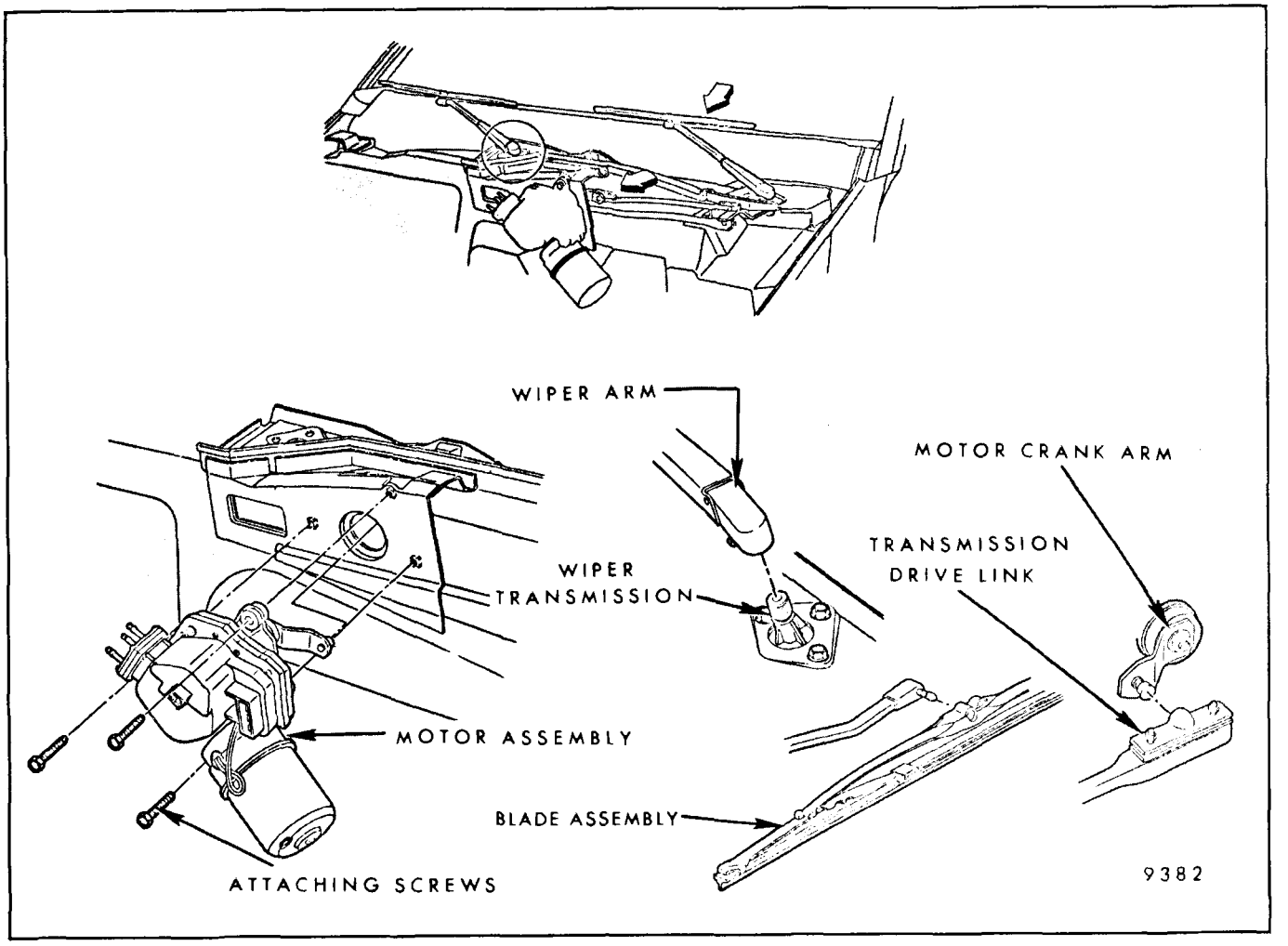

Fig. 2-32 - Round Motor Installation "B, C, D" Styles

b. If current draw exceeds specification, proceed to steps 3, 4 and 5.

3. Adjust armature end play as required and recheck current draw.

4. Adjust gear assembly end play as required and recheck current draw.

5. If adjustments in step 3 and 4 fail to correct excessive current draw condition, disassemble motor section of wiper and check armature on growler for shorted or grounded condition.

WIPER MOTOR

Removal and Installation - All Styles with Depressed Park Systems

1. Raise hood and remove cowl screen. On "K" styles remove front cowl panel and screen.

2. Loosen transmission drive link to crank arm attaching nuts (Fig. 2-33, 2-34, 2-35 or 2-39).

3. Remove transmission drive link(s) from motor crank arm.

4. Disconnect wiring and washer hoses.

5. Remove the three motor attaching screws.

6. Remove motor while guiding crank arm through hole.

7. To install, reverse the removal procedure. Motor must be in park position before assembling crank arm to transmission drive link(s).

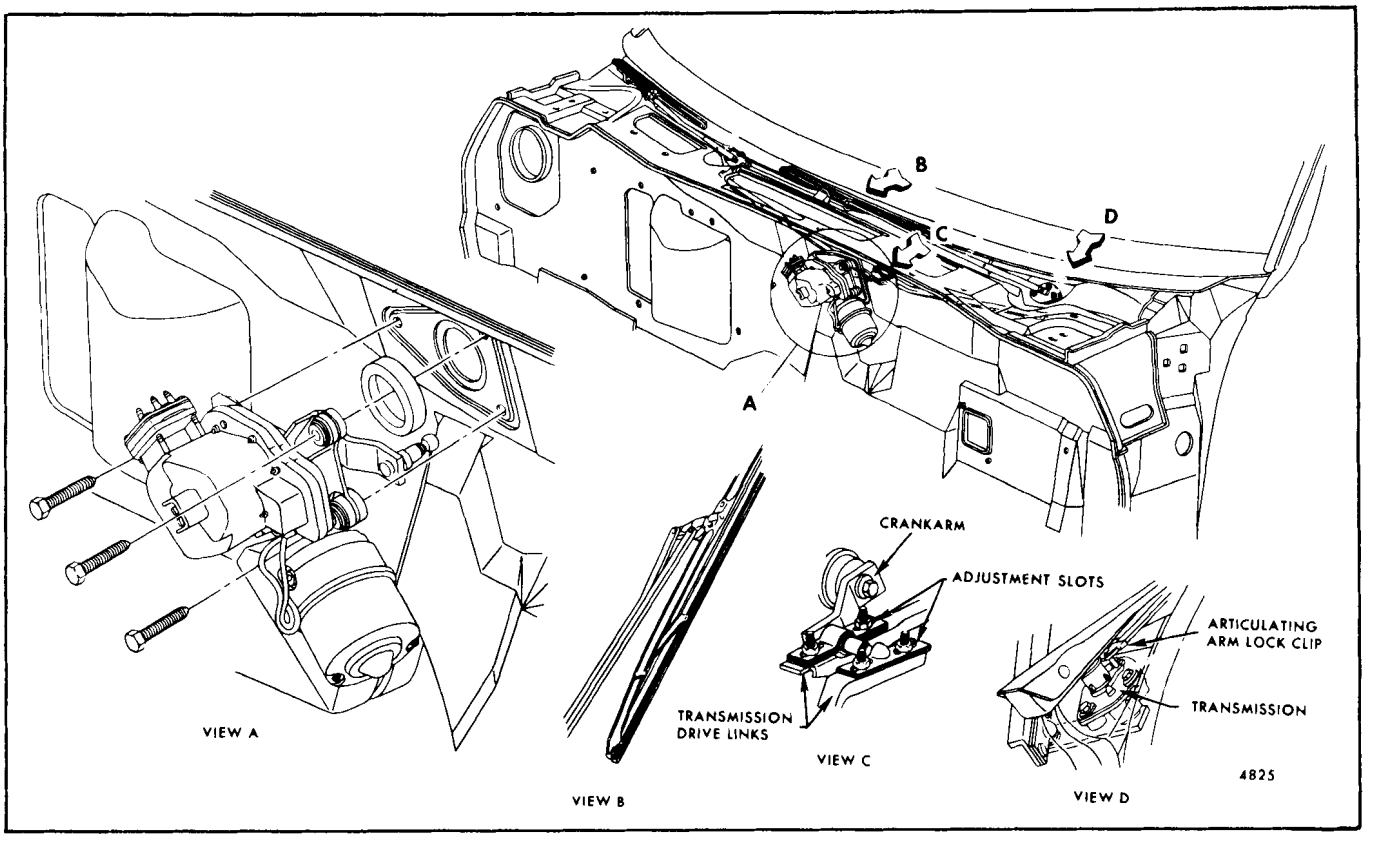

Fig. 2-33-Round Motor and Transmission Installation - "E" Styles

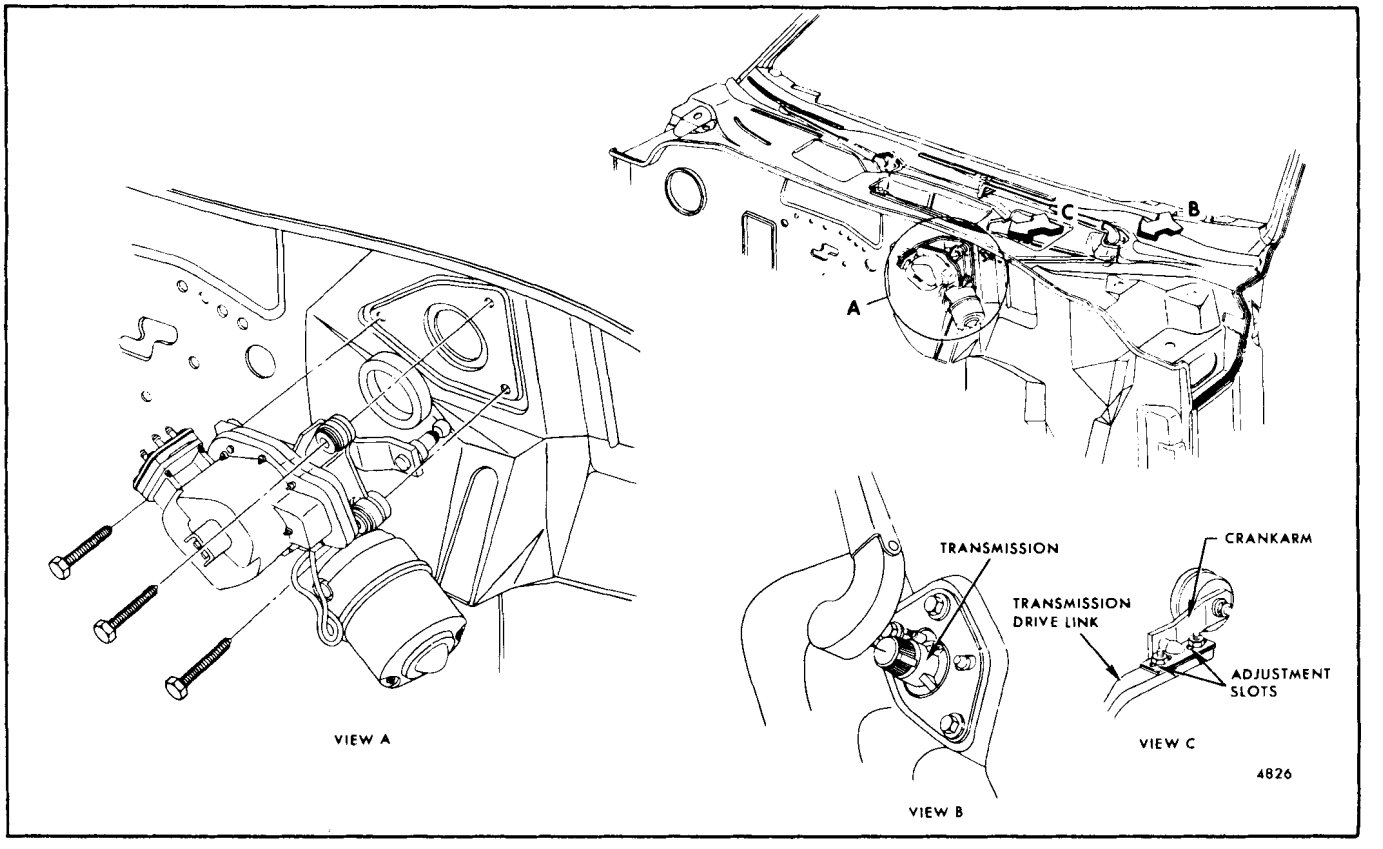

Fig. 2-34-Round Motor Installation "A" Styles ("F" Styles Similar)

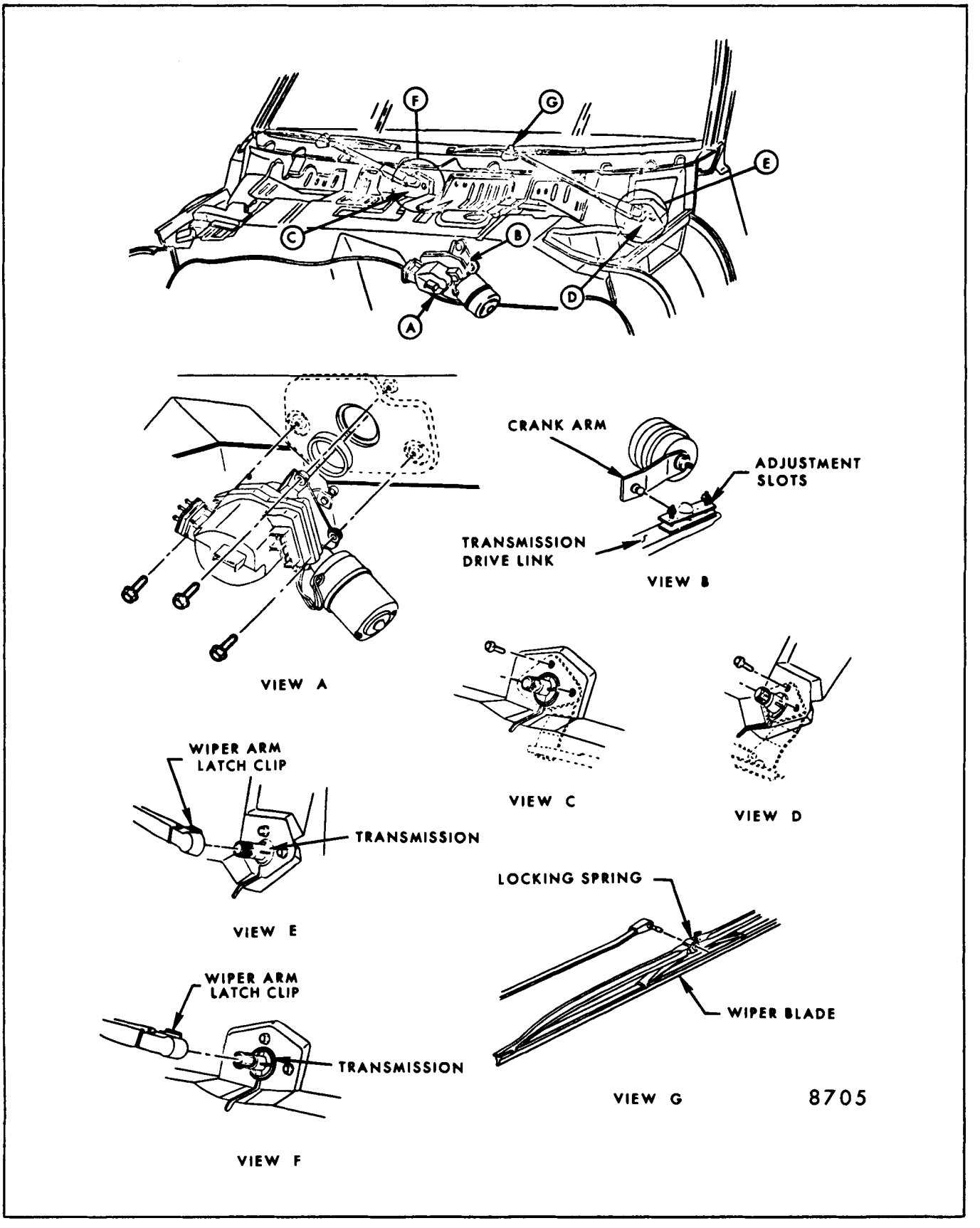

Fig. 2-35 - Round Motor and Transmission Installation - "K" Styles

WIPER ARM

Removal and Installation

1. Raise hood to gain access to wiper arms. On "K" styles remove front cowl panel and screen.
2. Use tool J-8966 or equivalent (Fig. 2-36), and lift arms off transmission shaft.
3. On "B, C, D, E and K" styles, lift wiper arm and slide latch clip (Fig. 2-38) out from under wiper arm.
4. Release wiper arm and lift wiper arm assembly off transmission shaft.
5. On "E" styles at left arm, slide articulating arm lock clip away from transmission pivot pin (Fig. 2-33) and lift arm off pin.
6. To install left wiper arm assembly on "E" styles, lubricate the transmission pivot pin, then position the articulating arm over the pivot pin and slide the lock clip toward the pivot pin until it locks in place on the pin. Install the left wiper arm assembly to the transmission shaft aligning the keyway to the shaft.

   NOTE: The same tool used for wiper arm removal may also be used to install the arm.
7. On "B, C" styles align slot in arm and blade assembly to keyway in transmission spindle and install to shaft. Lift wiper arm slightly and slide latch clip into place.

   NOTE: Windshield wiper blade assebmly release button or clip must be towards base of arm assembly for proper matching of blade to glass contour.
8. On "A and F" styles align the right wiper arm assembly in the proper park position and install wiper arm to transmission shaft.
9. On "E" styles, align keyway in right wiper arm assembly to transmission shaft and install arm assembly to shaft (Fig. 2-37).
10. On "B, C, D, E and K" styles, lift the wiper arm assemblies and slide latch clips (Fig. 2-38) under

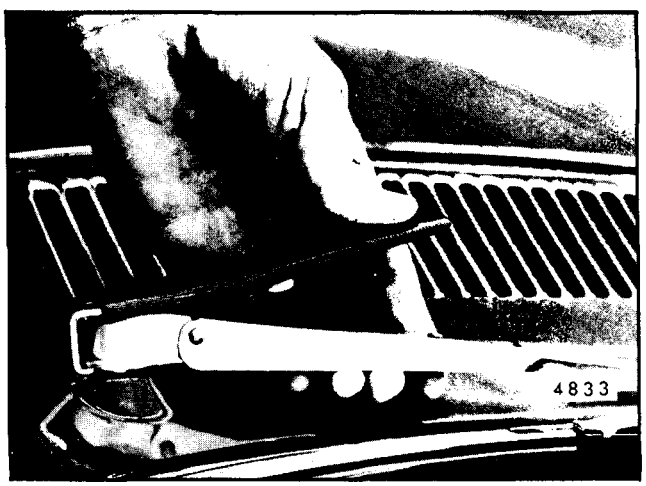

Fig. 2-36-Wiper Arm Removal Tool J-8966 (or Equivalent)

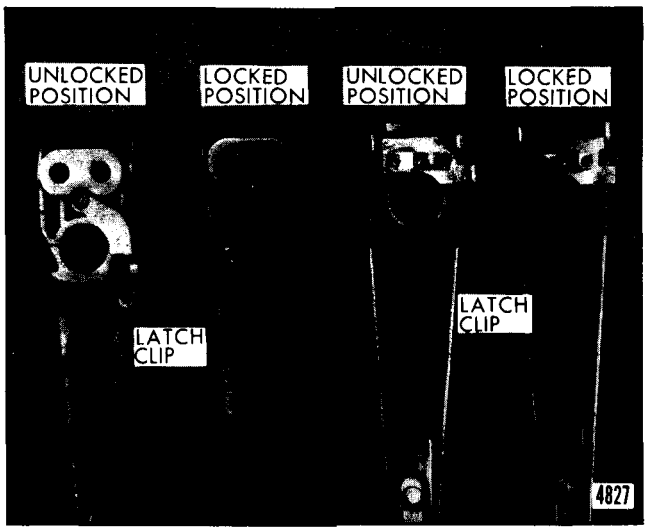

Fig. 2-37-Wiper Arm Latch Clips - "E" Styles

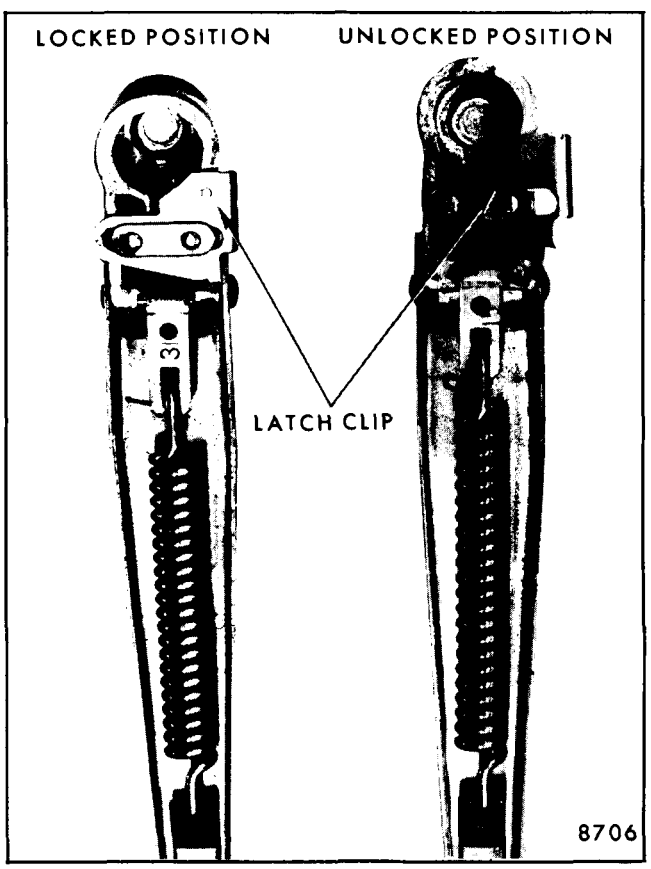

Fig. 2-38 - Wiper Arm Latch Clips "B, C, D, K" Styles

the arms. Release wiper arms and check wipe pattern and park position.

Adjustment

If the wiper arms and blades were in correct adjustment prior to wiper arm removal, adjustment should not be required. However, if adjustment is required, it can be performed as follows:

1. Raise the hood and remove cowl vent screen. On "K" styles remove front cowl panel and screen.
2. On "A and F" styles, remove the right arm and blade assembly.
3. Loosen, do not remove, the transmission drive link to motor crank arm attaching nuts (Fig. 2-33, 2-34 or 2-39). On "E" styles, if only one arm and blade assembly requires adjustment, loosen only the drive link to crank arm attaching nuts for the unit requiring adjustment.
4. Rotate the left arm assembly on "A and F" styles and both arm assemblies on "B, C, D, E and K" styles to a position 25.4 mm (1") below the blade stops.

   NOTE: To prevent damage to washer nozzles, temporarily remove retaining screws, and move nozzles out of the way.

   CAUTION: *On "C, D and E" styles, even if only one arm and blade assembly requires adjustment, the right and left assemblies must be rotated 1" below the stops.*

5. On "A, E, F" styles tighten the attaching nuts on the transmission drive link(s) to motor crank arm (25 to 35 in-lb torque). On "B, C, D" styles tighten to 3.5 to 5.0 N·m (30 to 45 in-lb).
6. On "A and F" styles, position the right arm and

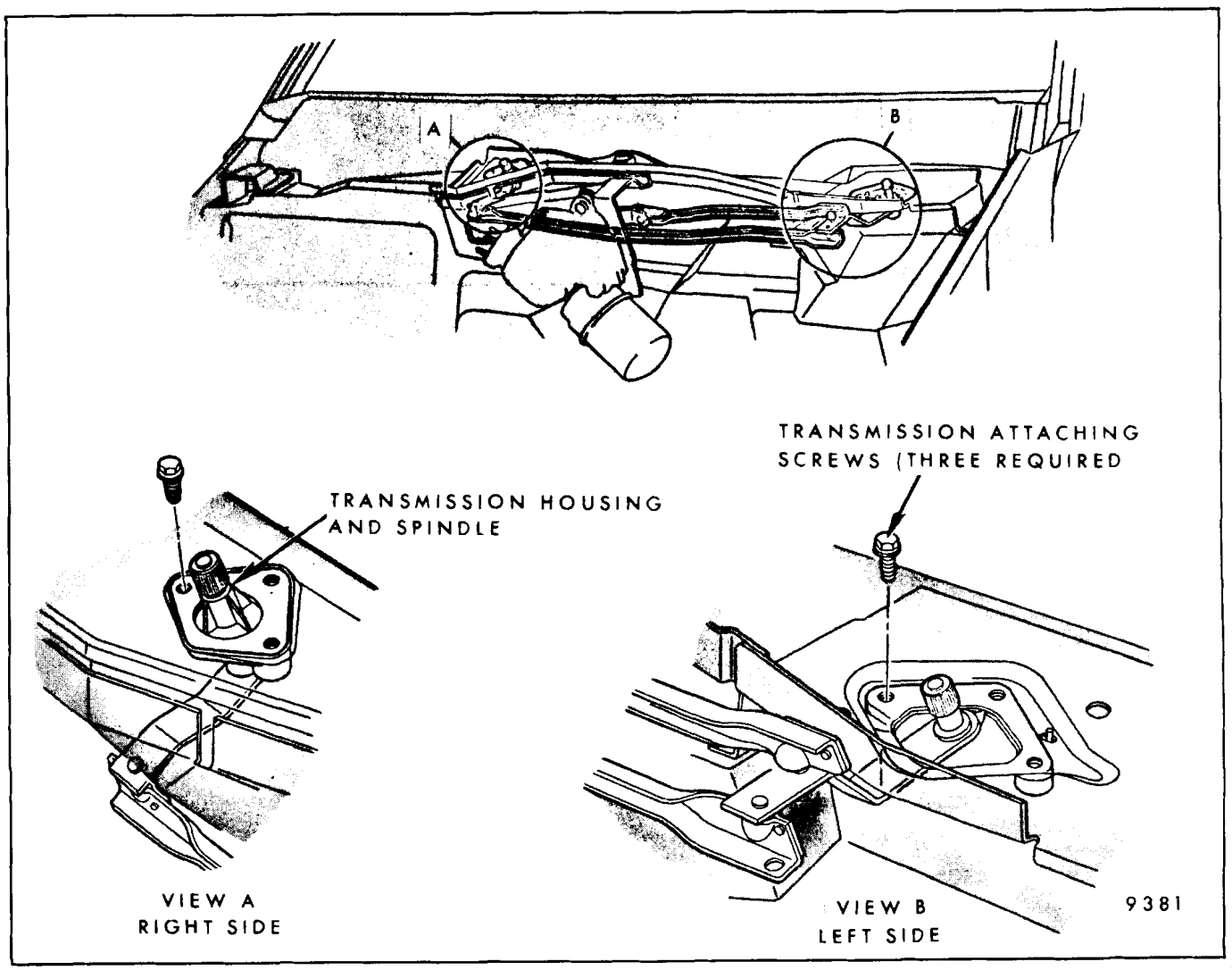

Fig. 2-39 - Windshield Wiper Transmission Installation - "B, C, D" Styles

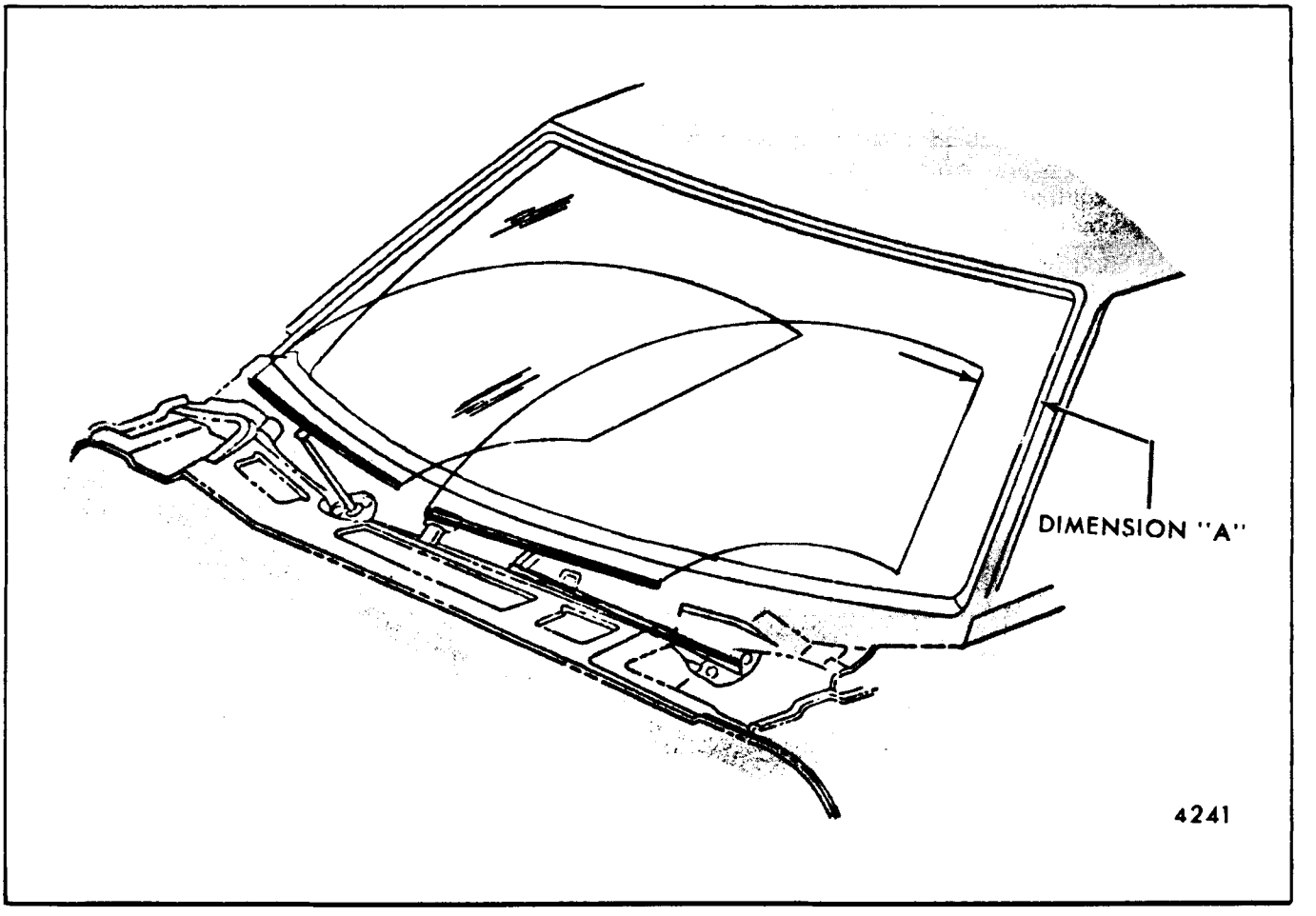

Fig. 2-40-Wipe Pattern

blade assembly 1" below the blade stop and install arm assembly to transmission shaft.

7. Lift the right and left arm and blade assemblies over the stops.
8. Check wipe pattern and park position. Dimension "A" as shown in Figure 2-40 for various body styles is as follows:

   a. "A-29-35" styles - 1.75" plus 1.50" or minus .00"

   b. "A-37-57-80" styles - 1.12" plus 1.50" or minus .00"

   c. All "B, C, D" styles - 35 mm (1.35") plus or minus 12 mm (0.50")

   d. "E" styles - 1.50" plus 1.50" or minus .00"

   e. "K" styles - 1.50" plus 0.75" or minus .00"

   f. All "F" styles - 1.25" plus 1.10" or minus 0.50"

   NOTE: The correct park position and outwipe dimension is determined with the wipers operating at LO speed on a wet glass.

9. Install cowl vent screen or front cowl panel and screen.

WIPER BLADE

Removal and Installation (Fig. 2-41)

Two methods are used to retain wiper blades to wiper arms.

1. One method uses a press-type release tab. When the release tab is depressed the blade assembly can be slid off the wiper arm pin.
2. The other method uses a coil spring retainer. A screwdriver must be inserted on top of the spring and the spring pushed downward. The blade assembly can then be slid off the wiper arm pin.

Two methods are also used to retain the blade element in the blade assembly.

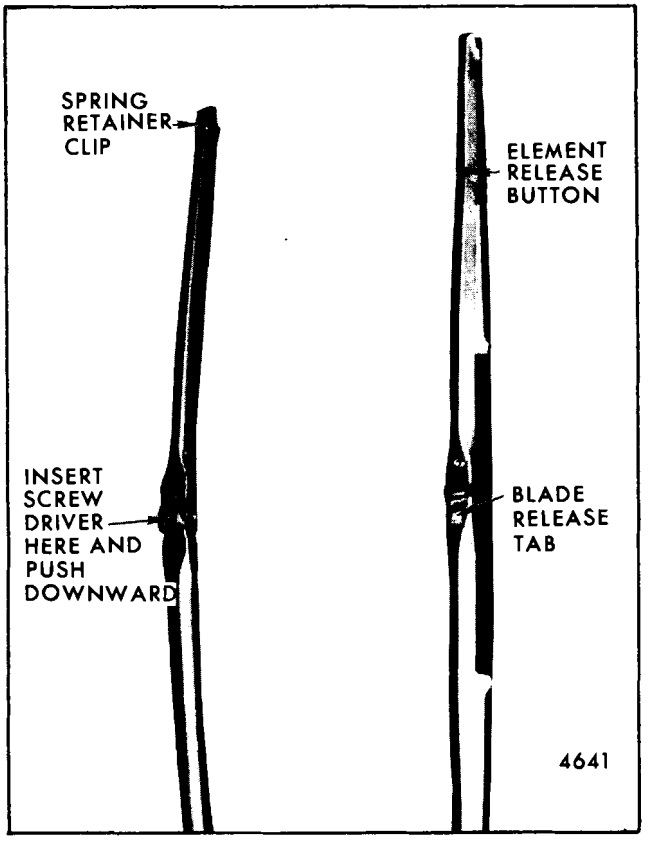

Fig. 2-41-Wiper Blade Assemblies

1. One method uses a press-type button. When the button is depressed, the blade assembly can be slid off the blade element.

2. The other method uses a spring-type retainer clip in the end of the blade element. When the retainer clip is squeezed together, the blade element can be slid out of the blade assembly.

   When installing a blade element into a blade assembly, be certain to engage the metal insert of the element into all retaining tabs of the blade assembly.

   NOTE: When properly installed, the element release button, or spring-type element retaining clip should be at the end of the wiper blade assembly nearest the wiper transmission.

WIPER TRANSMISSION

Removal and Installation

1. Raise hood and remove cowl vent screen. On "K" styles remove front cowl panel.

2. Remove right and left wiper arm and blade assemblies. On "E" styles, remove arm and blade assembly only from the transmission to be removed.

3. Loosen (do not remove) attaching nuts securing transmission drive link(s) to motor crank arm (Fig. 2-32, 2-33, 2-34, or 2-35).

   NOTE: On "E" styles, if only the left transmission is to be removed, it will not be necessary to loosen attaching nuts securing the right transmission drive link to motor crank arm.

4. Disconnect the transmission drive link(s) from the motor crank arm.

5. Remove transmission to body attaching screws. On "E" styles, remove only the attaching screws securing the transmission(s) to be removed to the body.

6. Remove transmission(s) and linkage assembly by guiding it through plenum chamber opening or to left side under dash panel extension.

7. To install transmission(s) and linkage assemblies, position assembly in plenum chamber through the openings or below dash extension panel from left side.

8. Loosely install transmission to body attaching screws.

9. On "A, E, F and K" styles, install transmission drive link(s) to motor crank arm and tighten attaching nuts to 25 to 35 in-lb torque. On "B, C, D" styles torque attaching nuts to 3.4 to 5.1 N·m (30 to 45 in-lb). See Figures 2-32, 2-33, or 2-35.

   NOTE: Wiper motor must be in park position.

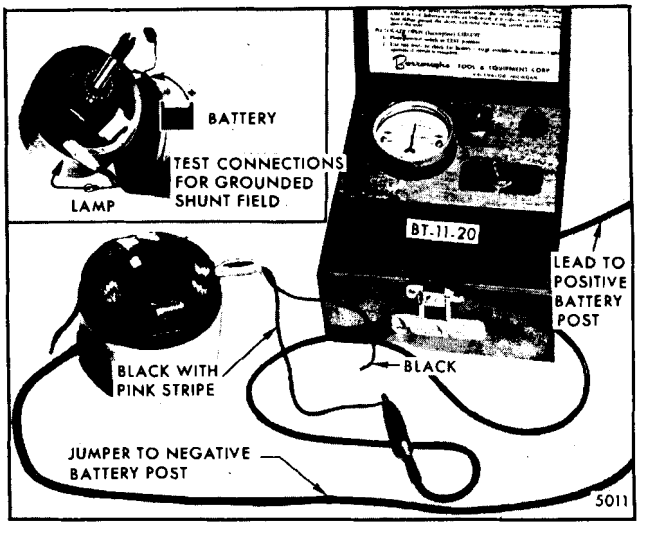

Fig. 2-42-Testing Field Coils

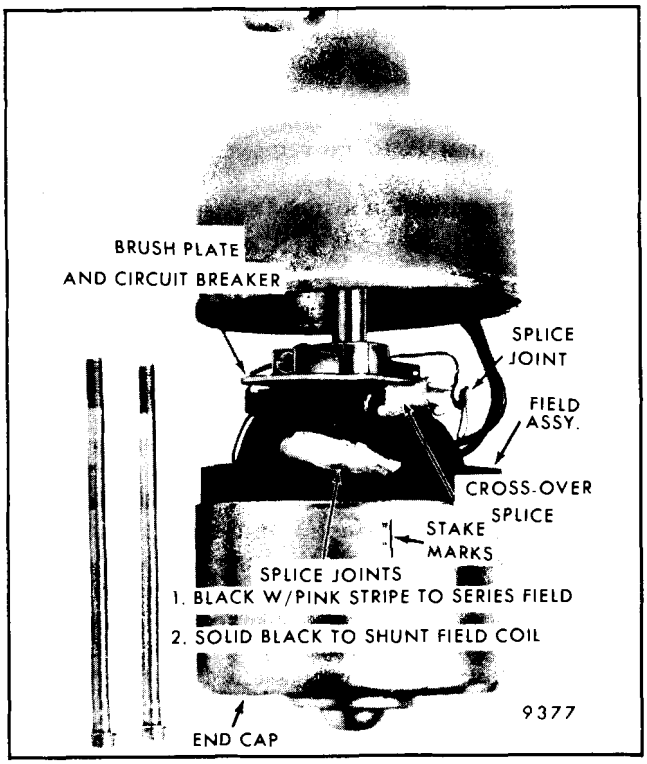

Fig. 2-43-Field and End Cap Assembly

10. Align transmission(s) and tighten attaching screws to body.

11. Install wiper arm and blade assemblies and adjust as described under WIPER ARM ADJUSTMENT.

12. Check wiper operation, wipe pattern and park position.

13. Install cowl vent screen or front cowl panel and screen.

14. Check washer nozzle alignment.

MOTOR DISASSEMBLY AND ASSEMBLY PROCEDURE

Brush Plate and Circuit Breaker Removal

1. Scribe a reference line along the side of the casting and end cap to insure proper reassembly.

2. Remove the two motor tie bolts.

3. Feed exposed excess length of motor leads through the casting grommet and carefully back the case and field assembly plus the armature away from the casting (Fig. 2-43).

   NOTE: It may be necessary to remove the armature end play adjusting screw and insert a rod through the opening in order to apply pressure against the end of the armature.

4. Unsolder the black lead from circuit breaker.

5. Straighten out the four tabs that secure the brush plate to the field coil retainers (Fig. 2-30).

   CAUTION: *Be careful not to break any of the retainer tabs.*

6. Install "U" shaped brush retainer clip over brush holder that has brush lead attached to circuit breaker (Fig. 2-30).

7. Holding the opposite brush from that retained in step 6, carefully lift the brush holder off the mounting tabs far enough to clear the armature commutator.

8. Allow the brush held in step 7 to move out of its holder. Remove the brush spring and lift the brush holder off the armature shaft.

Armature Removal

1. Follow steps 1 thru 8 under brush plate removal.

2. Lift armature out of case and field assembly.

3. Remove thrust ball from end of armature shaft and save for reassembly.

   NOTE: Thrust ball may be easily removed with a magnet.

Case and Field Assembly Removal

1. Remove brush plate and armature.

2. The end case and field assembly is serviced as a unit. To free the field and case assembly, cut the solid black and black with pink stripe leads in a location convenient for splicing.

3. Remove steel thrust plate and rubber disc from case bearing.

Motor Reassembly

1. If new field and case assembly is being installed, splice the black and black with pink stripe leads of the new field with the corresponding leads of the wiper.

2. Install the rubber thrust disc, steel thrust disc and felt lubricating washer in the case assembly bearing in the order indicated.

3. Lubricate end of armature shaft that fits in case bearing with recommended type grease (Fig. 2-52). Next, install thrust ball in end of shaft.

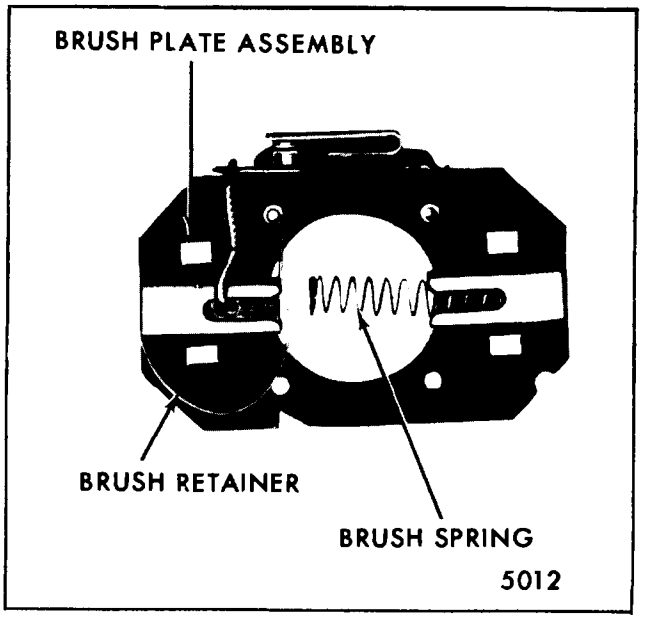

Fig. 2-44-Brush Plate Assembly - Removed

4. Assemble armature in the case and field assembly.

5. Position the partially assembled brush plate (Fig. 2-44) over the armature shaft far enough to allow reassembly of the remaining brush in its brush holder; then position the brush plate assembly on the mounting tabs in the position shown in Figure 2-30.

   NOTE: Circuit breaker ground lead will not reach circuit breaker terminal if brush plate is positioned wrong.

6. Center the brush plate mounting holes over the mounting tabs and bend the tabs toward the brush holders as required to secure the brush plate in position.

   NOTE: Be sure tabs are centered in brush plate mounting holes.

7. Remove brush retainer clips and resolder circuit breaker ground lead to circuit breaker.

8. If new case and field assembly is used, scribe a line on it in the same location as the one scribed on the old case. This will insure proper alignment of the new case with the scribed line made on the housing.

9. Position armature worm shaft inside the housing and using the scribed reference marks, line up as near as possible the case and field assembly with the housing.

10. Maintaining the armature in its assembled position in the case, start the armature worm shaft through the field and housing bearing until it starts to mesh with the drive gear. At the same time carefully pull the excess black and black with pink stripe leads through the housing grommet.

    NOTE: It may be necessary at this point to rotate armature slightly before the armature worm will engage with drive gear teeth.

11. Rotate the case as required to align the bolt holes in the case with those in the housing.

12. Secure the case to the housing with the two tie bolts.

13. Adjust armature end play screw (Fig. 2-51).

GEARBOX - DISASSEMBLY AND ASSEMBLY PROCEDURES

Relay Switch and Terminal Board Assembly Removal

1. Remove washer pump.

   NOTE: The wiper gear mechanism must be out of the park position to remove the relay switch and terminal board assembly.

2. If wiper gear drive pawl is in park position (Fig. 2-27), manually trip the latch arm toward the coil and apply feed current to the center terminal of the relay switch and terminal board and ground to the motor case. The wiper motor will turn the gear, moving the drive pawl out of the park position in the relay switch slot. If applying feed current to the center terminal does not

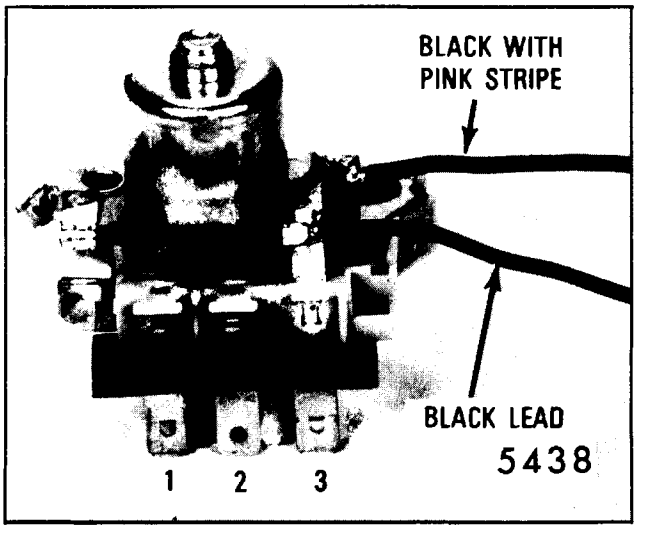

Fig. 2-45-Relay Switch and Terminal Board

energize the motor, it is possible to remove some of the insulation from the black with pink stripe wire between the motor and the relay switch and apply feed current at this point. Be sure to cover the exposed wire with tape after the operation is completed.

If wiper gear mechanism is not in park position as shown in Fig. 2-27 (drive pawl away from latch arm), proceed to step 3.

3. Remove relay switch and terminal board attaching screw and carefully lift the assembly out of the gearbox. Unsolder leads as required. Refer to Figure 2-45 when resoldering leads.

Reassembly of Relay Switch and Terminal Board Assembly

1. Resolder leads to relay switch and terminal board assembly as required.

   NOTE: Black wire to no. 3 terminal, black with pink stripe wire to fixed contact post.

2. Position relay switch and terminal board assembly in housing.

   CAUTION: *Be very careful to route leads in such a manner as to avoid having them pinched between relay switch and wiper housing.*

3. Install relay switch and terminal board attaching screw.

4. Install washer pump to wiper motor.

   NOTE: Refer to Round Motor - Washer System, Assembly of Washer Pump to Wiper Motor.

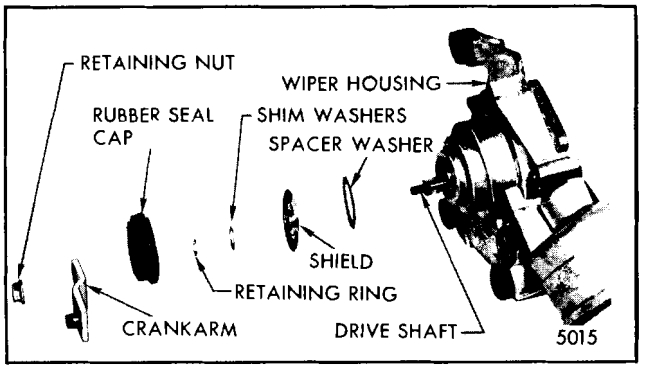

Fig. 2-46-Crank Arm Components - Exploded View

Drive Gear Disassembly

1. Remove washer pump.

2. Clamp crank arm in a vise and remove crank arm retaining nut.

   CAUTION: *Failure to clamp crank arm in vise may result in stripping of wiper gears.*

3. Remove crank arm, rubber seal cap, retaining ring, shim washers, shield and spacer washer in the order indicated (Fig. 2- 46).

4. Slide gear assembly out of housing (Fig. 2-47).

   NOTE: If relay switch and terminal board assembly has not been removed, move the latch arm out of the way.

5. Slide drive plate and shaft out of gear and remove the drive pawl, lock pawl and coil spring as required (Fig. 2-48).

   NOTE: A drive plate and shaft assembly with two grooves machined in the shaft can be used to service all 1968 through current model depressed park wiper systems. Service instructions included in any replacement package call out which groove to use.

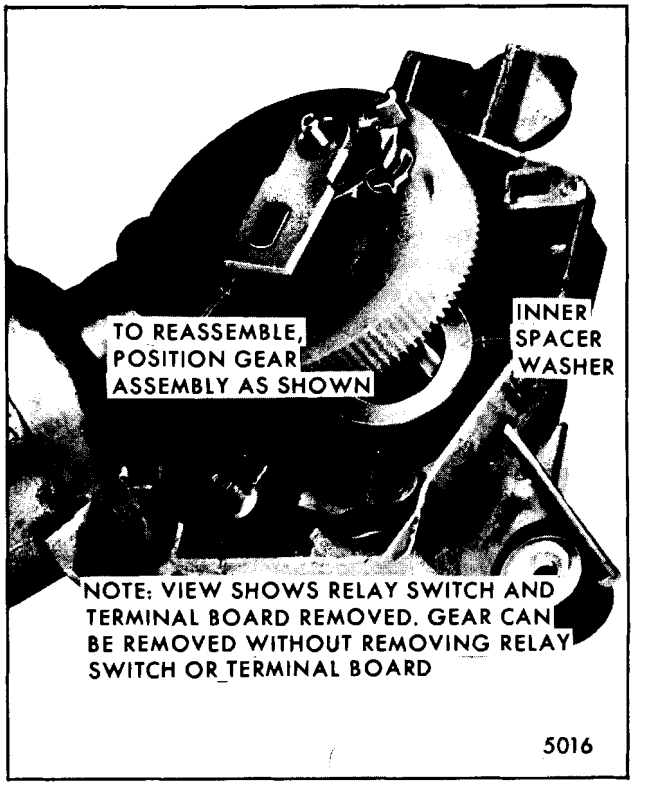

Fig. 2-47-Removing Gear

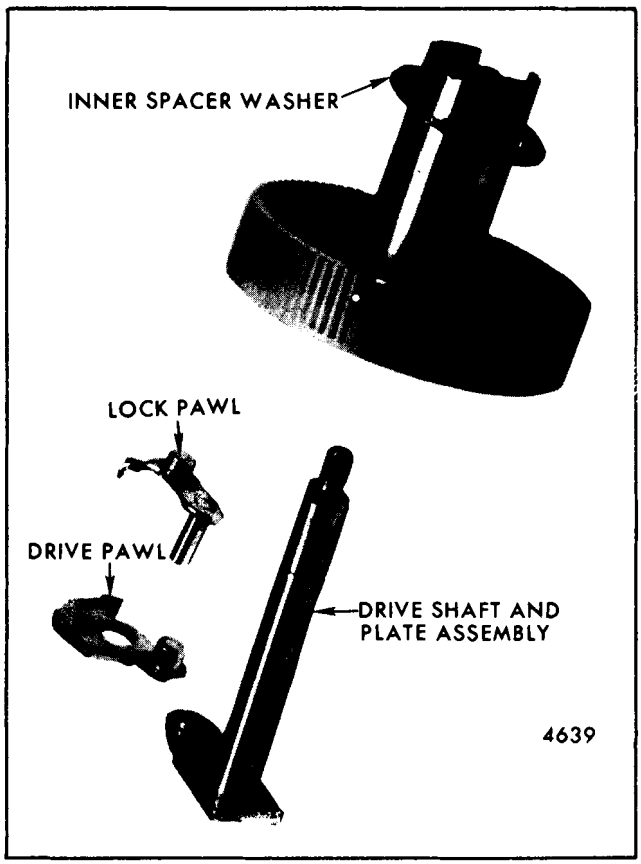

Fig. 2-48-Gear Removed

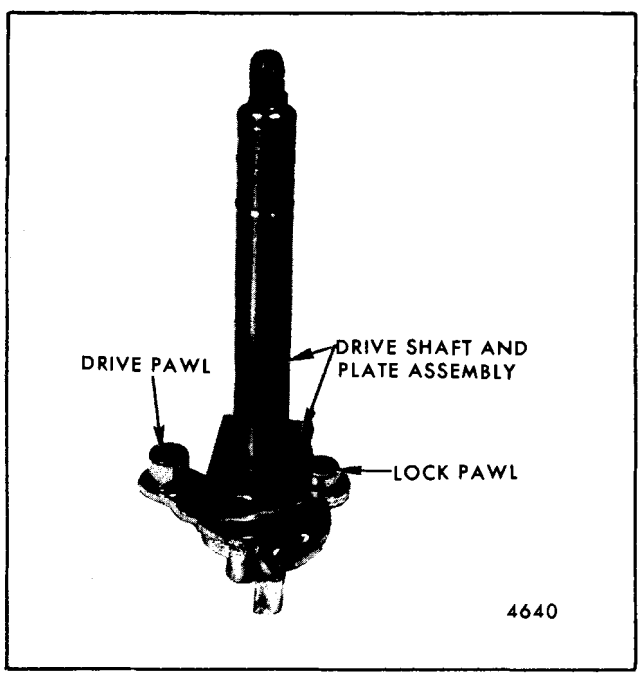

Fig. 2-49-Lock Pawl

Drive Gear Reassembly

1. Position drive pawl on drive plate.
2. Assemble lock pawl over drive pawl as shown in Figure 2-49.
3. Slide gear and tube over the drive shaft. (Move drive and lock pawls as required to allow their respective pins to fit in the gear guide channel.)
4. Holding the gear, manually rotate the drive plate in the direction of the arrow until the drive and lock pawl guide pins fit into their respective pockets in the gear (Fig. 2-50).
5. Reinstall coil spring between lock and drive pawls.

   NOTE: Be very careful to maintain lock and drive pawl guide pins in their respective pockets during step 6.

6. Assemble inner spacer washer over gear shaft and assemble gear mechanism in housing so that it is positioned with respect to the housing in the approximate location shown in Figure 2-47.
7. Reassemble the outer spacer washer, shield, shim washers as required to obtain 0.10 mm (.004"), plus or minus 0.05 mm (.002") end play, snap ring and rubber seal cap in the order indicated. Refer to Figure 2-46.
8. Operate wiper to park position and install crank arm in the approximate position shown in Figure 2-51.

   CAUTION: *Clamp crank arm in vise before securing retaining nut.*

9. Install washer pump to wiper motor.

   NOTE: Refer to WASHER SYSTEM - Round Motor, Assembly of Washer Pump to Wiper Motor.

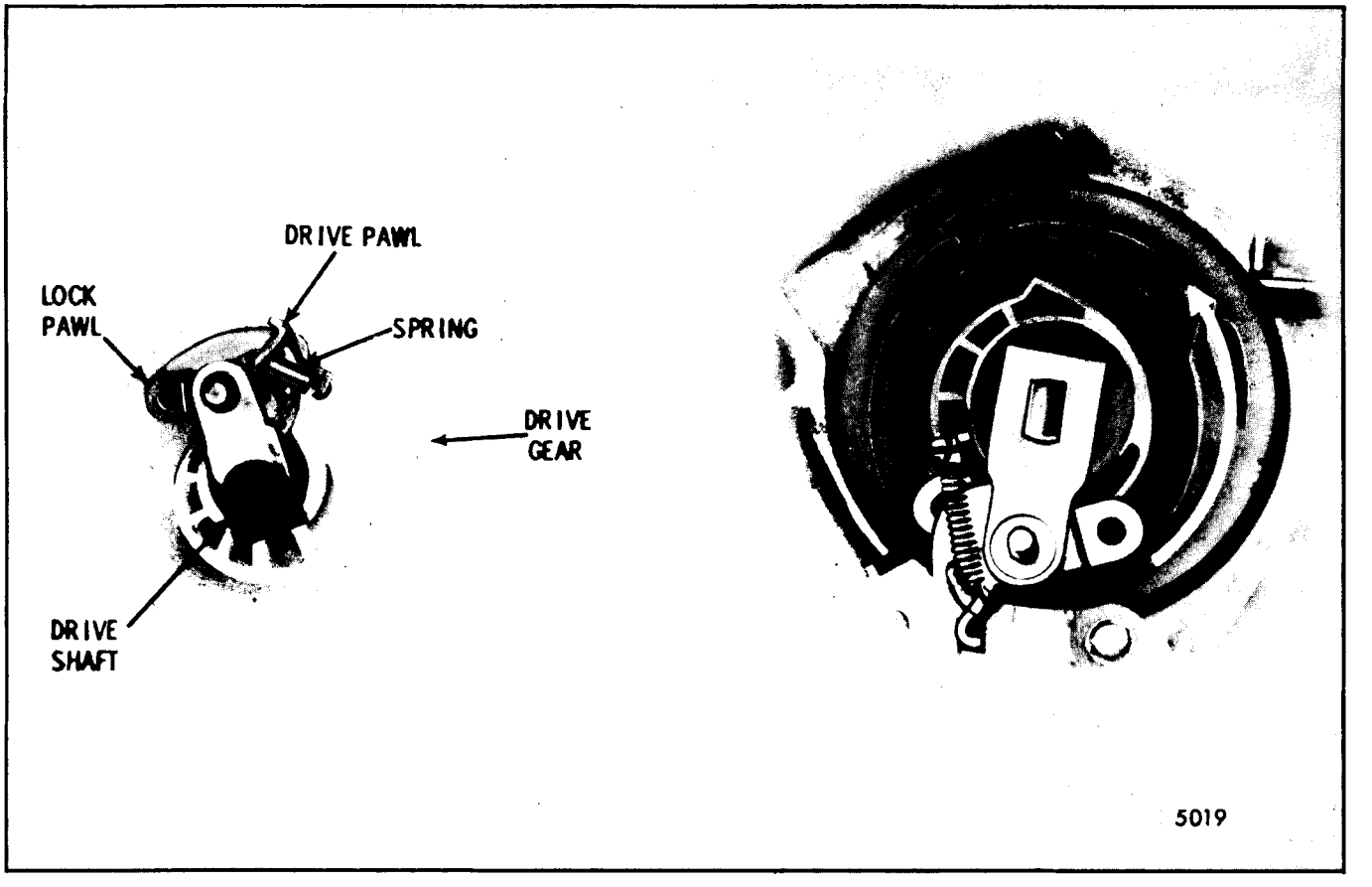

Fig. 2-50-Lock Pawl and Drive Pin Positioning

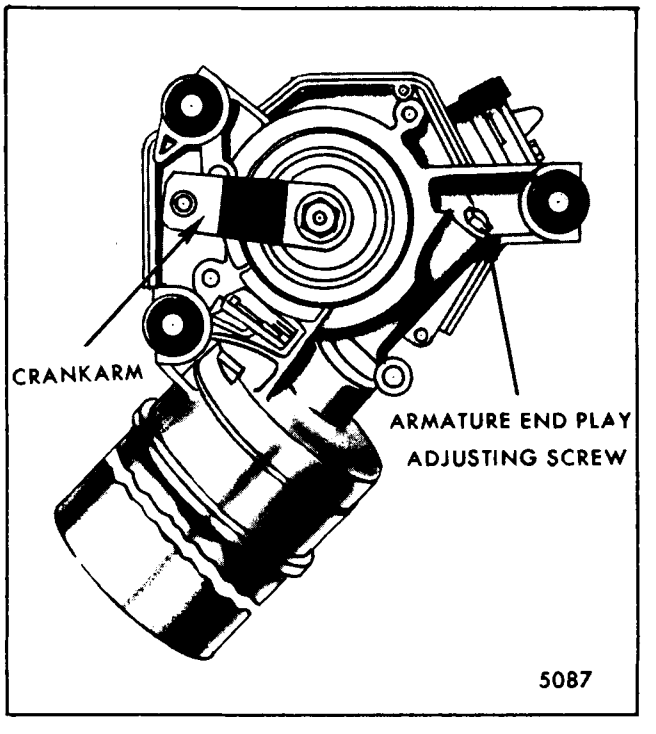

Fig. 2-51-Wiper Motor and Crank Arm in Park Position

WIPER MOTOR ADJUSTMENTS

Armature End Play

1. Loosen adjusting screw locknut (Fig. 2-51) and tighten or loosen the adjusting screw as required until end of screw barely touches end of armature.

2. Back off adjusting screw one quarter turn and tighten locknut.

Gear Assembly End Play

Add or remove shim washers as required to obtain 0.10 mm (.004") plus or minus 0.05 mm (.002") end play (Fig. 2-46).

SPECIFICATION CHART

OPERATING VOLTAGE			12 VOLTS D.C.
BENCH CHECK (No Load)	CURRENT DRAW (Amps)		CRANKARM SPEED
	"F"	"A-B-C-D-E-K"	
"LO" SPEED	5.0 Max.	6.0 Max.	35 - 50
"HI" SPEED	4.0 Max.	4.5 Max.	70 - 90
STALL (Cold Motor)			
"LO" SPEED	18.0 Max.	29.0 Max.	0

Torque	INCH-POUNDS	NEWTON-METRES
Washer Pump Mounting Screws.	18	2.0
Armature Adjusting Screw Jamb Nut.	50	5.7
Motor Tie Bolts.	30	3.4
Gear Box Relay Attaching Screw	*30	3.4
Motor Crankarm Attaching Nut	300 - 350	34 - 40
Motor Crankarm to Transmission Drive Link.	25 - 35	3 - 4
Motor to Body Attaching Bolts.	30 - 45	4 - 5
Transmission to Body Attaching Bolts	57 - 72	7 - 8

Lubrication	
Gear Teeth	Multifak EP-1 or Equivalent
Gear Shaft	
Gear Camtrack	
Seal Cap (Inside)	
Armature Shaft	
Armature Worm	

9383

Fig. 2-52-Specification Chart-Round Motor

MODIFIED PULSE WIPER SYSTEM

DESCRIPTION

The modified pulse wiper system provides a controlled wiping action. This optional system is standard on "K" styles and available on all "A, B, C, D, E and F" styles. It utilizes a round motor and wiper blades that park below the hoodline. The system can be identified by a dark gray pump cover and the two electrical leads coming out of the motor grommet (Fig. 2-53).

Each division uses a different dash switch. The Oldsmobile, Pontiac and Chevrolet switches provide two continuous speeds - LO and HI plus the delay modes. Buick and Cadillac switches provide three continous speeds - LO, MED and HI as well as the delay modes.

Regardless of the dash switch type, the dash switch lever in the DELAY mode can be moved from a MIN (minimum) to a MAX (maximum) position (Fig. 2-54). The movement of the lever from the MIN to MAX position varies the amount of time the wiper will delay between each wipe. The delay ranges between 0 and approximately 12 seconds depending on the position of the lever. MIN delay or 0 seconds between wipes provides the equivalent of LO speed continuous operation.

LO speed position on Buick, Chevrolet, Oldsmobile and Pontiac switches is actually the MIN delay mode. The Cadillac switch, however, bypasses the delay circuit for its continuous LO speed. This will be covered under Wiper Motor Operation.

The modified pulse wiper motor less the washer pump is very similar to the 1-3/4" stack standard depressed park wiper motor except for the red wire shown in Figure 2-53. The red lead is attached to the gearbox relay terminal and provides a B plus path to the pulse relay when the gearbox relay is energized.

NOTE: The round motor used with the modified pulse system on "F" styles is a 4" motor.

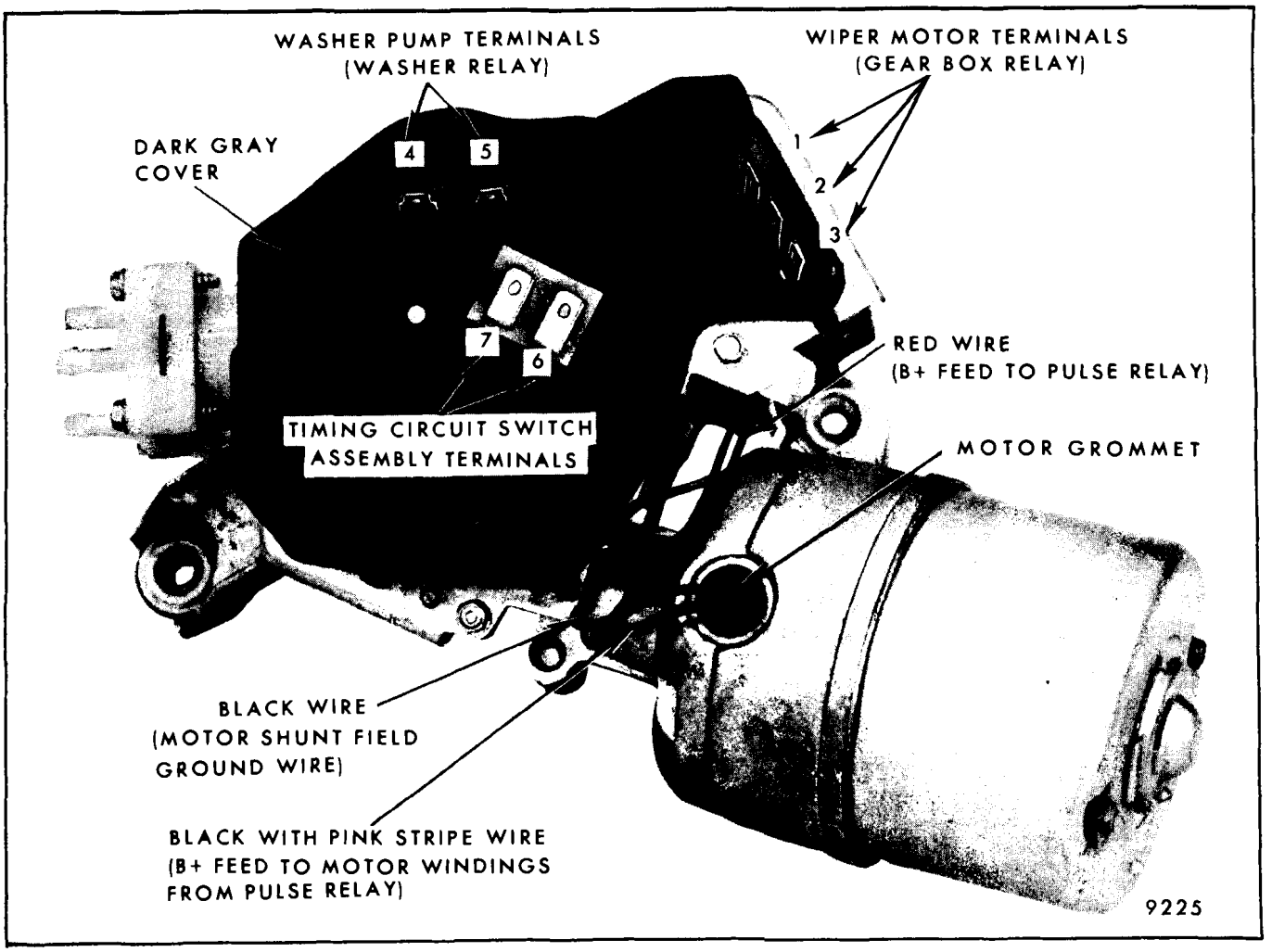

Fig. 2-53-Modified Pulse Wiper Motor and Pump Assembly

MOTOR OPERATION

NOTE: The dash switches are a combination of switches and a variable resistor controlled by a single lever and a wash button switch (Fig. 2-55).

Two relays control the starting and stopping of the wiper motor.

1. Gearbox Relay
2. Pulse Relay

Both of the relays must function in order for the wiper motor to operate. Detailed explanation of each relay circuit follows:

Gearbox Relay

The gearbox relay acts as a switch that turns the B plus supply to the pulse relay on and off.

Referring to Figure 2-56, note that the ignition switch completes the B plus circuit from the battery to one side of the relay coil and to one of the relay switch contacts. Turning the dash switch to the LO, MEDIUM (Buick, Cadillac), HI or DELAY positions completes the gearbox relay coil circuit to ground. This causes the gearbox relay switch contacts to close completing the B plus circuit to the pulse relay. The pulse relay circuit is covered under Pulse Relay.

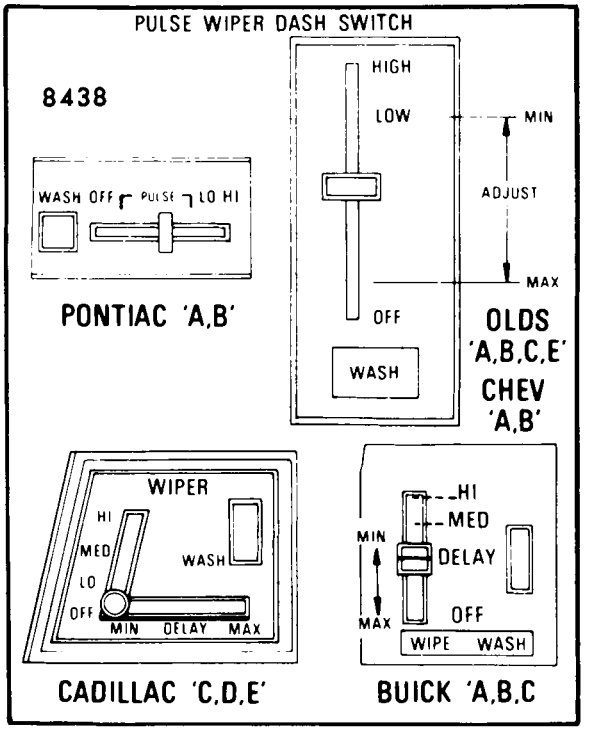

Fig. 2-54-Pulse Wiper Dash Switches

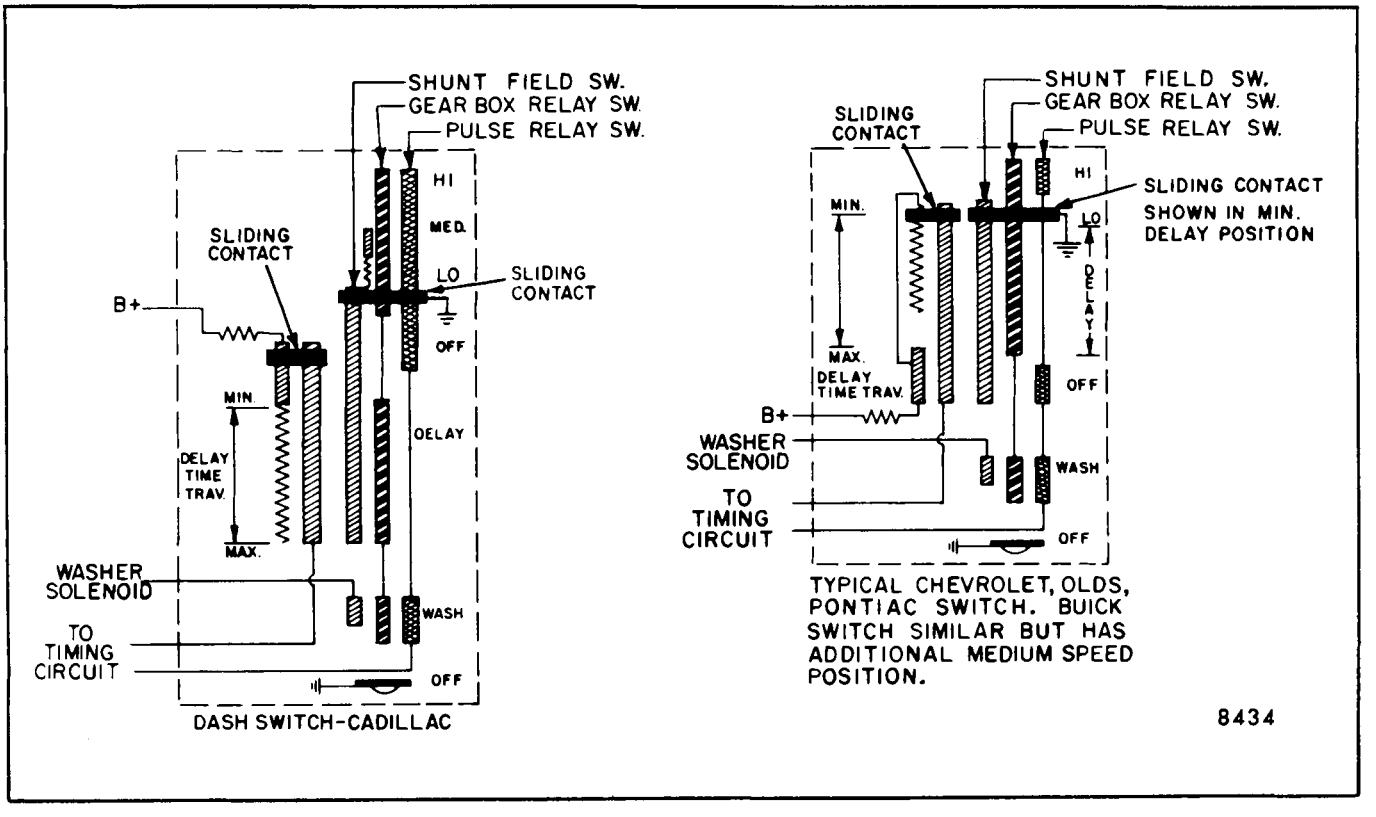

Fig. 2-55-Dash Switch Diagrams

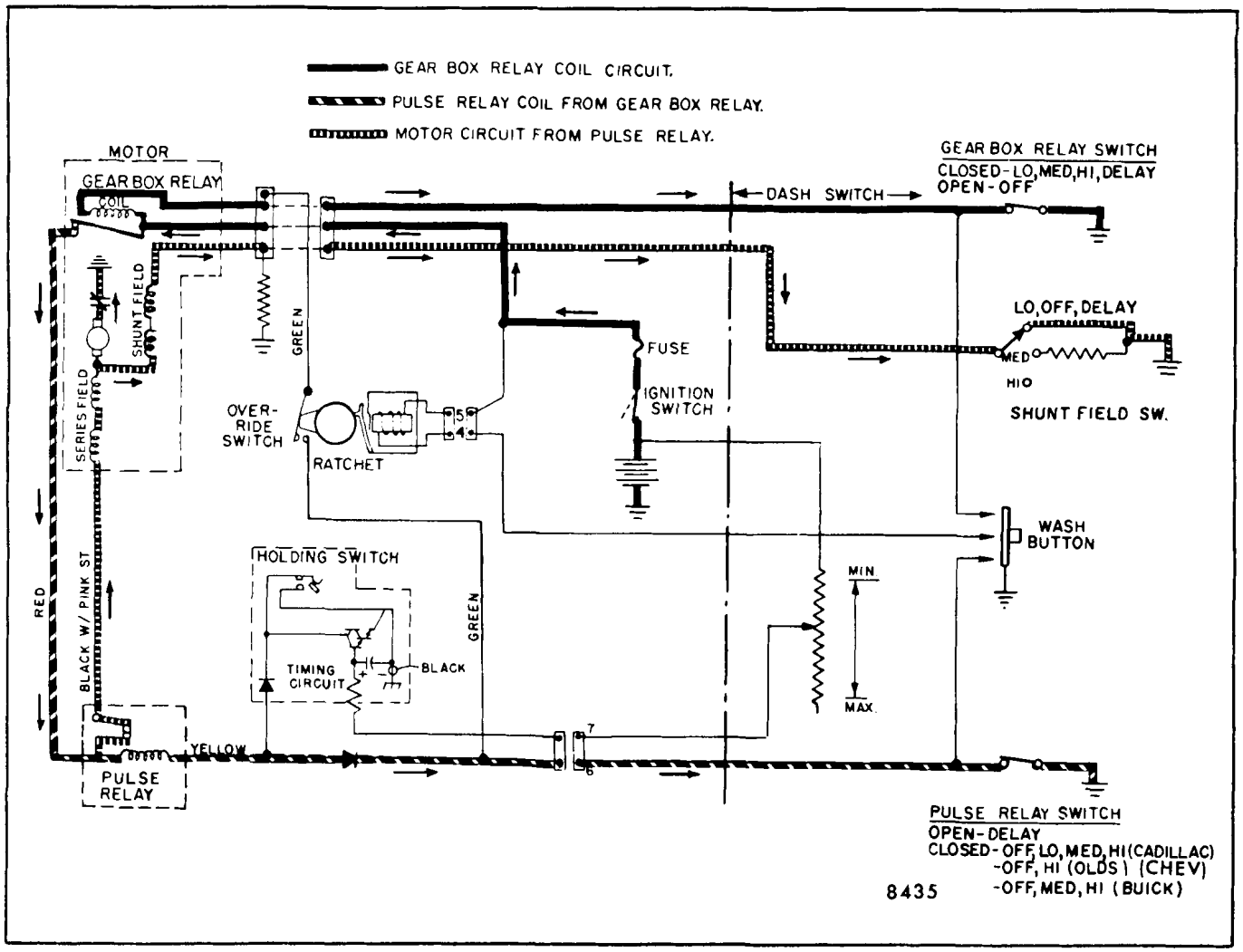

Fig. 2-56-Dash Switch in LO Speed - Cadillac

Pulse Relay

The purpose of the pulse relay is to provide B plus supply to the motor windings. This is accomplished by the pulse relay switch contacts when the coil circuit is completed to ground by either the dash switch or the timing circuit, depending upon the position of the dash switch. Actually, the dash switch and the timing circuits are parallel paths to ground for the pulse relay coil. Different switches are used by the various car divisions and the variations for each are explained as they occur.

Cadillac - Referring to Figure 2-56, note that the pulse relay coil circuit is completed to ground at the dash switch in the OFF, LO, MEDIUM and HI positions. Thus, whenever the dash switch is moved to LO, MEDIUM or HI, the gearbox and pulse relay circuits are completed almost simultaneously which in turn completes the motor circuit. The wiper motor then operates continuously in the speed selected by the dash switch position.

When the dash switch is moved to the DELAY mode, the pulse relay coil circuit is opened at the dash switch and the coil circuit will then be completed by the timing circuit as explained under Pulse Relay Coil Circuit via the Timing Device.

Buick, Chevrolet, Oldsmobile and Pontiac - The pulse relay coil circuit is connected to ground at the dash switch in OFF, MEDIUM (Buick) and HI positions (Fig. 2-56). In LO dash switch position, the switch is actually in the MIN delay position and the coil circuit is completed to ground via the timing device.

NOTE: MIN delay provides continuous LO speed operation. When the dash switch is moved from the MIN delay position toward the MAX delay, pulse wiper motor operation is attained.

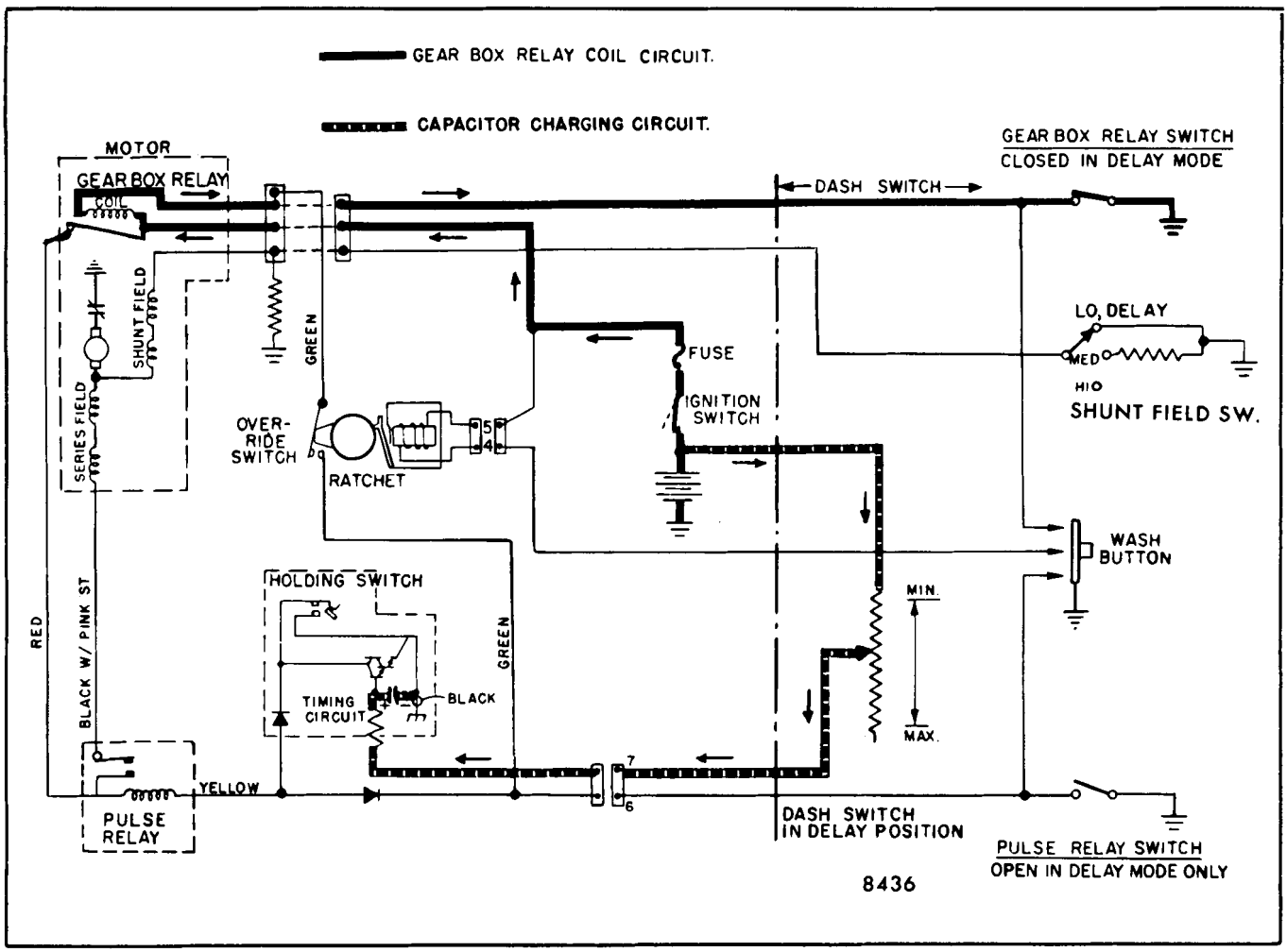

Fig. 2-57-Timing Capacitor Charging Circuit

Pulse Relay Coil Circuit via the Timing Device

NOTE: B plus is completed to the pulse relay coil when the gearbox relay is energized.

Regardless of application, the timing circuit for the pulse relay functions the same.

The timing circuit consists of two diodes, capacitor, variable resistor, transistor and holding switch. The diodes, capacitor, transistor and holding switch are located on the washer pump. The variable resistor is part of the dash switch.

The timing circuit functions as follows: Voltage applied to the capacitor via the variable resistor in the dash switch causes it to charge up (Fig. 2-57). When the capacitor reaches a predetermined charge it causes the transistor to turn on like a switch, completing the circuit to ground for the pulse relay coil (Fig. 2-58). This completes the pulse relay coil circuit and the pulse relay switch contacts close completing the B plus feed circuit to the motor.

The holding switch contacts are held open by a fin on the washer pump drive cam (Fig. 2-59). When the wiper starts to run, the fin is moved away from the holding switch permitting the contacts to close.

Closing the contacts accomplishes a dual function:

1. The capacitor is partially discharged in preparation for the next delay period. This also turns off the transistor.

2. A holding circuit to ground for the pulse relay coil is provided until the wiping stroke is completed.

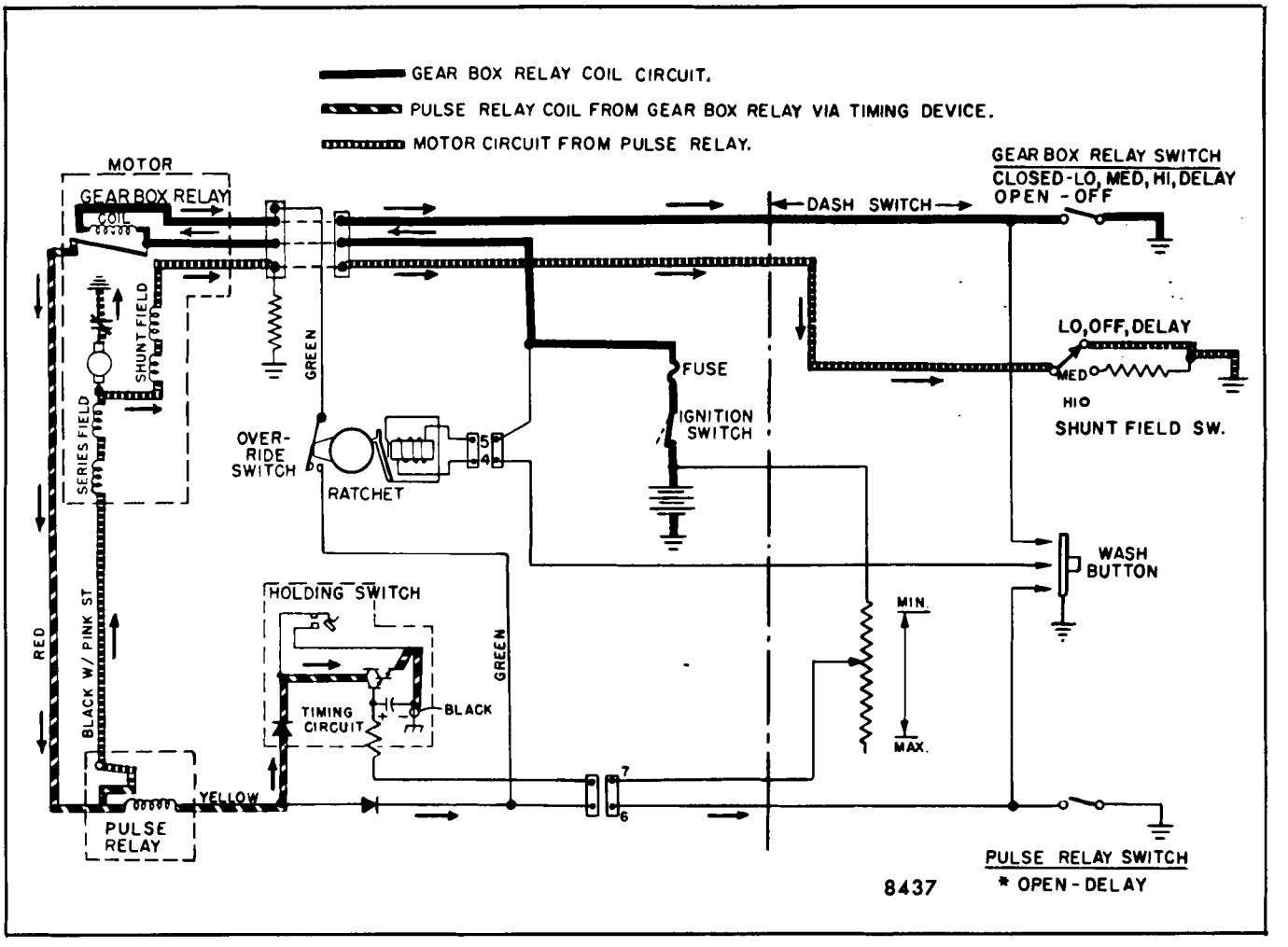

Fig. 2-58-Pulse Relay Coil Circuit via Timing Device

The wiping stroke is completed and the wiper shuts off when the fin on the washer pump drive cam reopens the holding switch contacts.

When the holding switch contacts open, the capacitor again starts charging to repeat the cycle.

NOTE: When the wiper is operating in the delay mode, the blades stop at the end of the normal wipe pattern (i.e., blades do not move down in their normal park position).

The amount of delay between wiping strokes is controlled by the variable resistor in the dash switch. Increasing the resistance increases the amount of time between wipe strokes.

LO-MEDIUM-HI Speed Motor Operation

Wiper motor speed variations are accomplished by changing the strength of the shunt field as follows:

1. LO SPEED - The shunt field is connected directly to ground at the dash switch in the LO, DELAY and OFF positions.
2. MEDIUM SPEED - (Cadillac, Buick) The shunt field circuit is completed to ground via two resistors which are actually connected in parallel. One resistor is located near the terminal board on the wiper motor gearbox relay, the other resistor is located on the dash switch.
3. HI SPEED - The shunt field circuit is opened to ground at the dash switch. However, it is completed to ground through the resistor located on the motor terminal board relay assembly.

Shutting the Wiper OFF

Moving the dash switch to the OFF position accomplishes three functions:

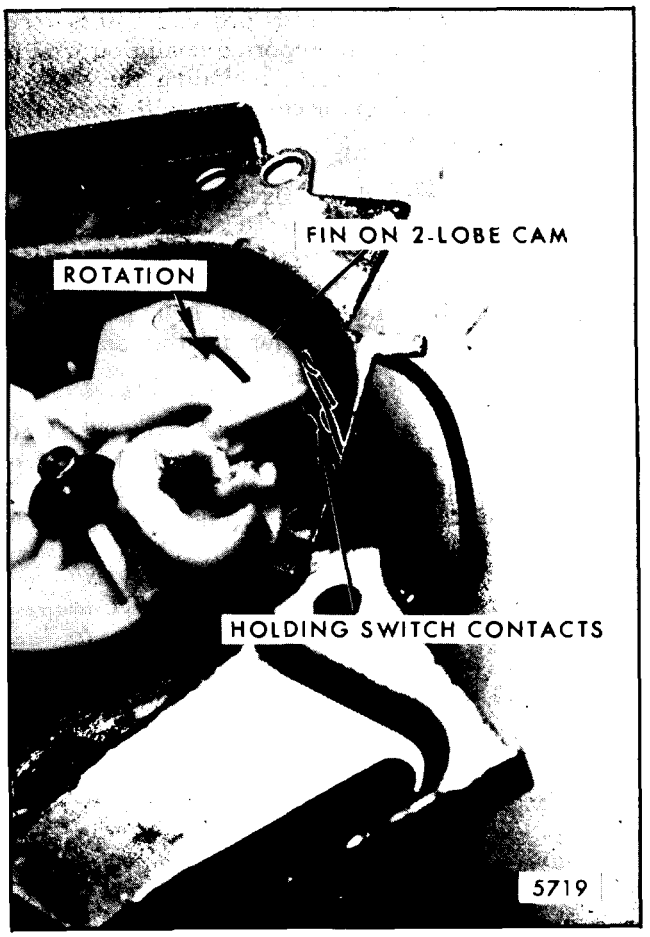

Fig. 2-59-Holding Switch Contacts

1. The gearbox relay coil circuit is opened allowing the spring-loaded relay latch arm to move out into the path of the gear mechanism (Fig. 2-60). However, the gearbox relay switch contacts are still closed and therefore the B plus circuit to the pulse relay is still maintained.

2. The pulse relay coil circuit is connected directly to ground at the dash switch. This will maintain the motor B plus feed circuit via the relay contacts during the park cycle.

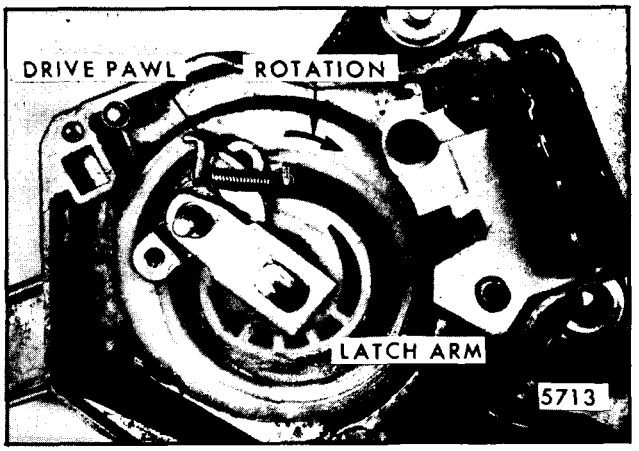

Fig. 2-60-Gear in Normal Run Position

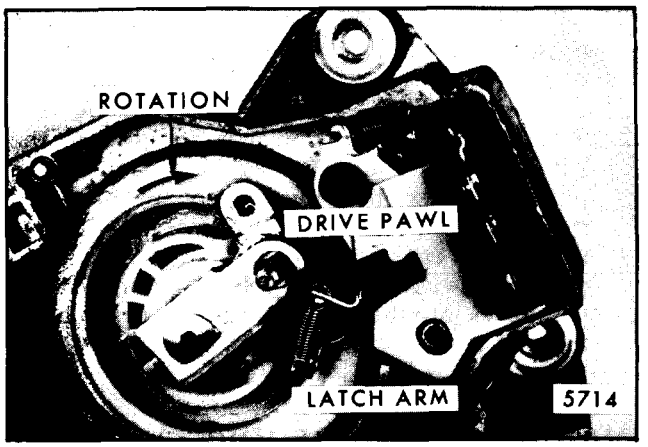

Fig. 2-61-Wiper Shutting Off

3. The shunt field is connected directly to ground at the dash switch to maintain LO speed operation during park cycle.

The continuing rotation of the motor gear causes the gear drive pawl to engage the relay latch arm (Fig. 2-61). This action unlocks the output shaft and wiper crank arm from the gear. The output shaft extends through the gear tube off center and as the gear continues to rotate a cam action results.

When the cam action described above is completed it accomplishes two functions:

1. It causes the gear assembly drive pawl to push the relay latch arm into the relay housing (Fig. 2-62), which in turn opens the relay switch contacts. This opens the B plus circuit to the

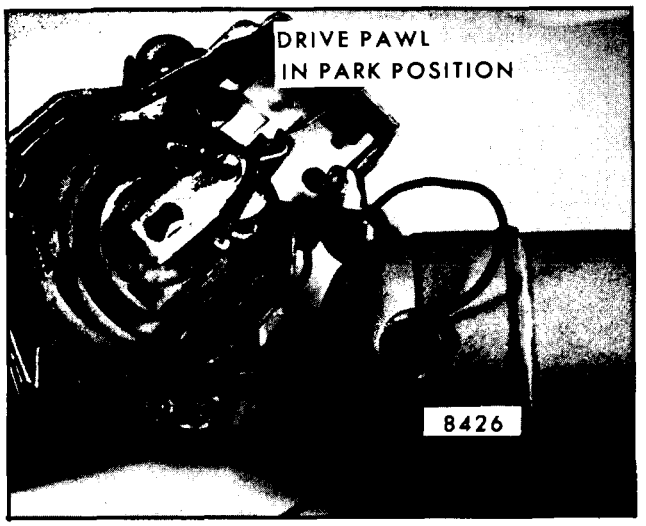

Fig. 2-62-Drive Pawl in Park

pulse relay coil. The pulse relay contacts then open which shuts off the B plus feed to the motor.

2. Since the wiper crank arm is attached to the wiper output shaft, the resulting cam action, previously described, causes a somewhat lateral movement of the crank arm. This lateral movement causes the wiper transmission to produce the additional angular rotation to move the blades into the full park position below hood level.

DIAGNOSTIC PROCEDURES

The diagnosis procedures covered in this manual are based on certain key tests and operational checks that will help locate the problem.

NOTE: Illustrations referred to within the diagnostic procedures are shown following the complete procedures.

Prior to starting the diagnosis procedure, it is very important to confirm the reported condition with a complete operational check, including the washer system. Then match up the condition with one in the Diagnosis Chart.

NOTE: When the diagnosis procedure requires removal of the washer pump, BE SURE to refer to Washer Pump Cover Removal. If wiper unit (wiper-washer assembly) is to be diagnosed on a detached basis, refer to Bench Operational Test. Determine trouble that exists then refer to the diagnostic procedures.

It is possible that a wiper may have more than one problem. When this exists, and one problem has been located and repaired, refer back to the chart and follow the procedures for the second condition.

CAUTION: *When a substitute dash switch is tried in the system, BE SURE to connect it to ground to prevent damage to timing circuit components.*

DIAGNOSIS CHART

MODIFIED PULSE WIPER SYSTEM

CONDITION	REFERENCE
1. Wiper system inoperative.	Fig. 2-64 and 2-65
2. Wiper inoperative in "Delay Mode". IMPORTANT: LO speed on Buick, Chevrolet, Olds and Pontiac application is actually "Minimum Delay".	Fig. 2-66
3. Wiper will not delay between wipes - runs steady with dash switch lever in any delay position - MIN to MAX.	Fig. 2-67
4. Wiper won't shut off and blades operate thru normal wipe pattern. (Washer pump not pumping).	Fig. 2-68
5. Wiper won't shut off and washer pump pumps continuously.	Fig. 2-69
6. Wiper won't shut off - blades move in and out of PARK position (15-20° travel).	Fig. 2-70
7. Wiper has "HI" speed only.	Fig. 2-71
8. Wiper has "LO" speed only. Operates correctly in delay mode and shuts off ok.	Fig. 2-72
9. Intermittent wiper operation. (Blades stop at random positions on windshield).	Fig. 2-73

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Fig. 2-63-Modified Pulse Wiper System Diagnosis Chart Index

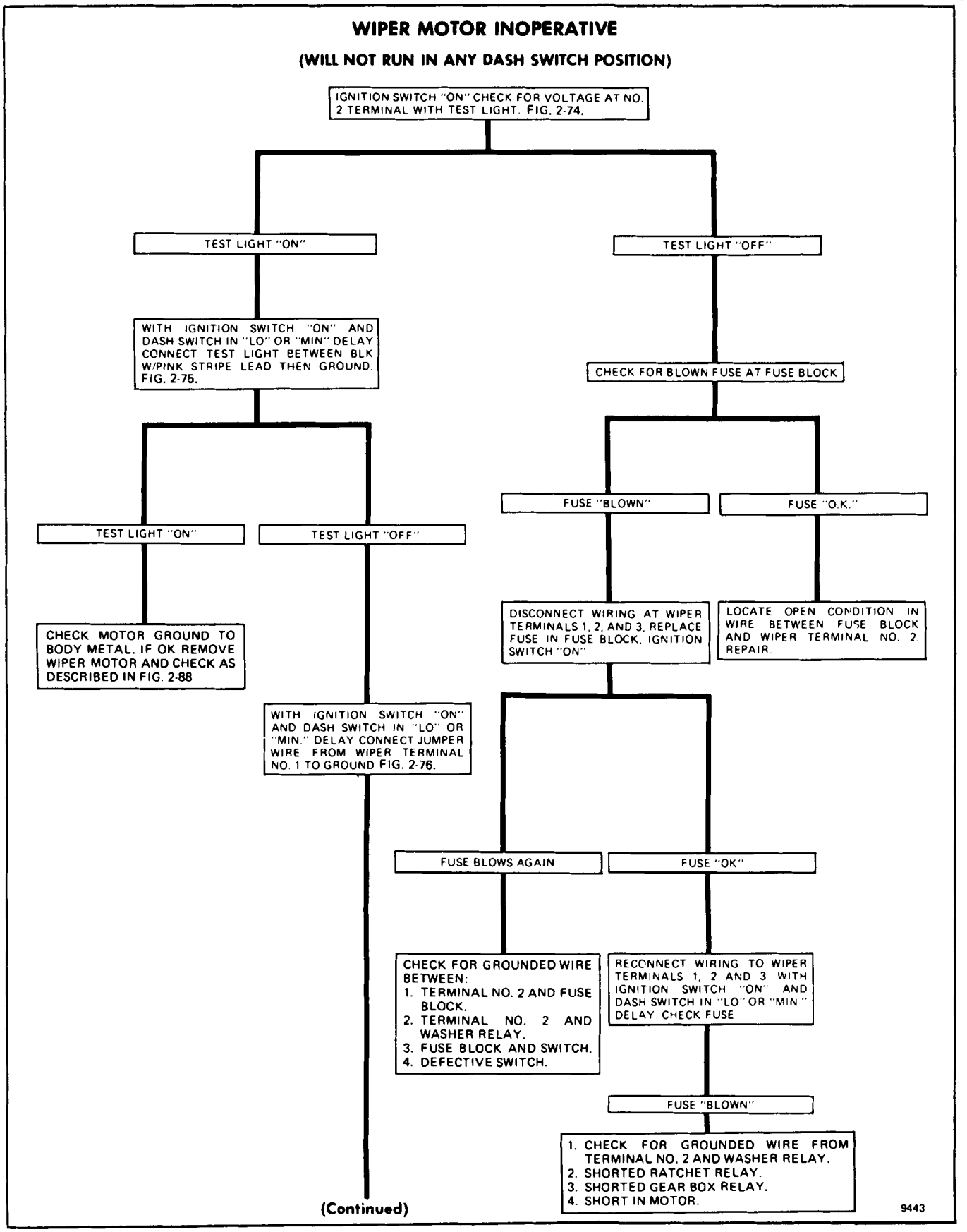

Fig. 2-64-Modified Pulse Wiper Diagnosis Chart - Condition 1

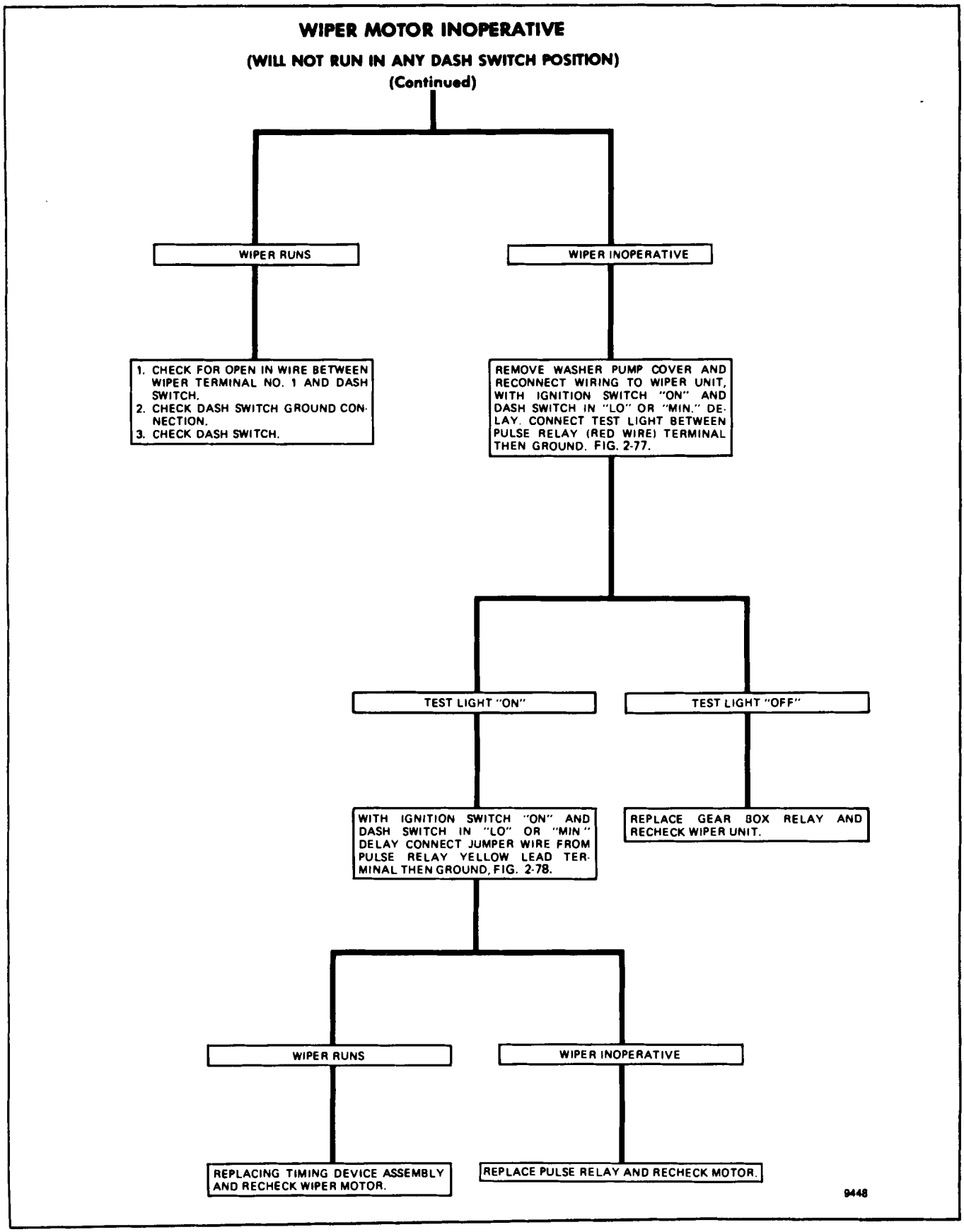

Fig. 2-65-Modified Pulse Wiper Diagnosis Chart - Condition 1

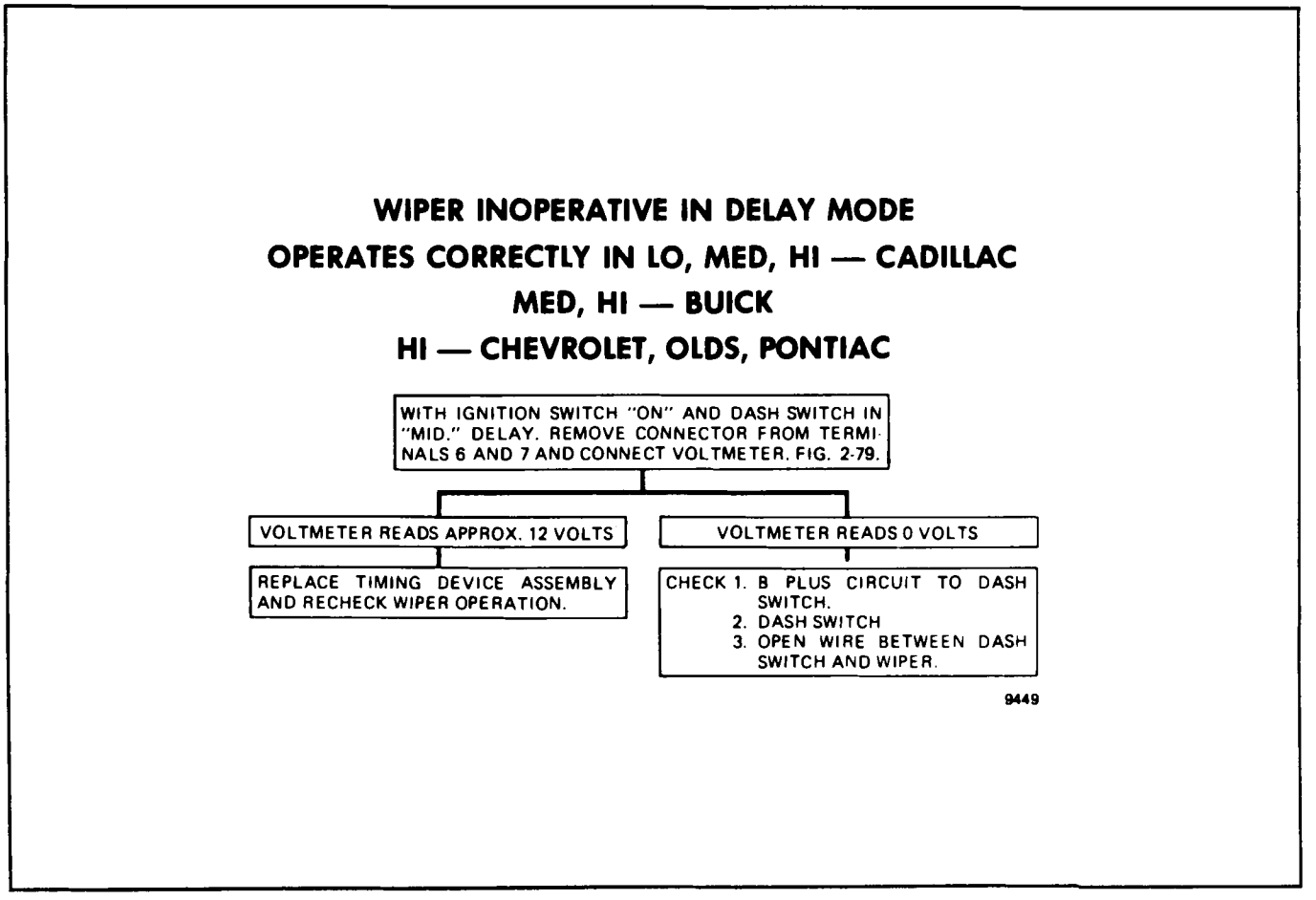

Fig. 2-66-Modified Pulse Wiper Diagnosis Chart - Condition 2

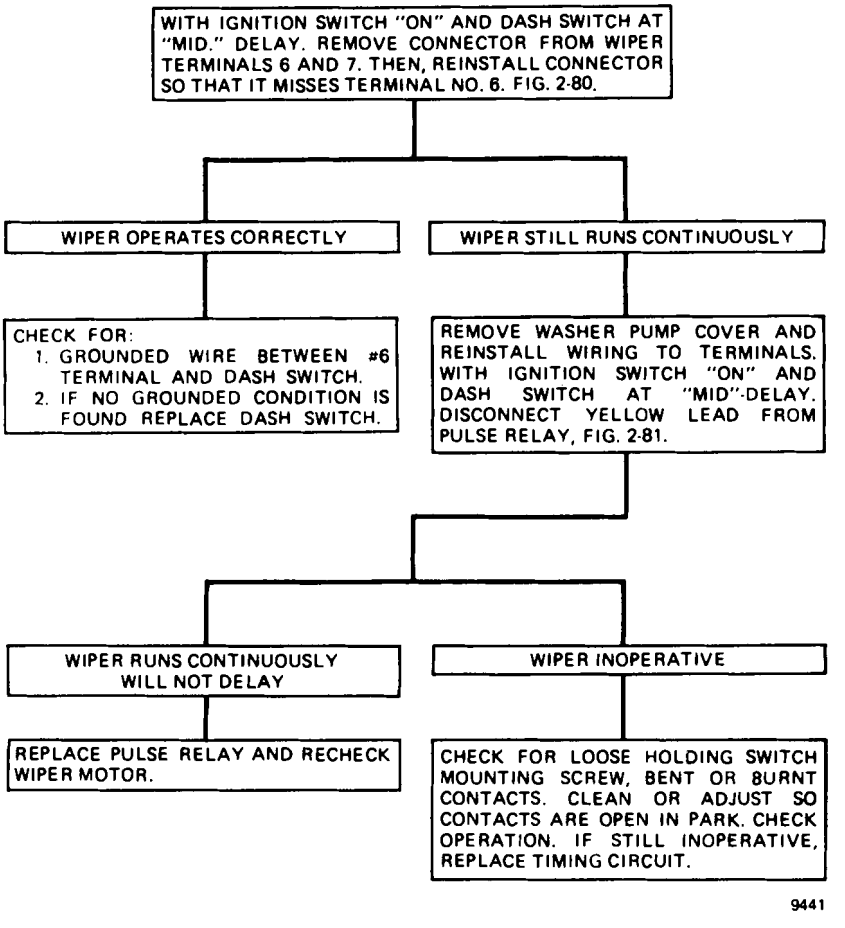

Fig. 2-67-Modified Pulse Wiper Diagnosis Chart - Condition 3

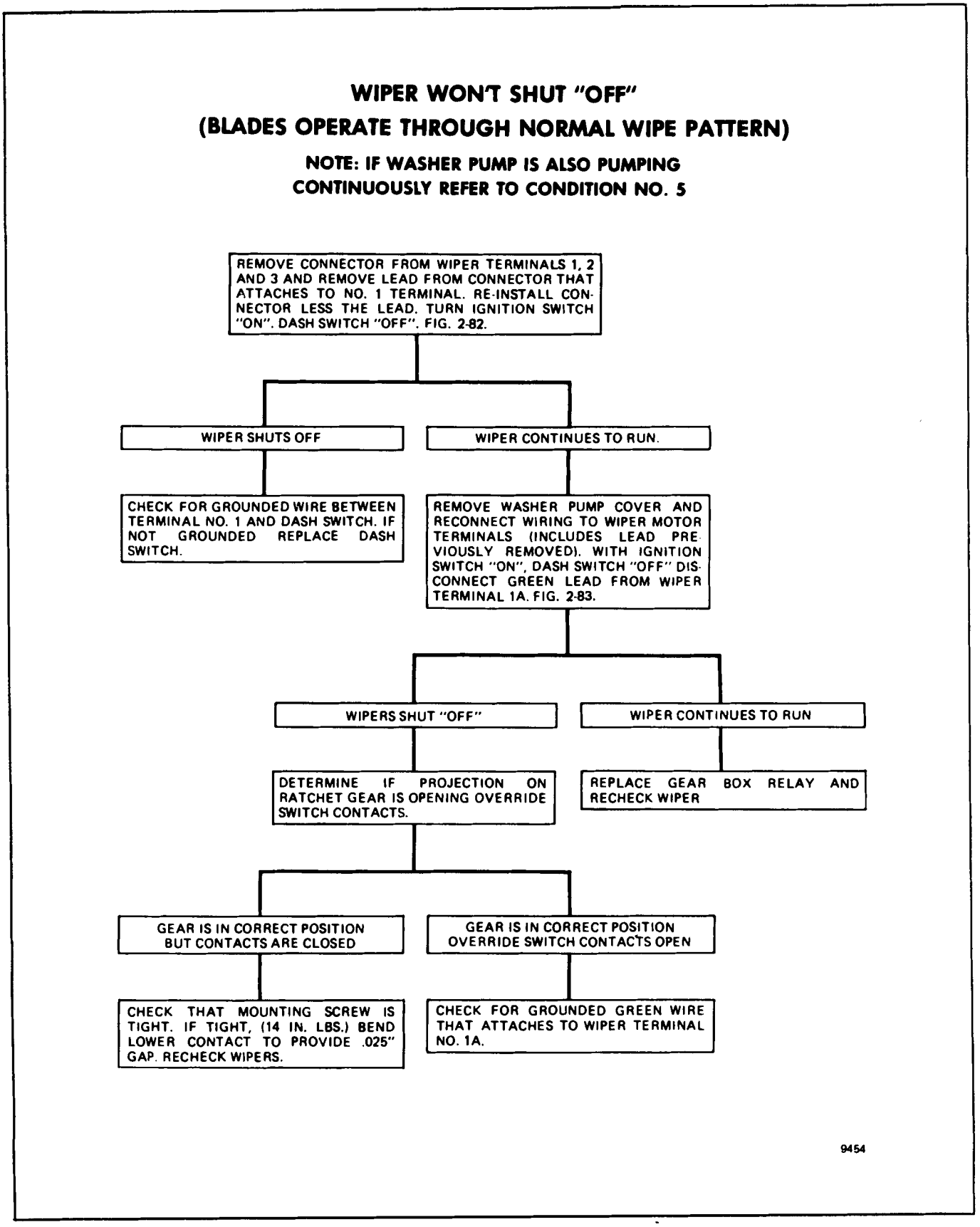

Fig. 2-68-Modified Pulse Wiper Diagnosis Chart - Condition 4

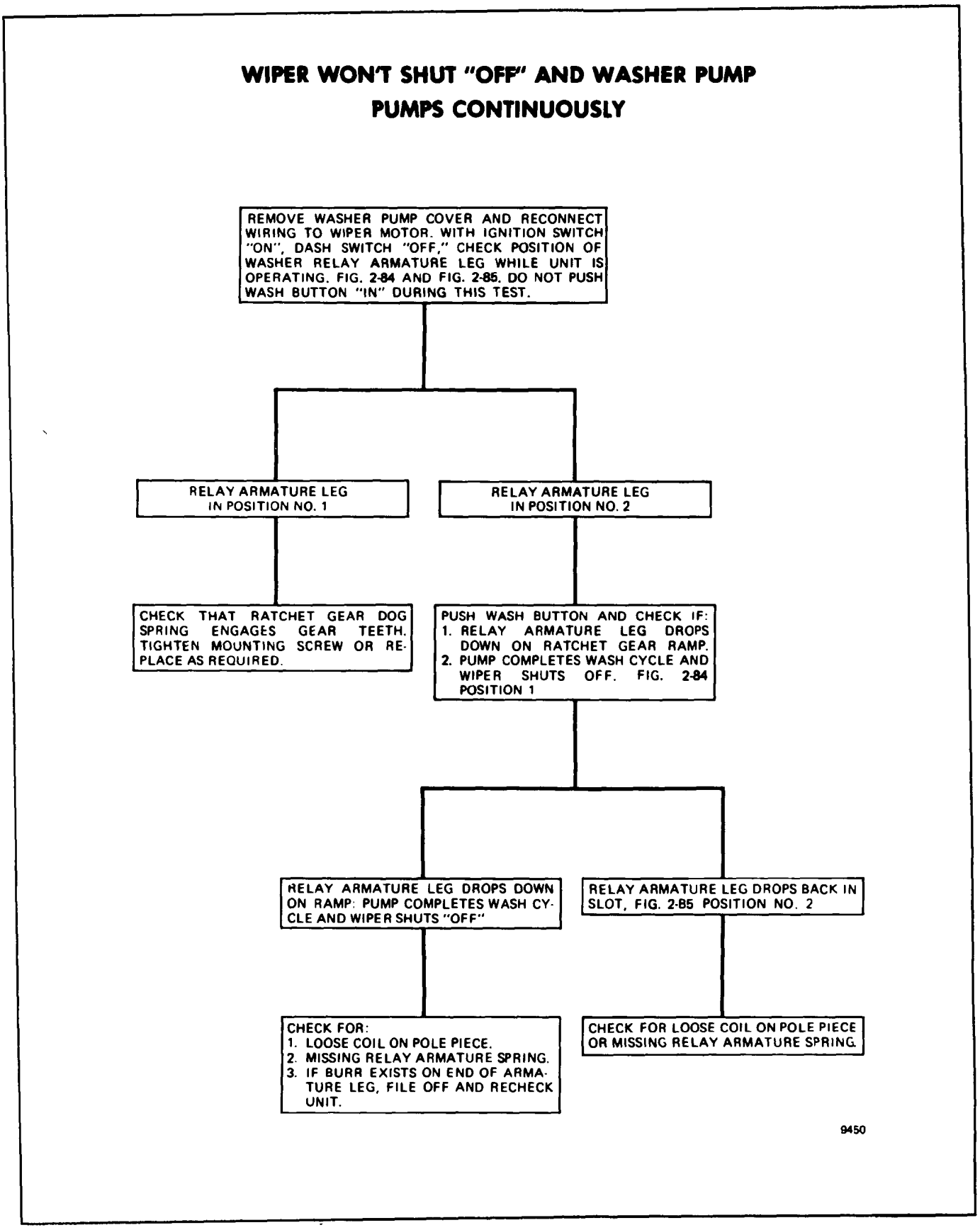

Fig. 2-69-Modified Pulse Wiper Diagnosis Chart - Condition 5

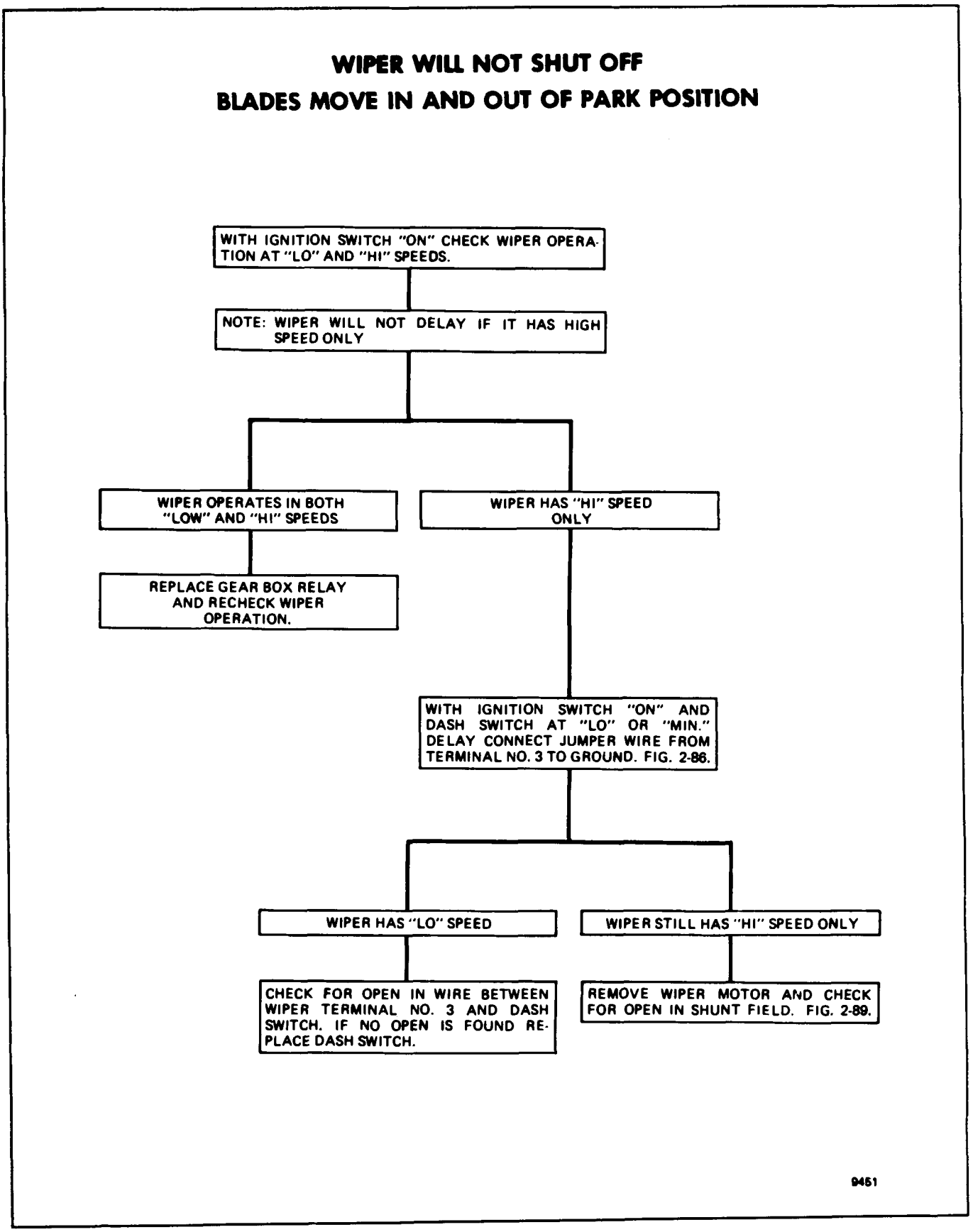

Fig. 2-70-Modified Pulse Wiper Diagnosis Chart - Condition 6

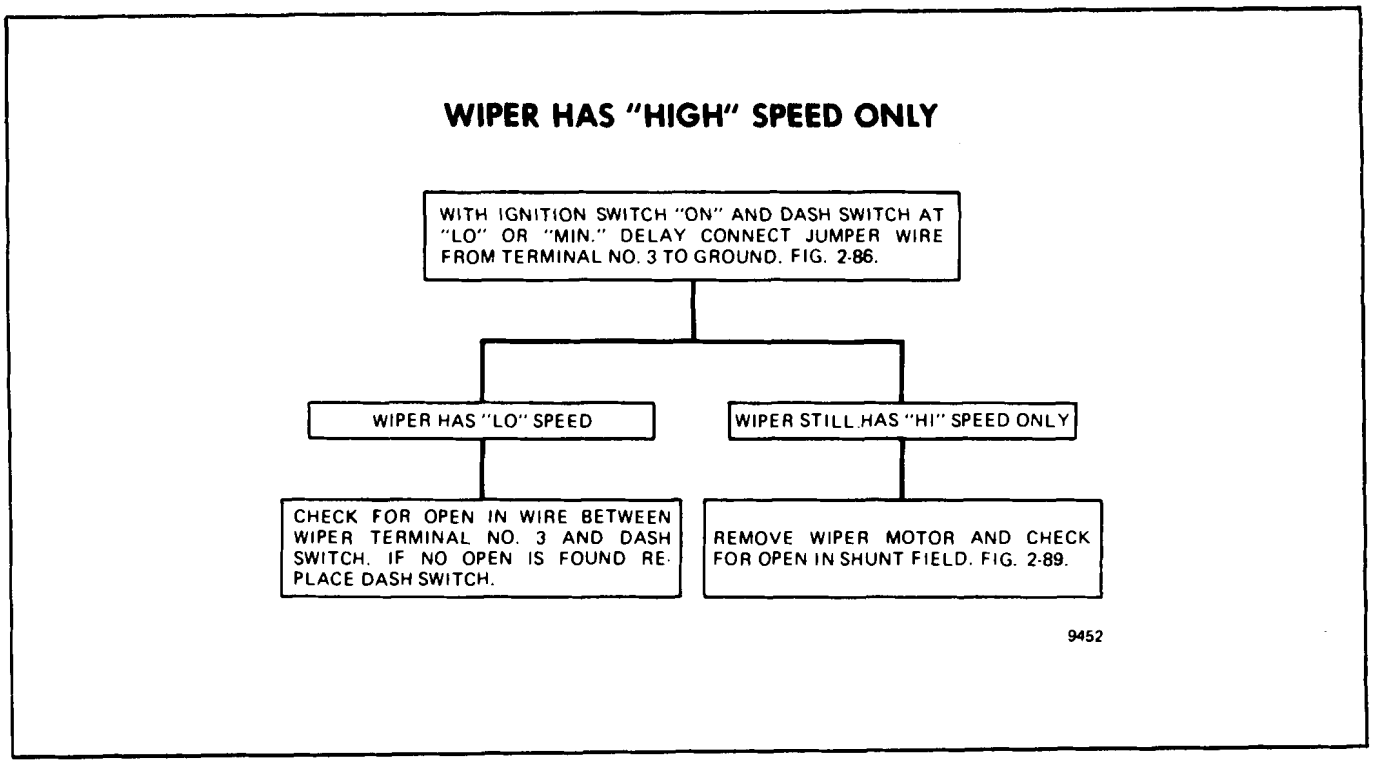

Fig. 2-71-Modified Pulse Wiper Diagnosis Chart - Condition 7

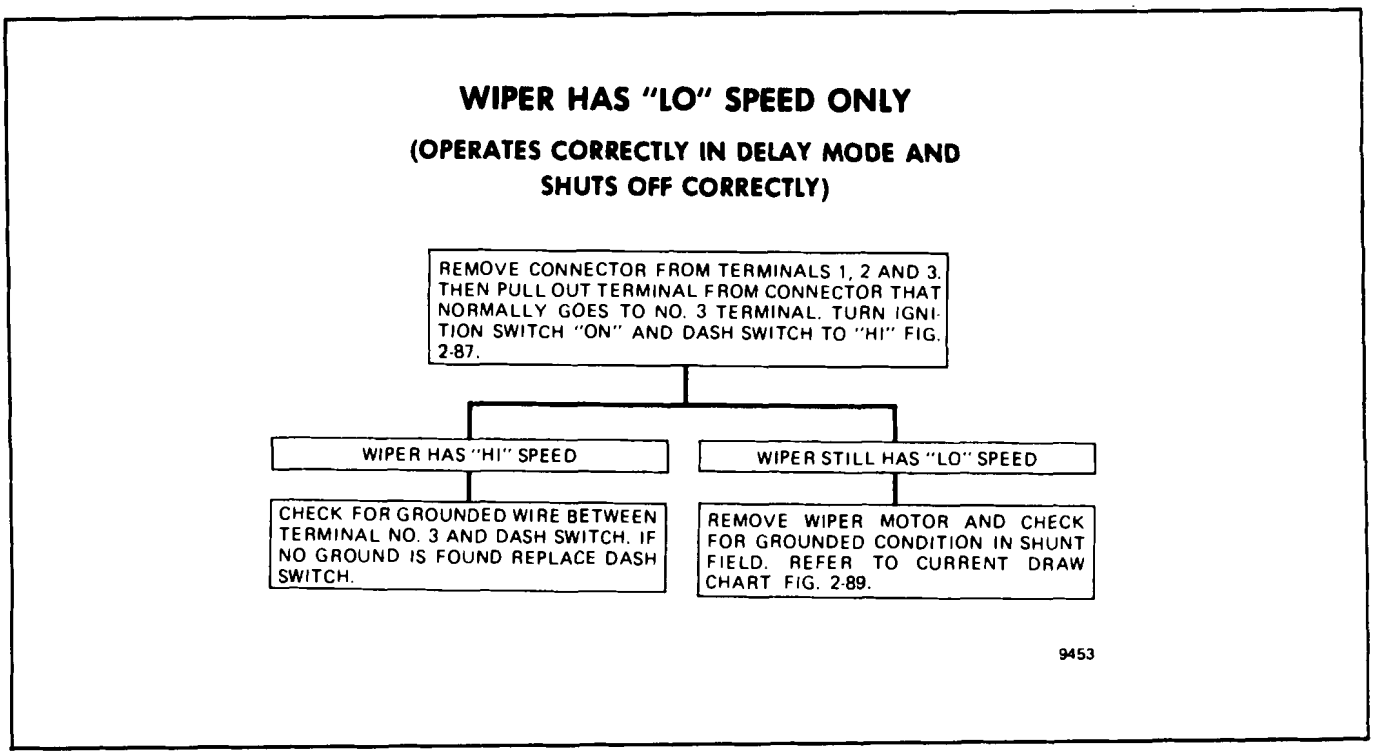

Fig. 2-72-Modified Pulse Wiper Diagnosis Chart - Condition 8

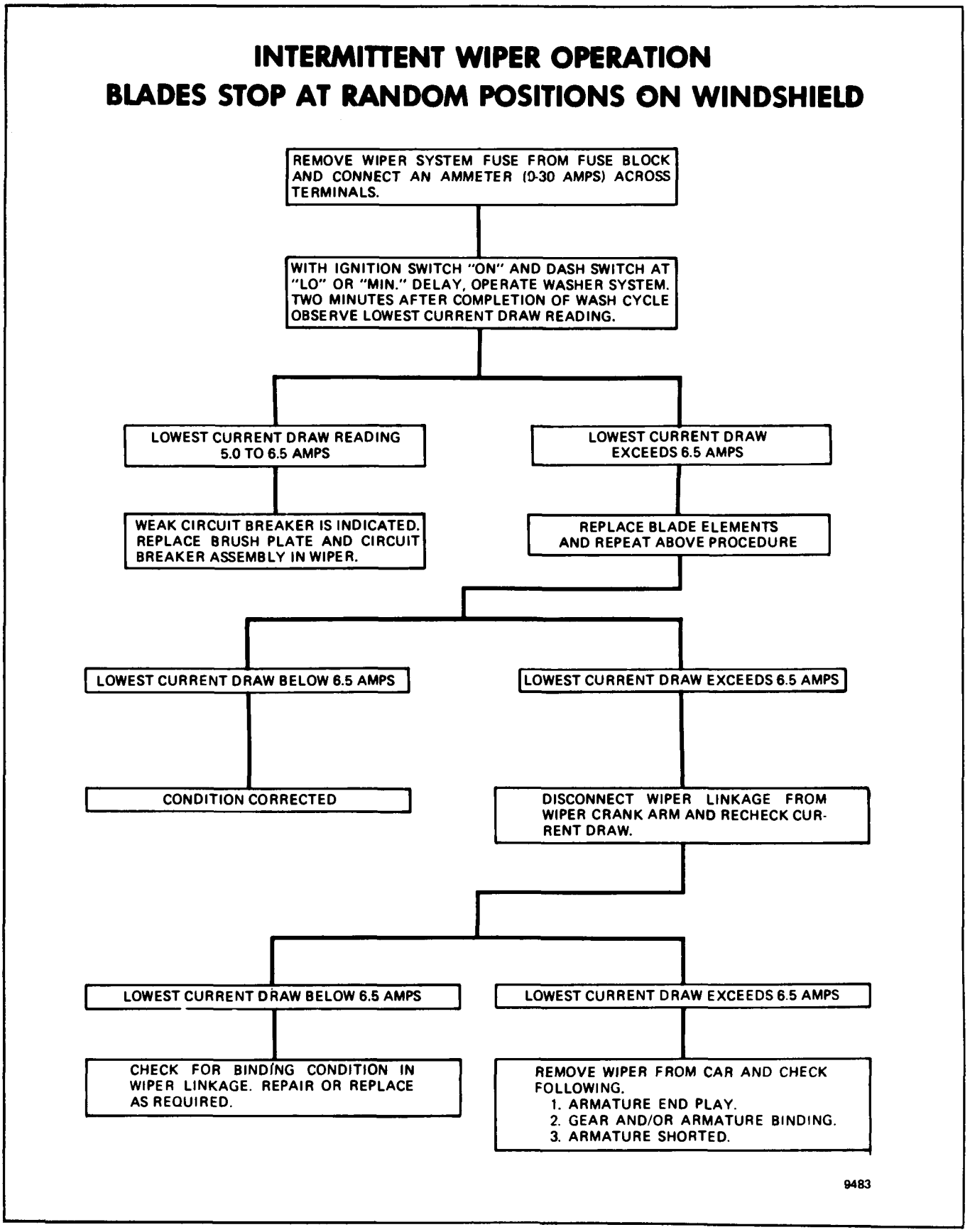

Fig. 2-73-Modified Pulse Wiper Diagnosis Chart - Condition 9

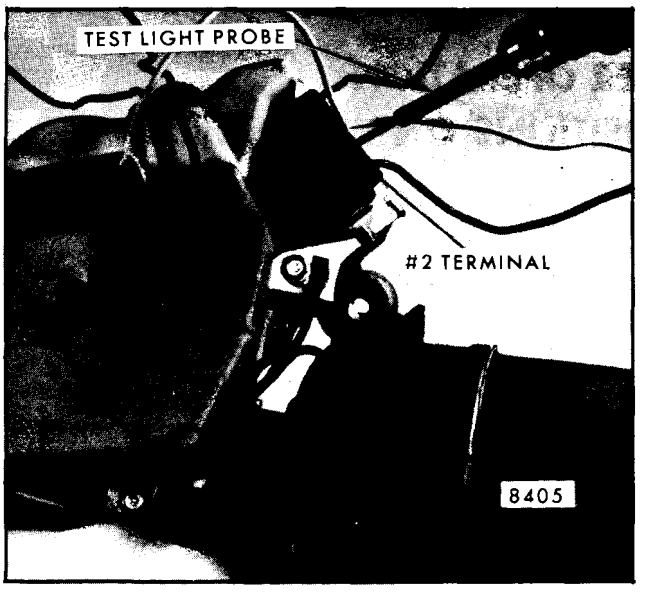

Fig. 2-74 - Condition 1

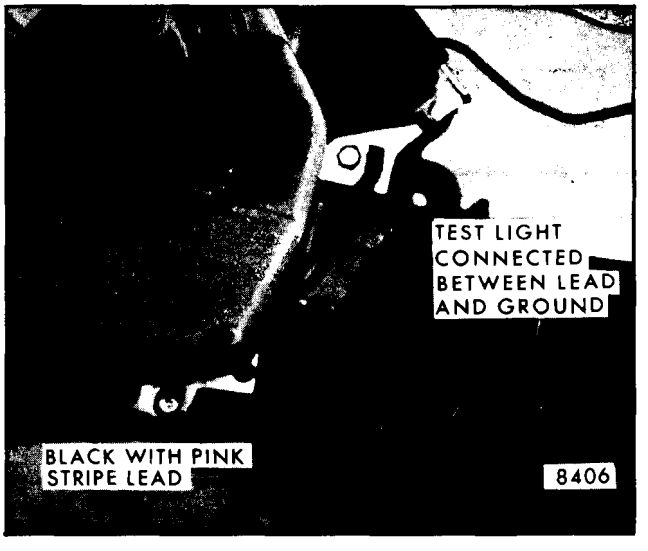

Fig. 2-75-Condition 1

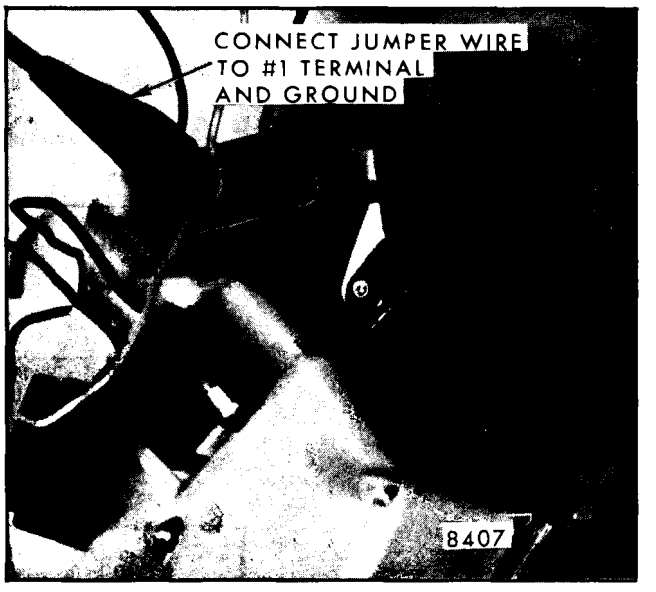

Fig. 2-76-Condition 1

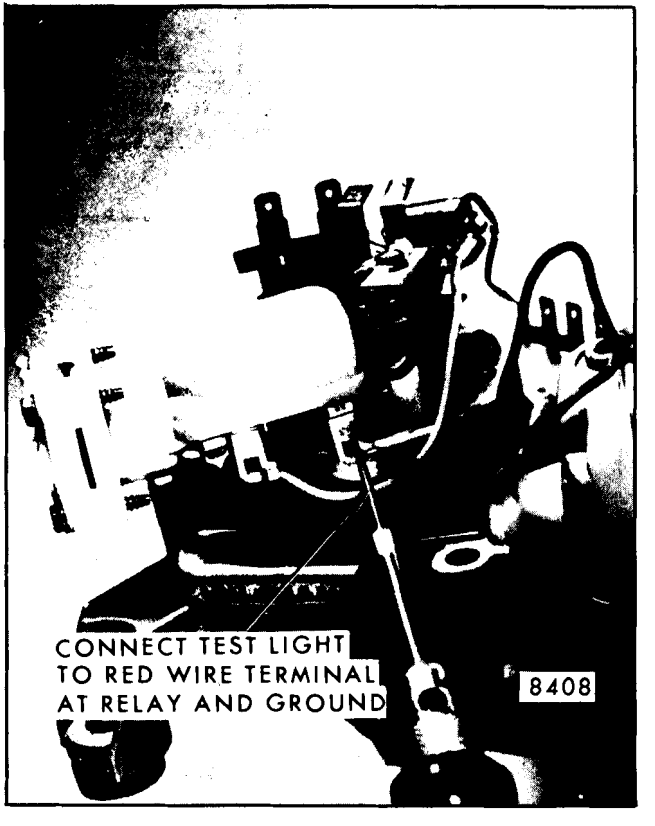

Fig. 2-77-Condition 1

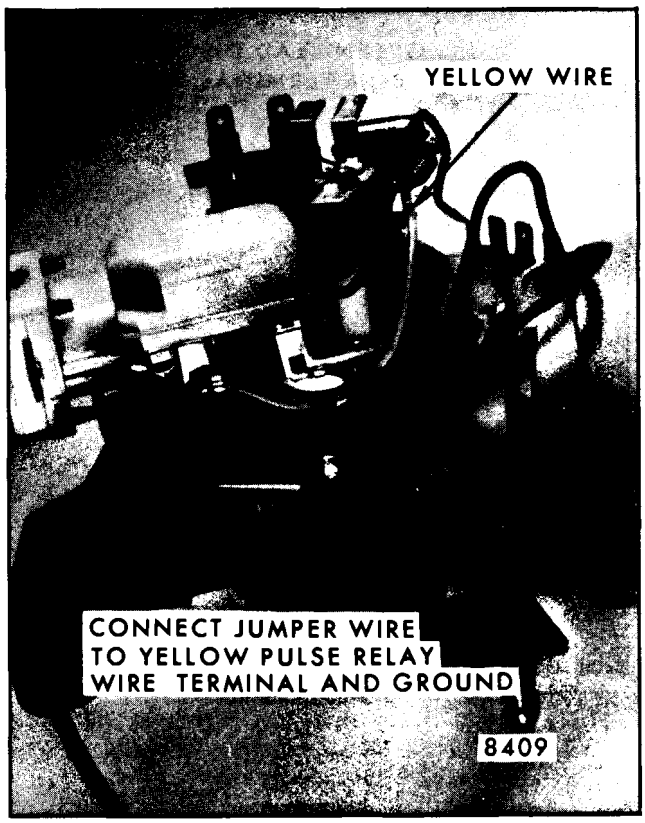

Fig. 2-78-Condition 1

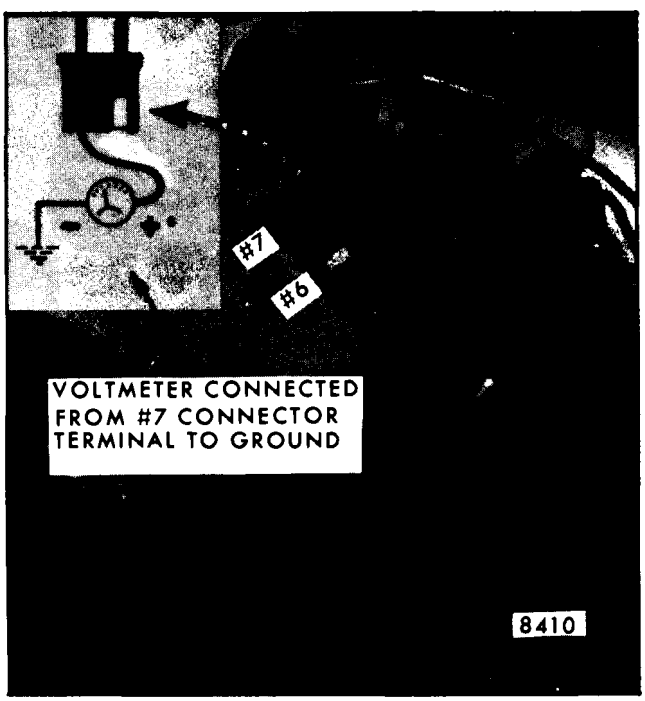

Fig. 2-79-Condition 2

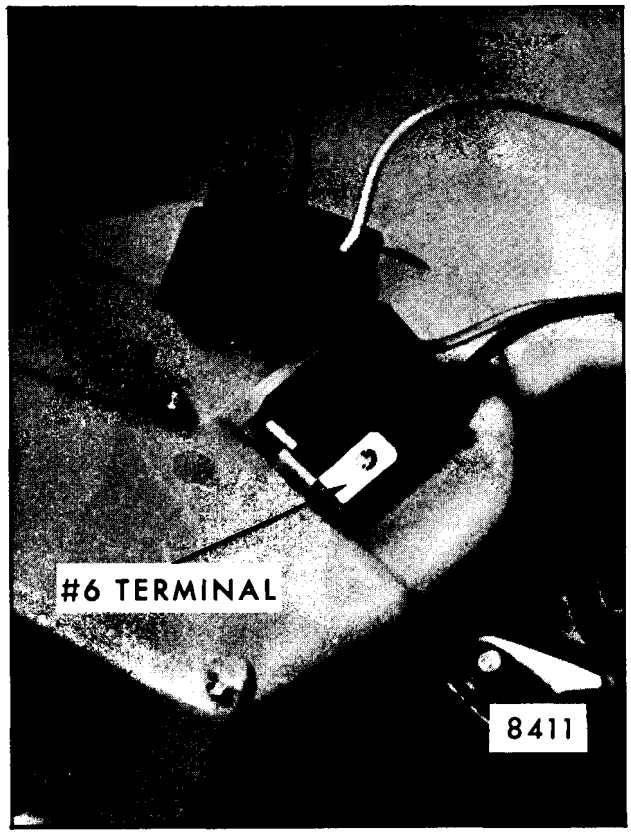

Fig. 2-80-Condition 3

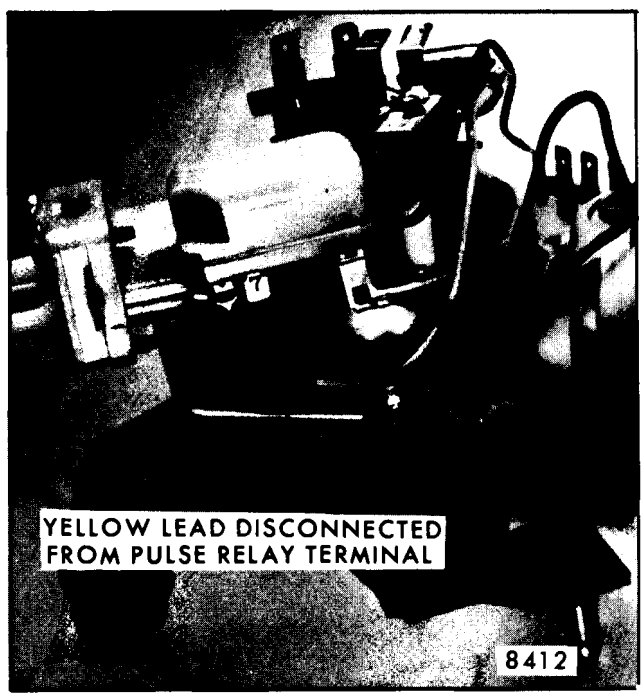

Fig. 2-81-Condition 3

Fig. 2-82-Condition 4

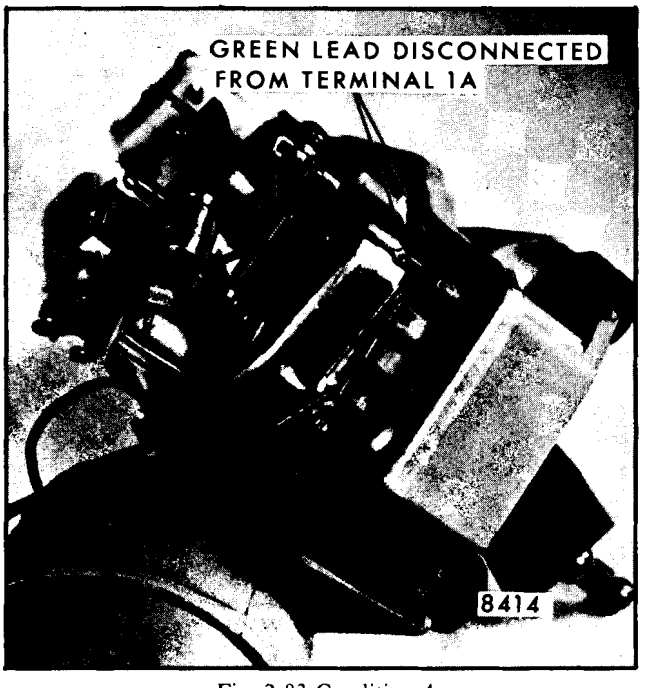

Fig. 2-83-Condition 4

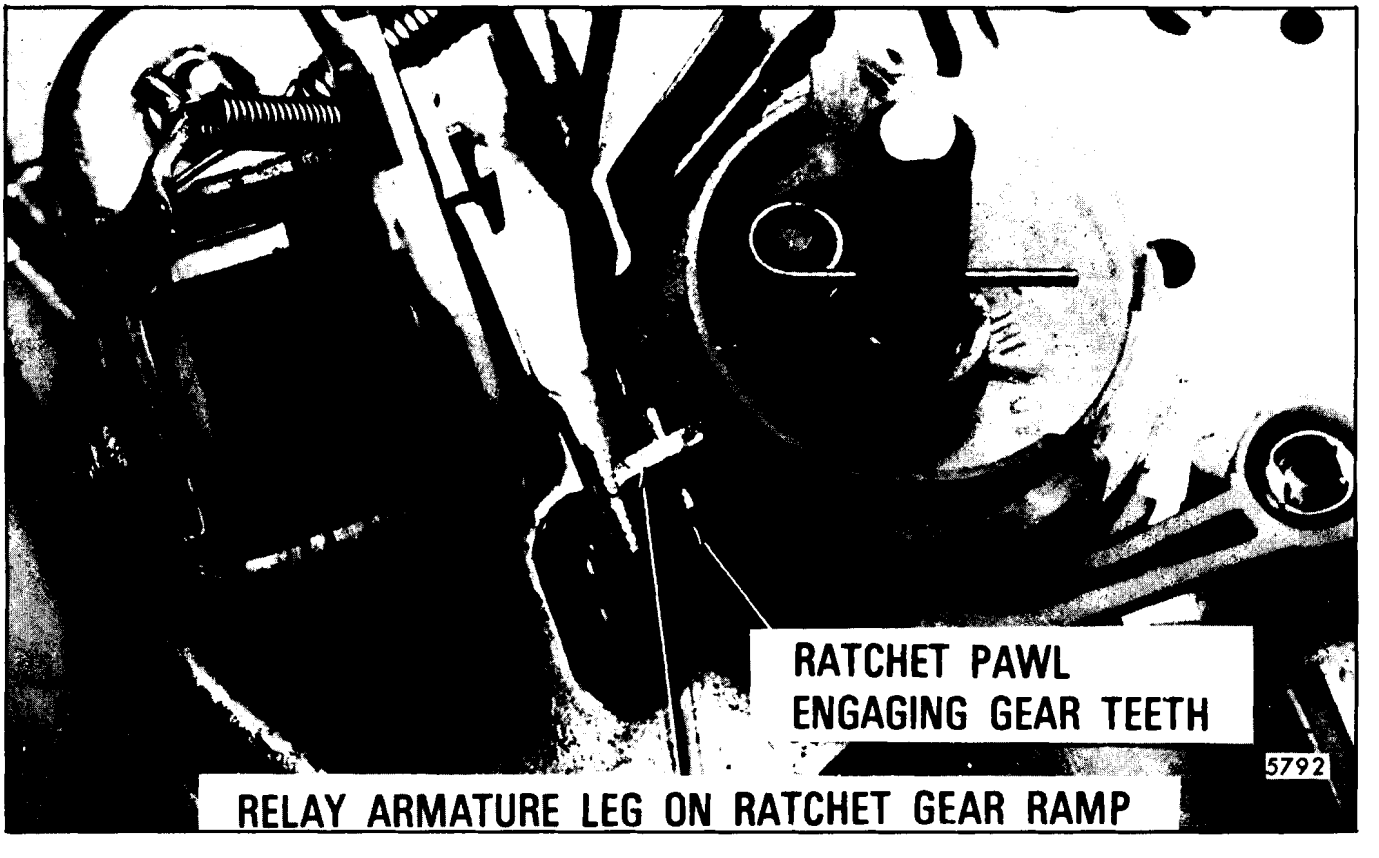

Fig. 2-84-Condition 5 - Position 1

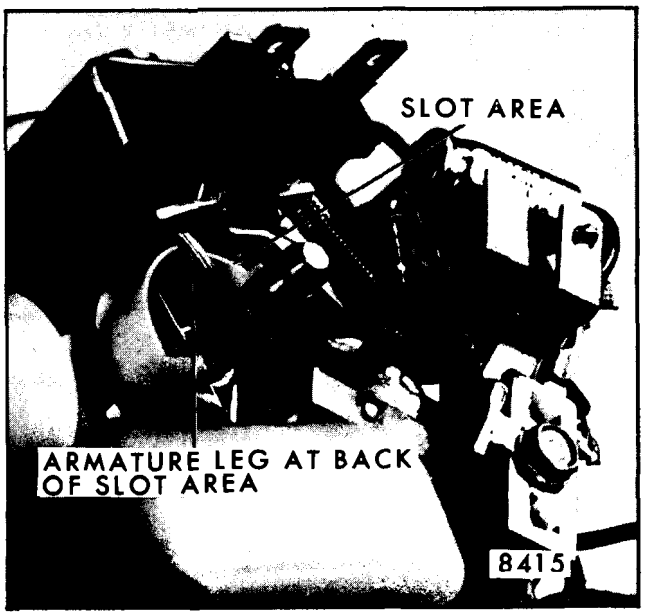

Fig. 2-85-Condition 5 - Position 2

Fig. 2-86-Condition 6

GEARBOX DISASSEMBLY AND ASSEMBLY PROCEDURES

Relay Switch - Terminal Board Assembly

1. Remove washer pump from gearbox, refer to Washer Disassembly.

2. If wiper gear drive pawl is in full park position (Fig. 2-91), operate the motor as required to move pawl out of relay slot (Fig. 2-88).

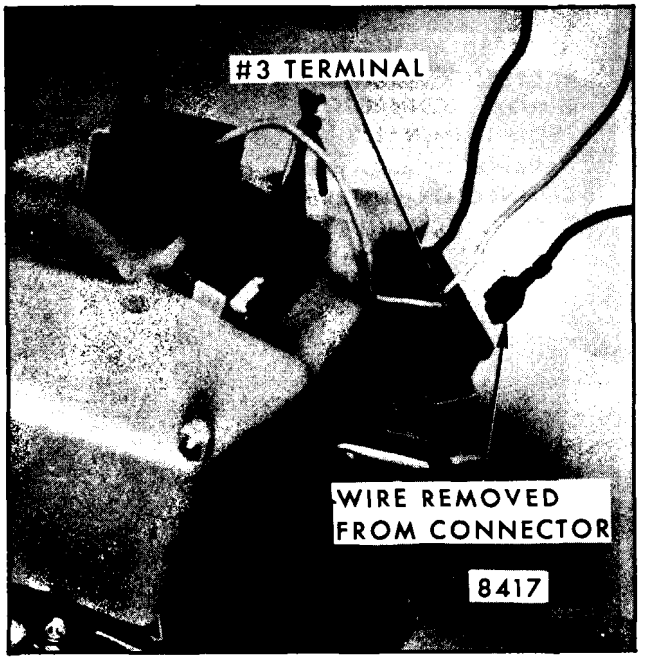

Fig. 2-87-Condition 8

NOTE: If wiper will not run, remove the gear mechanism.

3. If wiper gear drive pawl is not in full park position (Fig. 2-60), remove relay attaching screw (Fig. 2-91) and lift relay- terminal board assembly out of gearbox.

4. Unsolder the black lead from relay terminal. Refer to Figure 2- 92 when resoldering leads.

5. When reassembling relay in gearbox, BE CAREFUL to route leads in such a manner as to avoid having them pinched between relay and casting.

6. Refer to Figure 2-88 and operate wiper to park position, then reinstall washer pump. Refer to reassembly of washer to wiper gearbox (Fig. 2-91).

Drive Gear Disassembly

1. Clamp crank arm in vise and remove crank arm retaining nut, crank arm, rubber seal cap, retaining ring, shim washers, shield and spacer washer in the order indicated (Fig. 2-93).

2. Slide gear assembly out of housing (Fig. 2-94).

NOTE: If relay-terminal board assembly has not been removed, move the relay latch arm out of the way.

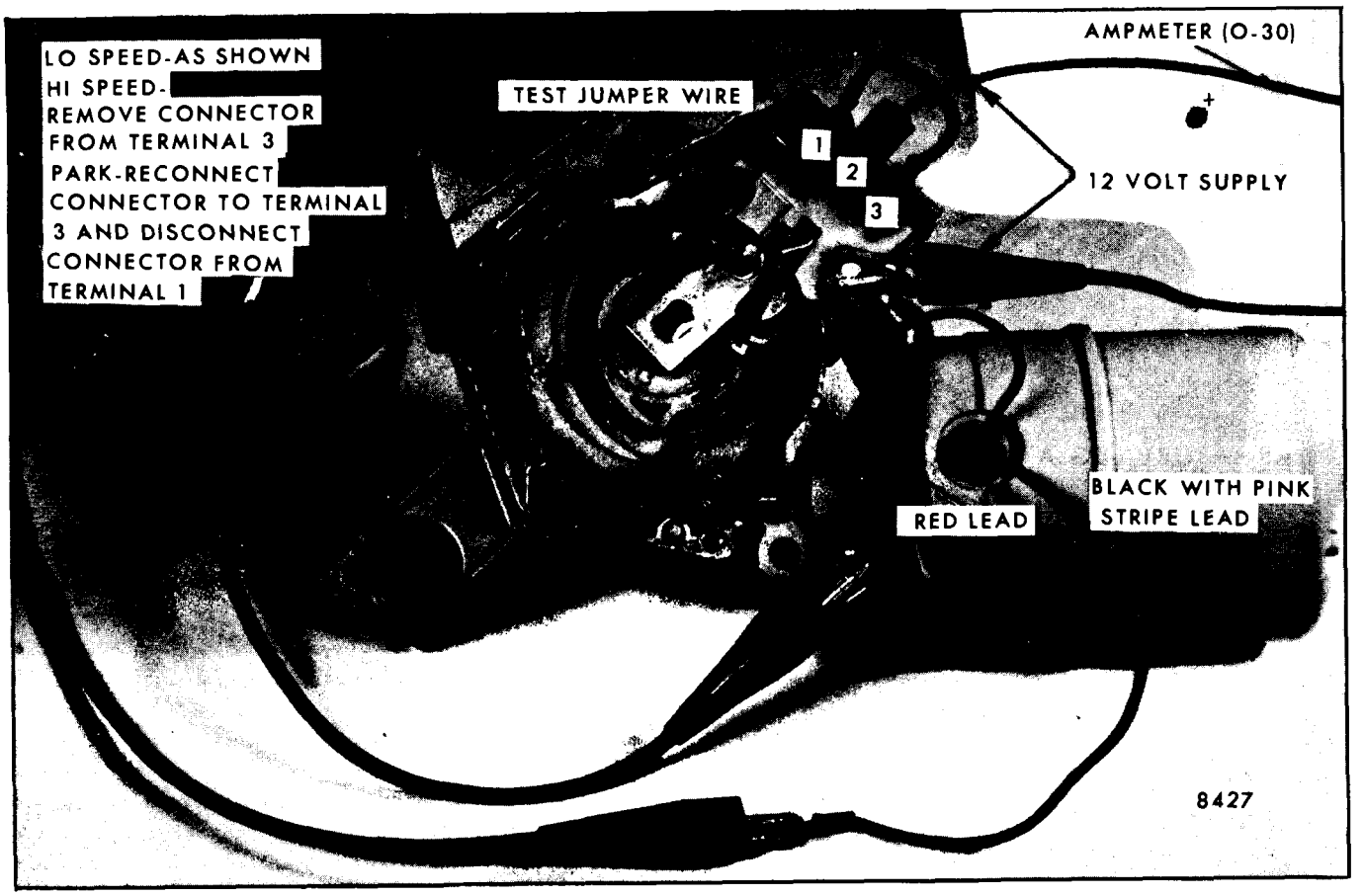

Fig. 2-88-Modified Pulse Motor Bench Operation Test

3. Slide drive plate and shaft out of gear and tube (Fig. 2- 95), and remove the drive pawl, lock pawl and coil spring as required. Save the inside spacer washer for reassembly.

NOTE: The replacement drive plate and shaft assembly is equipped with two retaining ring grooves. The instructions in the package call out which groove to use.

INTERPRETATION OF CURRENT DRAW READINGS

LO SPEED OPERATION - NORMAL CURRENT @ 12V - 5-6 AMPS

CONDITION	CURRENT DRAW (AMPS)	INTERPRETATION	REFER TO FIGURE 2-90
Wiper Inoperative	0	Open condition in gearbox relay coil.	
Wiper Inoperative	2.5 - 3.5	Open armature condition (commutator hooks - broken coil leads).	(I) (H)
	Open Armature Circuit	Hung brush.	(C)
		Open splice connections.	(A) (J)
		Circuit breaker contacts open.	(G)
Wiper Inoperative	20 - 25 (Stall Current)	Gear assembly jammed. Armature bound up.	
Wiper Inoperative	30+ Dead short condition	Check for armature thrown winding. Pinched black-pink stripe lead.	(F)
Wiper Operating	7.0+	Armature shorted. Binding condition in motor and/or gearbox.	
Wiper Operating - Won't shut off	5 - 6.0	Gearbox Relay	

9459

Fig. 2-89-Interpretation of Current Draw Readings

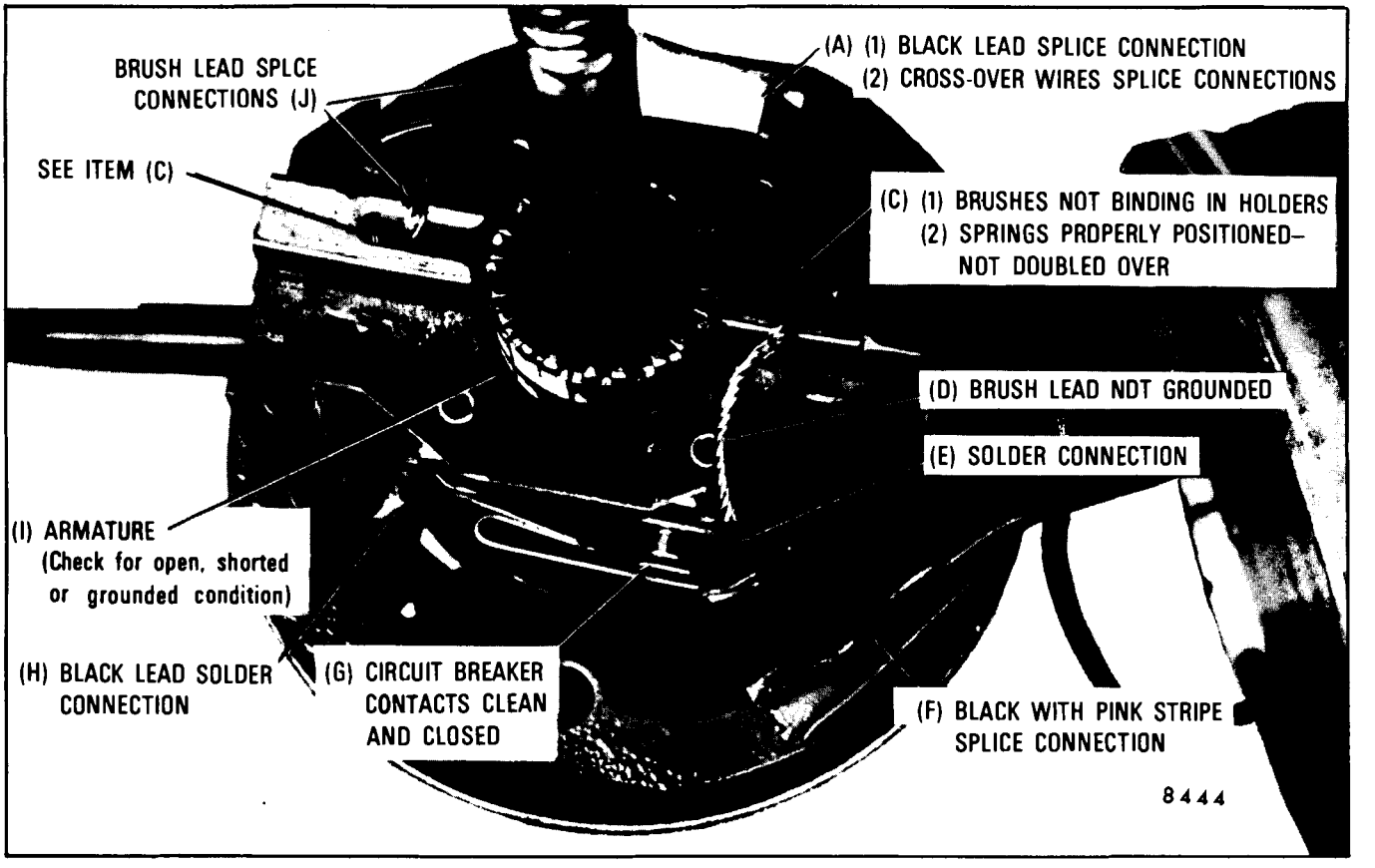

Fig. 2-90-Visual Inspection Modified Pulse Motor

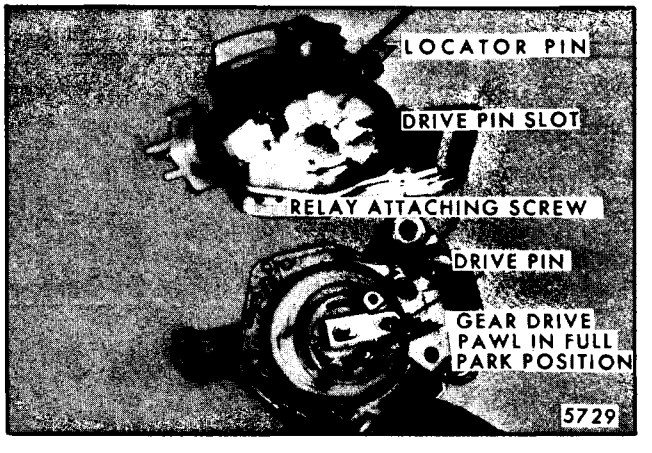

Fig. 2-91-Installing Pump to Motor

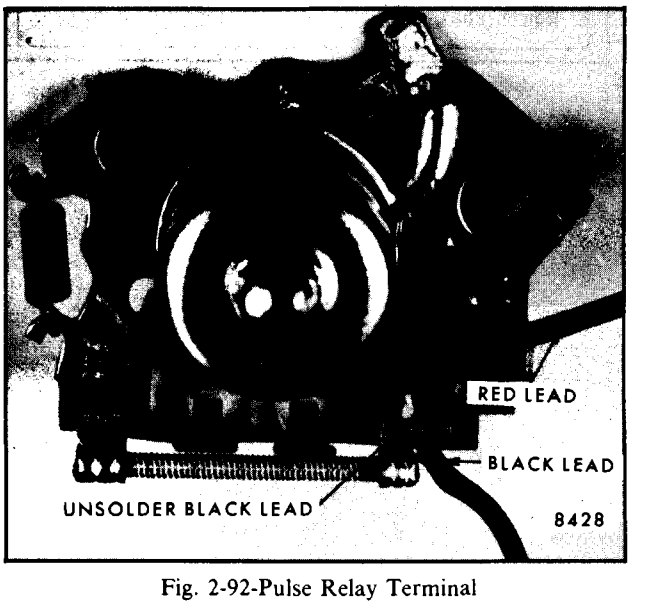

Fig. 2-92-Pulse Relay Terminal

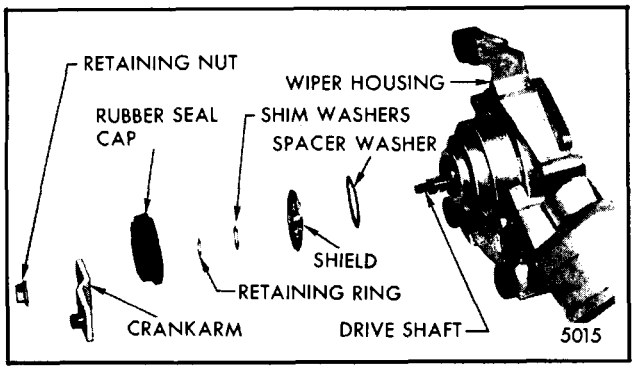

Fig. 2-93-Crank Arm Components

Drive Gear Reassembly

1. Position drive and lock pawls on drive plate as shown in Figure 2-95.

2. Slide gear and tube over the drive plate shaft. Move drive and lock pawls as required to allow their respective pins to fit in the gear guide channel (Fig. 2-95).

3. Holding the gear, manually rotate the drive plate in the direction of the arrow until the drive and lock pawl guide pins fit into the gear pockets (Fig. 2-96).

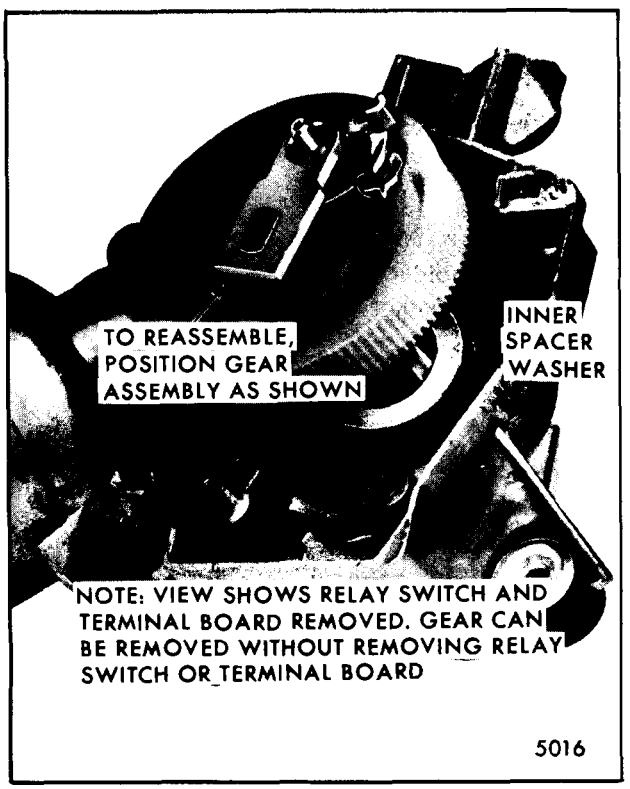

Fig. 2-94-Removing Gear

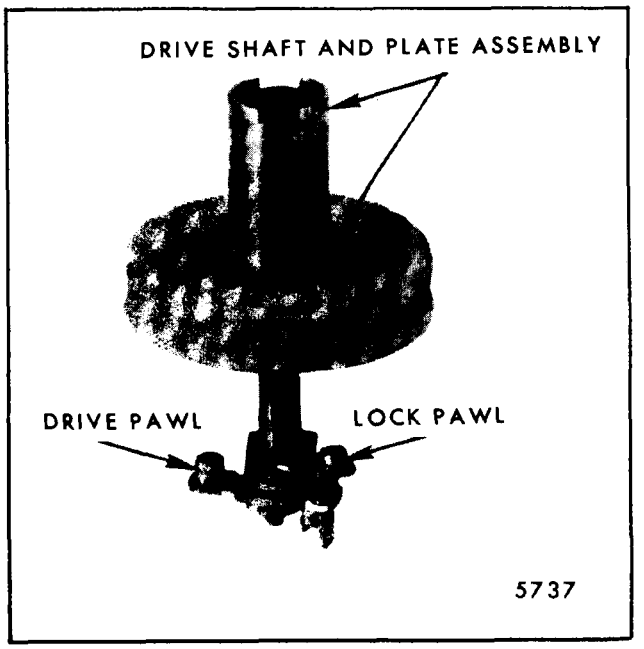

Fig. 2-95-Gear Removed

4. Reinstall pawl spring between lock and drive pawls (Fig. 2- 96).

   NOTE: Be careful to maintain the gear mechanism in its assembled position during step 5.

5. Assemble inner spacer washer over the gear tube and reassemble gear mechanism in gearbox (Fig. 2-94).

6. Reassemble parts removed in step 1 under disassembly.

   NOTE: Use shim washers as required to obtain a maximum of .004 end play.

7. Refer to Figure 2-88 and operate wiper to park position; then position crank arm on output shaft flat so that it points in the direction shown in Figure 2-97. Next, install crank arm retaining nut fingertight.

8. Clamp crank arm in vise and torque retaining nut to approximately 300 in-lb.

9. Reinstall washer pump to gearbox. Refer to washer pump to wiper gearbox assembly instructions.

MOTOR DISASSEMBLY AND ASSEMBLY PROCEDURES

Remove washer pump from wiper gearbox. It is not necessary to disassemble the gearbox.

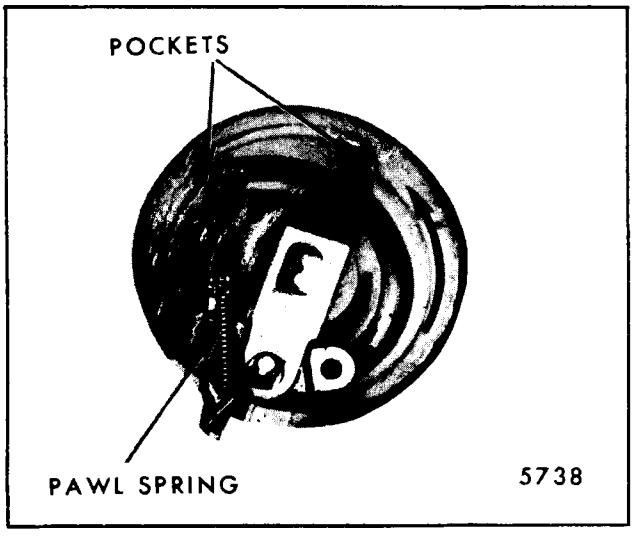

Fig. 2-96-Drive and Lock Pawl Guide Pin Pockets

Brush Plate and Circuit Breaker Removal

1. Scribe a reference line along the side of the casing and end cap to insure proper reassembly (Fig. 2-98).

2. Remove the two motor tie bolts.

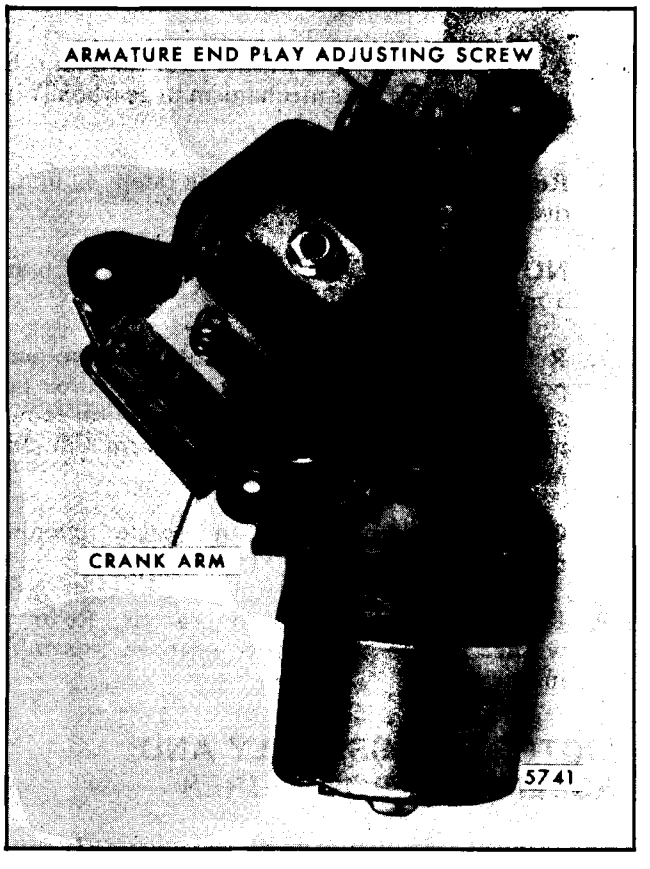

Fig. 2-97-Crank Arm in Park Position

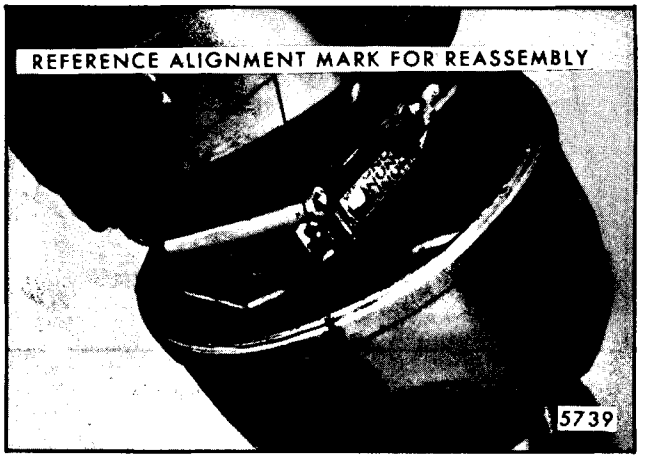

Fig. 2-98-Motor Case Alignment Marks

3. Feed exposed excess length of motor leads through the casting grommet and carefully back the case and field assembly plus the armature away from the casting (Fig. 2-98) until the armature shaft clears the casting bearing.

   NOTE: If necessary, remove the armature end play adjusting screw and insert a rod through the opening in order to apply pressure against the end of the armature.

4. Carefully note the routing, then unsolder the black lead from circuit breaker (refer to Fig. 2-99).

5. Straighten out the four tabs that secure the brush plate to the field coil bracket (Fig. 2-99).

   CAUTION: *Be careful not to break any of the retainer tabs.*

6. Install "U" shaped brush retainer clip over brush holder that has brush lead attached to circuit breaker (Fig. 2-99).

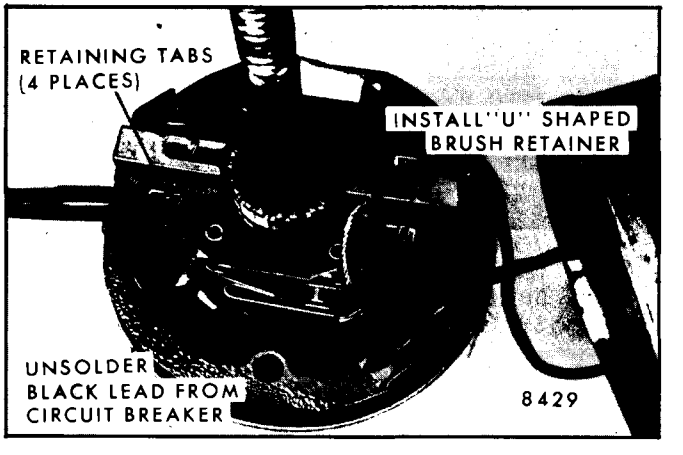

Fig. 2-99-Brushes and Brush Plate

7. Holding the opposite brush from that retained in step 6, carefully lift the brush holder off the mounting tabs far enough to clear the armature commutator.

8. Allow the brush held in step 7 to move out of its holder. Remove the brush spring and lift the brush holder off the armature shaft. Refer to Motor Reassembly for reinstalling brush plate and circuit breaker assembly (steps 5, 6, 7 and 9 through 12).

Armature Removal

1. Follow steps 1 through 8 under brush plate removal.

2. Lift armature out of case and field assembly.

3. Remove thrust ball from end of armature shaft to save for reassembly.

   NOTE: Thrust ball may be easily removed with a magnet.

4. To reassemble armature, follow steps 3 through 10 under motor reassembly.

Case and Field Assembly Removal

1. Remove brush plate and armature.

2. The end case and field assembly is serviced as a unit. To free the field and case assembly, cut the solid black and black with pink stripe leads in a location convenient for splicing.

3. Remove felt lubricating washer, steel thrust plate and rubber disc from case bearing.

Motor Reassembly

1. If new field and case assembly is being installed, splice the black and black with pink stripe leads of the new field with the corresponding leads to the wiper.

2. Install the rubber thrust disc, steel thrust disc and felt lubricating washer in the case assembly bearing in the order indicated.

3. Lubricate end of armature shaft that fits in case bearing with recommended type grease (Fig. 2-100). Next, install thrust ball in end of shaft.

4. Assemble armature in the case and field assembly.

5. Position the partially assembled brush plate over the armature shaft far enough to allow reassembly of the remaining brush in its brush holder; then position the brush plate assembly on the mounting tabs in the position shown in Figure 2-99.

6. Center the brush plate mounting holes over the mounting tabs and bend the tabs toward the brush holders as required to secure the brush plate in position. Be careful not to bend or distort the metal brush holders.

   NOTE: Be sure tabs are centered in brush plate mounting holes.

7. Remove brush retainer clips and resolder circuit breaker ground lead to circuit breaker.

8. If new case and field assembly is used, scribe a line on it in the same location as the one scribed on the old case. This will insure proper alignment of the new case with the scribed line made on the housing.

9. Position armature worm shaft inside the housing and using the scribed reference marks, line up as near as possible the case and field assembly with the housing.

10. Maintaining the armature in its assembled position, start the armature shaft through the housing bearing until it starts to mesh with drive gear teeth. At the same time carefully pull the excess lead lengths through the casting grommet.

SPECIFICATION CHART

OPERATING VOLTAGE			12 VOLTS D.C.
BENCH CHECK (No Load)	CURRENT DRAW (Amps)		CRANKARM SPEED
	"F"	"A-B-C-D-E-K"	
"LO" SPEED	5.0 Max.	6.0 Max.	35 - 50
"HI" SPEED	4.0 Max.	4.5 Max.	70 - 90
STALL (Cold Motor)			
"LO" SPEED	18.0 Max.	29.0 Max.	0

Torque	INCH-POUNDS	NEWTON-METRES
Washer Pump Mounting Screws	18	2.0
Armature Adjusting Screw Jamb Nut	50	5.7
Motor Tie Bolts	30	3.4
Gear Box Relay Attaching Screw	30	3.4
Motor Crankarm Attaching Nut	300 - 350	34 - 40
Motor Crankarm to Transmission Drive Link	25 - 35	3 - 4
Motor to Body Attaching Bolts	30 - 45	4 - 5
Transmission to Body Attaching Bolts	57 - 72	7 - 8

Lubrication	
Gear Teeth Gear Shaft Gear Camtrack Seal Cap (Inside) Armature Shaft Armature Worm	Multifak EP-1 or Equivalent

9383

Fig. 2-100-Specification Chart - Pulse Wiper

NOTE: If necessary, rotate the armature slightly so that the armature worm will engage with drive gear teeth.

11. Rotate case as required to align the bolt holes in the end case with those in the housing.
12. Secure the case to the housing with the two tie bolts. Adjust armature end play as required.

WASHER SYSTEMS

DESCRIPTION

The washer pump used on all round motor systems is a positive displacement type pump employing a small piston, spring and valve arrangement. The plastic valve assembly is identical, however, the programming (starting and completion of wash cycle) which is accomplished electrically and mechanically by a relay assembly and ratchet wheel arrangement differs and will be explained separately.

The washer system on "F, (styles without modified pulse system) and H and X" styles consists of a permanent magnet motor and pump assembly that is mounted to the bottom of the washer solution jar with a retaining nut and screen assembly. The motor and pump assembly is common to the three different shaped jars used on "F, H and X" styles. It is serviced as a complete assembly including the gasket and retaining nut and screen (Fig. 2-101). The washer solution jar is serviced separately.

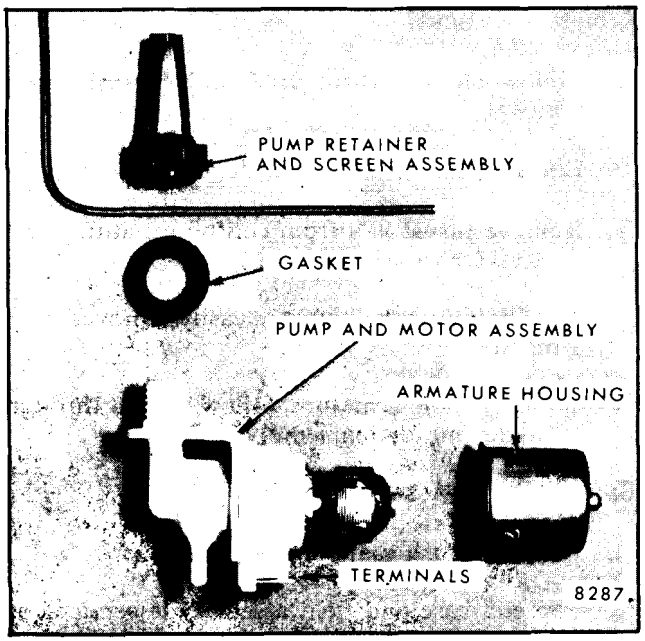

Fig. 2-101-Jar Mounted Motor and Pump Assembly

JAR MOUNTED SYSTEM

Description

Pushing the wash button in completes the washer motor circuit to ground and turns the washer motor on causing the pump and wipers to operate (Fig. 2-103).

The washer pump will operate only while the wash button is held in allowing direct control of the amount of solution delivered to the windshield. It is shut off as soon as the wash button is released. The wipers will continue to operate until the dash mounted control switch is pushed to the off position.

Removal and Installation

1. Remove two solution jar to body attaching screws.
2. Disconnect electrical wiring and hose.
3. Note installed position of motor and pump assembly in relation to bottom of jar (Fig. 2-102).
4. Grasp motor and pump assembly and remove retaining nut and screen assembly using a ratchet wrench, extension, universal joint and 15/16" deep socket.
5. To install, reverse removal procedure. Torque retaining nut and screen assembly to 1.7 to 3.4 N·m (15 to 30 in-lb).

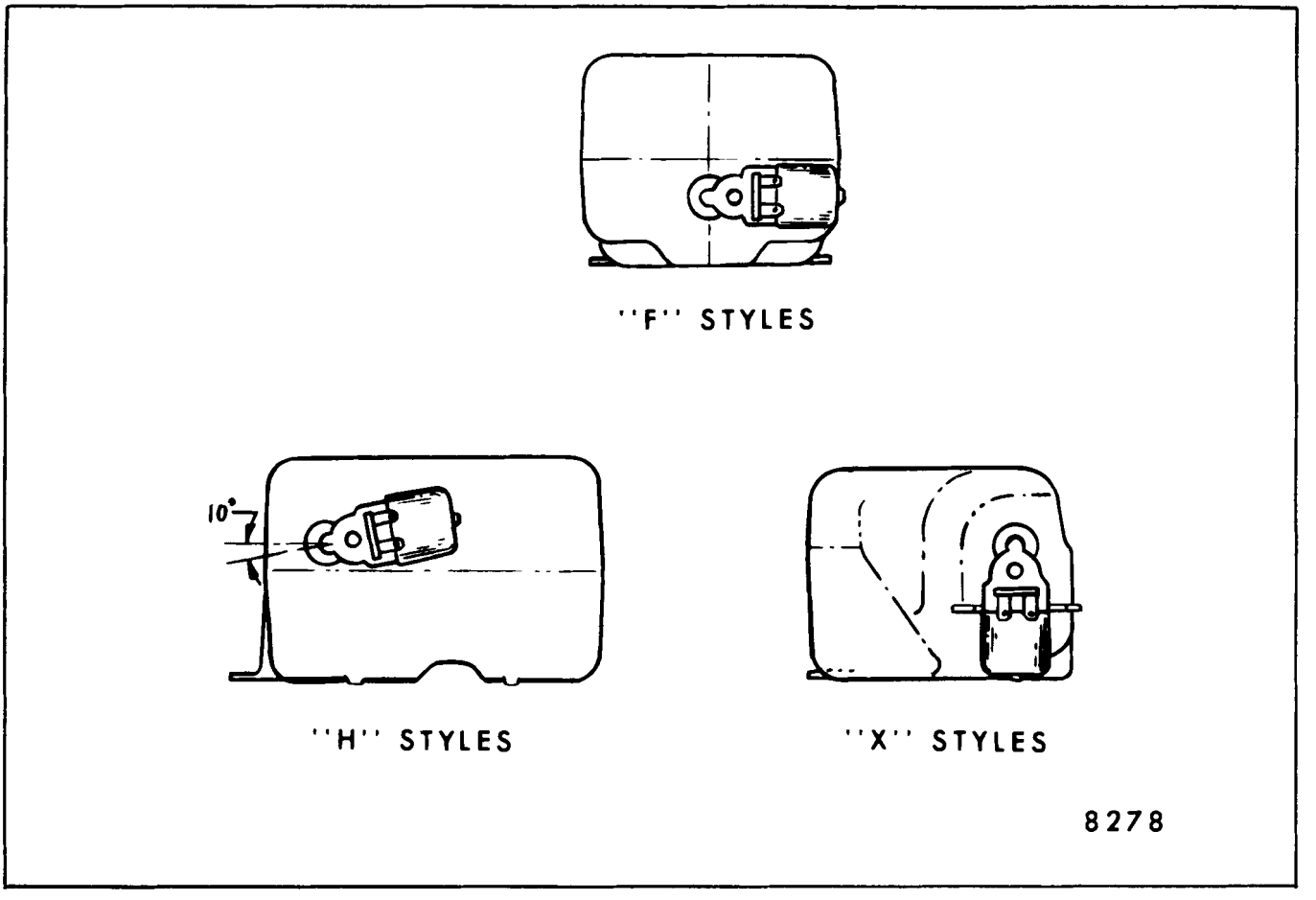

Fig. 2-102-Motor and Pump Assembly Positioning to Jar

DIAGNOSIS PROCEDURE - JAR MOUNTED WINDSHIELD WASHER PUMP SYSTEM - WASHER PUMP INOPERATIVE

NOTE: To insure proper operation of pump be sure adequate amount of solution is maintained in washer jar.

TEST	TEST RESULT	CORRECTION
1. Check for voltage at washer pump terminal (ignition switch on) Fig. 2-104	a. No voltage at terminal	a. Check for open in B plus wire (black with yellow stripe) or blown fuse
	b. Voltage present	b. Proceed to Test 2
2. With ignition on, connect jump wire from dash switch motor terminal to ground (Fig. 2-103)	a. Motor operates	a. Check for open in dark blue wire between motor and dash switch. If no open can be found, replace dash switch
	b. Motor inoperative	b. Replace motor and pump assembly

DIAGNOSIS PROCEDURE - JAR MOUNTED WINDSHIELD WASHER PUMP SYSTEM - WASHER PUMP OPERATES BUT PRESSURE IS WEAK

NOTE: To insure proper operation of pump be sure adequate amount of solution is maintained in washer jar.

TEST	TEST RESULT	CORRECTION
1. Check hoses for kinks, cracks or loose fit at nozzles, washer pump and "T" connection. Insure that nozzles and screen are clean.	a. Hoses damaged or loose, nozzles or screen dirty b. Hoses, screen and nozzles okay	a. Make necessary repairs b. Proceed to Test 2
2. Remove wiring connector from motor and check that B plus lead (black with yellow stripe) and dash switch lead (dark blue) are not reversed in connector	a. B plus and switch leads reversed b. B plus and switch leads not reversed	a. Install leads correctly and recheck operation of pump b. If nozzle adjustment is correct, replace motor and pump assembly

DIAGNOSIS PROCEDURE - JAR MOUNTED WINDSHIELD WASHER PUMP SYSTEM - WASHER PUMP RUNS BUT NO SOLUTION IS DELIVERED FROM NOZZLE

NOTE: To insure proper operation of pump be sure adequate amount of solution is maintained in washer jar.

TEST	TEST RESULT	CORRECTION
1. Repeat Test 1 under Diagnosis Chart (Washer Pump Operates But Pressure is Weak)	a. No discrepancies found	a. Replace motor and pump assembly

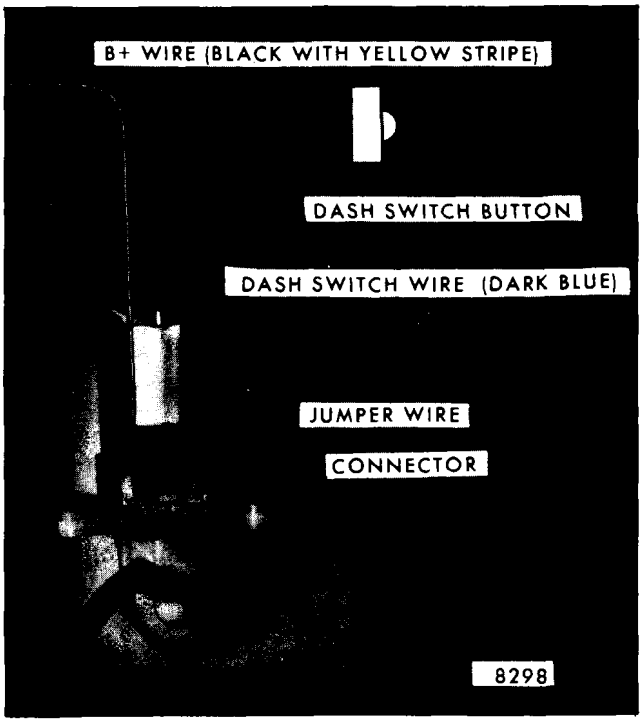

Fig. 2-103-Jumper Wire from Dash Switch Motor Terminal to Ground

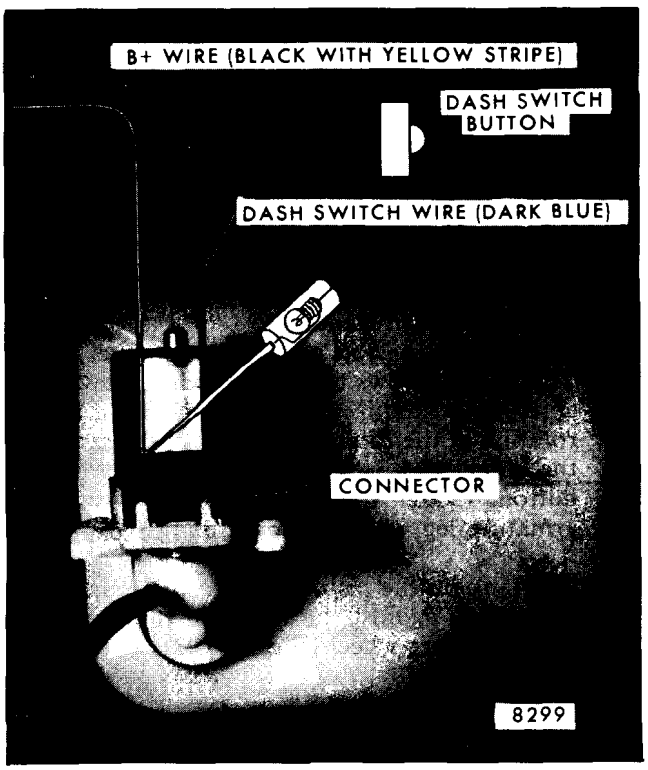

Fig. 2-104-Voltage Check at B Plus Motor Terminal

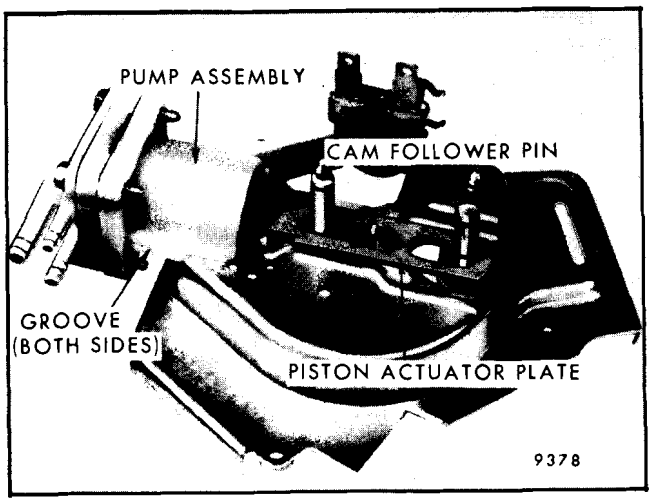

Fig. 2-105-Pump Intake Stroke

ROUND MOTOR WASHER SYSTEM

Description

A new design washer pump assembly is used with the round motor system (nonpulse only). The washer pump is similar to the past design except for the additional material added to the frame. The material was added to cover the cavity arch of the new design motor and gearbox assembly.

> **CAUTION:** *Past model design washer pump assemblies cannot be used with the new design motor.*

NOTE: The new design washer pump assembly can be used with both the new design and past model design motor and gearbox assemblies.

The basic pumping mechanism consists of a spring-loaded piston assembly enclosed in a plastic cylinder. Attached to the piston and extending out of the cylinder housing is an actuator plate. A valve assembly consisting of two exhaust valves and one intake valve is attached to the opposite end of the cylinder housing and controls the flow of washer solution.

Referring to Figure 2-119, note that the elongated slot of the piston actuator plate fits over a pin. This pin is a part of a cam-follower assembly which is actuated by the 4-lobe cam located on the underside of the pump mounting plate. When the wiper is running, the drive gear rotates the 4-lobe cam which in turn causes the cam-follower to move back and forth.

When the cam-follower moves in the direction indicated by the arrow in Figure 2-105, the cam-follower pin, which extends through the piston actuator plate, pulls the actuator plate away from the

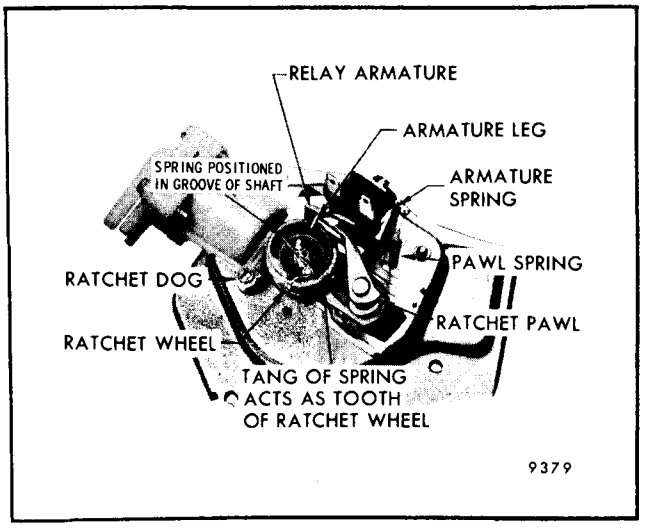

Fig. 2-106-Pump Mechanism

valve assembly compressing the piston spring. As the piston moves away from the valve assembly, a vacuum is created in the cylinder which opens the intake valve, drawing washer solution into the cylinder (Fig. 2-122).

As the 4-lobe cam continues to rotate, the cam-follower pin moves in the opposite direction described in the intake stroke. This permits the piston spring to expand which in turn pushes the piston toward the valve assembly creating pressure between the piston and valve assembly. This pressure build-up forces the washer solution out the two exhaust valves to the nozzles (Fig. 2- 122).

NOTE: For purposes of explanation, only one exhaust valve opening is shown.

The intake and exhaust stroke cycle will occur four times for each revolution of the wiper drive gear while the washer pump is operating.

The programming section of the pump mechanism consists of a relay, ratchet pawl, ratchet wheel, and ratchet wheel dog (Fig. 2-106).

Refer to Figure 2-107 and note that a tang on the piston actuator plate is resting against a ramp on the lower surface of the ratchet wheel. This holds the piston actuator plate in a lock- out position. With actuator plate in this position and the wiper running, the cam-follower pin merely moves back and forth in the elongated slot of the piston actuator plate and no pumping action can occur.

The ratchet wheel, which, if rotated, would move the ramp away from the tang of the actuator plate releasing the pump action is prevented from rotating as follows:

The relay assembly, consisting of a coil and armature, is constructed in such a way that the ratchet wheel pawl extends through an opening in the relay armature, preventing it from engaging the ratchet wheel teeth.

Actuating the washer button to obtain windshield washer pump operation starts the wiper motor and energizes the pump relay. When relay is energized, the relay armature is pulled suddenly toward the coil, allowing the ratchet wheel pawl to drop out of the relay armature opening and engage the teeth of the ratchet wheel.

The ratchet wheel pawl, which is actuated by the same cam-follower pin that moves the piston actuator plate, begins to rotate the ratchet wheel. Rotating the ratchet wheel one tooth moves the ratchet wheel ramp away from the tang of the piston actuator plate (Fig. 2-107), permitting the piston spring to expand which in turn forces the piston toward the valve assembly resulting in the first exhaust stroke. This sequence then repeats through the remaining cycles.

The pumping operation is terminated automatically when the ratchet wheel has rotated a full 360 degrees. This is accomplished as follows:

As the ratchet wheel approaches the completion of its 360 degrees travel, two functions occur simultaneously:

1. A leg on the relay armature rides up a ramp located on the outer surface of the ratchet wheel. When the leg reaches the top of the ramp, it moves over the top edge of the ratchet wheel. This action allows the ratchet wheel pawl to re-enter the armature opening preventing further rotation of the ratchet wheel until the next time the relay coil is energized from the washer button. (Refer to Fig. 2-106 for position of armature leg while pump is idling.)

2. The tang on the piston actuator plate is resting once more against the ramp on the lower side of the ratchet wheel (Fig. 2- 107).

DIAGNOSIS CHART - ROUND MOTOR WASHER SYSTEM

CONDITION	APPARENT CAUSE	CORRECTION
1. Washers inoperative	a. Inadequate quantity of washer solution	a. Add washer solution
	b. Hoses damaged, loose, and/or kinked	b. Cut short length off end of hose to insure airtight connection or replace hose
	c. Plugged screen at end of jar cover hose	c. Clean screen
	d. Loose electrical connection to washer pump or wiper switch	d. Check electrical connections and repair if necessary
	e. Open circuit in feed wire to ratchet relay coil	e. Locate open circuit and repair
	f. Wiper switch defective	f. Replace wiper switch
	g. Ratchet relay coil defective	g. Replace ratchet relay
	h. Washer nozzles plugged	h. Clean washer nozzles
	i. Ratchet wheel tooth missing	i. Replace ratchet wheel
	j. Ratchet pawl spring missing	j. Replace ratchet pawl spring
	k. Defective pump valve assembly	k. Replace pump valve assembly
2. Washer pumps continuously when wipers are operating	a. Grounded wire from ratchet relay to switch	a. Locate grounded wire and repair
	b. Wiper switch defective	b. Replace wiper switch
	c. Ratchet wheel tooth missing	c. Replace ratchet wheel
	d. Ratchet wheel dog broken or not contacting ratchet wheel teeth	d. Replace or repair ratchet wheel dog
	e. Lock-out tang broken or bent on piston actuator plate	e. Replace piston actuator plate

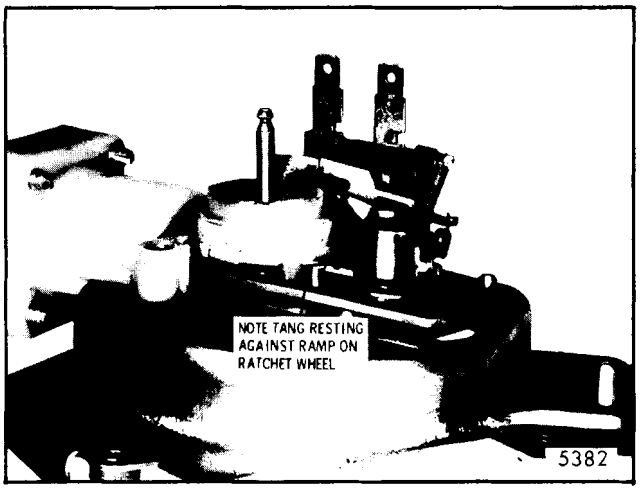

Fig. 2-107-Ratchet Wheel-Ramp

REMOVAL OF WASHER PUMP FROM WIPER MOTOR

1. Remove washer hoses from pump.
2. Disconnect wires from pump relay.
3. Remove plastic pump cover.
4. Remove attaching screws securing pump frame to motor gearbox and remove pump and frame.

WASHER DISASSEMBLY

Ratchet Dog

Remove attaching screw and lift ratchet dog off mounting plate.

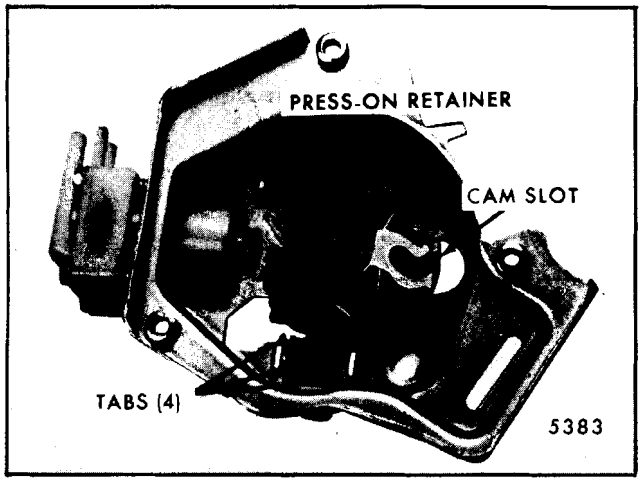

Fig. 2-108-Removing Four Lobe Cam

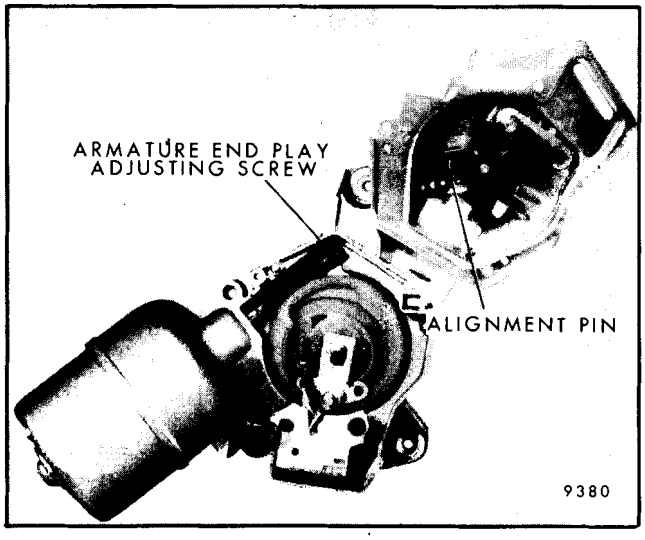

Fig. 2-109-Installing Pump to Motor

Ratchet Pawl and Pawl Spring

Disengage pawl spring from pawl and slide pawl off cam- follower pin.

Ratchet Wheel

Pry ratchet spring out of slot in shaft, hold relay armature against relay coil and slide ratchet wheel off shaft.

CAUTION: *When reassembling ratchet wheel be careful not to damage ratchet dog.*

Four-Lobe Cam

Remove the push-on retainer and slide cam off shaft (Fig. 2- 108).

Relay-Terminal Board Assembly

1. Remove four-lobe cam.
2. Remove ratchet pawl and pawl spring.
3. Remove relay armature and spring.
4. Chisel off the four bent-over tabs that secure the coil mounting bracket to the base (Fig. 2-108). Remove relay coil and terminal board assembly. To mount a replacement relay assembly, hold it securely against the base mounting surface and bend locking tabs over.

   CAUTION: *Be careful not to damage coil winding or terminals.*

5. To check the pump programming mechanism, manually rotate the four-lobe cam through complete cycle (360 degrees) and observe if pump is operating as previously explained.

Pump Assembly

1. Remove ratchet wheel, ratchet wheel dog, ratchet pawl and spring.

2. To release the plastic pump housing from the sheet metal base, pull it in the direction toward the valve end until the grooves in the housing clear the base. Next, detach the assembly from the cam-follower pin (Fig. 2-119).

   NOTE: The piston and plastic housing are serviced as a complete assembly.

Valve Assembly

1. Note position of valve assembly relative to the pump housing for reassembly, then remove four screws that secure valve assembly to housing.

2. Remove housing-to-valve-body gasket and save for reassembly.

Assembly of Washer Pump to Wiper Motor

NOTE: Wiper motor gear must be in PARK position (Fig. 2-109) to assemble pump to wiper motor.

1. Remove plastic pump cover.

2. Rotate the 4-lobe cam until index hole in the cam is aligned with the hole in the pump mounting plate. Insert a pin through both holes to maintain cam in position (Fig. 2-110).

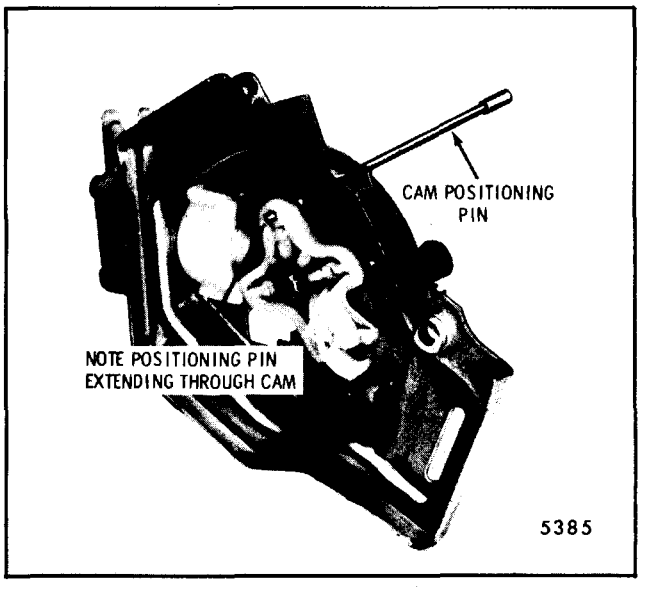

Fig. 2-110-Cam Alignment Pin Installation

3. Position pump on wiper so that slot in 4-lobe cam fits over the gear drive pin which is part of the lock pawl (Fig. 2-110). Secure pump to gear housing and remove locator pin, temporarily connect wiring connector.

4. Turn on wiper and washer pump to check pump operation.

   NOTE: A loud knocking noise would indicate that the pump cam has not engaged the drive pin properly.

5. Install pump cover.

MODIFIED PULSE WIPER WASHER SYSTEM

Description

The modified pulse windshield washer system is referred to as a programmed system and functions as follows:

Momentarily depressing the dash control wash button, when the dash switch is in the OFF position, starts a wash cycle. The wash cycle consists of eight squirts of solution, four drying wipes; then automatically parks the blades and shuts the system OFF. If the dash switch is in any position other than OFF, the washer system functions as shown in Figure 2-111.

NOTE: The dash switch wash button on pulse wiper systems functions differently from that used with the standard system. It does NOT mechanically move the wiper switch to the ON position when depressed. The turning ON of the wiper motor is accomplished electrically and will be covered in the Washer Pump Operation section.

WIPER SWITCH POSITION			
Lo	Med.	Hi	Delay
Wiper runs and washes in Lo Speed	Wiper runs and washes in medium Speed	Wiper runs and washes in Hi Speed	Delay operation is overridden, wiper runs and washes in continuous Lo Speed; completes programmed wash cycle plus four drying wipes and then automatically reverts back to pulse operation.

9580

Fig. 2-111-Washer Operation in Various Switch Positions

Washer Pump

The washer pump used on the modified pulse wiper differs considerably from the pump used on a standard wiper. Referring to Figure 2-113 note the following components NOT found on a standard pump: (1) pulse relay, (2) override switch, (3) holding switch, (4) solid state electronic device and (5) a special drive cam (Fig. 2-114). These special components serve the following functions:

1. Pulse relay - acts as a switch to complete B plus feed to the wiper motor windings.

2. Override switch - used during washer pump operation to provide alternate or auxiliary circuits. The switch is actuated by a projection on the rim of the ratchet gear. Detailed explanation of the switch operation is covered in Operating Principles.

3. Holding switch - used in conjunction with the timing device to control the delay mode of operation. This switch is actuated by a fin on the washer pump drive cam (refer to Fig. 2-112).

4. Timing device - consists of a transistor, capacitor, two diodes and a resistor mounted on an insulating board.

5. Drive cam - drives the pump mechanism and also actuates the holding switch.

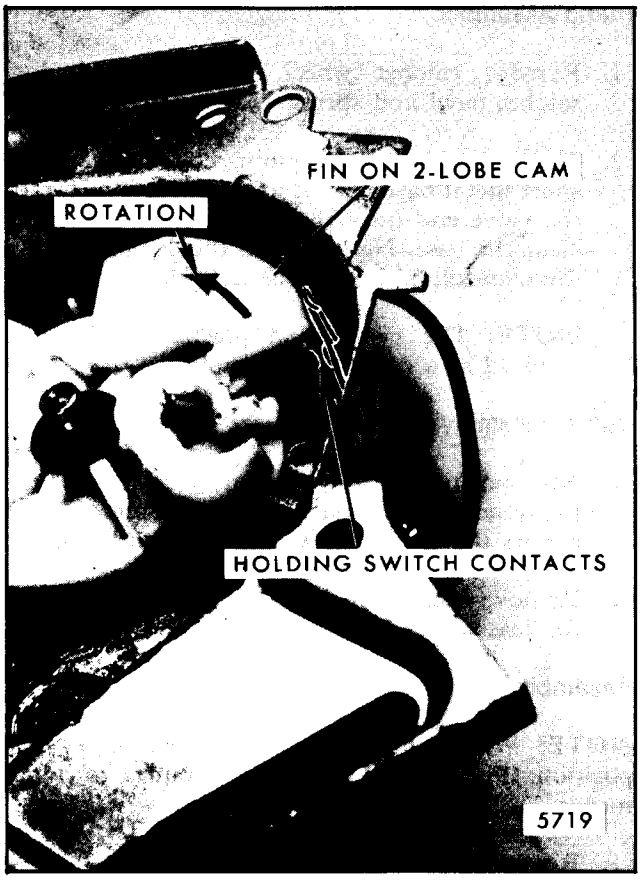

Fig. 2-112-Holding Switch Contacts

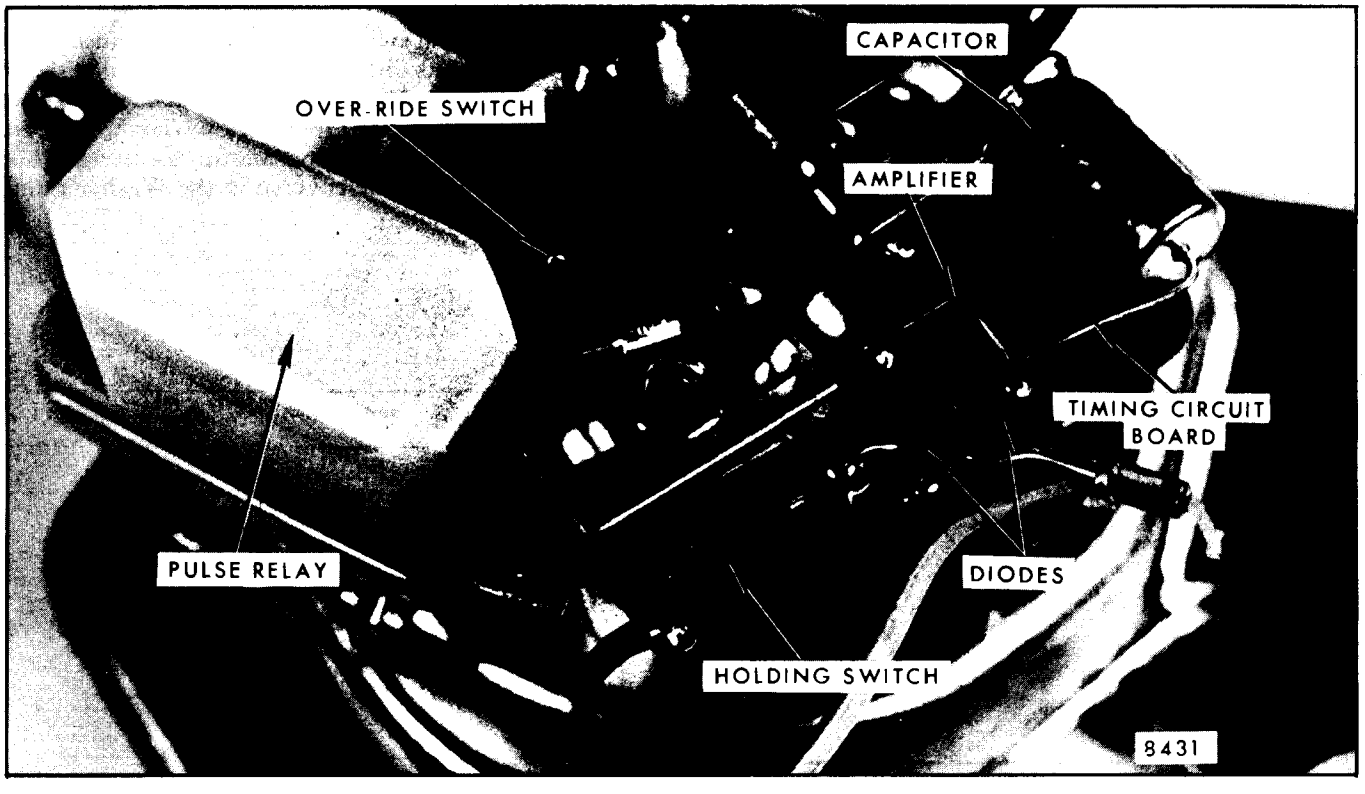

Fig. 2-113-Modified Pulse Washer Pump Timing Circuit

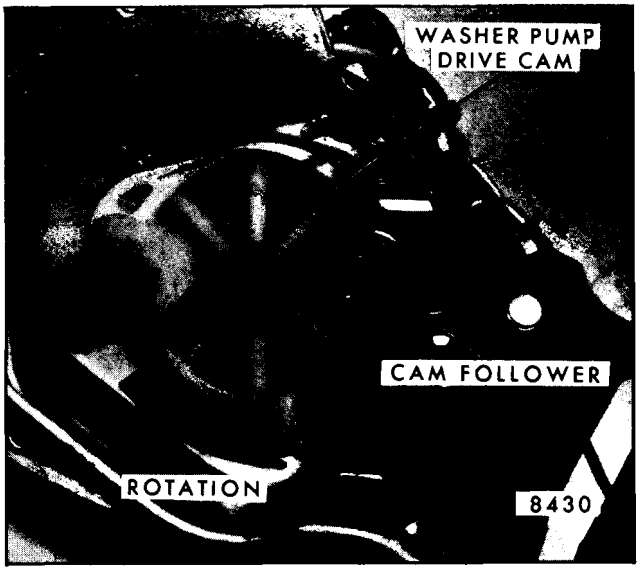

Fig. 2-114-Washer Pump Cam Rotation

Washer Pump Electrical Circuits and Operation

To start a wash cycle of operation requires three relay circuits. Referring to Figure 2-115, note that the gearbox relay, pulse relay and washer pump ratchet relay coil circuits are completed to ground simultaneously when the dash switch wash button is depressed.

Depending on the position of the dash switch - OFF, LO, MED, HI or DELAY - three main variations of circuitry can develop when the wash button is depressed to start a wash cycle.

Dash Switch in OFF Position - Wash Button Depressed - Ignition Switch On

The wash button temporarily completes the gearbox relay coil circuit to ground. This causes the relay switch contacts to close completing B plus to the motor windings and the pulse relay coil.

The pulse relay coil is connected to ground at the dash switch in the OFF position and when the

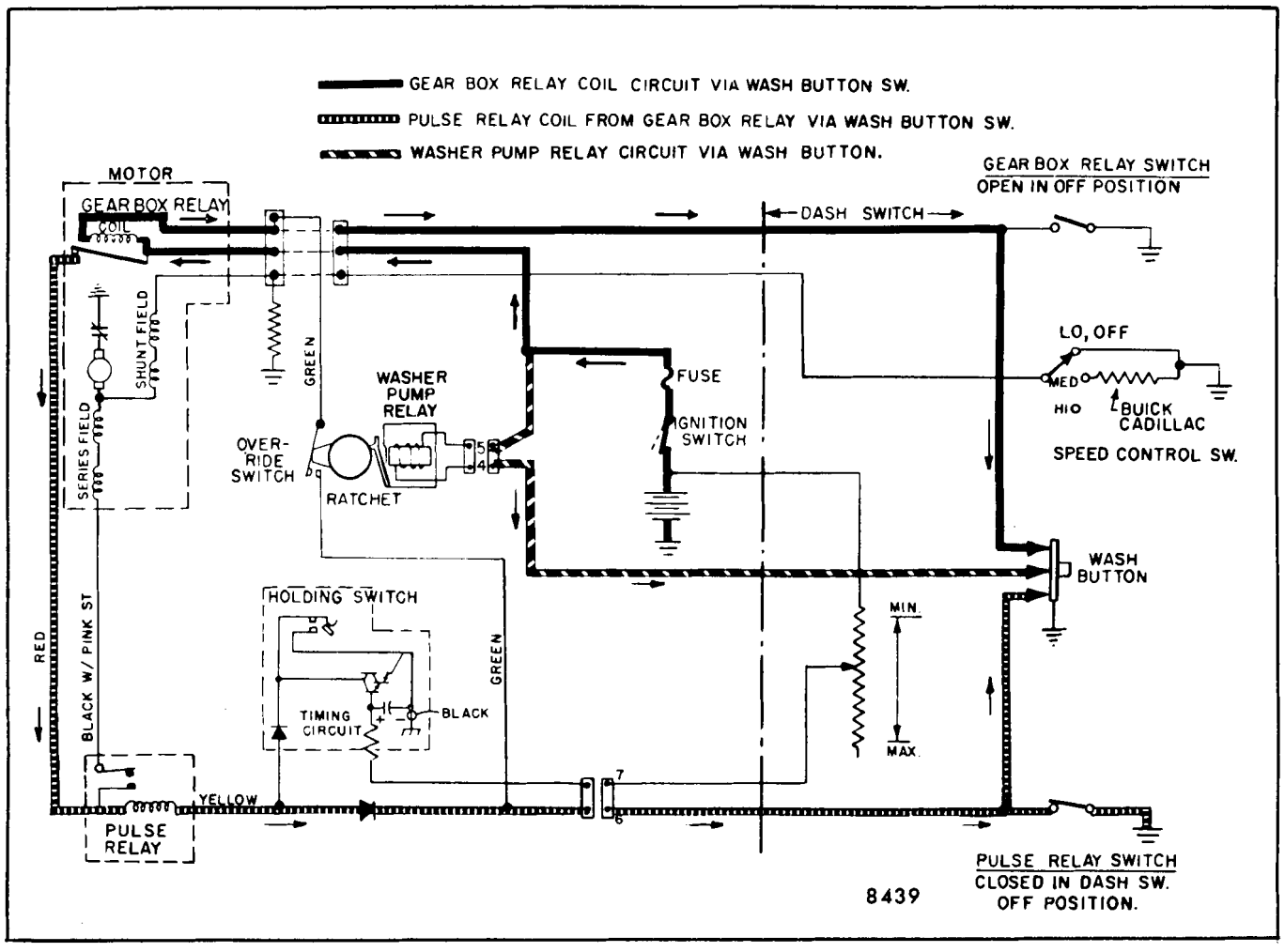

Fig. 2-115-Start of Wash Cycle - Wash Button Pushed In

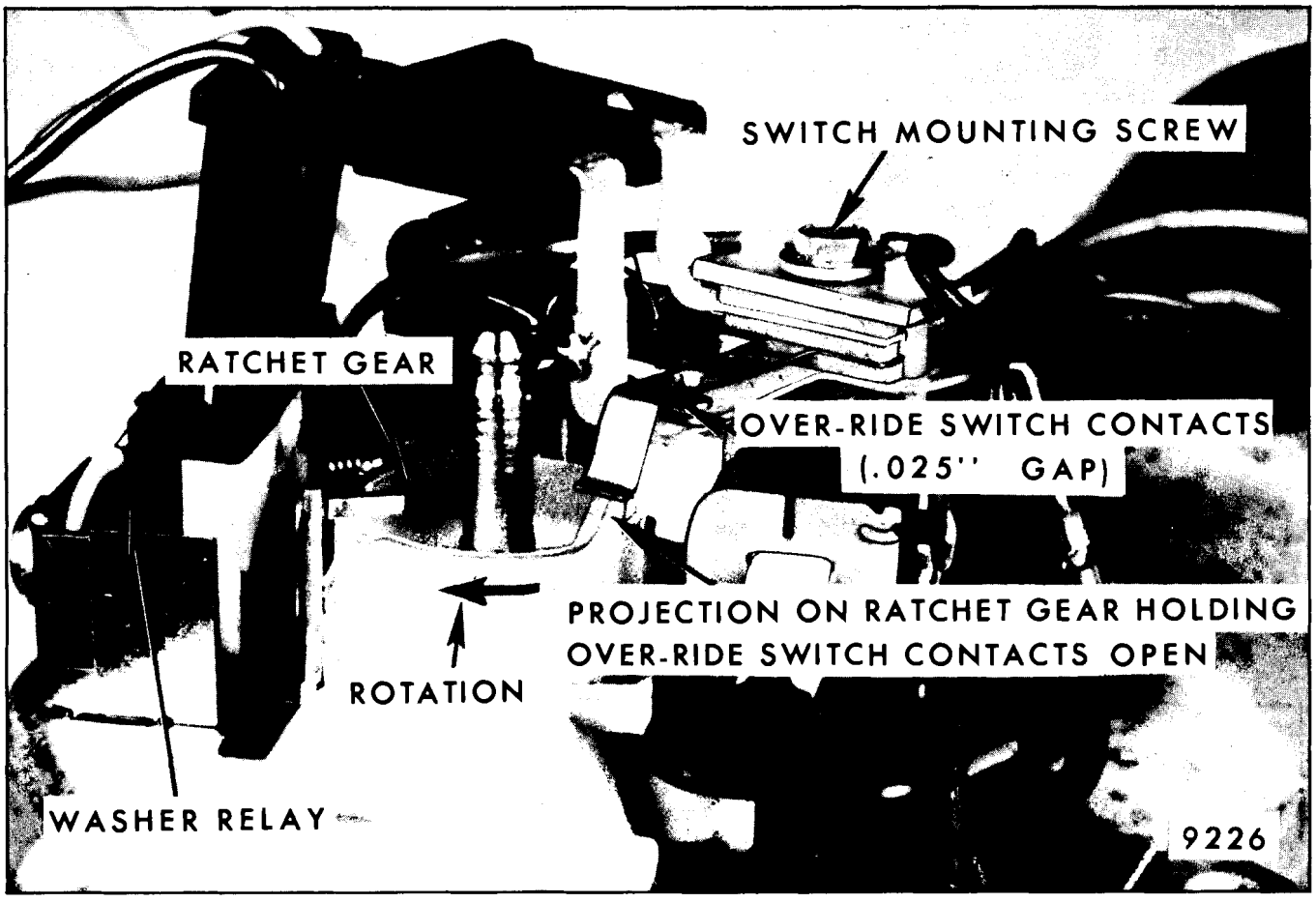

Fig. 2-116-Pump Programming Mechanism

gearbox relay completes the B plus circuit, the pulse relay coil circuit is simultaneously completed. The pulse relay switch contacts then close, completing the B plus feed circuit to the motor, starting the motor.

The washer pump ratchet relay coil circuit is simultaneously completed to ground by the wash button. With this relay energized, the pump is unlocked from its idling or lock-out position starting a wash cycle. As soon as the wash cycle starts, the ratchet gear starts to rotate which permits the override contacts to close (Fig. 2-116). The closed override switch provides an alternate path to ground for the gearbox relay when the wash button is released (Fig. 2-117). This alternate circuit is required to prevent the wiper motor from shutting off when the wash button is released.

When the ratchet gear has been rotated 360 degrees (12 teeth), the projection on the rim of the ratchet opens the override switch contacts (Fig. 2-117), which opens the gearbox relay coil circuit. Opening the gearbox relay coil circuit causes the wiper to shut off as described under Motor Operation.

Dash Switch in LO, MED or HI - Wash Button Depressed - Ignition Switch On

Whenever the wiper motor is operating in any of the continuous speed modes - LO, MED, HI - and the wash button is depressed to start a wash cycle, the wiper will wash and wipe at that speed.

Since the wiper is running, the pulse and gearbox relay circuits are already complete. Thus, depressing the wash button actually completes only the washer pump ratchet relay coil to ground to start the pumping action. At the completion of the wash cycle the motor continues to run at the speed at which the dash switch is positioned.

Dash Switch in DELAY Position - Wash Button Depressed - Ignition Switch On

Depressing the wash button to start the wash cycle overrides the delay mode and provides continuous wiper operation in LO speed during the wash cycle. At completion of the wash cycle, the wiper motor automatically reverts to the DELAY mode of operation.

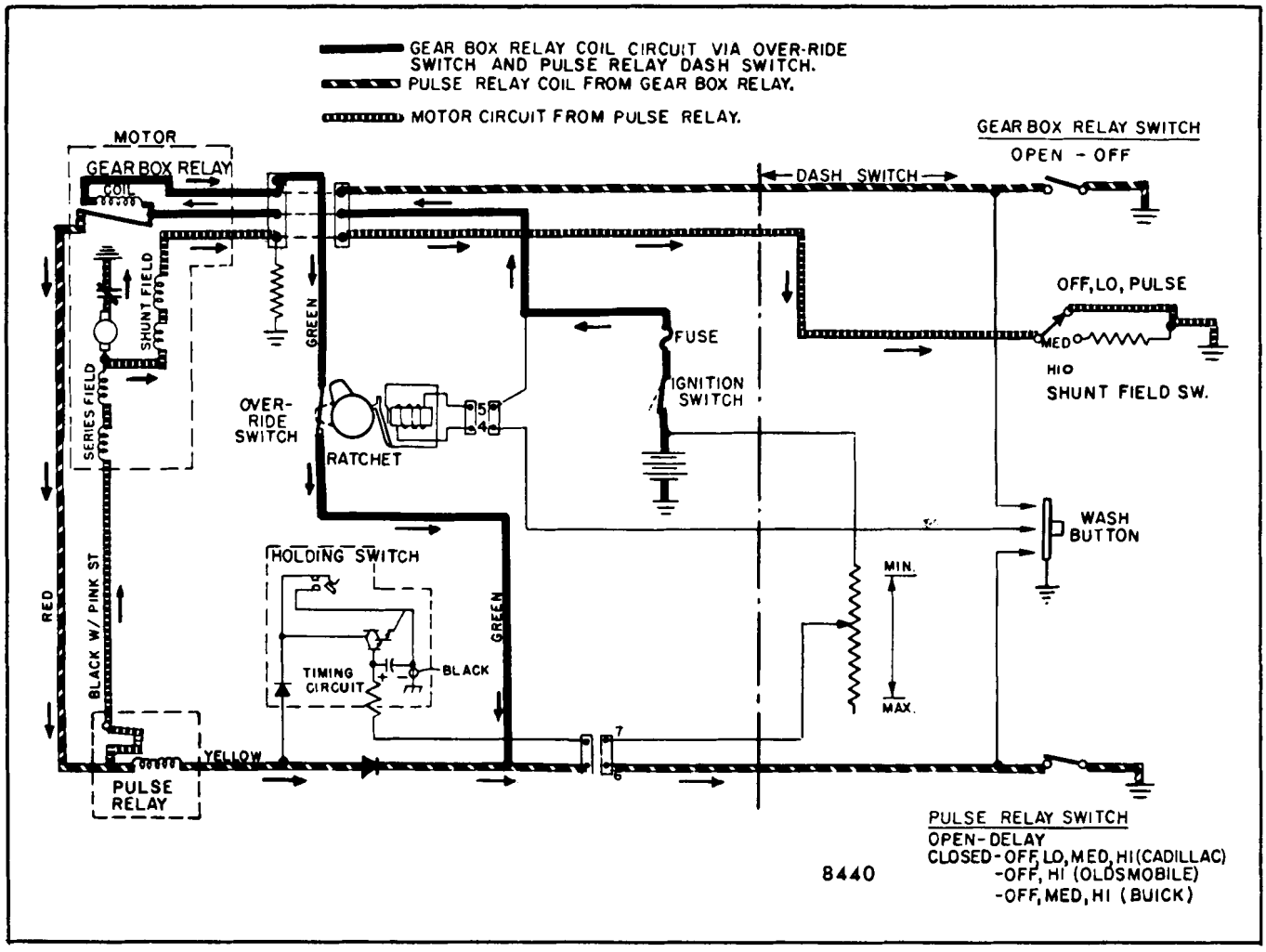

Fig. 2-117-Gearbox Relay Holding Circuit Dash Switch Released Motor Operation Maintained

The above operation is accomplished as follows:

When the dash switch is in the DELAY position, the gearbox relay coil circuit is complete. This, in turn, completes the B plus circuit to the pulse relay. However, the pulse relay coil circuit is completed during pulse operation.

In order to override the delay mode and provide continuous LO speed operation during the wash cycle, a bypass circuit around the timing device is accomplished as follows:

Momentarily depressing the wash button completes the pulse relay coil and washer pump ratchet relay coil circuits to ground. This causes the wiper motor and pump to start immediately regardless of the delay mode time setting.

As soon as the wiper starts, the pump also starts, which causes the override switch contacts to close. This provides a bypass circuit to ground for the pulse relay as shown in Figure 2-118.

At completion of the wash cycle, the projection on the rim of the ratchet gear opens the override switch contacts which, in turn, opens the pulse relay bypass circuit, and the wiper motor reverts to the pulse or delay mode of operation.

Washer Pump Mechanical Operation

The pump mechanism used on the modified pulse wiper washer pump is very similar to that used on the standard depressed park wiper washer system.

The basic pump mechanism consists of a spring-loaded piston assembly enclosed in a plastic cylinder. Attached to the piston and extending out of the cylinder housing is an actuator plate. A valve assembly consisting of two exhaust valves and one intake valve is attached to the opposite end of the

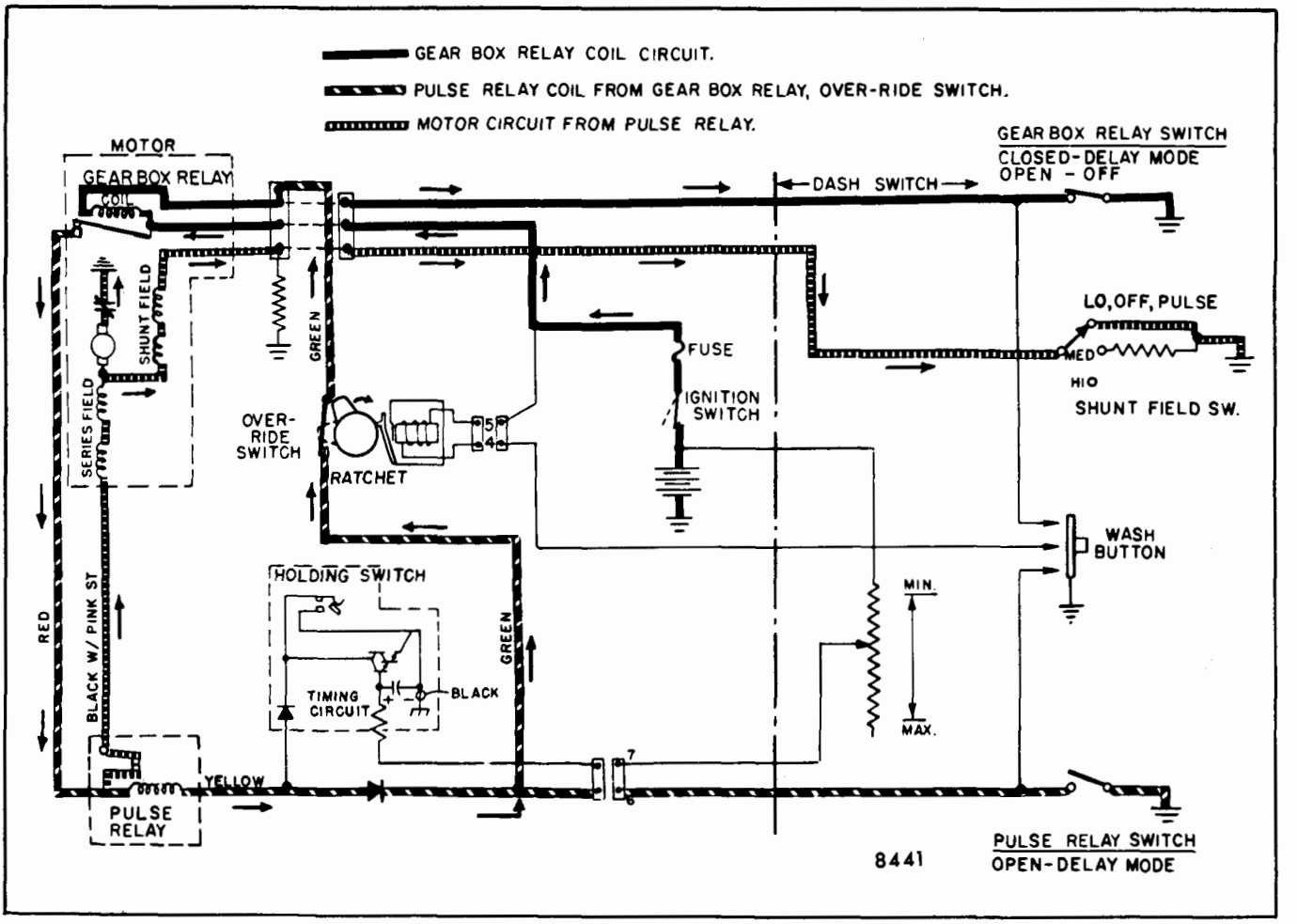

Fig. 2-118-Pulse Relay Circuit Via Override Switch Bypass Time Delay Circuit - Continuous Wiper Operation During Wash Cycle

cylinder housing and controls the flow of washer solution (Fig. 2-119).

NOTE: Figures 2-119 and 2-120 show the pump with most of the programming parts removed for illustrative purposes.

Referring to Figure 2-119 note that the elongated slot of the piston actuator plate fits over a pin. This pin is a part of a cam-follower assembly which is actuated by a drive cam located on the underside of the pump mounting plate (Fig. 2-114). When the wiper is running, the drive gear rotates the drive cam which in turn causes the cam-follower to move back and forth.

Note that a tang on the piston actuator plate is resting against a ramp on the lower surface of the ratchet gear (Fig. 2-119). This holds the piston actuator plate in a lock-out position as long as the RATCHET GEAR IS NOT ROTATED.

With the piston actuator plate in the lock-out position and the wiper running, the cam-follower pin moves back and forth in the elongated slot of the piston actuator plate and no pumping action can occur.

Actuating the washer button to obtain windshield washer pump operation starts the wiper motor and

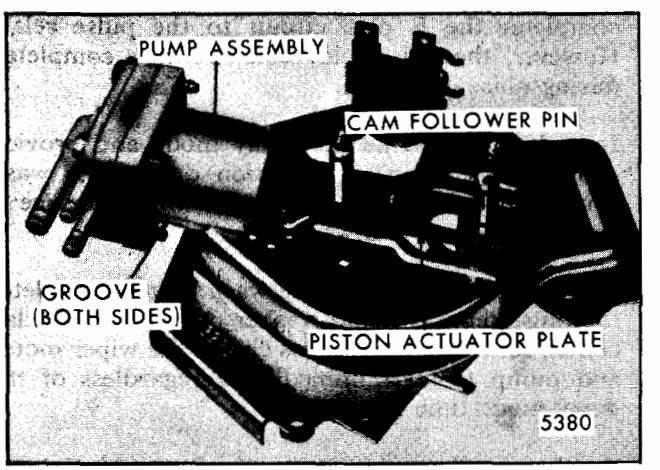

Fig. 2-119-Pump Intake Stroke

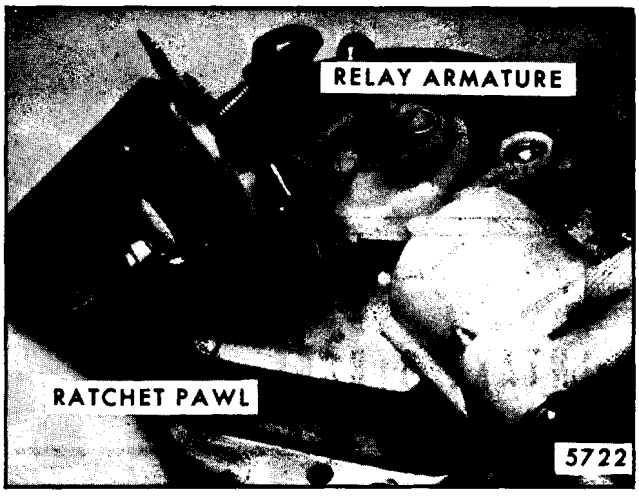

Fig. 2-120-Ratchet Pawl and Armature

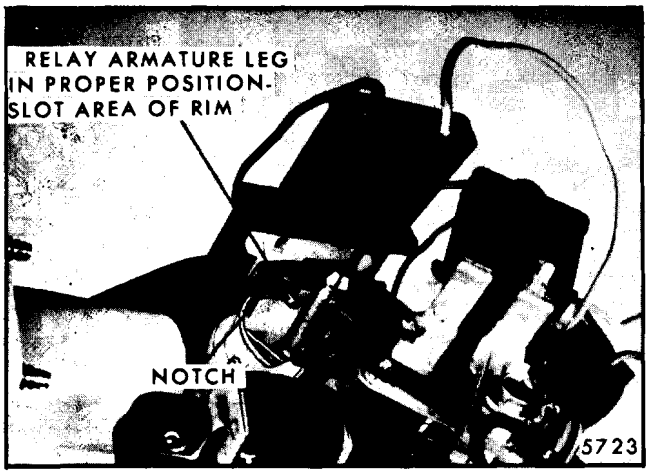

Fig. 2-121-Pump in Idling Position

energizes the pump relay. With the relay energized, the relay armature is pulled toward the coil, allowing the ratchet pawl to drop out of the relay armature opening and engage the teeth of the ratchet wheel. Figure 2-131 shows the pawl extending through window of relay armature.

The ratchet pawl, which is actuated by the same cam-follower pin that moves the piston actuator plate, then begins to rotate the ratchet wheel. Rotating the ratchet wheel one tooth moves the ratchet wheel ramp away from the tang of the piston actuator plate (Fig. 2-119), permitting the piston spring to expand which, in turn, forces the piston toward the valve assembly resulting in the first exhaust stroke (Fig. 2-122).

During the first exhaust stroke, the expanded piston spring also pulls the piston actuator plate up tightly against the cam- follower pin. The continuing rotation of the drive cam will now cause the cam-follower pin to move the actuator plate and piston in a direction that will compress the piston spring, causing washer solution to be drawn into the piston housing via the intake valve (intake stroke, Fig. 2-122).

Two intake and two exhaust strokes occur for each revolution of the drive cam.

The pumping operation is terminated automatically when the ratchet wheel has rotated a full 360 degrees. This is accomplished as follows:

As the ratchet wheel approaches the completion of its 360 degrees travel, two functions occur simultaneously:

1. A leg on the relay armature rides up a ramp located on the outer surface of the ratchet gear rim. When the leg reaches the top of the ramp, it moves over the top edge of the ratchet gear rim. This action allows the ratchet gear pawl to re-enter the armature opening preventing further rotation of the ratchet gear until the next time the relay coil is energized from the washer button. (Refer to Figure 2-121 for position of armature leg while pump is idling.)

2. The tang of the piston actuator plate is resting once more against the ramp on the lower side of the ratchet wheel (Fig. 2- 131).

DIAGNOSTIC PROCEDURES - MODIFIED PULSE WASHER SYSTEM

The following procedures cover that part of the washer system that is related to the pump mechanism when the motor is operating correctly.

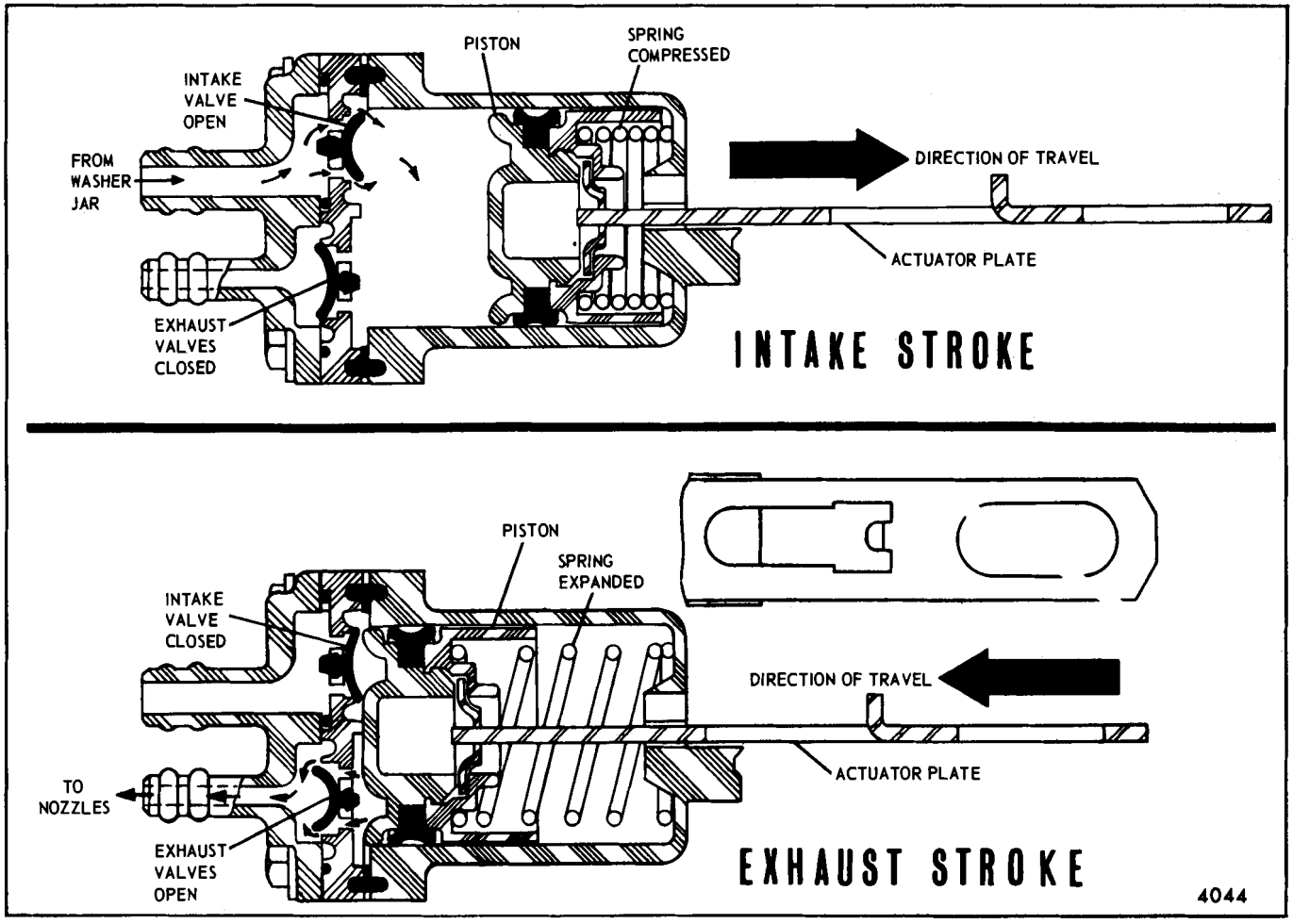

Fig. 2-122-Intake and Exhaust Stroke

DIAGNOSIS CHART

MODIFIED PULSE WASHER SYSTEM

CONDITION	REFERENCE
1. Windshield washer system inoperative. (Wiper motor operates correctly)..	Fig. 2-124 and 2-125
2. Washer Pump Noisy - makes loud "klunking" type noise.	Fig. 2-126
3. Wiper shuts off before wash cycle is completed. (Blades start out of park position, pump delivers one "squirt", and blades return to park position).	Fig. 2-127
4. Washer pumps continuously with dash switch in all positions except "OFF".	Fig. 2-128

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Fig. 2-123-Modified Pulse Washer System - Diagnosis Chart Index

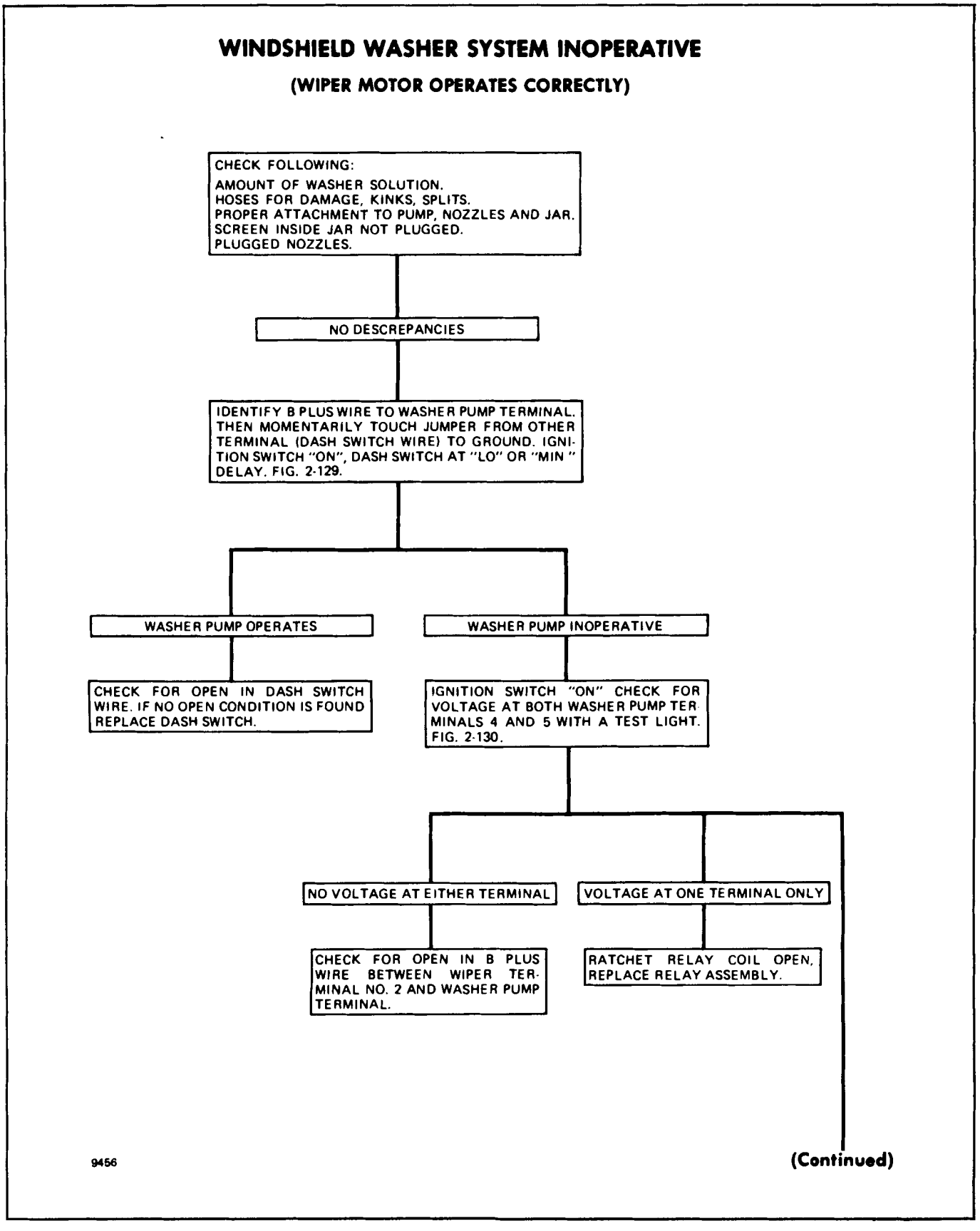


Fig. 2-124-Modified Pulse Washer System - Diagnosis Chart - Condition 1

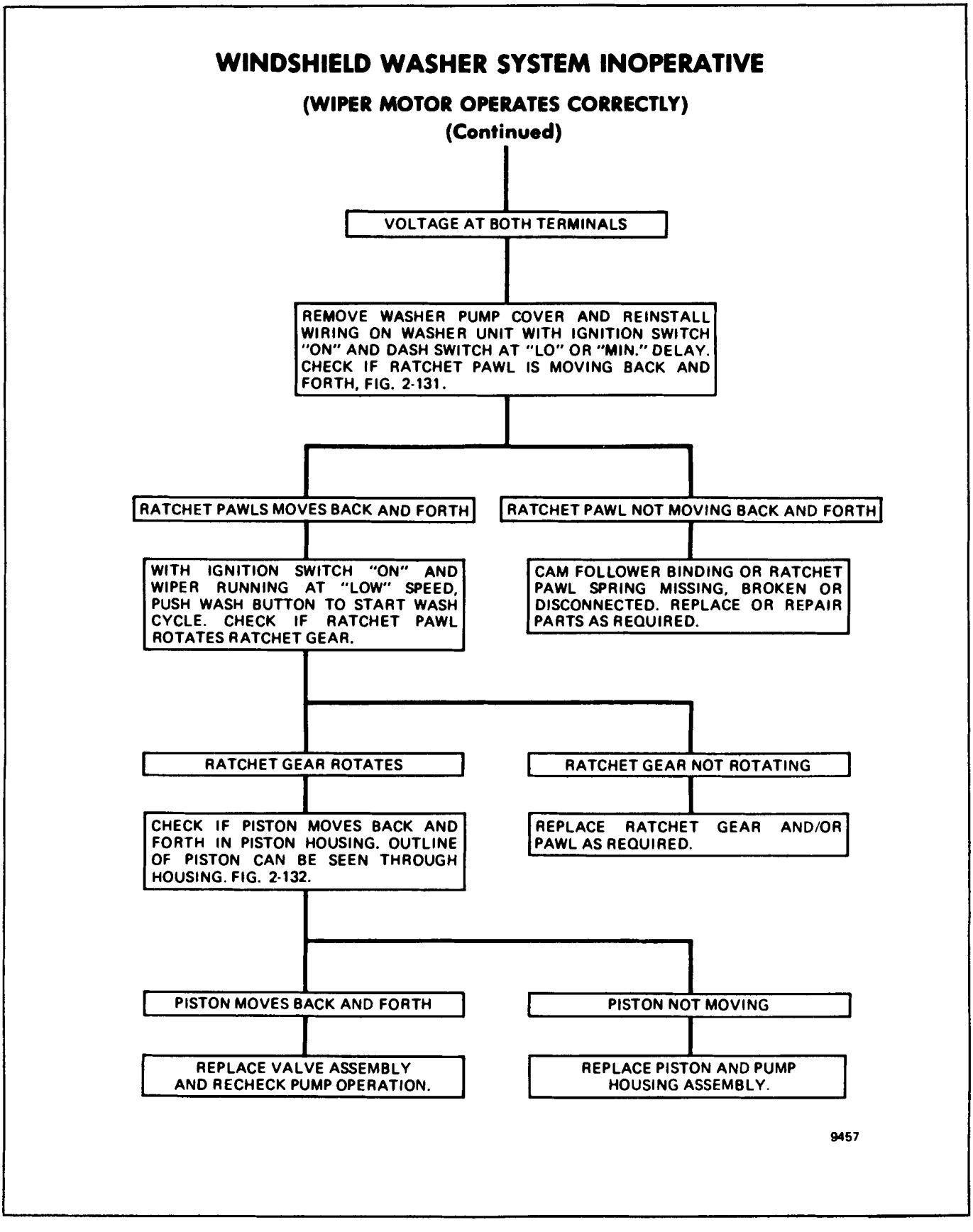


Fig. 2-125-Modified Pulse Washer System - Diagnosis Chart - Condition 1

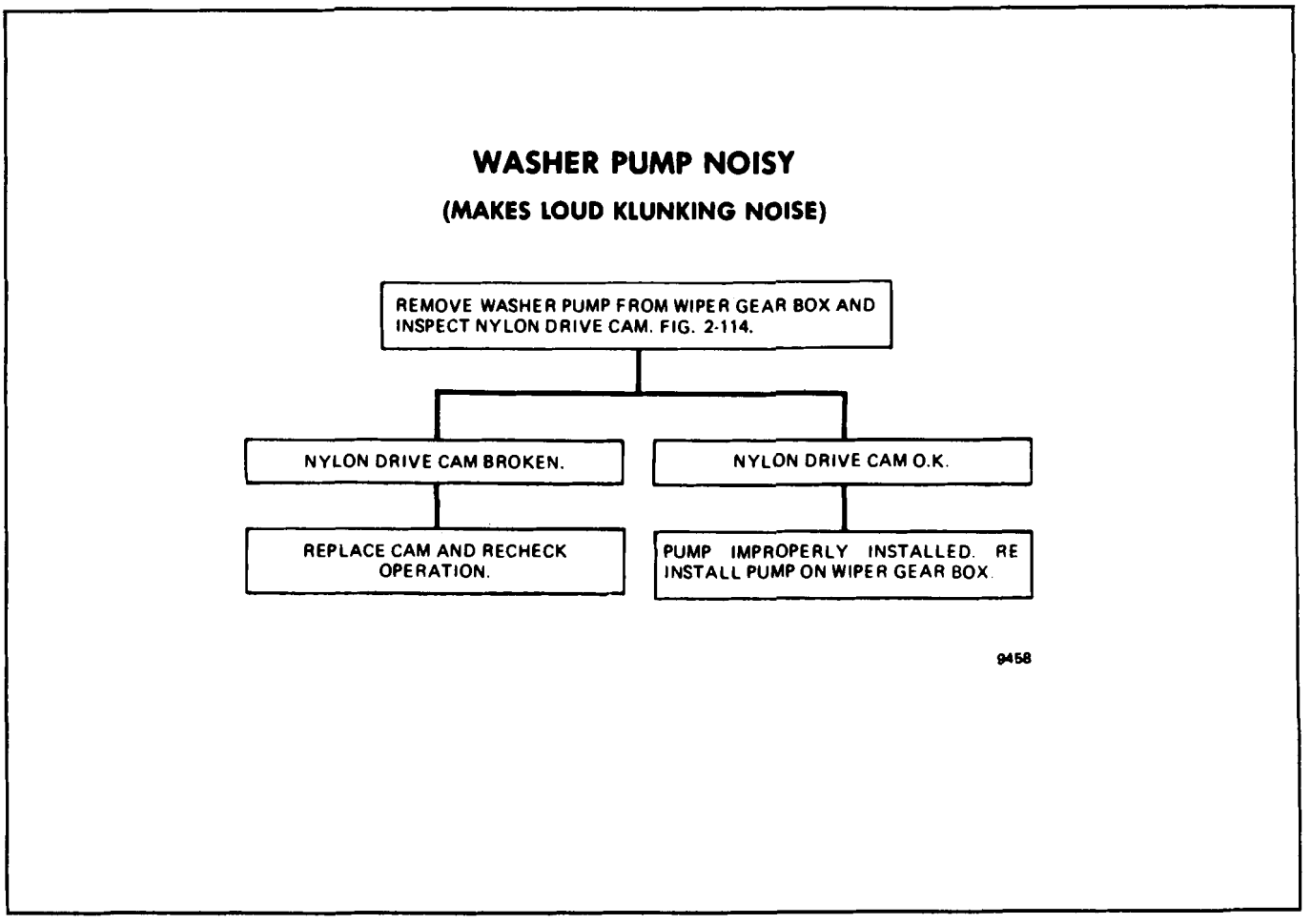


Fig. 2-126-Modified Pulse Washer System - Diagnosis Chart - Condition 2

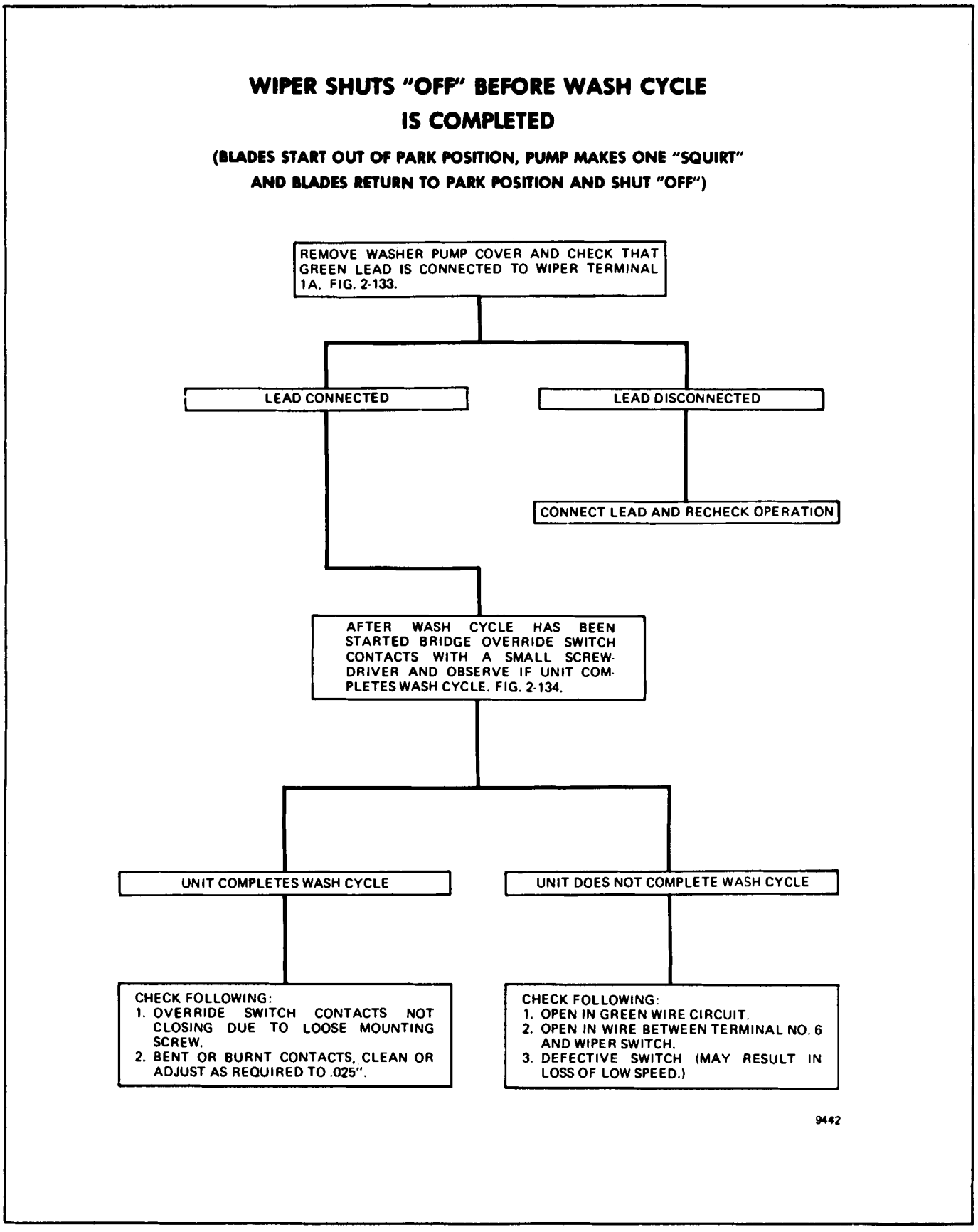


Fig. 2-127-Modified Pulse Washer System - Diagnosis Chart - Condition 3

Released by: www.78ta.com
Serial Number: 77BDY-001-10018

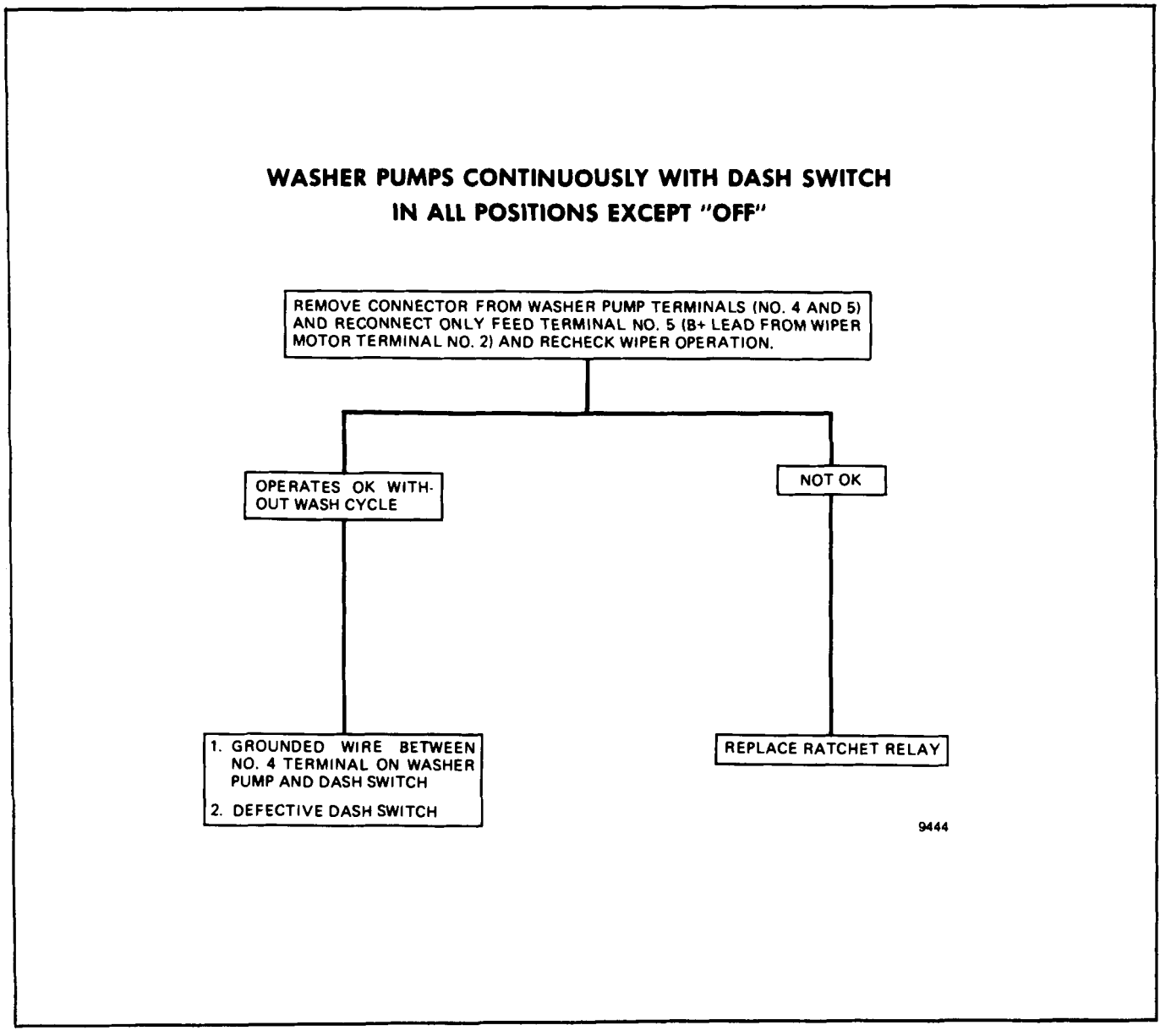


Fig. 2-128-Modified Pulse Washer System Wiper Diagnostic Chart - Condition 4

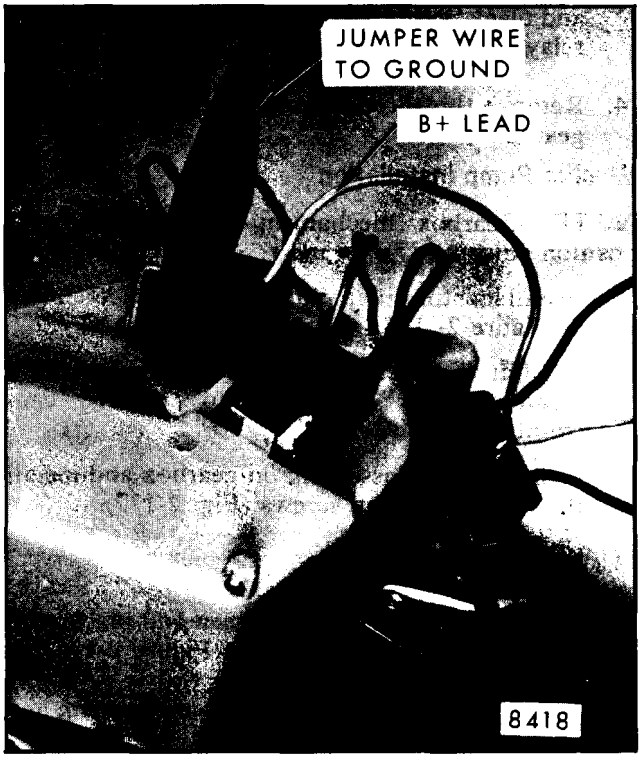


Fig. 2-129-Condition 1

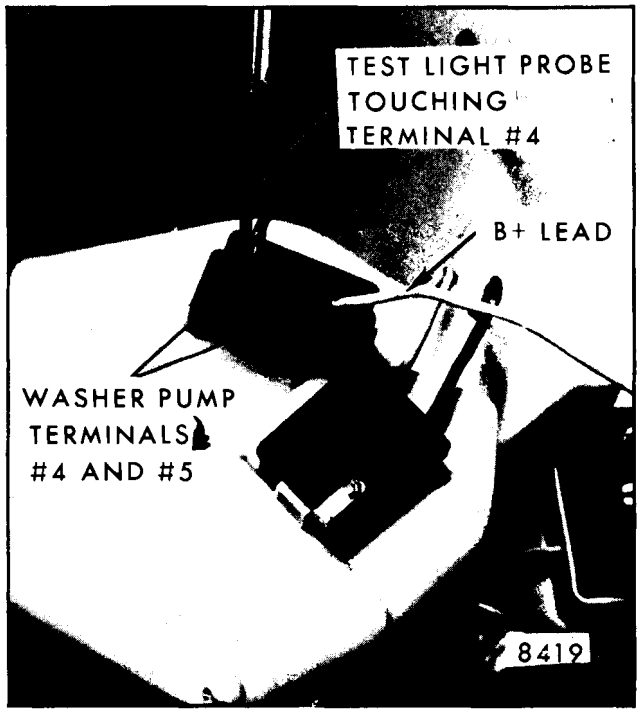


Fig. 2-130-Condition 1

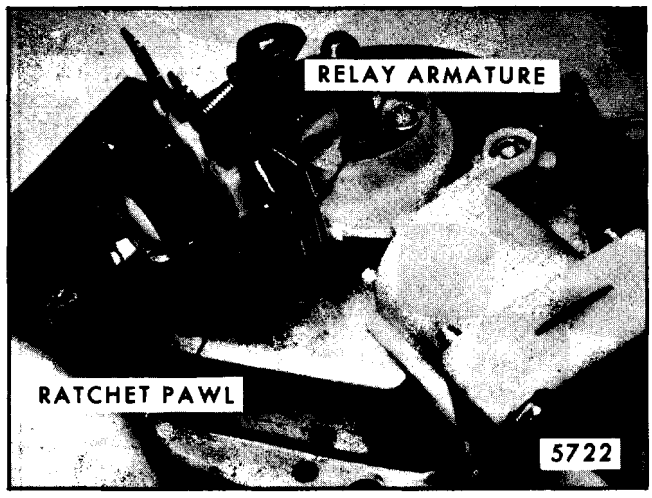


Fig. 2-131-Condition 1

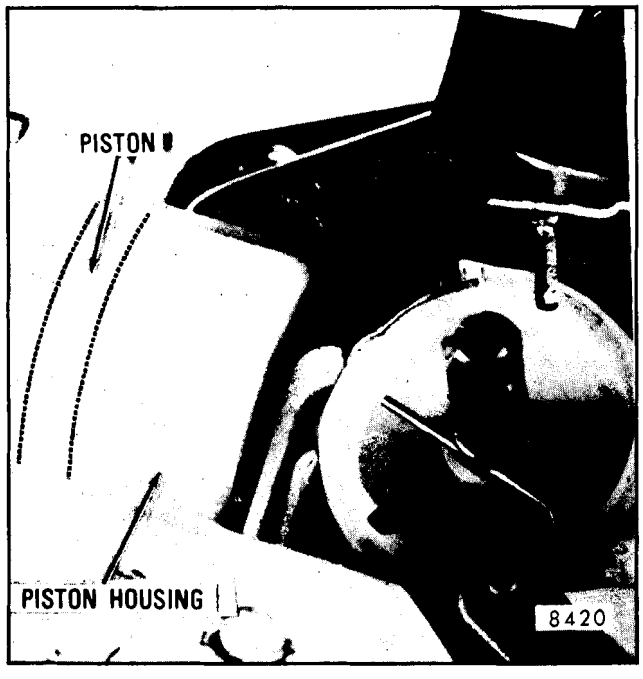


Fig. 2-132-Condition 1

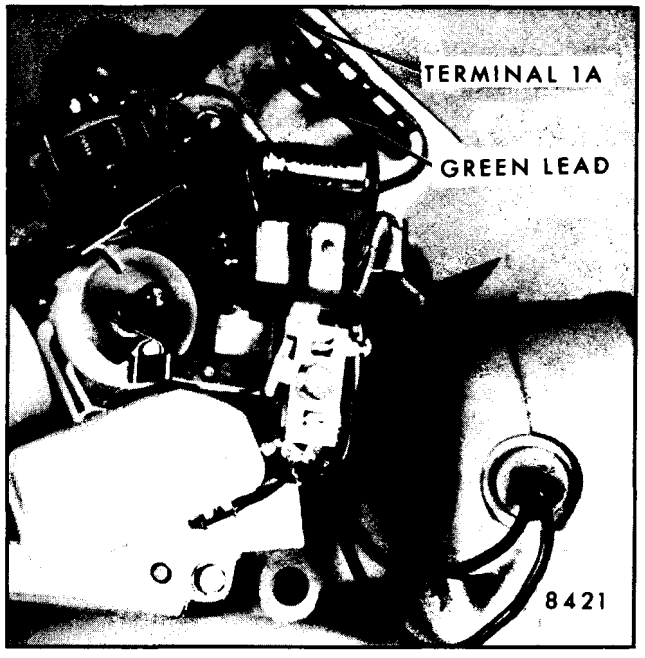


Fig. 2-133-Condition 3

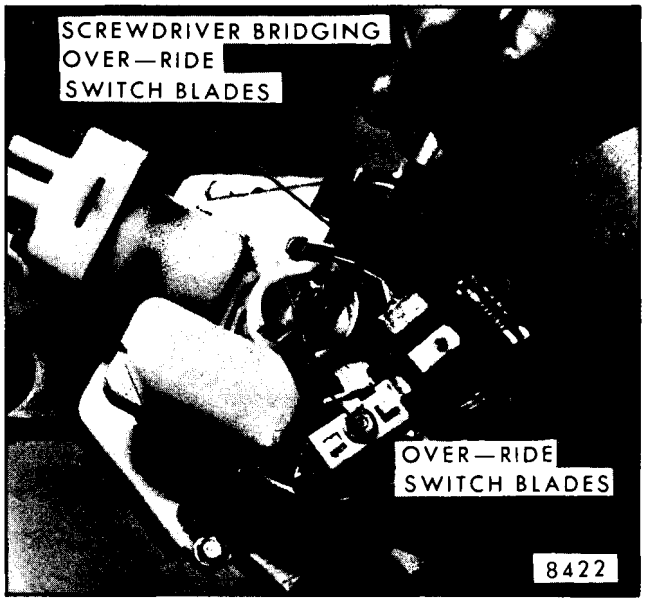


Fig. 2-134-Condition 3

DISASSEMBLY - ASSEMBLY PROCEDURES

Washer Pump Removal

1. Remove complete wiper washer assembly from vehicle.
2. Remove plastic tab from terminal 6 and 7 opening and pull plastic cover off mounting post (Fig. 2-135).
3. Disconnect the green lead from terminal 1A, red and black with with pink stripe leads from pulse relay terminals (Fig. 2-136).
4. Remove the three screws that attach pump to gearbox.

Washer Pump Installation

NOTE: Gearbox mechanism must be in park position (Fig. 2-137).

1. Install locator pin in pump mechanism as shown in Figure 2- 137.

   NOTE: If necessary to rotate cam to install locator pin, be sure to rotate cam counterclockwise.
2. Position pump assembly on gearbox and install the three attaching screws (Fig. 2-137).
3. Remove locator pin.
4. Route and attach the red, green and black with pink stripe leads as shown in Figure 2-136.
5. Position cover on washer pump mechanism and snap it over the mounting pin.
6. Reinstall small plastic plate in terminal 6 and 7 opening, refer to Figure 2-137.
7. Reinstall wiper in vehicle and attach wiring and hoses.

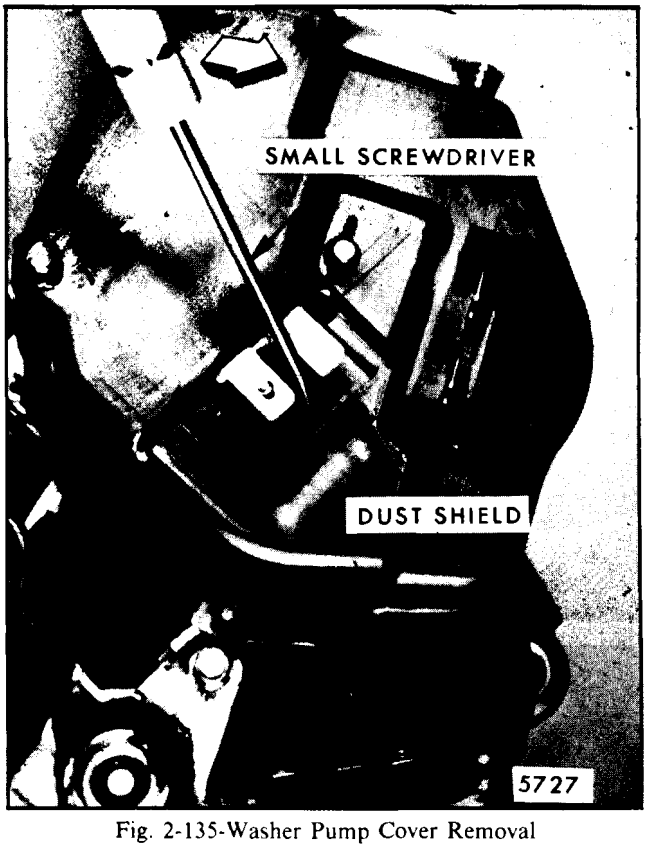


Fig. 2-135-Washer Pump Cover Removal

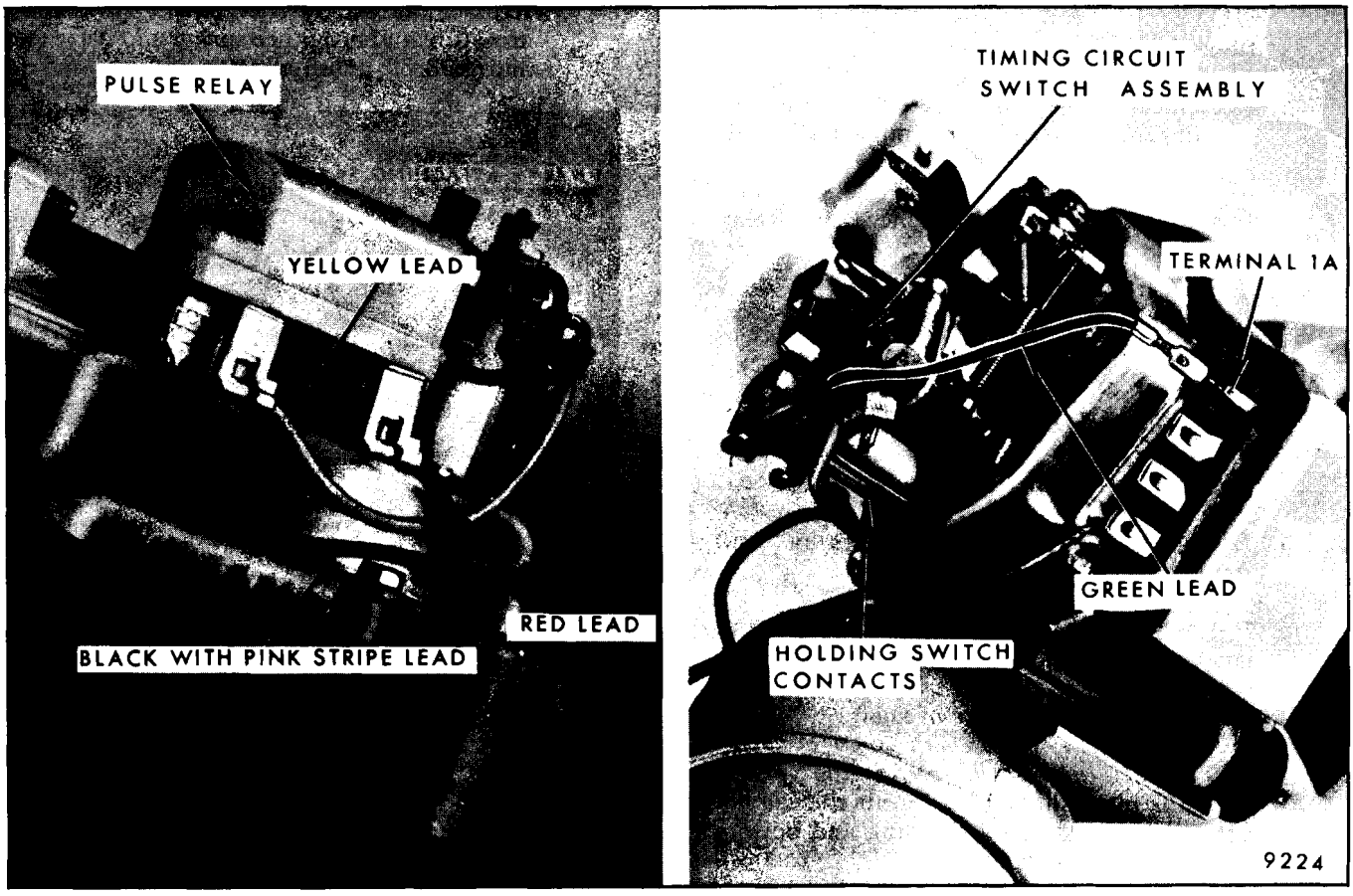


Fig. 2-136-Modified Pulse Relay Terminals and Leads

Washer Pump Components

1. Valve Assembly:

   a. Note position of valve assembly pipes relative to the pump housing for reassembly, then remove the four screws that attach valve assembly to housing (Fig. 2-138).

Fig. 2-137-Installing Pump to Motor

   b. Remove seal ring between housing and valve body and save for reassembly.

2. Drive Cam:

   Remove push-on retainer and slide cam off shaft (Fig. 2-139). New retainers are provided in cam service packages.

3. Timing Device, Holding Switch and Override Switch Assembly, Pulse Relay Assembly:

   a. Remove attaching screw and lift the pulse relay timing device, holding switch and override switch assembly off the washer frame surface.

   b. Disconnect red and yellow leads from pulse relay and detach from locator pins.

   c. To reassemble, position pulse relay on switch base locator pins, rotate drive cam counterclockwise to position shown in Figure 2-139, then secure the complete assembly to washer pump frame with the attaching screw.

NOTE: If screw strips, use a nut (6-32 thread) to secure.

d. Reconnect red and yellow leads to appropriate pulse relay terminals (Fig. 2-136).

4. Ratchet Gear, Dog Spring, Ratchet Pawl, Relay Armature:

a. Follow step a under item 3.

b. Remove dog spring assembly (Fig. 2-140).

c. Remove ratchet pawl retaining ring, disconnect pawl spring and slide pawl off cam-follower shaft (Fig. 2-140).

d. Disconnect relay armature spring and remove armature (Fig. 2- 140).

e. Release ratchet gear spring from groove in shaft and slide ratchet gear off shaft.

f. Reassemble ratchet gear of shaft.

NOTE: If necessary, move the piston actuator plate slightly to permit the ratchet gear collar to slide by the tang and bottom on the actuator plate.

5. Piston and Pump Housing:

a. Follow steps a through e under item 4.

b. To release the pump housing assembly from the sheet metal base, pull it in the direction toward the valve assembly until the grooves in the plastic pump housing clear the base. Next, detach the assembly from the cam-follower pin.

NOTE: The piston and housing are serviced as an assembly. The valve is serviced separately.

6. Relay-Terminal Board Assembly:

a. Follow disassembly steps under items 2, 3 and steps c and d under item 4.

b. Bend or chisel off the four bent over tabs that secure the coil mounting bracket to the base (Fig. 2-139).

To install a replacement relay assembly, hold it securely against the base mounting surface and bend locking tabs over.

CAUTION: *Be careful not to damage coil winding or terminals.*

c. Reassemble the ratchet pawl, pawl spring armature and armature spring and drive cam and recheck pump operation.

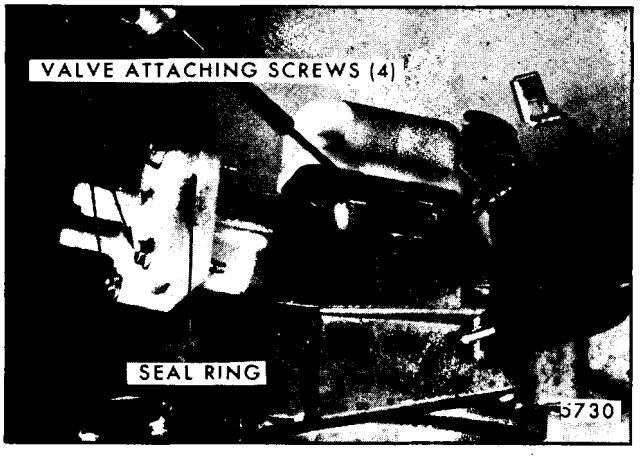


Fig. 2-138-Valve Assembly

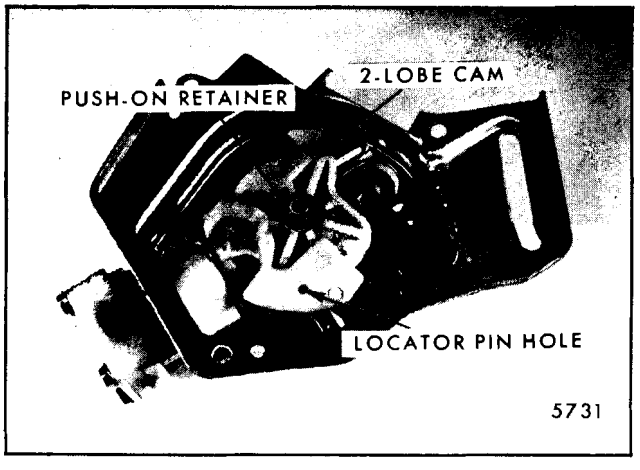


Fig. 2-139-Drive Cam

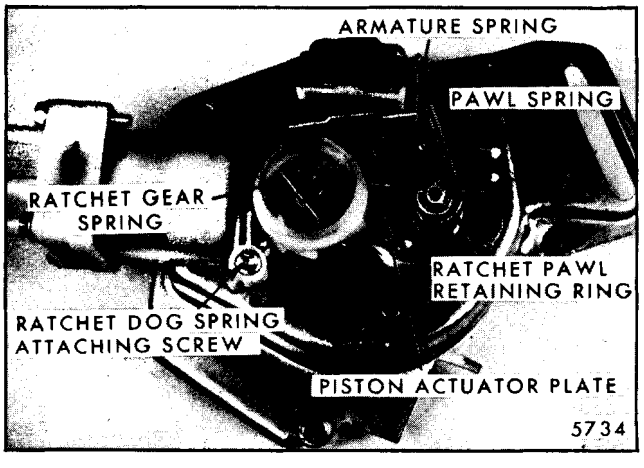


Fig. 2-140-Ratchet Pawl

WINDSHIELD WIPER SYSTEM TESTER

DESCRIPTION

The Wiper System Tester (Tool J-25079) is a universal tester that can be used to test the following systems either ON or OFF the car:

A. Modified Pulse Round Motor Wiper System

B. Two-Speed Round Motor Wiper System

C. Two-Speed Rectangular Motor Wiper System

Separate diagnostic procedures have been provided for locating problems in the above systems. The procedures for each type of system are based on certain failure modes which result in a specific malfunction. Therefore, the type of system and the manner in which the system is operating should be observed before referring to the conditions listed in the diagnosis chart indexes. It should also be noted that multiple problems in a particular system may lead to a combination of conditions, each of which must be checked separately.

Tester terminal connectors are identified by tags to facilitate hook-up. Connectors have been provided for ROUND MOTOR terminal boards, RECTANGULAR MOTOR terminal boards, TIMING CIRCUIT and WASHER RELAY terminals. The type of system to be tested determines which connectors are to be utilized. (Refer to Figs. 2-160, 2-164, 2-165, and 2-166 for terminal identification and location.)

A green ground clip has been provided for establishing motor case ground when testing wiper assemblies off car. This is the only difference between on-car and off-car test procedures.

The tester has two test switches. A rotary test switch that functionally checks the following motor operations: Test 1 - OFF/PARK, Test 2 - LOW SPEED, Test 3 - HIGH SPEED, Test 4 - DELAY for those styles equipped with modified pulse wiper systems. The other test switch (Test 5) is a button-type switch that checks operation of the washer pump.

In addition, a two-position selector switch is provided for use on either a depressed park wiper system (blades park below hood line) or a nondepressed park wiper system (blades park above hood line). The type of system being tested determines the switch position during test operations. Also, it is equipped with an integral ammeter for measuring current draw and a test probe and indicator lamp.

Current is supplied by battery cables (positive-red and negative- black) that can be attached to the car battery or any independent 12 volt power source. The circuitry is protected by a 10 amp pop- up circuit breaker with power indicator lamp.

NOTE: Prior to beginning diagnosis of wiper-washer problems, check for the following:

a. Blown fuse

b. Electrical connectors not properly engaged

c. Quantity of washer solution adequate

d. Hoses damaged, kinked or split

e. Hoses not attached or loose to washer pump, nozzles and jar

f. Plugged screen at end of hose inside jar

g. Plugged nozzles

ON-CAR TEST PROCEDURE

1. Place tester on left front fender.

2. Disconnect wiper/washer connectors and substitute appropriate tester connections (tester connectors are labeled to facilitate hook-up).

3. Attach battery cables to battery (positive-red and negative- black).

4. Place selector switch in either depressed park or nondepressed park position depending on which type of system is being tested.

5. Refer to the diagnosis chart index for the type of system being tested and select the appropriate diagnosis chart for that condition. Follow the procedures as outlined on the diagnosis chart to locate the problem area. Repair or replace as required and check operation of system.

   NOTE: When checking for intermittent wiper operation problems with voltmeter, make certain that battery is fully charged or run engine to assure proper voltage for wiper operation.

OFF-CAR TEST PROCEDURE

Off-car test procedure is the same as on-car test procedure except it is necessary to attach tester green ground clip to motor case to establish motor ground.

In addition, several wiper/washer components can be checked independently as outlined below:

1. Round motors (nonpulse) can be checked for low and high speed operation and park without the pump assembly being attached by connecting only the tester motor terminal connector and green ground clip. On pulse motors (refer to Fig. 2-159), it is necessary to join the terminal ends of the black/pink stripe and red wires together to provide current to the motor.
2. Washer relays can be tested by attaching the tester washer relay connector to the relay and depressing and holding wash test button (Test 5) while observing the ammeter. A good relay will draw approximately 1 to 1-1/2 amps.
3. Jar mounted washer motor and pump assemblies can be checked for proper operation by attaching tester washer connector to the pump assembly and depressing wash button (Test 5).

DIAGNOSIS CHART INDEX
MODIFIED PULSE - ROUND MOTOR
DEPRESSED PARK WIPER SYSTEM

CONDITION NUMBER	CONDITION	FIGURE NUMBER
	WIPER PROBLEMS	
1	WIPER SYSTEM INOPERATIVE-"WIPER FUSE OK"	2-142
2	WIPER SYSTEM INOPERATIVE-"WIPER FUSE BLOWN"	2-143
3	WIPER WON'T SHUT OFF-CONTINUOUS HIGH SPEED OPERATION IN ALL WIPER SWITCH POSITIONS	2-143
4	WIPER WON'T SHUT OFF-SYSTEM OPERATES NORMALLY WITH WIPER SWITCH IN ALL OTHER POSITIONS	2-144
5	WIPER WON'T SHUT OFF OR DELAY BETWEEN WIPES-SYSTEM OPERATES NORMALLY WITH WIPER SWITCH IN ALL OTHER POSITIONS	2-144
6	WIPER WON'T SHUT OFF AND WASHER PUMPS CONTINUOUSLY	2-144
7	WIPER HAS "LO" SPEED ONLY-SYSTEM OPERATES NORMALLY WITH WIPER SWITCH IN ALL OTHER POSITIONS	2-144
8	WIPER SYSTEM INOPERATIVE IN DELAY MODE-SYSTEM OPERATES NORMALLY WITH WIPER SWITCH IN ALL OTHER POSITIONS	2-145
9	WIPER WILL NOT DELAY BETWEEN WIPES (RUNS STEADY IN DELAY MODE)-SYSTEM OPERATES NORMALLY WITH WIPER SWITCH IN ALL OTHER POSITIONS	2-145
10	INTERMITTENT WIPER OPERATION-BLADES STOP AT RANDOM POSITIONS ON WINDSHIELD	2-145
	WASHER PROBLEMS	
11	WASHER PUMPS CONTINUOUSLY WITH WIPER SWITCH IN ALL POSITIONS	2-146
12	WASHER INOPERATIVE-WIPER MOTOR OPERATES NORMALLY IN ALL WIPER SWITCH POSITIONS	2-146
13	WASHER SHUTS OFF BEFORE WASH CYCLE IS COMPLETED WHEN WASH CYCLE IS STARTED WITH WIPER SWITCH IN OFF POSITION-BLADES MOVE OUT OF PARK POSITION MAKE ONE SQUIRT RETURN TO PARK AND SHUT OFF	2-147
14	WASHER PUMP NOISY-MAKES LOUD KLUNKING NOISE	2-147

9206

Fig. 2-141 - Modified Pulse Diagnosis Chart Index

MODIFIED PULSE ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

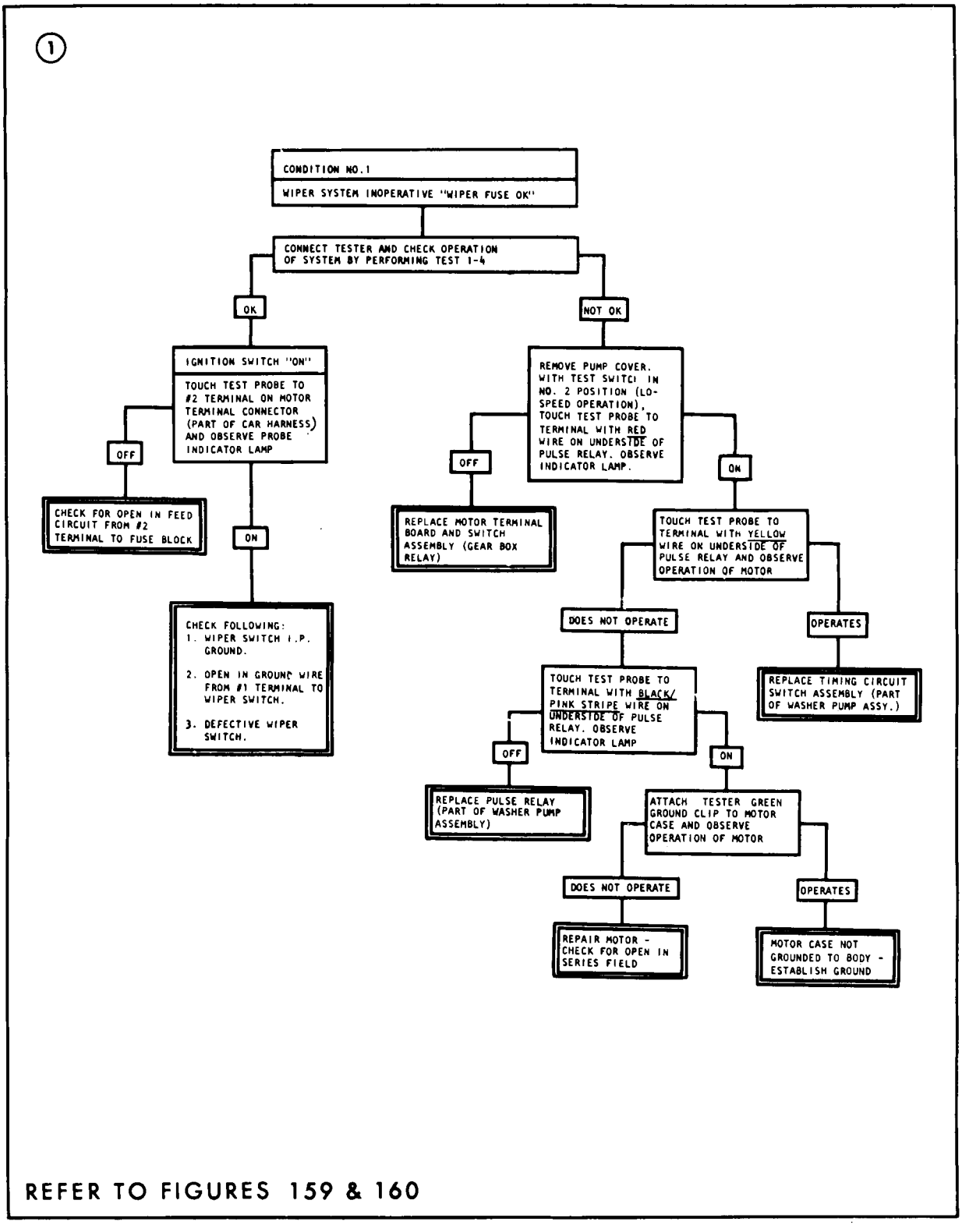


Fig. 2-142 - Modified Pulse Diagnosis Chart (Condition No. 1)

MODIFIED PULSE ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

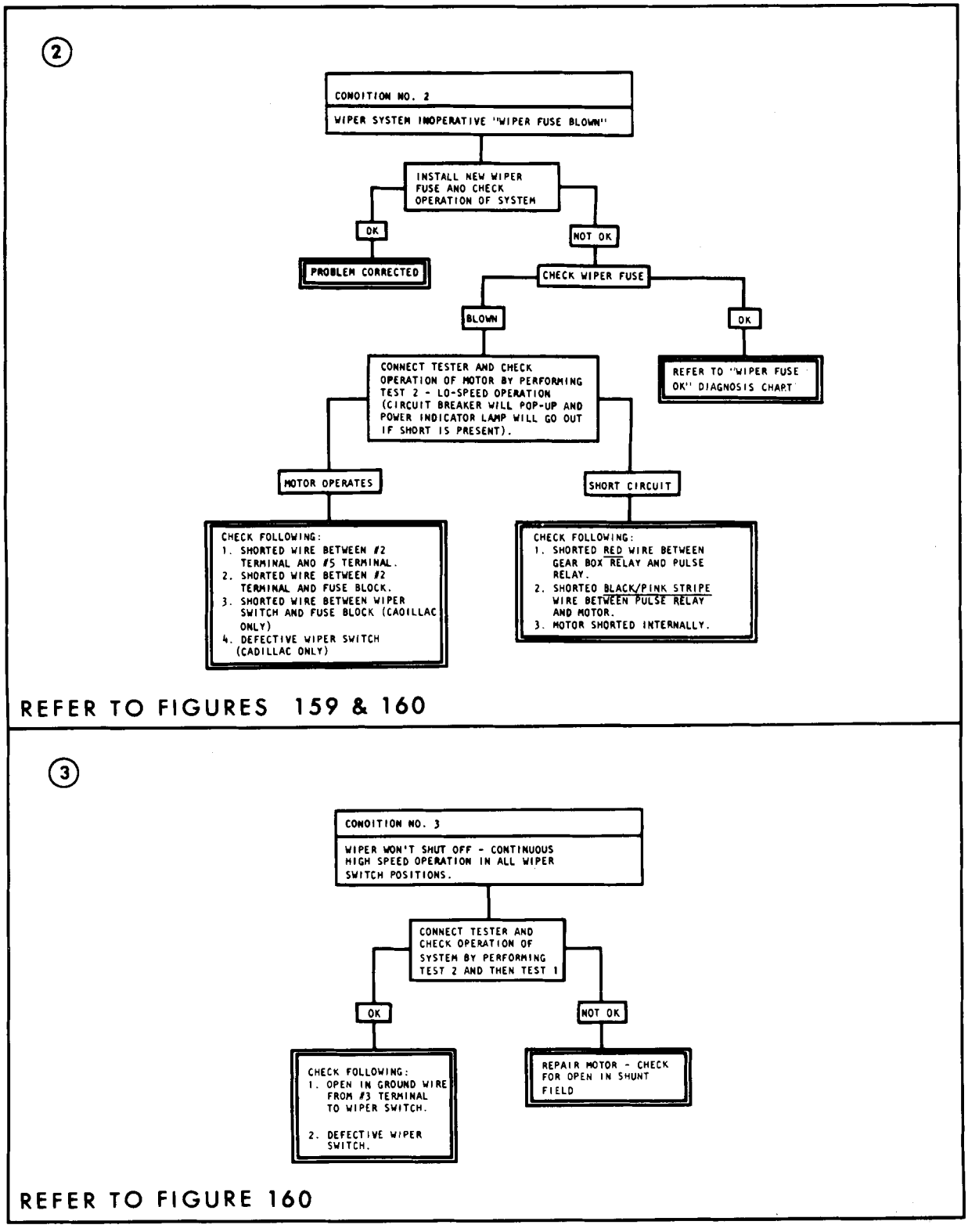


Fig. 2-143 - Modified Pulse Diagnosis Chart (Condition Nos. 2 and 3)

MODIFIED PULSE ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

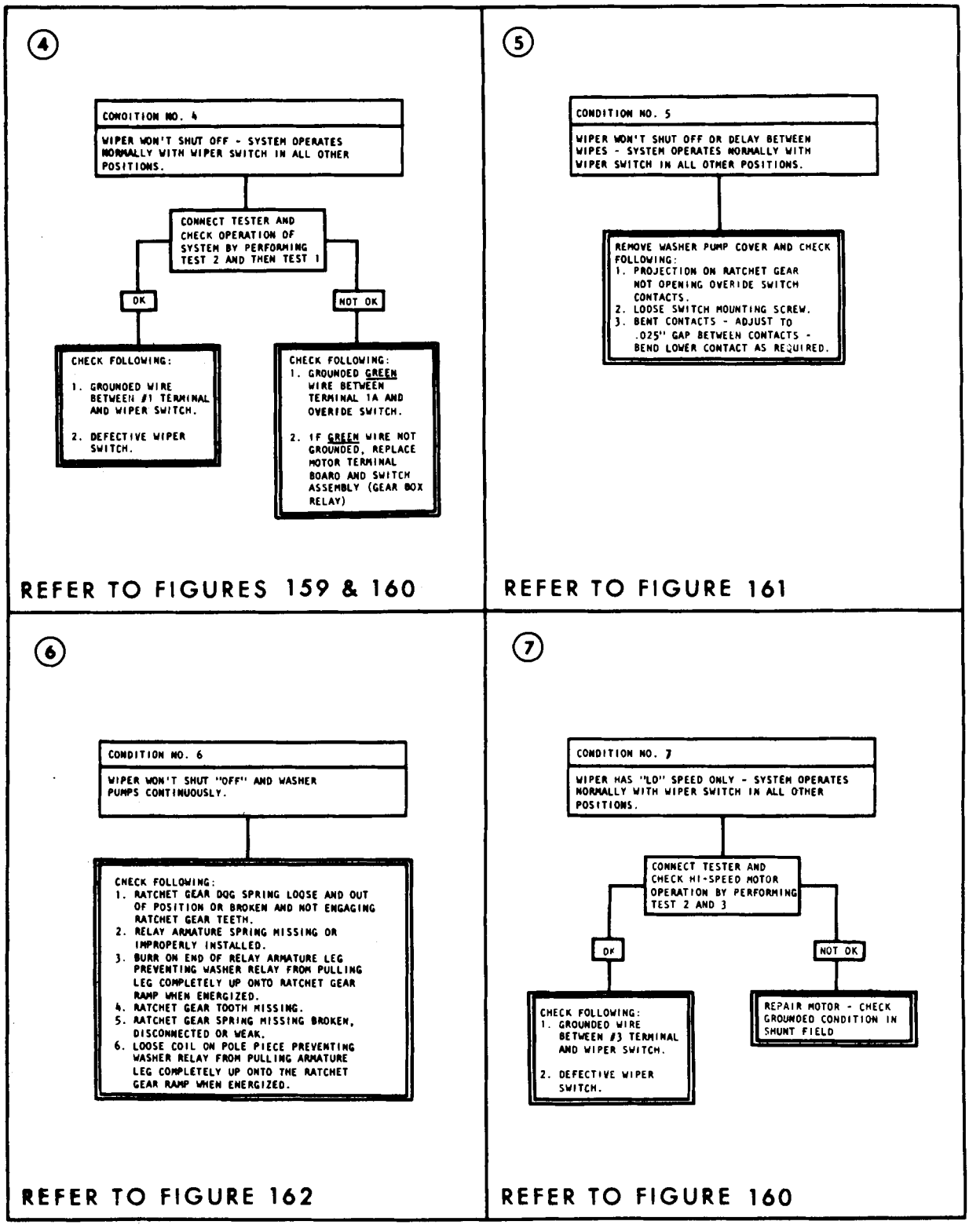


Fig. 2-144 - Modified Pulse Diagnosis Chart (Condition Nos. 4, 5, 6 and 7)

MODIFIED PULSE ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

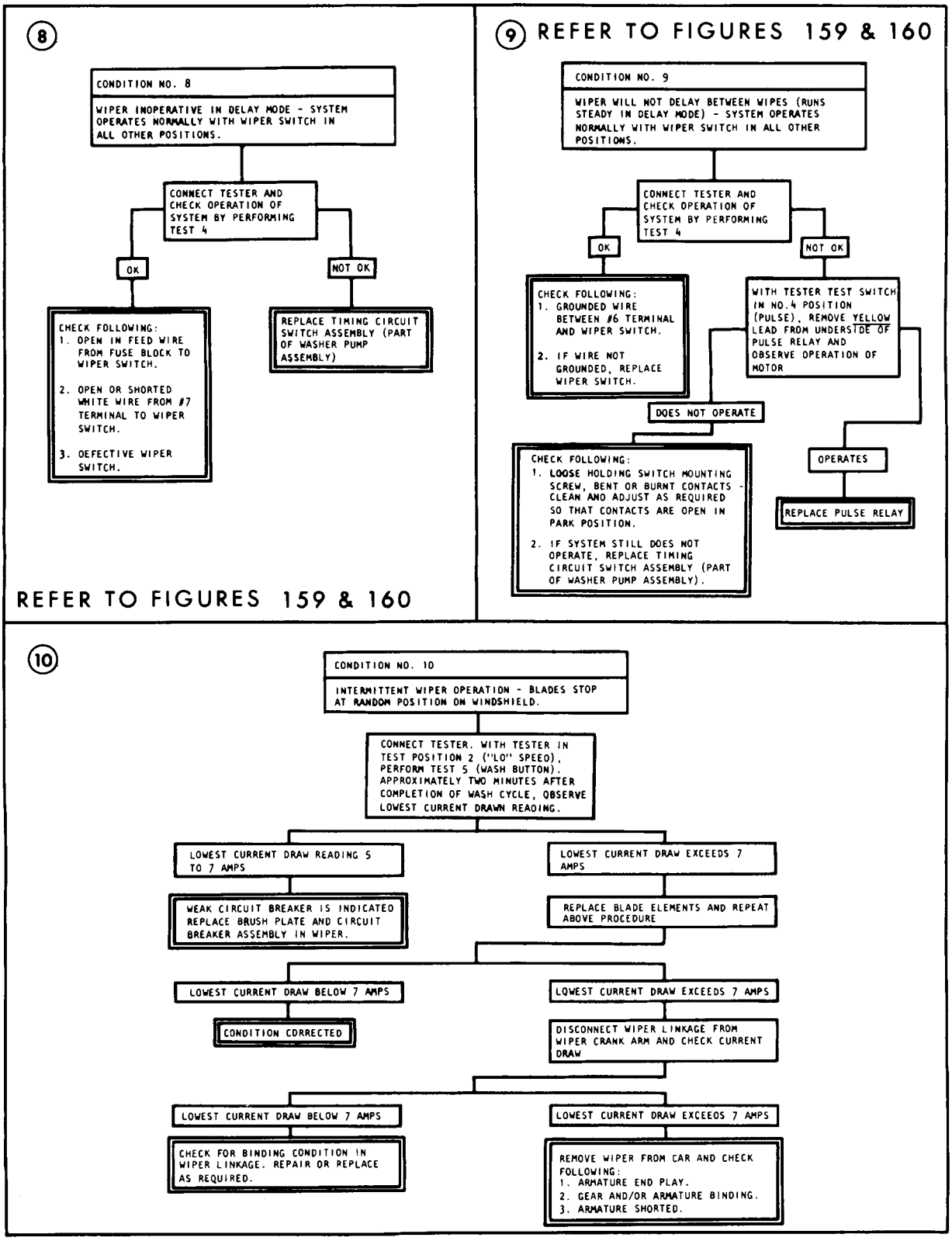


Fig. 2-145 - Modified Pulse Diagnosis Chart (Condition Nos. 8, 9 and 10)

MODIFIED PULSE ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

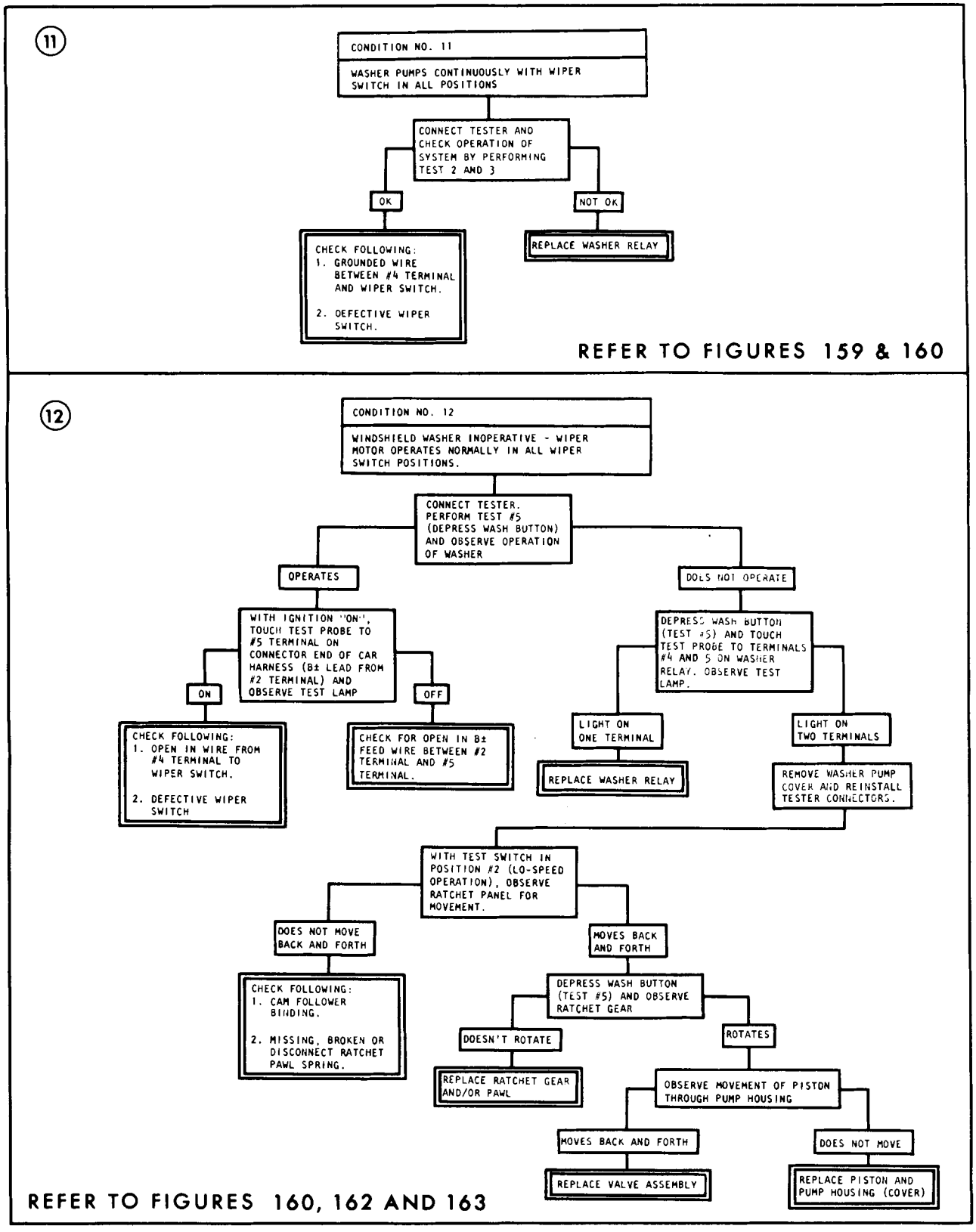


Fig. 2-146 - Modified Pulse Diagnosis Chart (Condition Nos. 11 and 12)

9211

MODIFIED PULSE ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

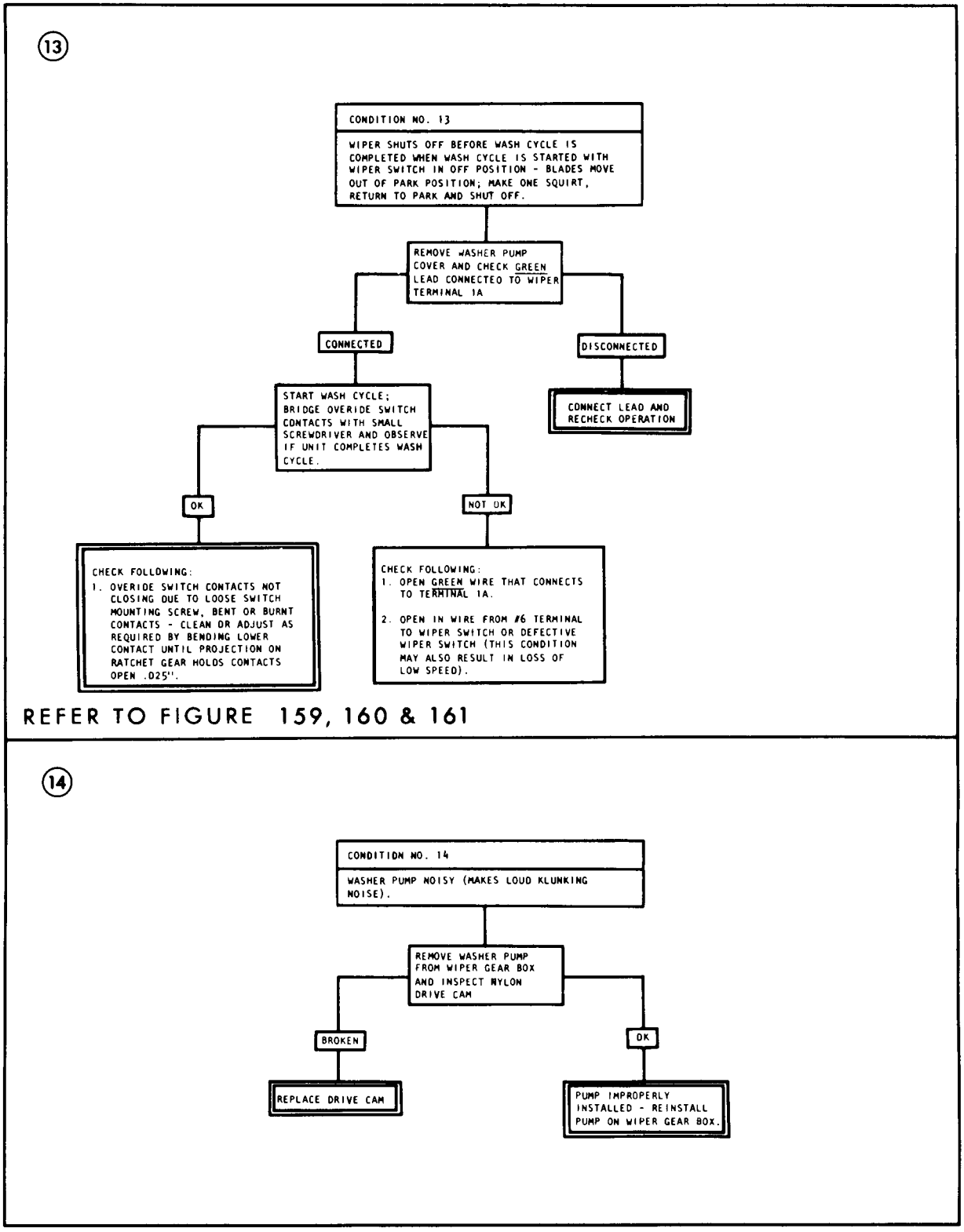


Fig. 2-147 - Modified Pulse Diagnosis Chart (Condition Nos. 13 and 14)

DIAGNOSIS CHART INDEX
TWO AND THREE SPEED - ROUND MOTOR
DEPRESSED PARK WIPER SYSTEM

CONDITION NUMBER	CONDITION	FIGURE NUMBER
	WIPER PROBLEMS	
1	WIPER SYSTEM INOPERATIVE-"WIPER FUSE BLOWN"	2-149
2	WIPER SYSTEM INOPERATIVE-"WIPER FUSE OK"	2-149
3	WIPER WON'T SHUT OFF-SYSTEM OPERATES NORMALLY WITH WIPER SWITCH IN ALL OTHER POSITIONS	2-150
4	WIPER WON'T SHUT OFF-CONTINUOUS HIGH SPEED OPERATION IN ALL WIPER SWITCH POSITIONS	2-150
5	WIPER HAS LOW SPEED ONLY-WIPER SHUTS OFF OK	2-150
6	HIGH SPEED TOO FAST	2-151
7	WIPERS OPERATE AT HIGH SPEED WITH WIPER SWITCH IN MEDIUM SPEED POSITION	2-151
8	INTERMITTENT WIPER OPERATION-BLADES STOP AT RANDOM POSITIONS ON WINDSHIELD	2-151
	WASHER PROBLEMS	
9	WASHER INOPERATIVE-WIPER MOTOR OPERATES NORMALLY IN ALL WIPER SWITCH POSITIONS	2-152
10	WASHER PUMPS CONTINUOUSLY WITH WIPER SWITCH IN ALL POSITIONS	2-152
11	WASHER PUMP NOISY-MAKES LOUD KLUNKING NOISE	2-153

9213

Fig. 2-148 - Two-Speed Round Motor Diagnosis Chart Index

TWO-SPEED ROUND MOTOR NON-DEPRESSED PARK WIPER SYSTEM

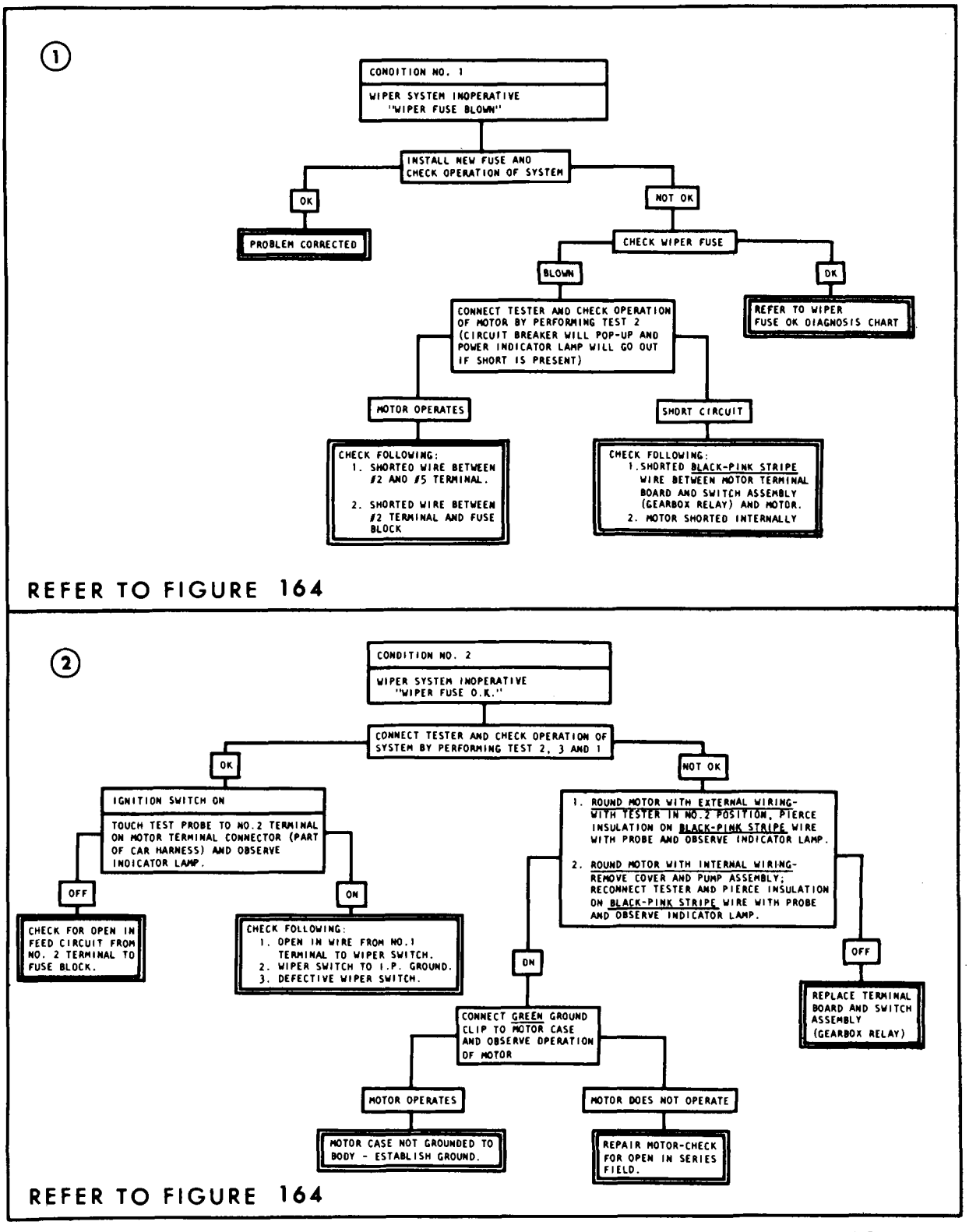


Fig. 2-149 - Two-Speed Round Motor Diagnosis Chart (Condition Nos. 1 and 2)

TWO-SPEED ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

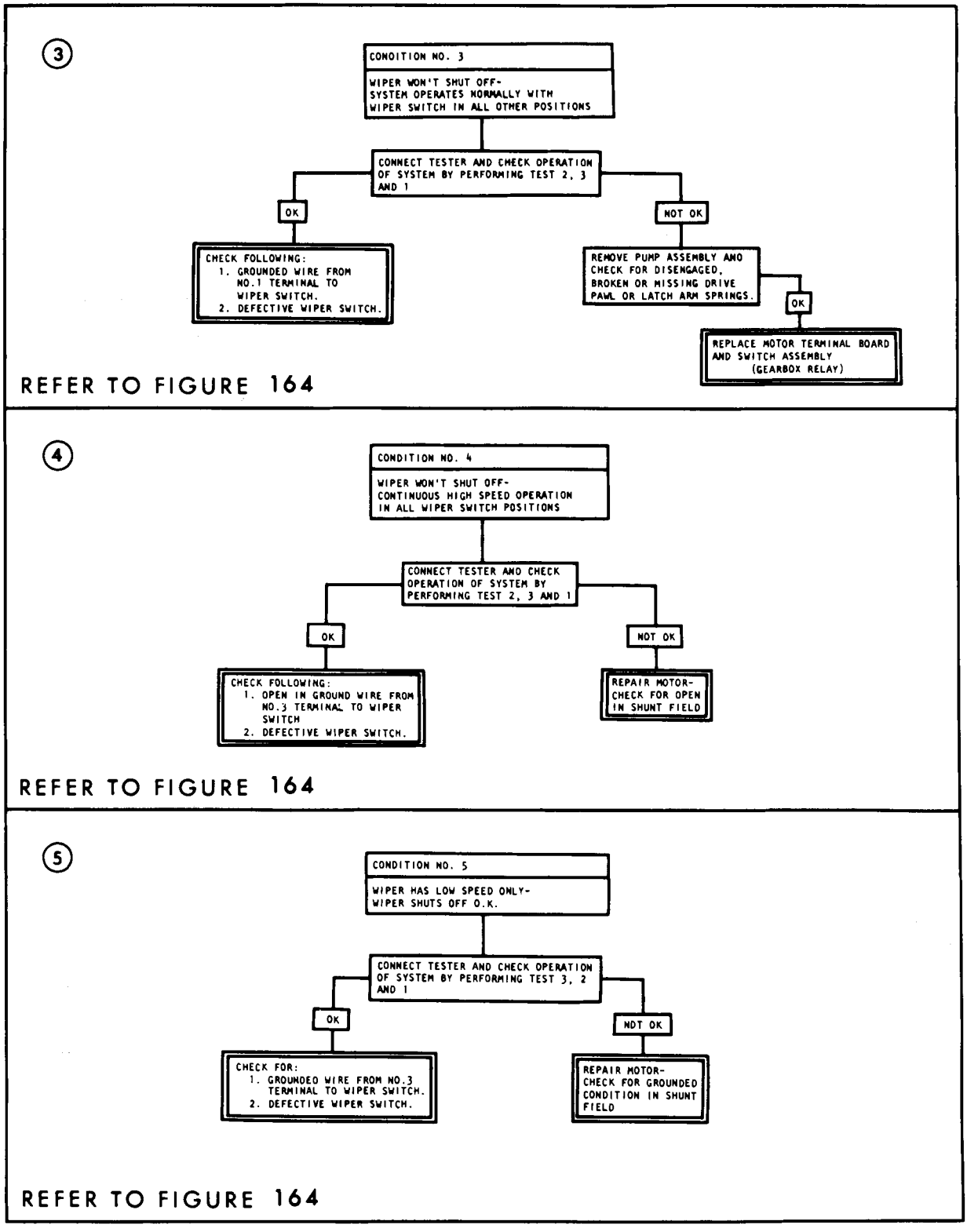


Fig. 2-150 - Two-Speed Round Motor Diagnosis Chart (Condition Nos. 3, 4 and 5)

TWO-SPEED ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

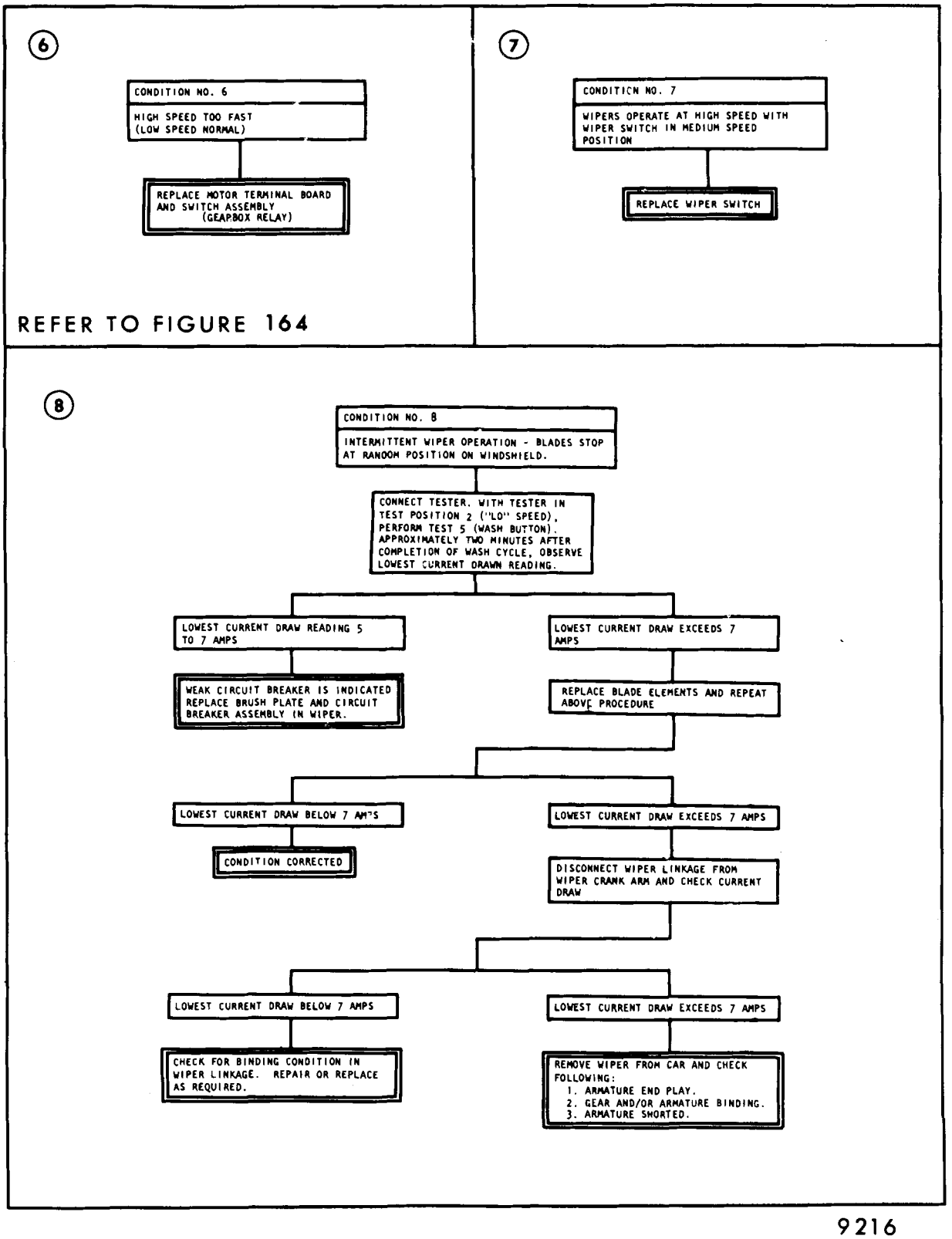


Fig. 2-151 - Two-Speed Round Motor Diagnosis Chart (Condition Nos. 6, 7 and 8)

TWO-SPEED ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

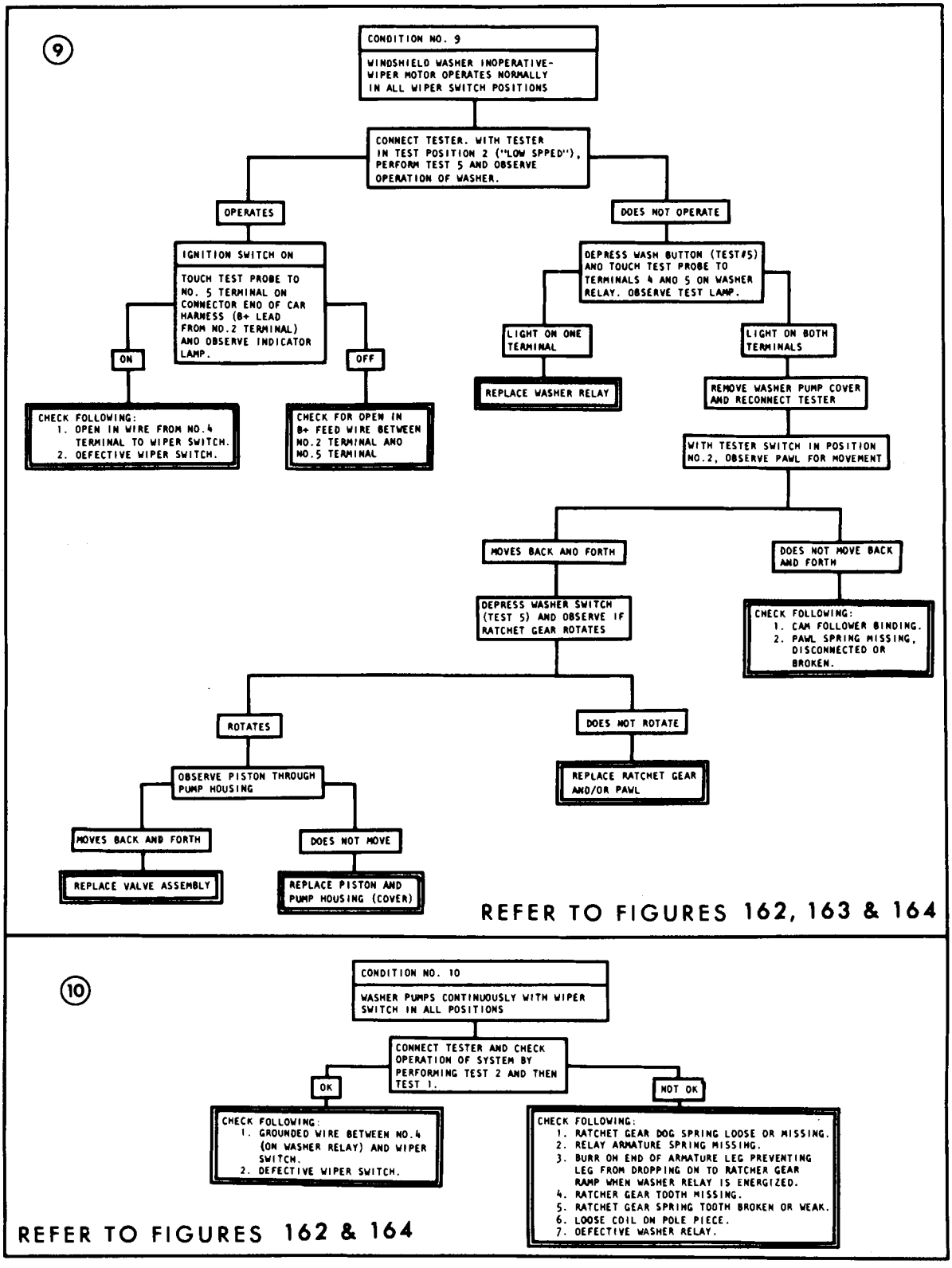


Fig. 2-152 - Two-Speed Round Motor Diagnosis Chart (Condition Nos. 9 and 10)

TWO-SPEED ROUND MOTOR DEPRESSED PARK WIPER SYSTEM

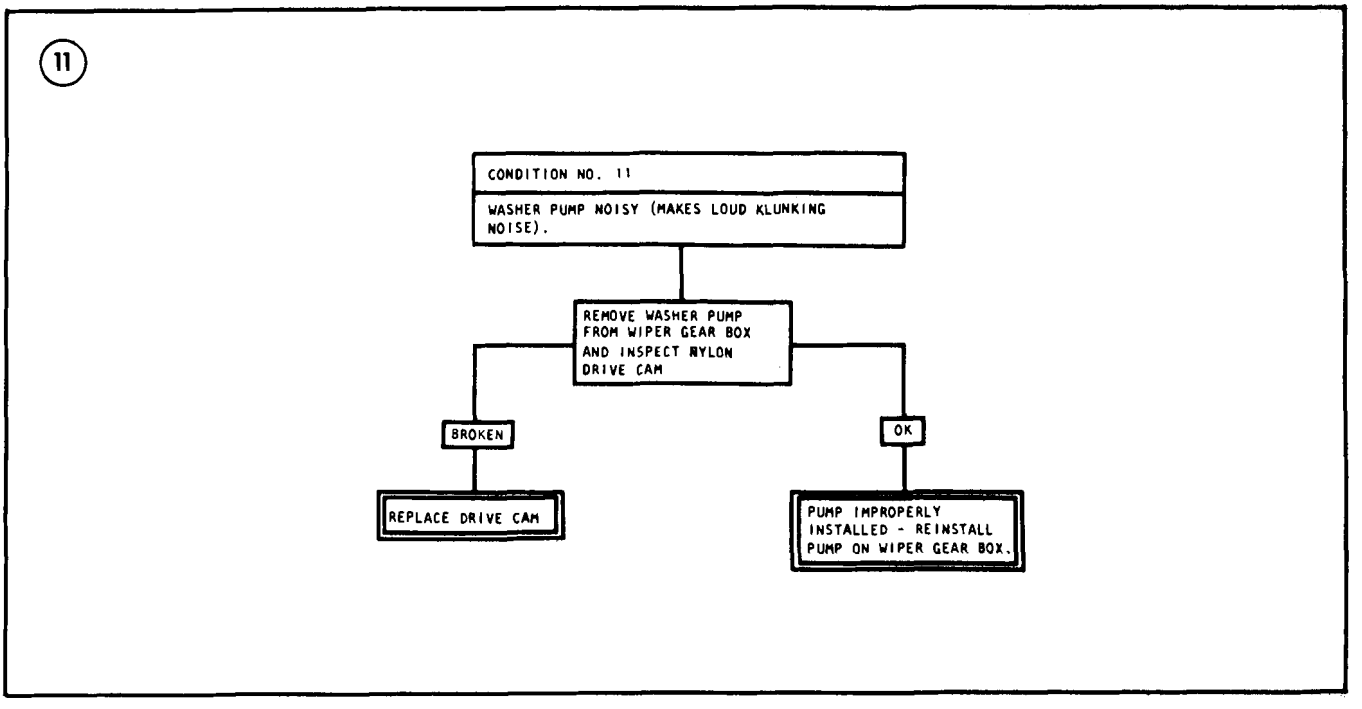


Fig. 2-153 - Two-Speed Round Motor Diagnosis Chart (Condition No. 11) 9218

DIAGNOSIS CHART INDEX
TWO SPEED - RECTANGULAR MOTOR
NON-DEPRESSED PARK WIPER SYSTEM

CONDITION NUMBER	CONDITION	FIGURE NUMBER
	WIPER PROBLEMS	
1	WIPER SYSTEM INOPERATIVE-WIPER FUSE BLOWN	2-155
2	WIPER SYSTEM INOPERATIVE-WIPER FUSE OK	2-155
3	WIPER WON'T SHUT OFF-OPERATES IN BOTH LOW AND HIGH SPEEDS	2-156
4	WIPER WON'T SHUT OFF-OPERATES IN LOW SPEED ONLY	2-156
5	WIPER HAS HIGH SPEED ONLY	2-156
6	WIPER SHUTS OFF, BUT BLADES DO NOT RETURN TO FULL PARK POSITION	2-157
7	HIGH SPEED TOO FAST	2-157
8	INTERMITTENT WIPER OPERATION	2-157
9	WIPER INOPERATIVE FROM SEPARATE PULSE CONTROL	2-157
	WASHER PROBLEMS	
10	WASHER INOPERATIVE	2-158

9219

Fig. 2-154 - Two-Speed Rectangular Motor Diagnosis Chart Index

TWO-SPEED RECTANGULAR MOTOR DEPRESSED PARK WIPER SYSTEM

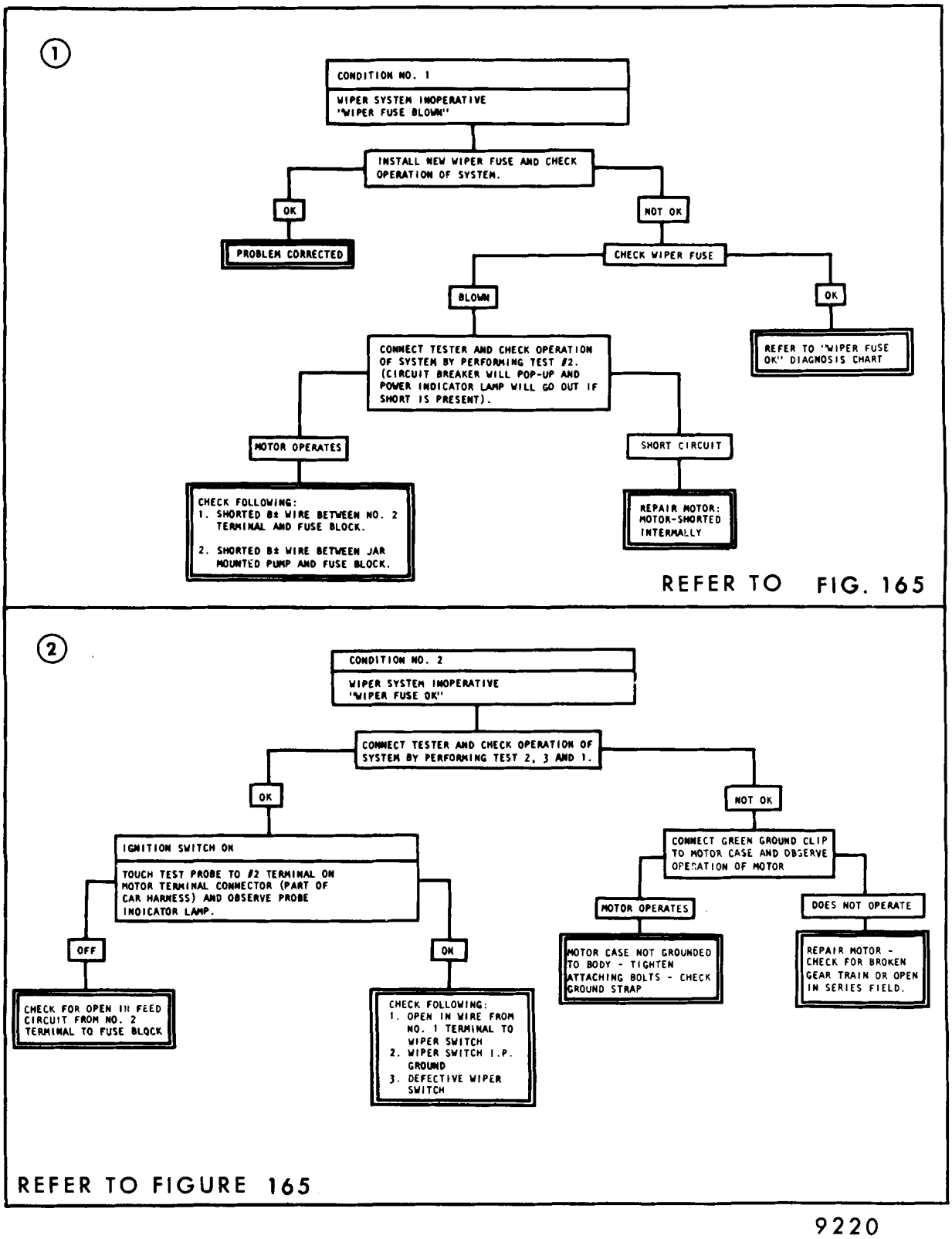


Fig. 2-155 - Two-Speed Rectangular Motor Diagnosis Chart (Condition Nos. 1 and 2)

TWO-SPEED RECTANGULAR MOTOR NON-DEPRESSED PARK WIPER SYSTEM

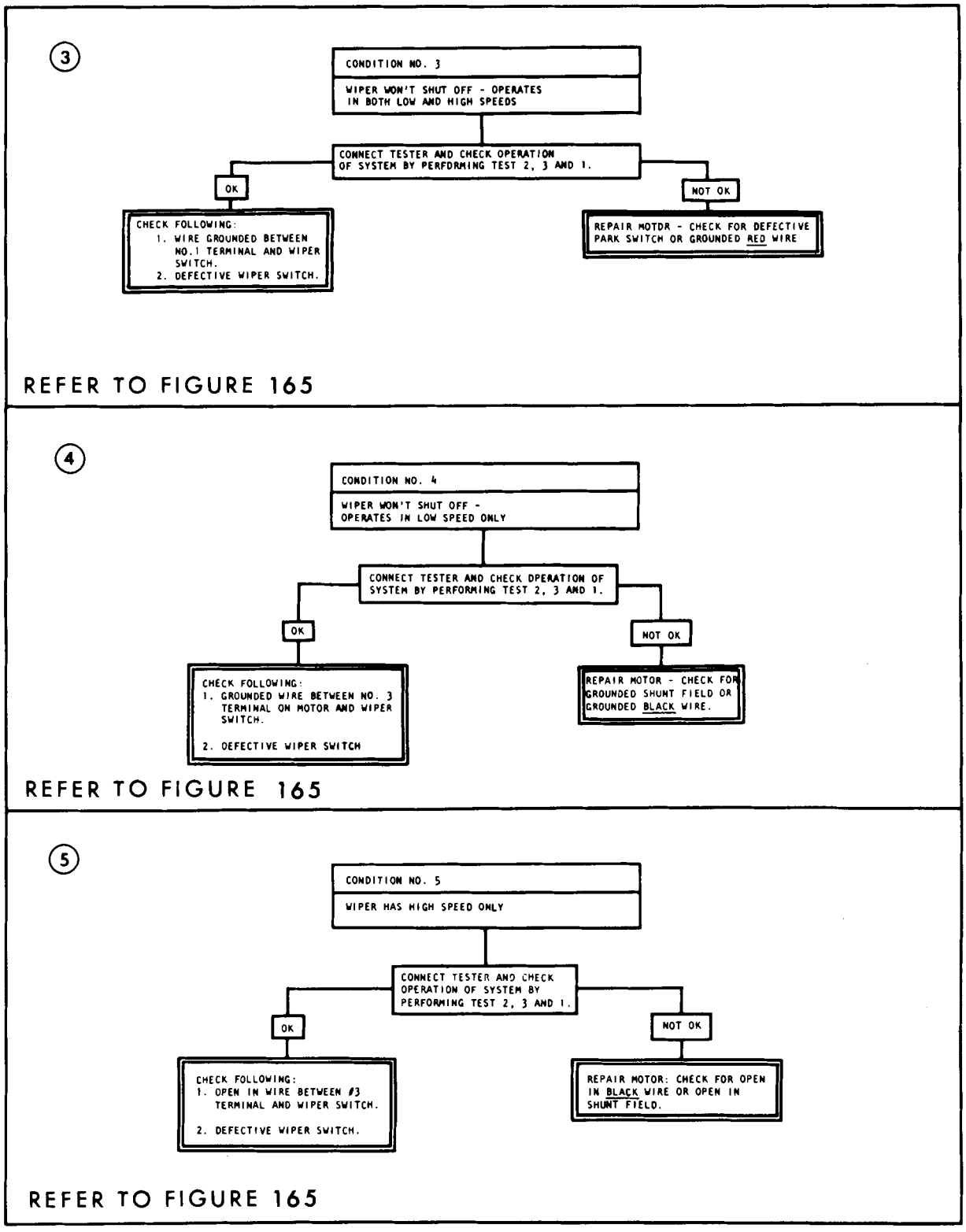


Fig. 2-156 - Two-Speed Rectangular Motor Diagnosis Chart (Condition Nos. 3, 4 and 5)

TWO-SPEED RECTANGULAR MOTOR NON-DEPRESSED PARK WIPER SYSTEM

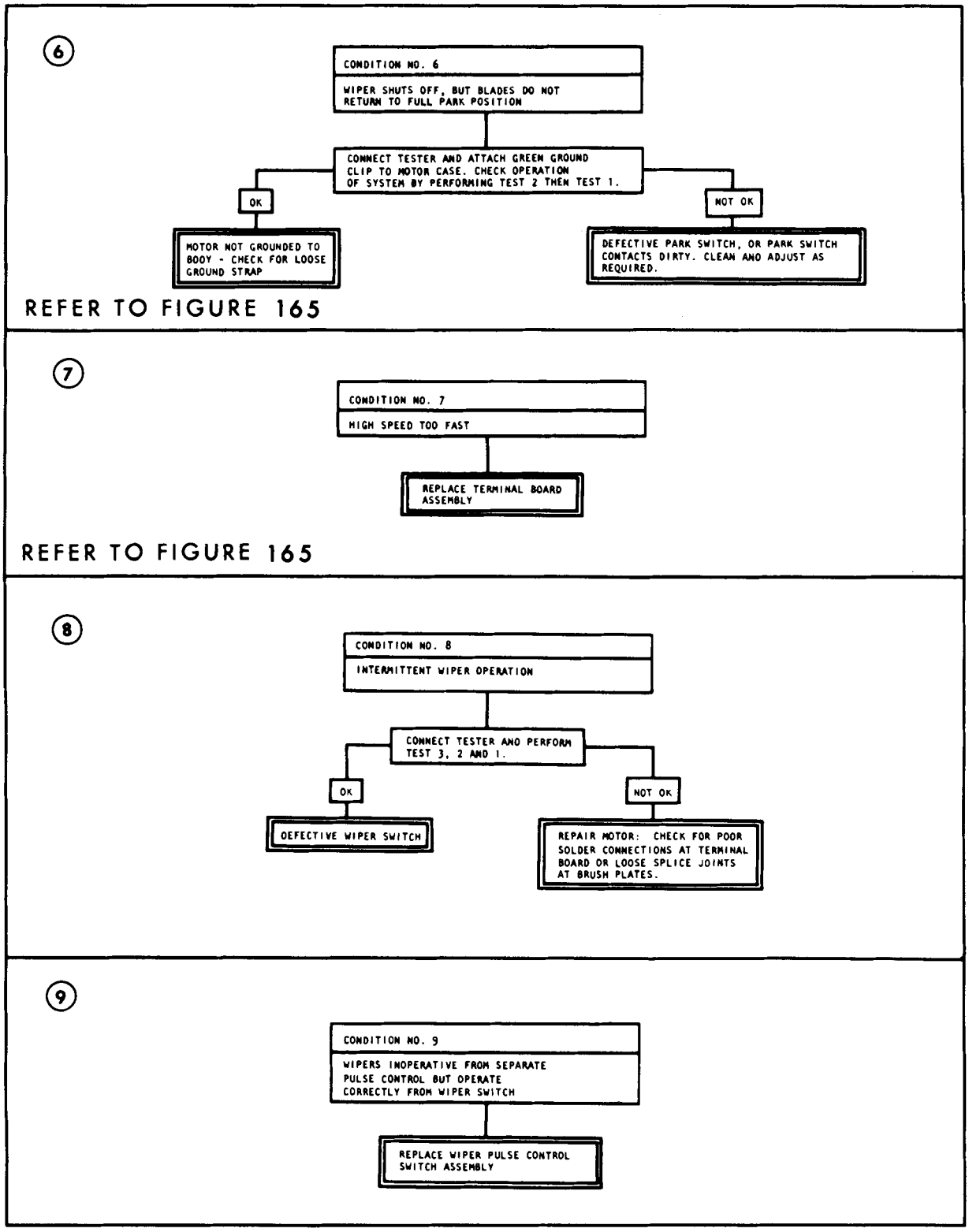
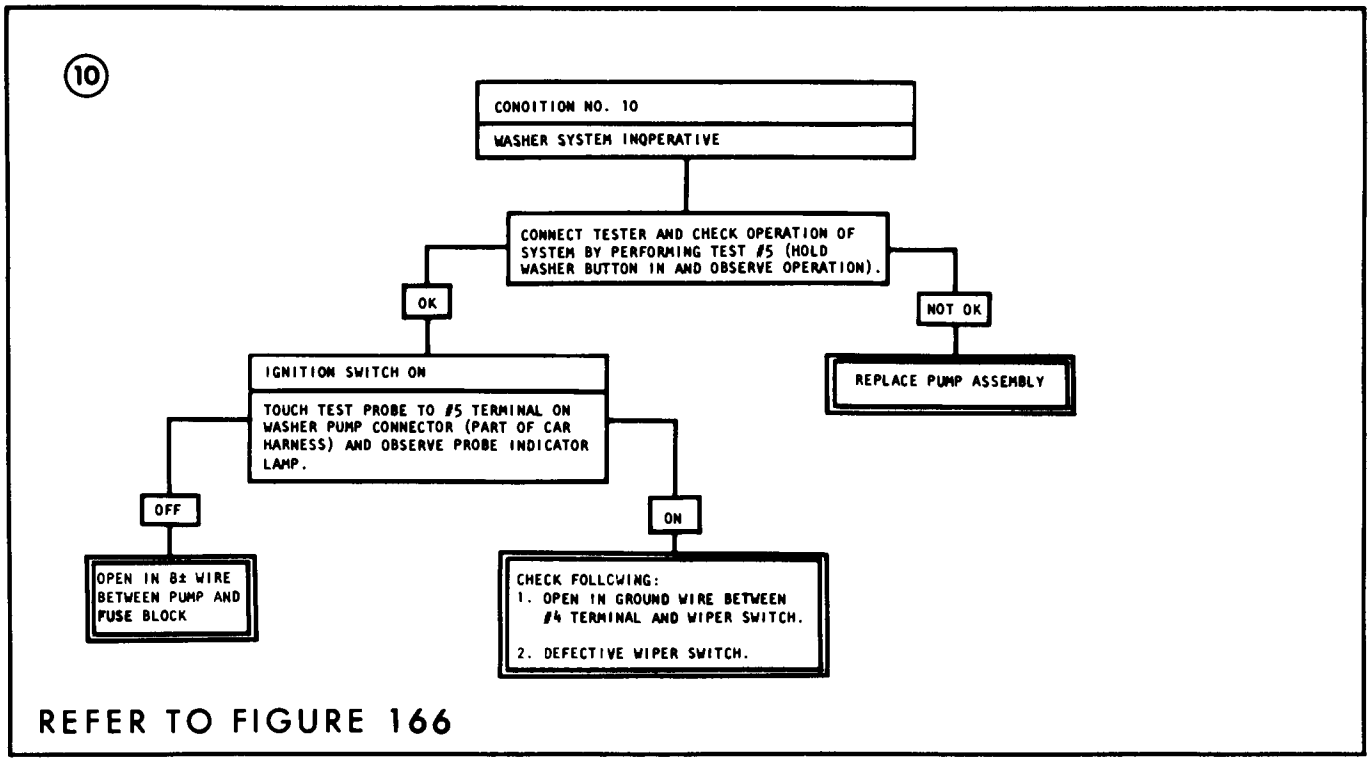


Fig. 2-157 - Two-Speed Rectangular Motor Diagnosis Chart (Condition Nos. 6, 7, 8 and 9)

TWO-SPEED RECTANGULAR MOTOR NON-DEPRESSED PARK WIPER SYSTEM



9223

Fig. 2-158 - Two-Speed Rectangular Motor Diagnosis Chart (Condition No. 10)

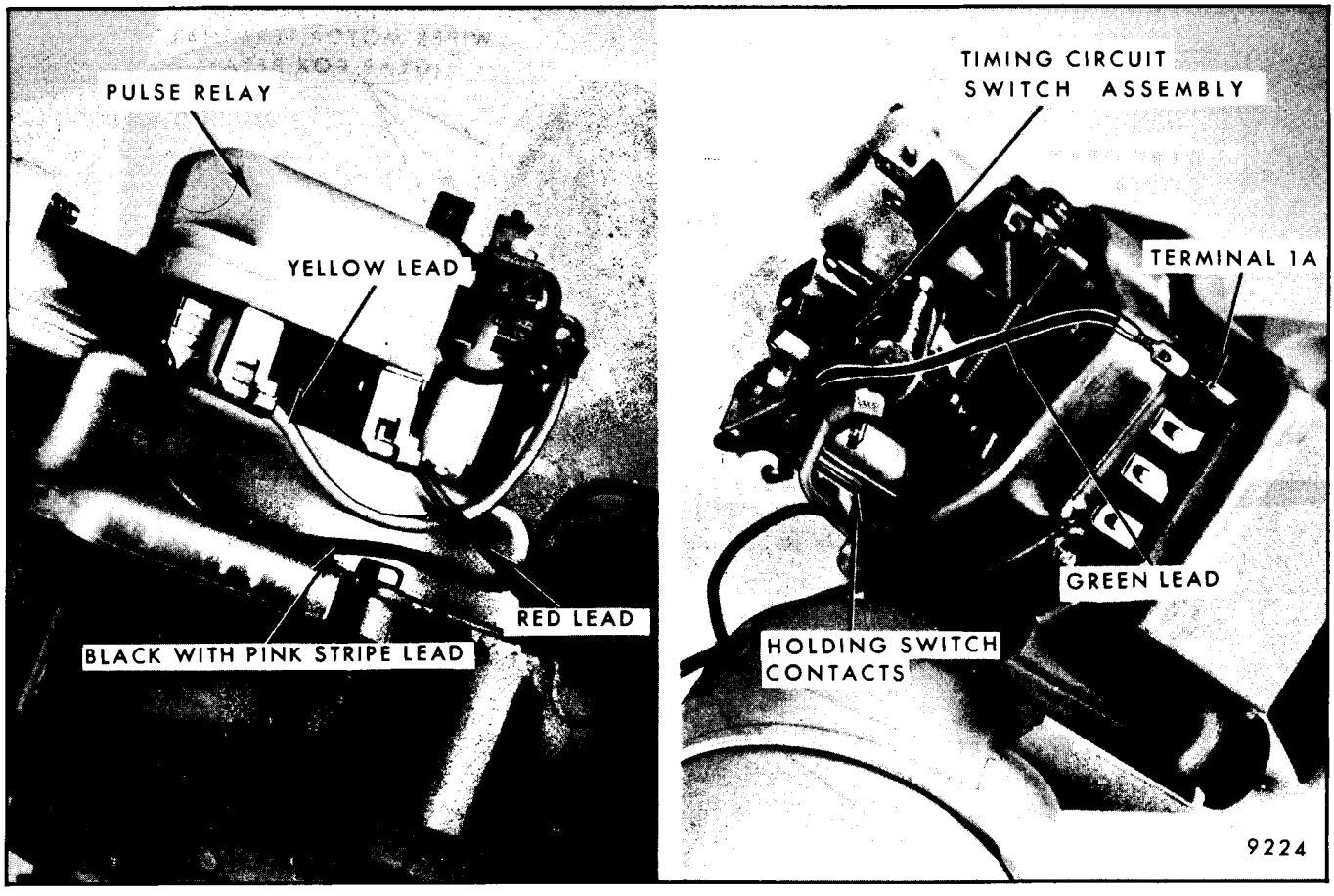


Fig. 2-159 - Modified Pulse Wiper System

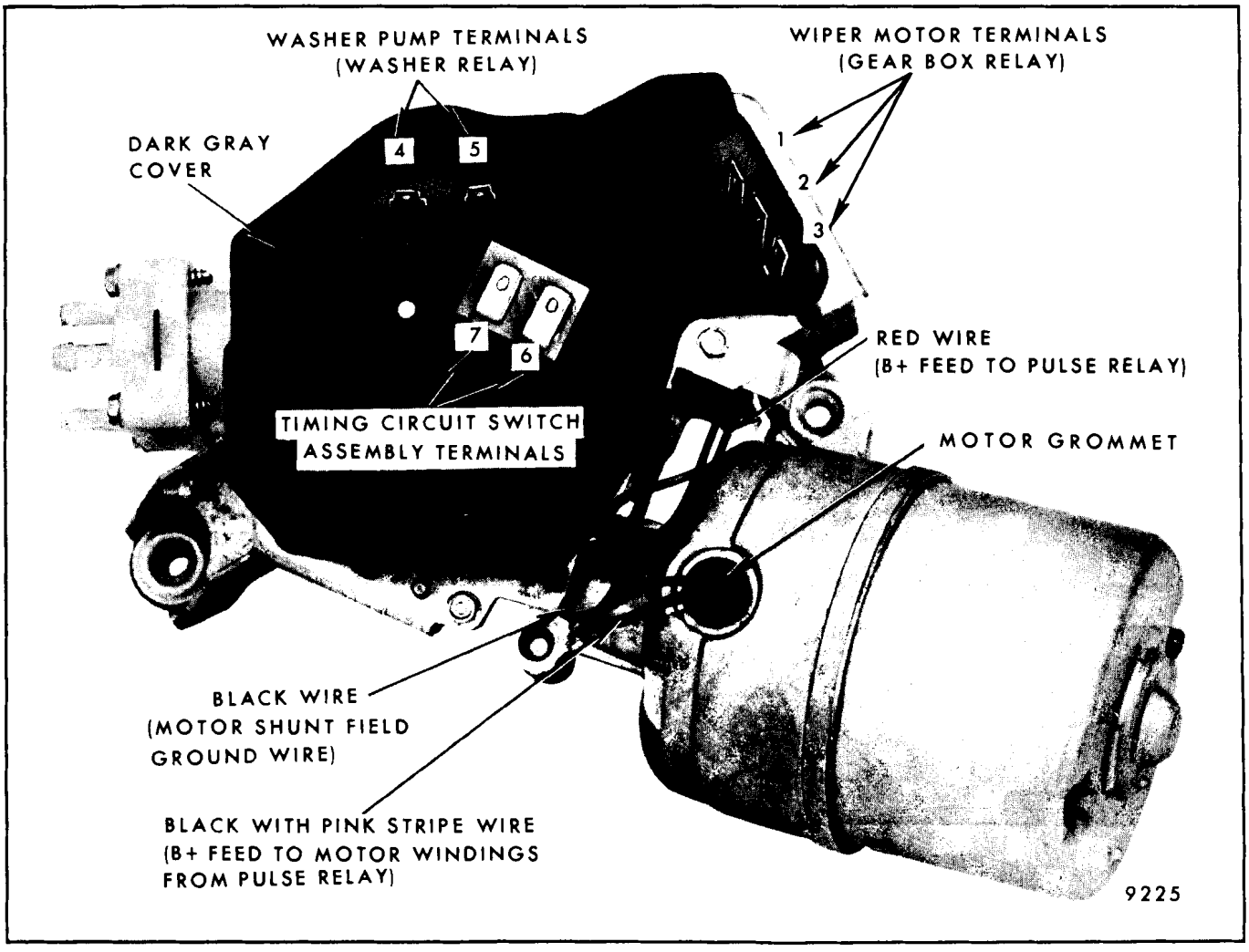


Fig. 2-160 - Modified Pulse Wiper System

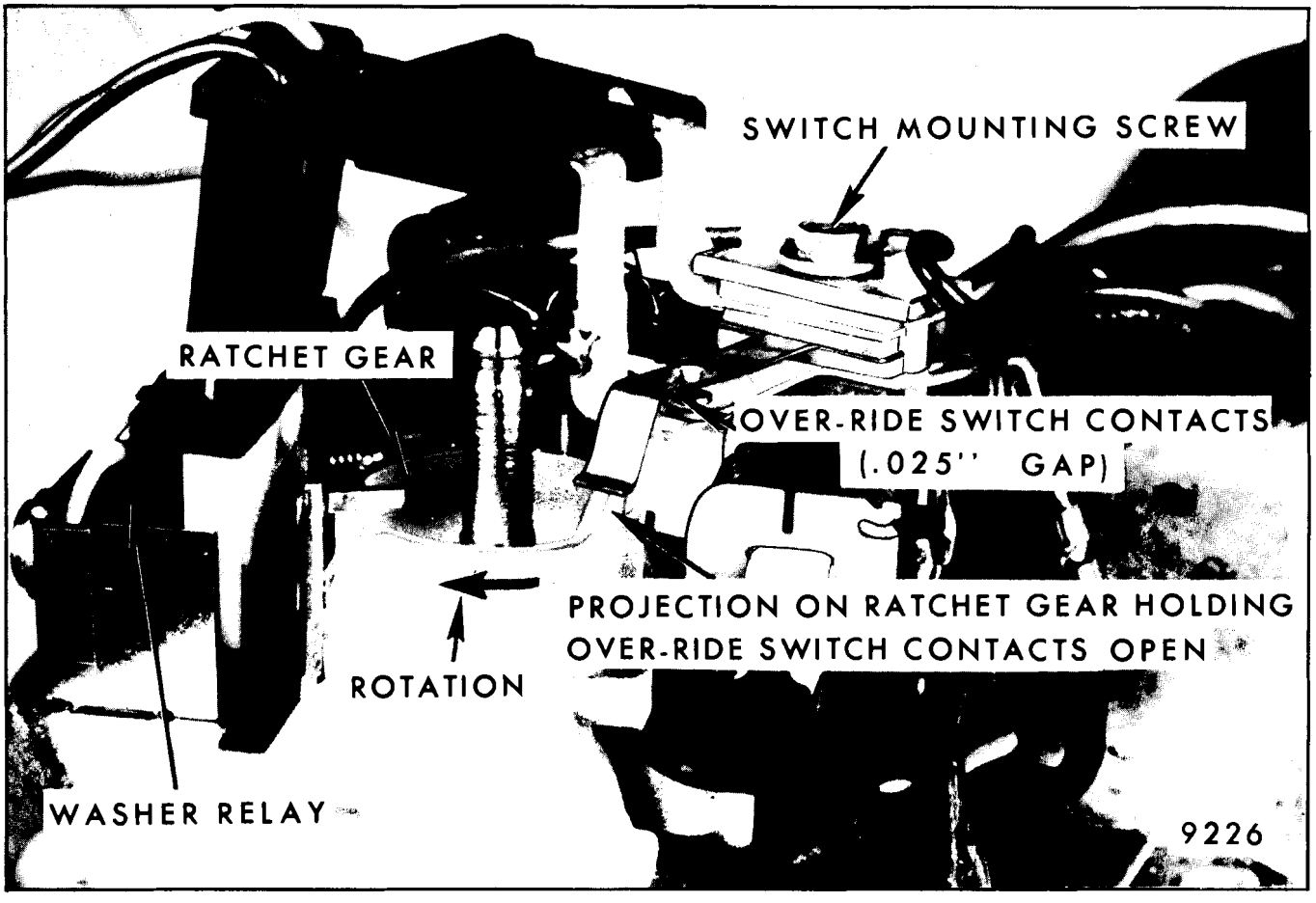


Fig. 2-161 - Modified Pulse Wiper System

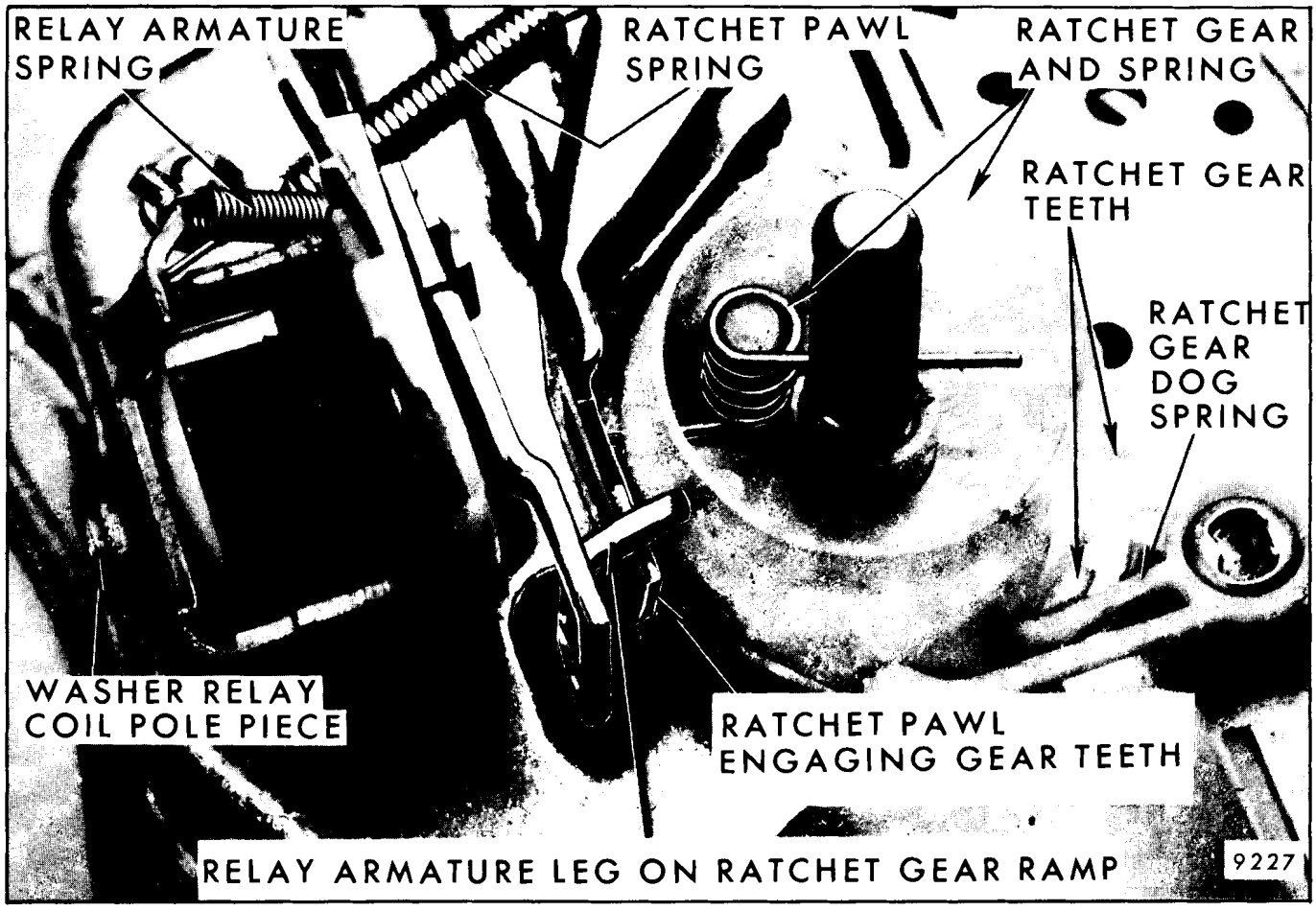


Fig. 2-162 - Modified Pulse Wiper System

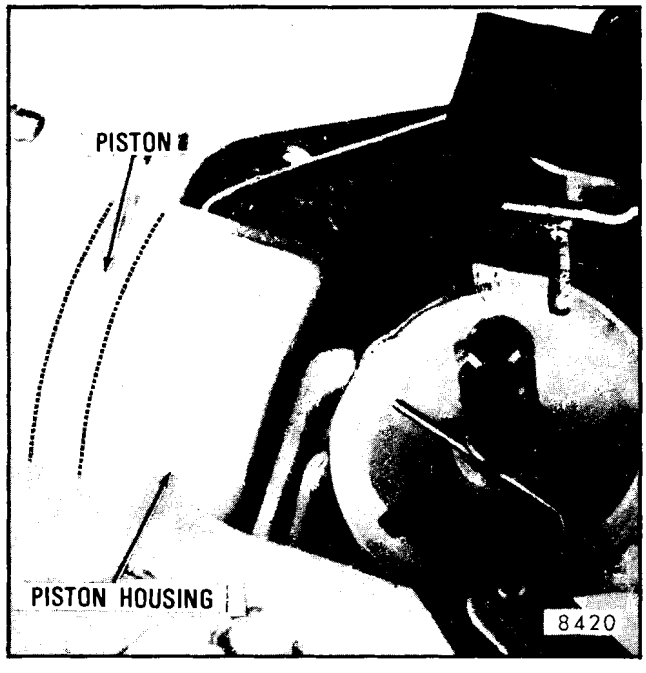


Fig. 2-163 - Modified Pulse and Two-Speed Round Motor Washer Assembly

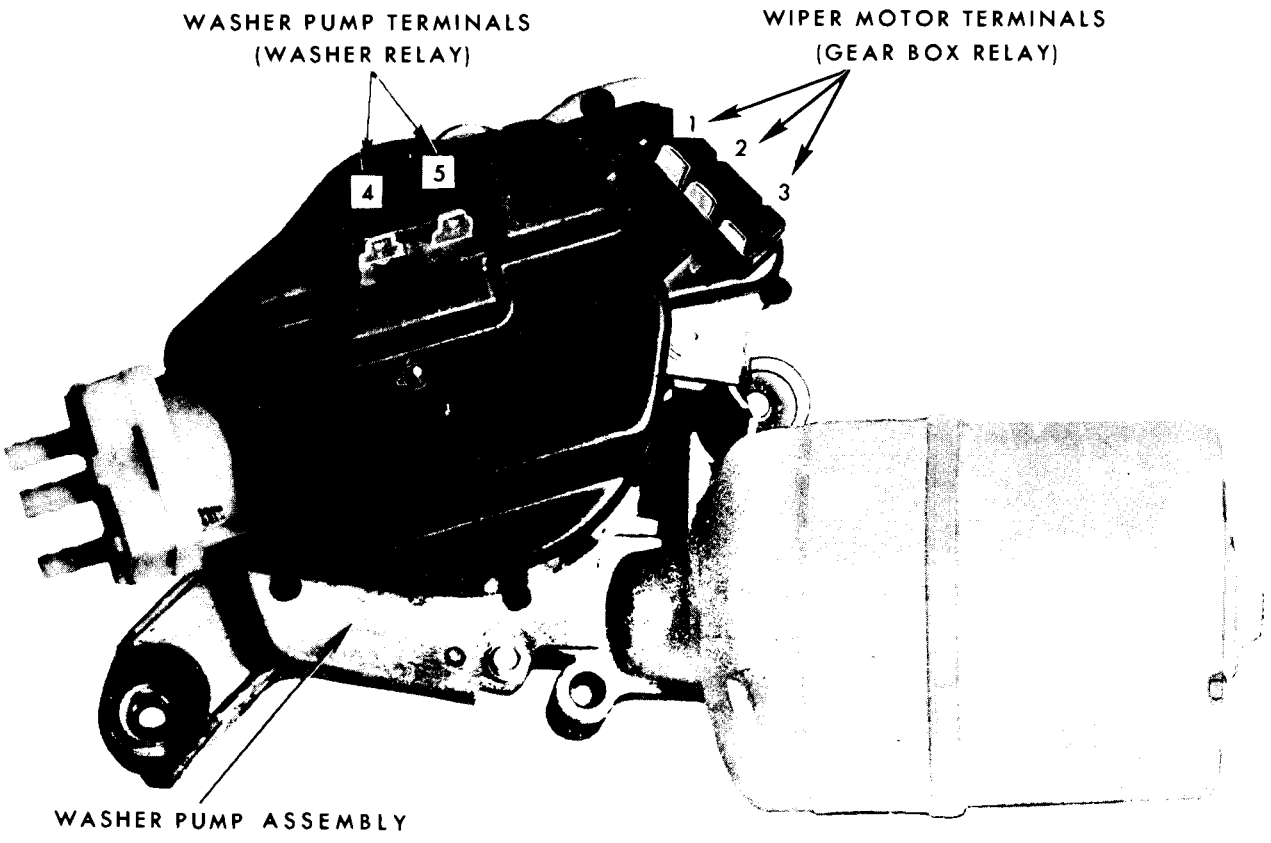


Fig. 2-164 - Two-Speed Round Motor Wiper System

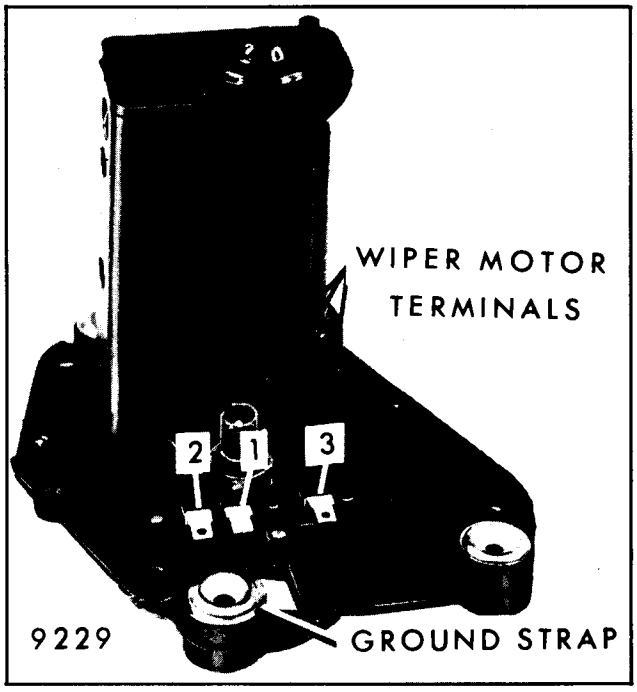


Fig. 2-165 - Two-Speed Rectangular Motor Wiper System

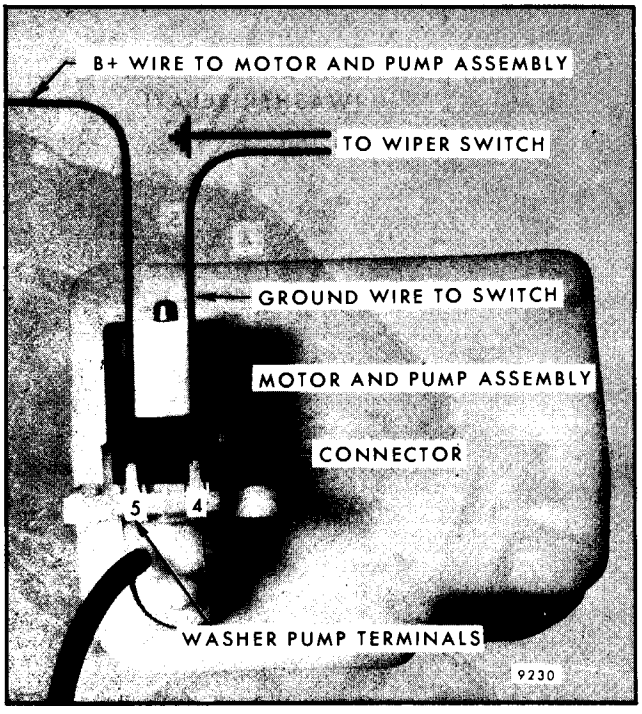


Fig. 2-166 - Jar Mounted Washer Pump Assembly

SECTION 3
UNDERBODY

TABLE OF CONTENTS

SUBJECT	PAGE
Underbody Alignment	
General Body Construction	3-1
Alignment Checking	3-1
Reference Point Dimensions	3-2
Horizontal Dimensions - "F" Bodies	3-2
Vertical Dimensions - "F" Bodies	3-3
Horizontal Dimensions - "X" Bodies	3-4
Vertical Dimensions - "X" Bodies	3-5
Horizontal Dimensions - "H-11-15-77" Bodies	3-5
Vertical Dimensions - "H-11-15-77" Bodies	3-8
Horizontal Dimensions - "H-07-27" Bodies	3-9
Vertical Dimensions - "H-07-27" Bodies	3-11
Horizontal Dimensions - "K" Body	3-13
Vertical Dimensions - "K" Body	3-13
Floor Pan Insulators	3-14
Floor Carpets	3-22

UNDERBODY ALIGNMENT - "F, H, K and X" Bodies

GENERAL BODY CONSTRUCTION

The "F, H, K and X" series bodies are of unitized construction. On "F, K, and X" bodies, a stub frame supports the front end sheet metal, front suspension, engine and other mechanical components. On "H" bodies, integral front and rear frame side rails support the bolt-on front end sheet metal, front and rear suspension systems and other mechanical components. Unitized construction demands that underbody components be properly aligned to assure correct suspension location. In the event of collision damage, it is important that the underbody be thoroughly checked and, if necessary, realigned in order to accurately establish proper dimensions.

Since each individual underbody component contributes directly to the overall strength of the body, it is essential that proper welding, sealing and rust-proofing techniques be observed during service operations. The underbody components should be rust- proofed whenever body repair operations which destroy or damage the original rust-proofing are completed. When rust-proofing critical underbody components, it is essential that a good quality type of air dry primer be used (such as corrosion resistant zinc chromate or equivalent material). It is not advisable to use combination type primer-surfacers.

There are many classifications of tools that may be employed to correct the average collision damage situation including frame straightening machines, lighter external pulling equipment and standard body jacks.

ALIGNMENT CHECKING

An accurate method of determining the alignment of the underbody utilizes a measuring tram gage. The tram gage required to perform all recommended measuring checks properly must be capable of extending to a length of 90". At least one of the vertical pointers must be capable of a maximum reach of 18".

Dimensional checks indicated in the upper portion of Figures 3-1, 3-3, 3-5 and 3-13 are calculated on a horizontal plane parallel to the plane of the underbody. Precision measurements can be made only if the tram gage is also parallel to the plane of the underbody. This can be controlled by setting the vertical pointers on the tram gage according to the dimensional checks shown in the lower portion of Figures 3-1, 3-3, 3-5 and 3-13. For actual dimensions, see applicable charts in text.

A proper tramming tool is essential for analyzing and determining the extent of collision misalignment present in underbody construction.

To assist in checking alignment of the underbody components, repairing minor underbody damage or locating replacement parts, the following underbody

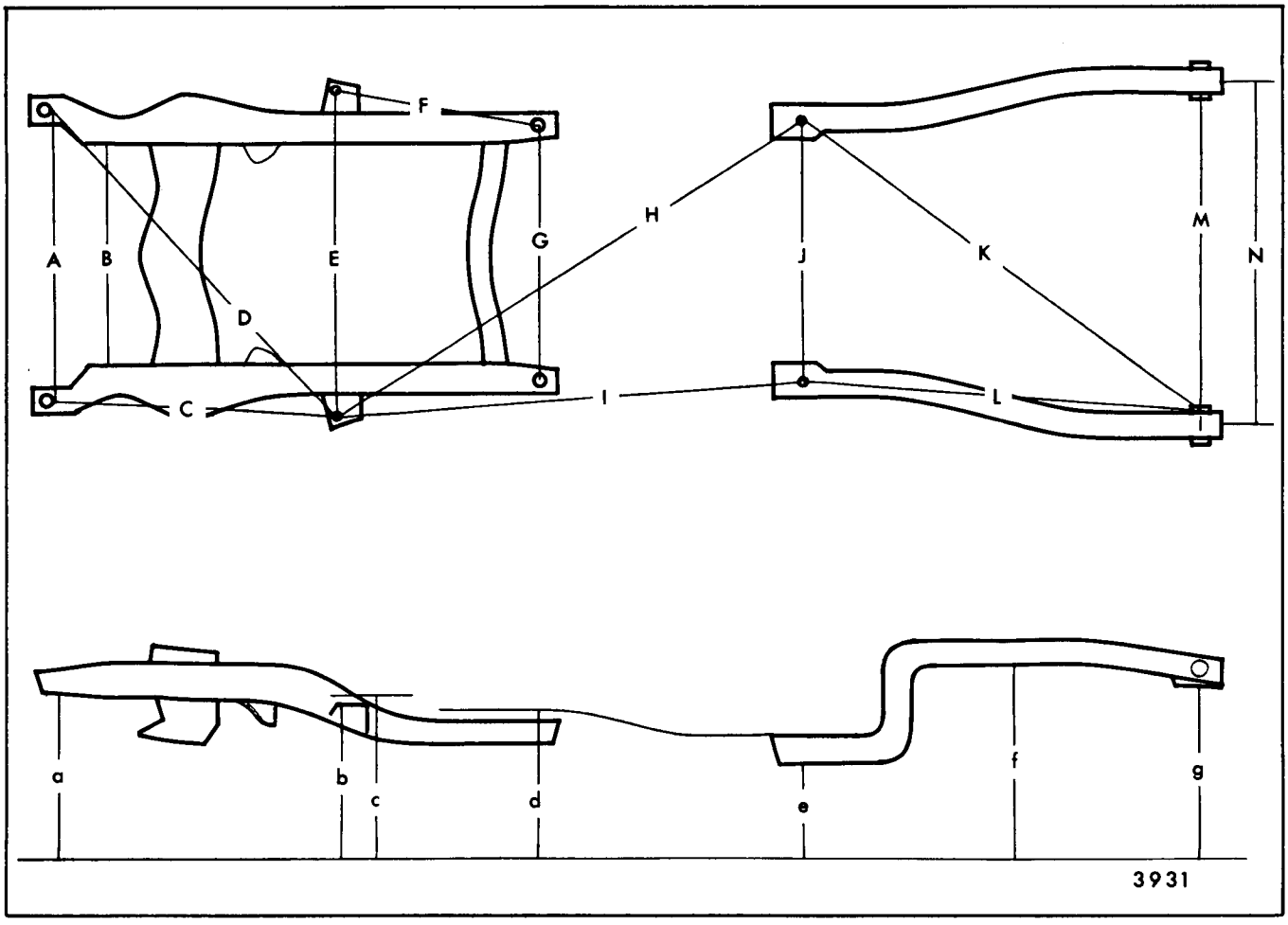


Fig. 3-1 Horizontal and Vertical Checking Dimensions - "F" Bodies

dimensions and alignment checking information is presented.

REFERENCE POINT DIMENSIONS - (Figs. 3-1, 3-3, 3-5 and 3-13)

Dimensions to gage holes are measured to dead center of the holes and flush to adjacent surface metal unless otherwise specified. The master gage holes adjacent to the no. 1 body mount and in the side rails near the rear spring front attachment on "X and F" bodies and the master gage hole forward of the shock absorber housing in the front side rails on the "H" body and master gage holes adjacent to the no. 2 body mount and in the compartment pan side rails near the rear spring front attachment on the "K" body are key locations and should be used wherever possible as a basis for checking other reference points.

HORIZONTAL DIMENSIONS - "F" BODIES (Fig. 3-1)

Fig. Ref.	Dimension	Location
A	37-11/16"	Between rear edges at centerline of 1-5/16" holes in lower surface of rails directly below radiator support mounting location.
B	28-13/16"	Between inboard surface of rails at steering gear lower front mounting location and steering idler arm lower mounting location. (These locations are not equally distant from frame centerline).

Fig. Ref.	Dimension	Location
C	39-5/8"	Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location to center of 5/8" master gage hole adjacent to no. 1 body mount on same side of frame.
D	57-1/4"	Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location to center of 5/8" master gage hole adjacent to no. 1 body mount on opposite side of frame.
E	45-1/4"	Between centers of 5/8" master gage holes adjacent to no. 1 body mount in frame or body.
F	32-7/8"	Center of 5/8" master gage hole adjacent to no. 1 body mount to center of no. 2 body mount location on same side of frame or body.
G	33-7/16"	Between centers of no. 2 body mount bolt holes.
H	84-11/16"	Center of 5/8" master gage hole adjacent to no. 1 body mount to center of 11/16" master gage hole in compartment side rail on opposite side of body.
I	74-1/16"	Center of 5/8" master gage hole adjacent to no. 1 body mount to center of 7/8" master gage hole in compartment side rail on same side of body.
J	37-1/16"	Between centers of 7/8" master gage holes in compartment side rails.
K	60-7/16"	Center of 7/8" master gage hole in compartment side rail to a point at inboard lower edge of opposite side rail on centerline of shackle bolt hole (Fig. 3-2).
L	45-1/4"	Center of 7/8" master gage hole in compartment side rail to a point at inboard lower edge of same side rail on centerline of shackle bolt hole (Fig. 3-2).

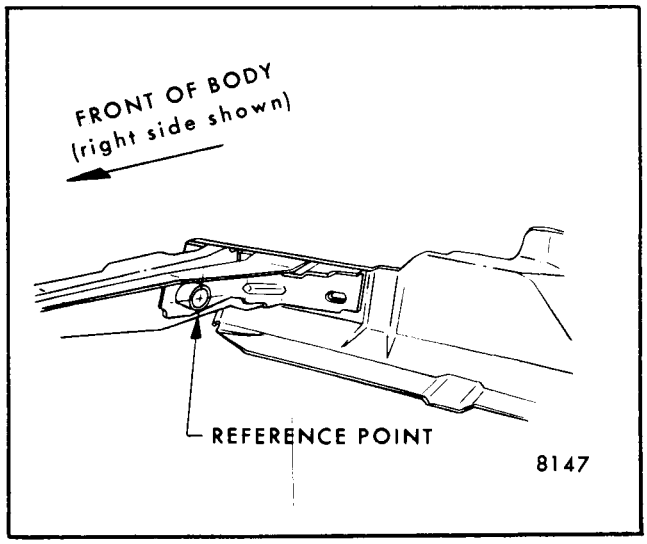


Fig. 3-2 Side Rail at Rear Spring Shackle Bushing - "F" Bodies

Ref.	Dimension	Location
M	43-9/16"	Between inboard lower edges of compartment side rails on centerline of shackle bolt hole (Fig. 3-2).
N	38"	Between centers of rear bumper lower inner attaching bolt holes.

VERTICAL DIMENSIONS - "F" BODIES (Fig. 3-1).

Fig. Ref.	Dimension	Location
a	9-11/16"	Rear edge at centerline of 1-5/16" hole in lower surface of rail directly below radiator support mounting location.
b	9-1/16"	5/8" master gage hole in frame adjacent to no. 1 body mount.
c	9-15/16"	5/8" master gage hole in body adjacent to no. 1 body mount.
d	3-9/16"	No. 2 bar adjacent to no. 2 body bolt.
e	7/8"	Compartment side rail adjacent to 7/8" master gage hole.
f	13-3/4"	Lower horizontal surface of compartment side rail above rear axle housing.
g	10-1/4"	Lower surface of compartment side rail at centerline of shackle bolt hole (see Fig. 3-2).

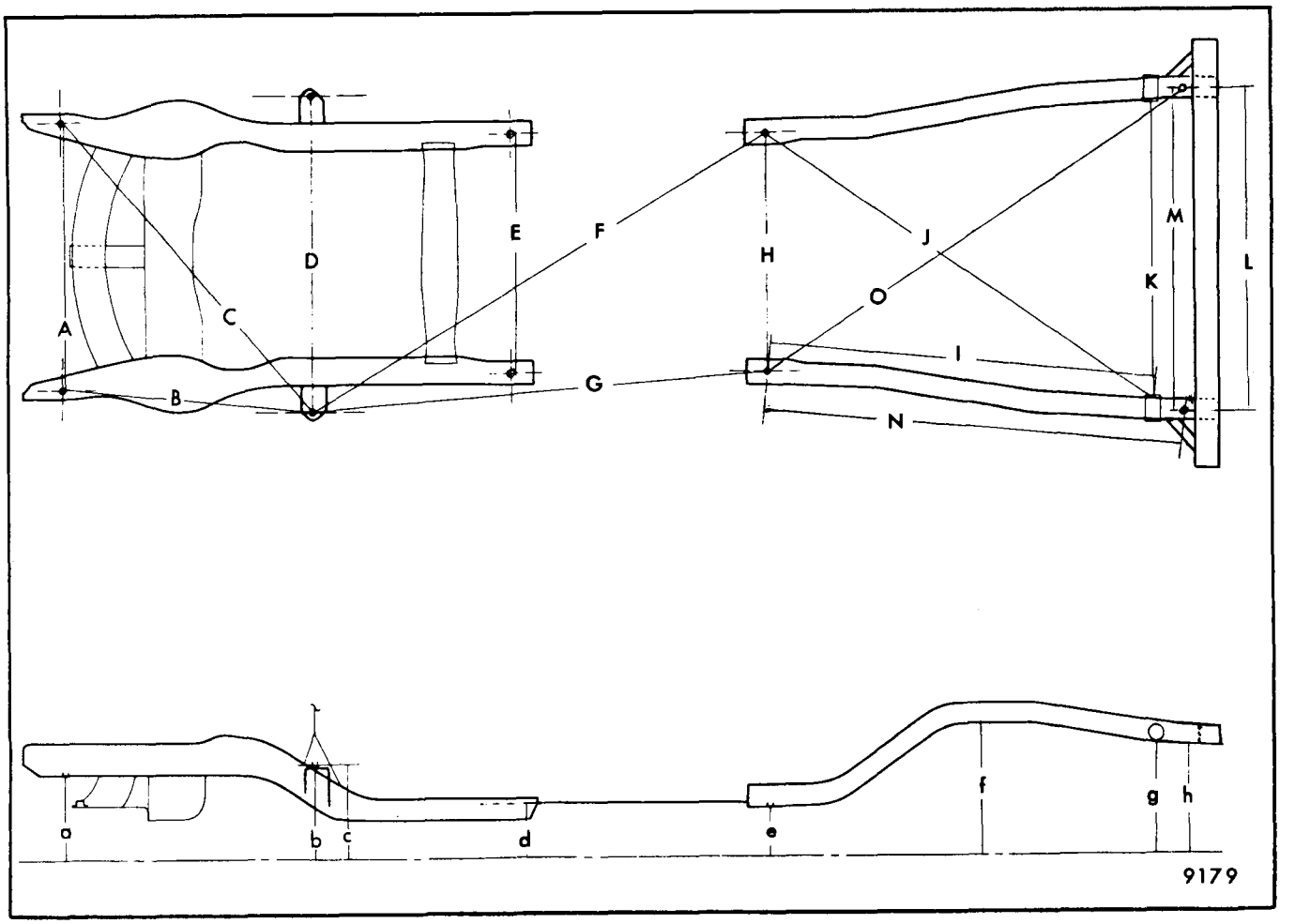


Fig. 3-3-Horizontal and Vertical Checking Dimensions - "X" Bodies

HORIZONTAL DIMENSIONS - "X" BODIES (Fig. 3-3)

Fig. Ref.	Dimension	Location
A	31-3/4"	Between centers of front stabilizer bar "U" bracket front attaching holes.
B	33-1/16"	Center of front stabilizer bar "U" bracket front attaching hole and center of master gage hole adjacent to no. 1 body mount on same side of body.
C	50-1/16"	Center of front stabilizer bar "U" bracket front attaching hole and center of master gage hole adjacent to no. 1 body mount on opposite side of body.
D	44-9/16"	Center of master gage hole adjacent to no. 1 body mount.
E	33-3/4"	Rear edge at centerline of no. 2 body mount bolt hole.
F	79-1/16"	Center of master gage hole adjacent to no. 1 body mount and center of master gage hole in side rail on opposite side of body.
G	69"	Center of master gage hole adjacent to no. 1 body mount and center of master gage hole in side rail on same side of body.
H	33-11/32"	Between centers of 5/8" master gage holes in compartment side rails.

Fig. Ref.	Dimension	Location
I	54-7/8"	Center of 5/8" master gage hole in side rail and a point at inboard edge of same side rail at centerline of shackle bolt hole (Fig. 3-4).
J	66-9/16"	Center of 5/8" master gage hole in side rail and a point at inboard edge of opposite side rail at centerline of shackle bolt hole (Fig. 3-4).
K	42-3/4"	Between inboard lower edges of compartment side rails on centerline of shackle bolt hole (see Fig. 3-4).
L	40-1/4"	Center of rear bumper lower attaching bolts.
M	45"	Between centers of 11/16" hole in compartment side rails for rear bumper energy absorbing unit front attaching bolt.
N	61-7/16"	Center of 5/8" master gage hole in side rail and center of 11/16" hole for rear bumper energy absorbing unit front attaching bolt on same side of body.
O	72-3/8"	Center of 5/8" master gage hole in side rail and center of 11/16" hole for rear bumper energy absorbing unit front attaching bolt on opposite side of body.

VERTICAL DIMENSIONS - "X" BODIES (Fig. 3-3)

Fig. Ref.	Dimension	Location
a	5-5/32"	Front stablilzer bar "U" bracket front attaching hole or center of bolt head.
b	10-15/16"	Master gage hole adjacent to no. 1 body mount in frame.
c	11-13/16"	Master gage hole adjacent to no. 1 body mount on body.

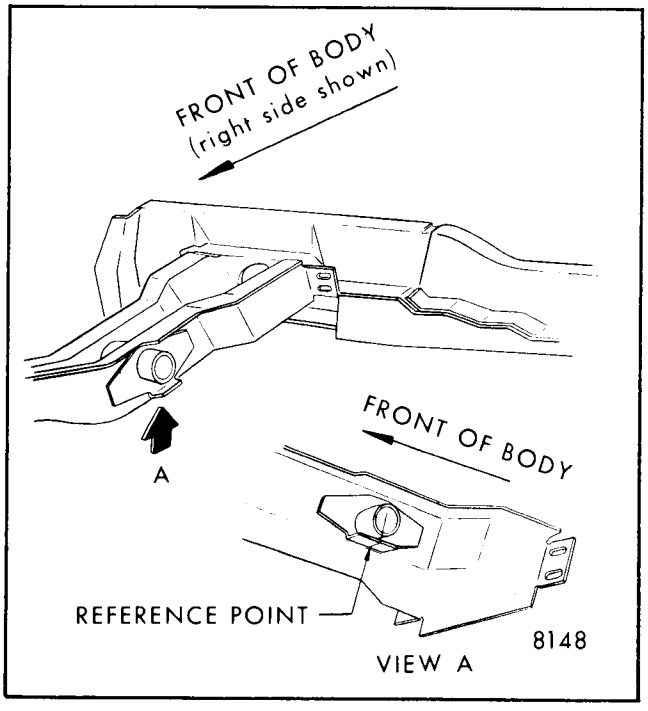


Fig. 3-4-Side Rail at Rear Spring Rear Shackle Bushing - "X" Bodies

Fig. Ref.	Dimension	Location
d	3-21/32"	No. 2 bar adjacent to no. 2 body mount bolt cage nut.
e	1-7/8"	5/8" master gage hole in side rail.
f	13-7/16"	Lower surface of side rail at kick-up either side of rear axle housing.
g	9-21/32"	Lower surface of side rail at centerline of shackle bolt hole (see Fig. 3-4).
h	9-3/32"	Lower surface of side rail at 11/16" hole for rear bumper energy absorbing unit front attaching bolt.

HORIZONTAL DIMENSIONS - "H" BODIES - "11-15-77" Styles (Fig. 3-5)

Fig. Ref.	Dimension	Location
A	33-1/4"	Between leading outboard surfaces of front side rails.

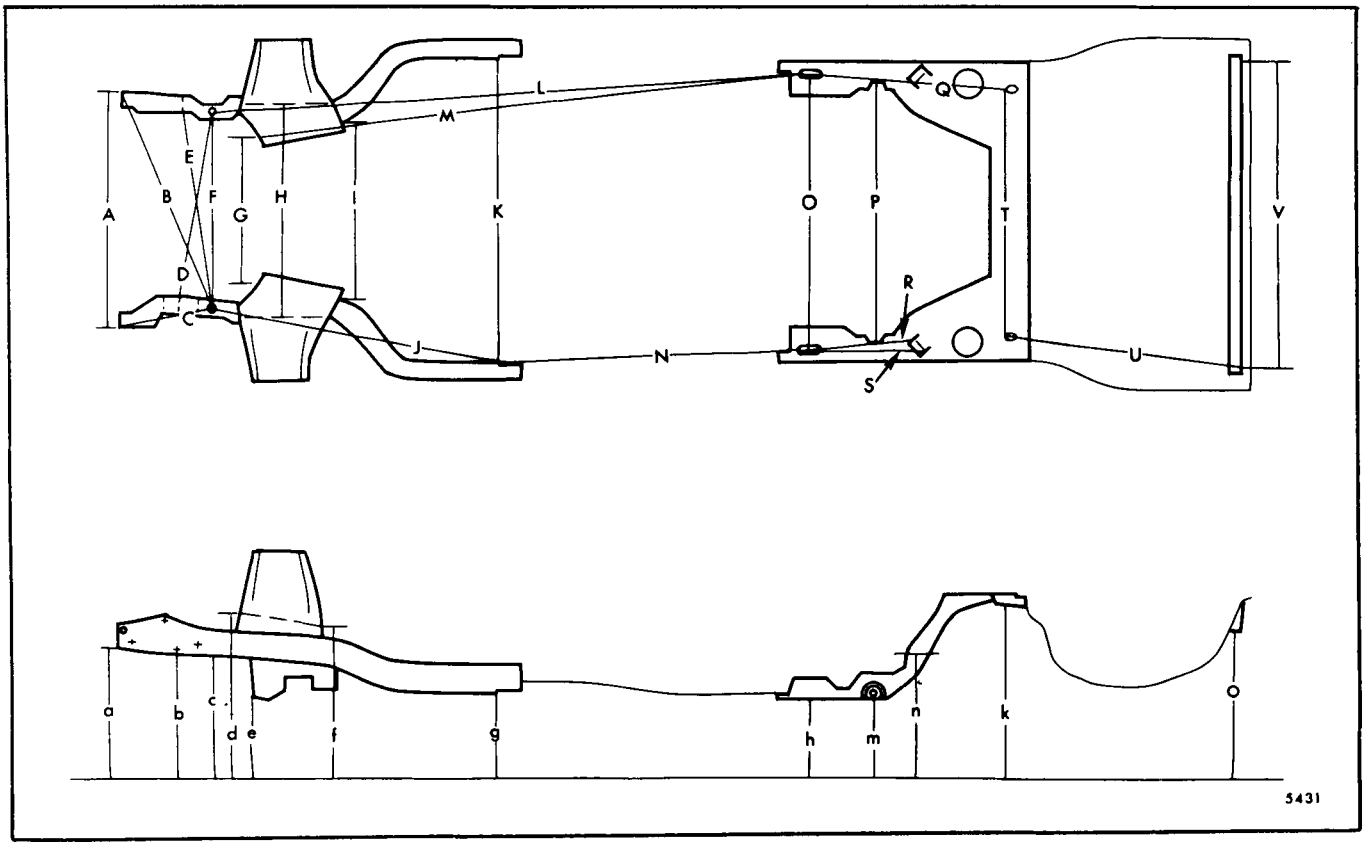


Fig. 3-5-Horizontal and Vertical Checking Dimensions - "H-11-15-77" Styles

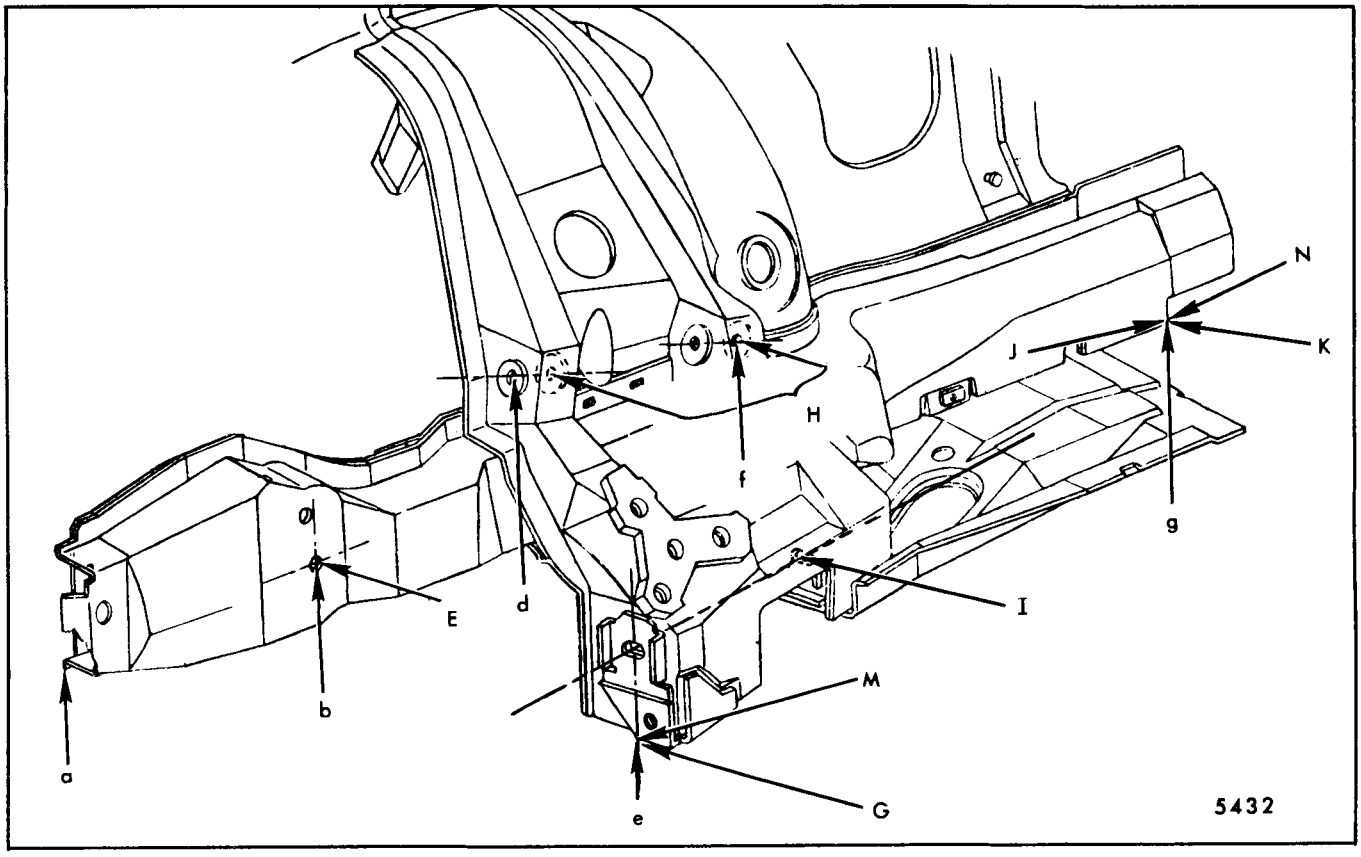


Fig. 3-6-Reference Points at Right Front Rail - All "H" Styles

Fig. Ref.	Dimension	Location
B	33-1/4"	From center of 3/4" master gage hole in lower surface of front rail (approximately 4" forward of shock absorber housing) to leading outboard lower edge of opposite side rail.
C	12-5/8"	From center of 3/4" master gage hole in front side rail to leading outboard lower edge of same rail.
D	26-9/16"	From center of 3/4" master gage hole in right hand front rail to inboard surface of left hand front rail at steering gear forward lower mounting bolt hole (see Fig. 3-7).
E	28"	From center of 3/4" master gage hole in left hand front rail to inboard surface of right hand front rail at steering idler arm lower bolt hole (see Fig. 3-6). NOTE: Reference points at steering gear and idler arm locations are NOT of equal distance from the vehicle centerline.
F	27-3/4"	Between centers of 3/4" master gage holes in front rails.
G	21-7/16"	Between centers of lower front suspension attaching bolt holes in shock absorber housing (see Fig. 3-6).
H	30-1/4"	Between centers of either front or rear upper suspension attaching bolt holes in shock absorber housing (see Fig. 3-6).
I	25"	Between centers of lower rear suspension attaching bolt holes (forward surface) in shock absorber housing (see Fig. 3-6).
J	40-15/16"	From center of 3/4" master gage hole in front rail to lower corner of step near the rear of same rail (see Fig. 3-6).
K	42-3/4"	Between front rails at lower corner of step (see Fig. 3-6).
L	83-1/16"	From center of 3/4" master gage hole in front rail to forward end of oblong shipping hook hole in rear rail on same side of body.
M	77-1/4"	From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole to forward end of the oblong shipping hook hole in rear rail on same side of body (see Figs. 3-6 and 3-7).
N	43"	From lower corner of step at rear of front rail to forward end of the oblong shipping hook hole in rear rail on same side of body (see Fig. 3-6).
O	37-1/2"	Between centers of oblong shipping hook holes in rear rails.
P	36-1/16"	Between inboard surfaces of rear lower suspension arm mounting locations in rear rails (see Fig. 3-8).
Q	28-3/4"	From the forward end of the oblong shipping hook hole in rear rail to forward edge on center of 1-1/2" oblong hole in floor pan reinforcement at rear spring on same side of body.
R	16-5/8"	From the forward end of the oblong shipping hook hole in rear rail to outboard surface of inboard portion of the upper suspension mounting bracket on same side of body (see Fig. 3-8).
S	17-7/8"	From the forward end of the oblong shipping hook hole in rear rail to inboard surface of outboard portion of the upper suspension mounting bracket on same side of body (see Fig. 3-8).
T	35"	Between forward edge on center of 1-1/2" oblong holes in floor pan reinforcements at rear springs.

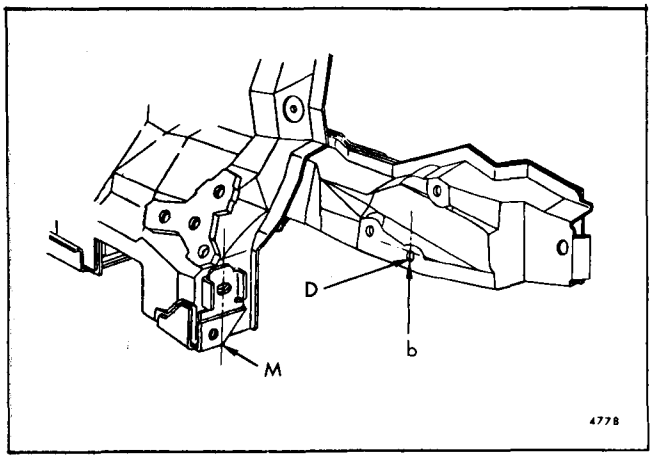


Fig. 3-7-Reference Points at Left Front Rail - All "H" Styles

Fig. Ref.	Dimension	Location
U	29-5/8"	From forward edge on center of 1-1/2" oblong hole in floor pan reinforcement at rear spring to centerline of the 5/8" lower outboard bumper attaching holes (see Fig. 3-9).
V	49-1/8"	Between centers of the outboard 5/8" rear bumper attaching holes in rear cross bar (see Fig. 3-9).

VERTICAL DIMENSIONS - "H" BODIES - "11-15-77" Styles (Fig. 3-5)

Fig. Ref.	Dimension	Location
a	6-7/8"	Leading outboard lower edge of side rail (see Fig. 3-6).
b.	7-13/16"	Left side - center of steering gear lower forward attaching bolt hole (see Fig. 3-7).
	9-7/16"	Right side - center of steering idler arm lower attaching bolt hole (see Fig. 3-6).
c	7-1/8"	Left side - lower surface of front rail adjacent to 3/4" master gage hole.
	7-1/2"	Right side - same location as above.
d	12-5/8"	Center of upper front suspension attaching location on shock absorber housing (see Fig. 3-6).
e	1-5/16"	From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole (see Fig. 3-6).
f	11"	Center of upper rear suspension attaching location on shock absorber housing (see Fig. 3-6).
g	1-1/16"	Lower corner of step near end of front side rail (see Fig. 3-6).
h	1-9/16"	Lower surface of rear rail adjacent to forward end oblong shipping hook hole.
k	15-5/16"	Lower surface of floor pan reinforcement at rear spring adjacent to 1-1/2" oblong hole.
m	1-3/4"	Center of rear suspension lower control arm mounting location (see Fig. 3-8).
n	7-5/8"	Center of rear suspension upper control arm mounting location (see Fig. 3-8).
o	9-1/16"	Lower surface of rear cross bar at centerline of lower outboard bumper attaching 5/8" hole.

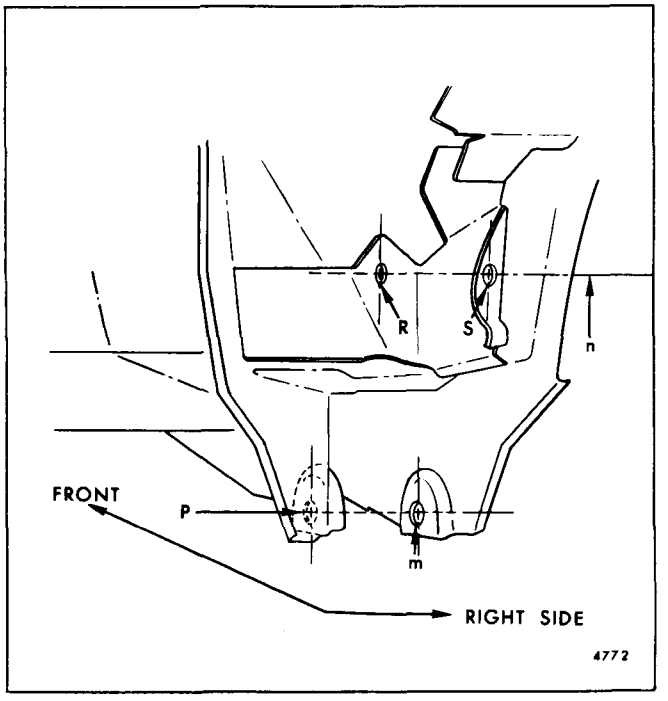


Fig. 3-8-Reference Points at Rear Suspension Area - All "H" Styles

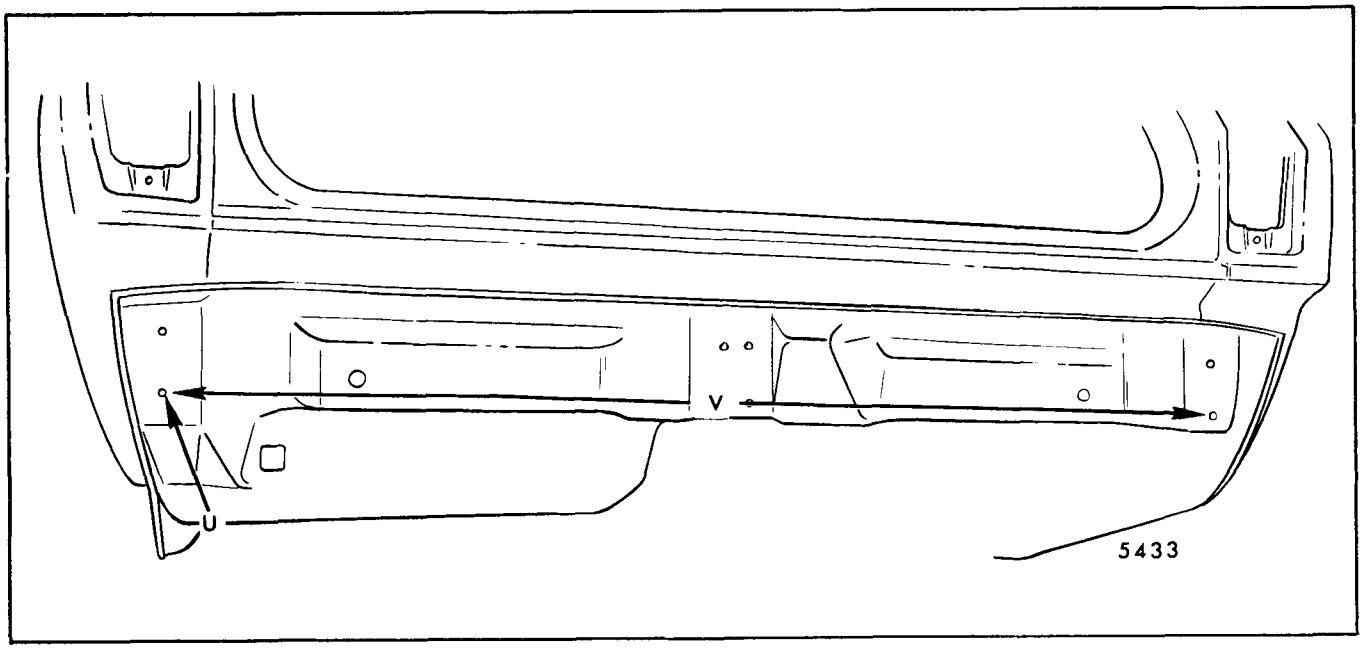


Fig. 3-9-Reference Points at Rear Cross Bar - "H-11-15-77" Styles

HORIZONTAL DIMENSIONS - "H" BODY - "07 and 27" Styles (Fig. 3-10)

Fig. Ref.	Dimension	Location
A	33-1/4"	Between leading outboard surfaces of front side rails.
B	33-1/4"	From center of 3/4" master gage hole in lower surface of front rail (approximately 4" forward of shock absorber housing) to leading outboard lower edge of opposite side rail.
C	12-5/8"	From center of 3/4" master gage hole in front side rail to leading outboard lower edge of same rail.
D	26-9/16"	From center of 3/4" master gage hole in right hand front rail to inboard surface of left hand front rail at steering gear forward lower mounting bolt hole (see Fig. 3-7).
E	28"	From center of 3/4" master gage hole in left hand front rail to inboard surface of right hand front rail at steering idler arm lower bolt hole (see Fig. 3-6). NOTE: Reference points at steering gear and idler arm locations are NOT of equal distance from the vehicle centerline.
F	27-3/4"	Between centers of 3/4" master gage holes in front rails.
G	21-7/16"	Between centers of lower front suspension attaching bolt holes in shock absorber housing (see Fig. 3-6).
H	30-1/4"	Between centers of either front or rear upper suspension attaching bolt holes in shock absorber housing (see Fig. 3-6).
I	25"	Between centers of lower rear suspension attaching bolt holes (forward surface) in shock absorber housing (see Fig. 3-6).
J	40-15/16"	From center of 3/4" master gage hole in front rail to lower corner of step near the rear of same rail (see Fig. 3-6).
K	42-3/4"	Between front rails at lower corner of step (see Fig. 3-6).
L	83-1/16"	From center of 3/4" master gage hole in front rail to forward end of oblong shipping hook hole in rear rail on same side of body.

Fig. Ref.	Dimension	Location
M	77-1/4″	From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole to forward end of the oblong shipping hook hole in rear rail on same side of body (see Figs. 3-6 and 3-7).
N	43″	From lower corner of step at rear of front rail to forward end of the oblong shipping hook hole in rear rail on same side of body (see Fig. 3-6).
O	37-5/8″	Between centers of oblong shipping hook holes in rear rails.
P	36-1/4″	Between inboard surfaces of rear lower suspension arm mounting locations in rear rails (see Fig. 3-8).
Q	29-3/32″	From the forward end of the oblong shipping hook hole in rear rail to forward edge of center of 1-1/2″ oblong hole in floor pan reinforcement at rear spring on same side of body.
T	32-55/64″	Between forward edge on center of 1-1/2″ oblong holes in floor pan reinforcements at rear springs.
U	30-7/8″	From forward edge on center of 1-1/2″ oblong hole in floor pan reinforcement at rear spring to centerline of the 5/8″ lower outboard bumper attaching holes.
V	28-3/4″	Between centers of the outboard 5/8″ rear bumper attaching holes in rear cross bar (see Fig. 3-11).

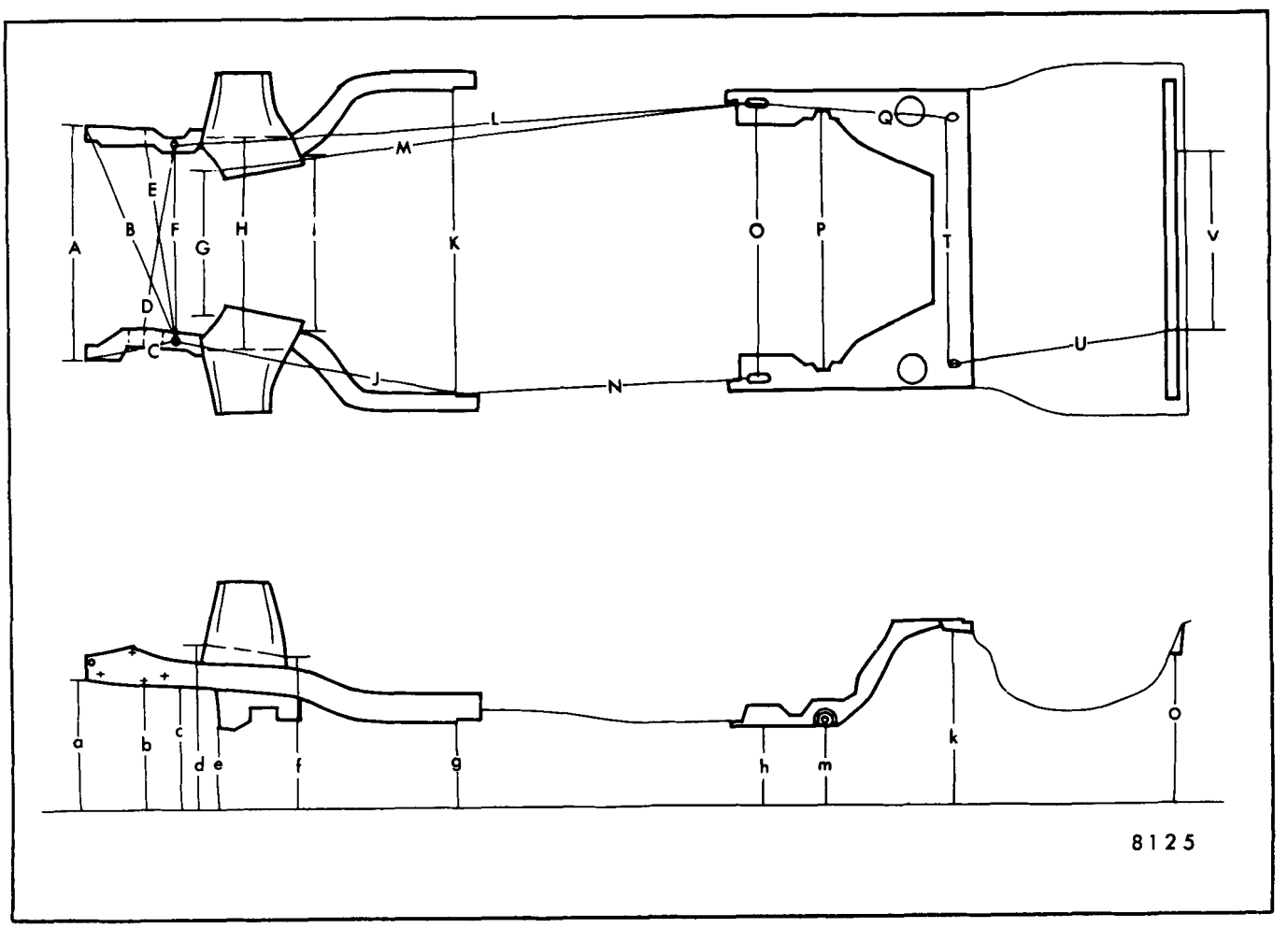


Fig. 3-10-Horizontal and Vertical Checking Dimensions - "H-07 and 27" Styles

VERTICAL DIMENSIONS - "H" BODY - "07 and 27" STYLES (Fig. 3-10)

Fig. Ref.	Dimension	Location
a	6-7/8"	Leading outboard lower edge of side rail (see Fig. 3-6).
b	7-13/16"	Left side - center of steering gear lower forward attaching bolt hole (see Fig. 3-7).
	9-7/16"	Right side - center of steering idler arm lower attaching bolt hole (see Fig. 3-6).
c	7-1/8"	Left side - lower surface of front rail adjacent to 3/4" master gage hole.
	7-1/2"	Right side - same location as above.
d	12-5/8"	Center of upper front suspension attaching location on shock absorber housing (see Fig. 3-6).
e	1-5/16"	From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole (see Fig. 3-6).
f	11"	Center of upper rear suspension attaching location on shock absorber housing (see Fig. 3-6).
g	1-1/16"	Lower corner of step near end of front side rail (see Fig. 3-6).
h	1-9/16"	Lower surface of rear rail adjacent to forward end oblong shipping hook hole.
k	15-5/16"	Lower surface of floor pan reinforcement at rear spring adjacent to 1-1/2" oblong hole.
m	1-3/4"	Center of rear suspension lower control arm mounting location (see Fig. 3-8).
n	7-9/32"	Center of rear suspension upper control arm mounting location (see Fig. 3-8).
o	10-21/64"	Lower surface of rear cross bar at centerline of lower outboard bumper attaching 5/8" hole.

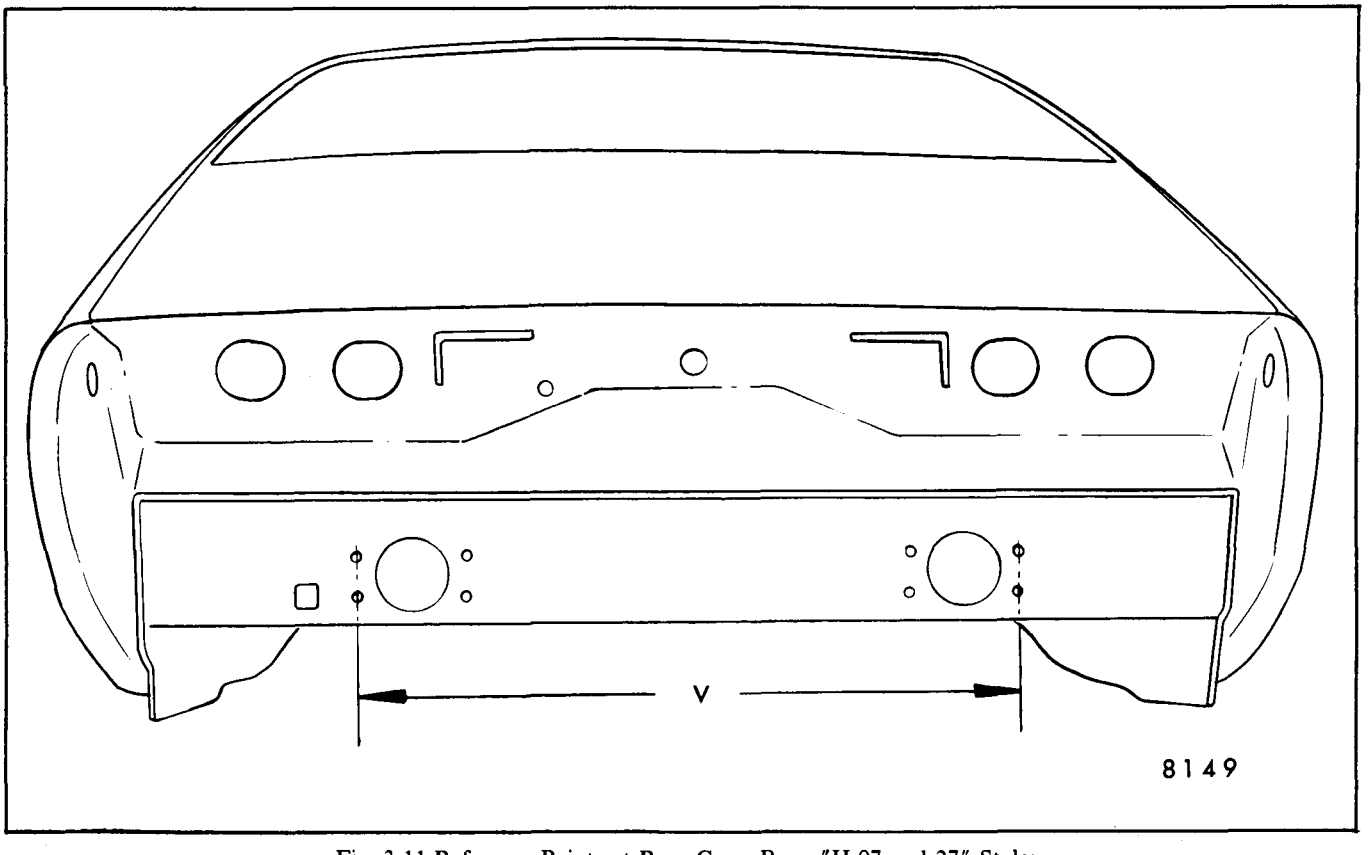


Fig. 3-11-Reference Points at Rear Cross Bar - "H-07 and 27" Styles

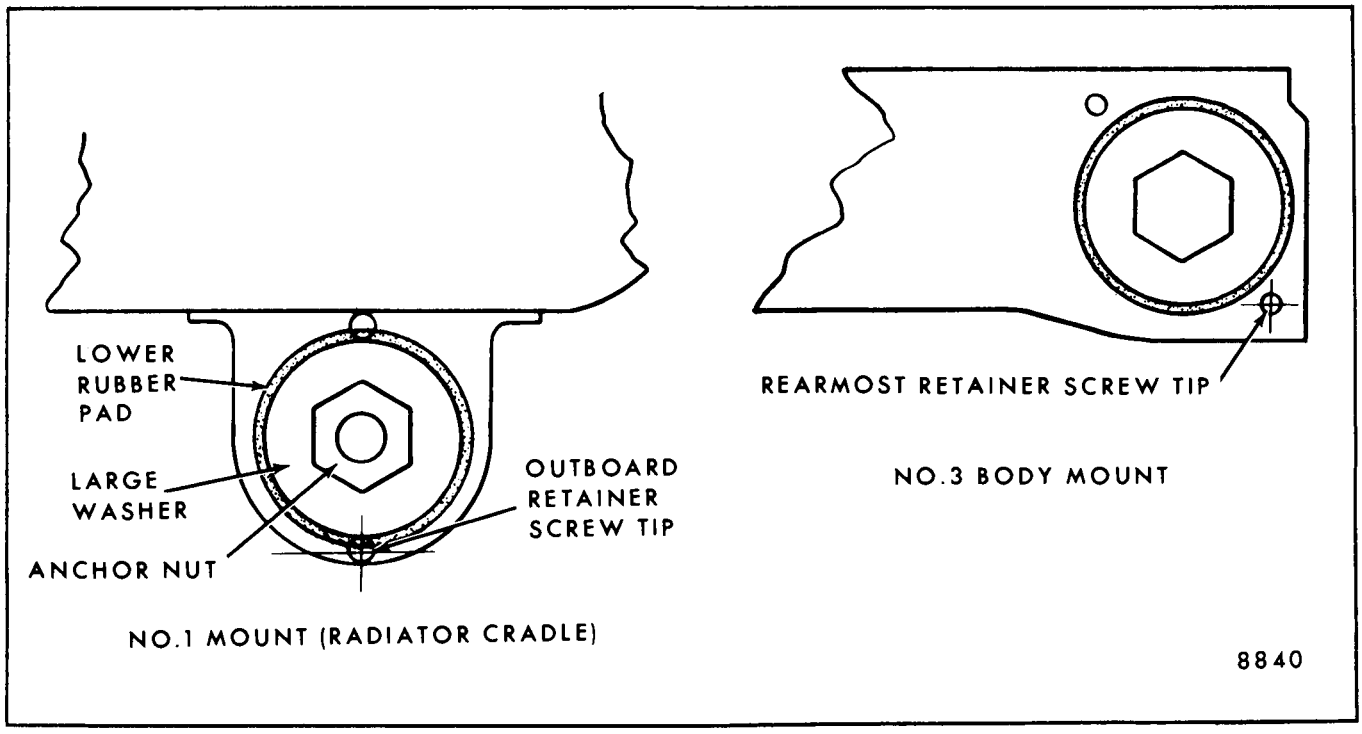


Fig. 3-12-No. 1 Mount (Radiator Cradle) and No. 3 Body Mount - "K" Body

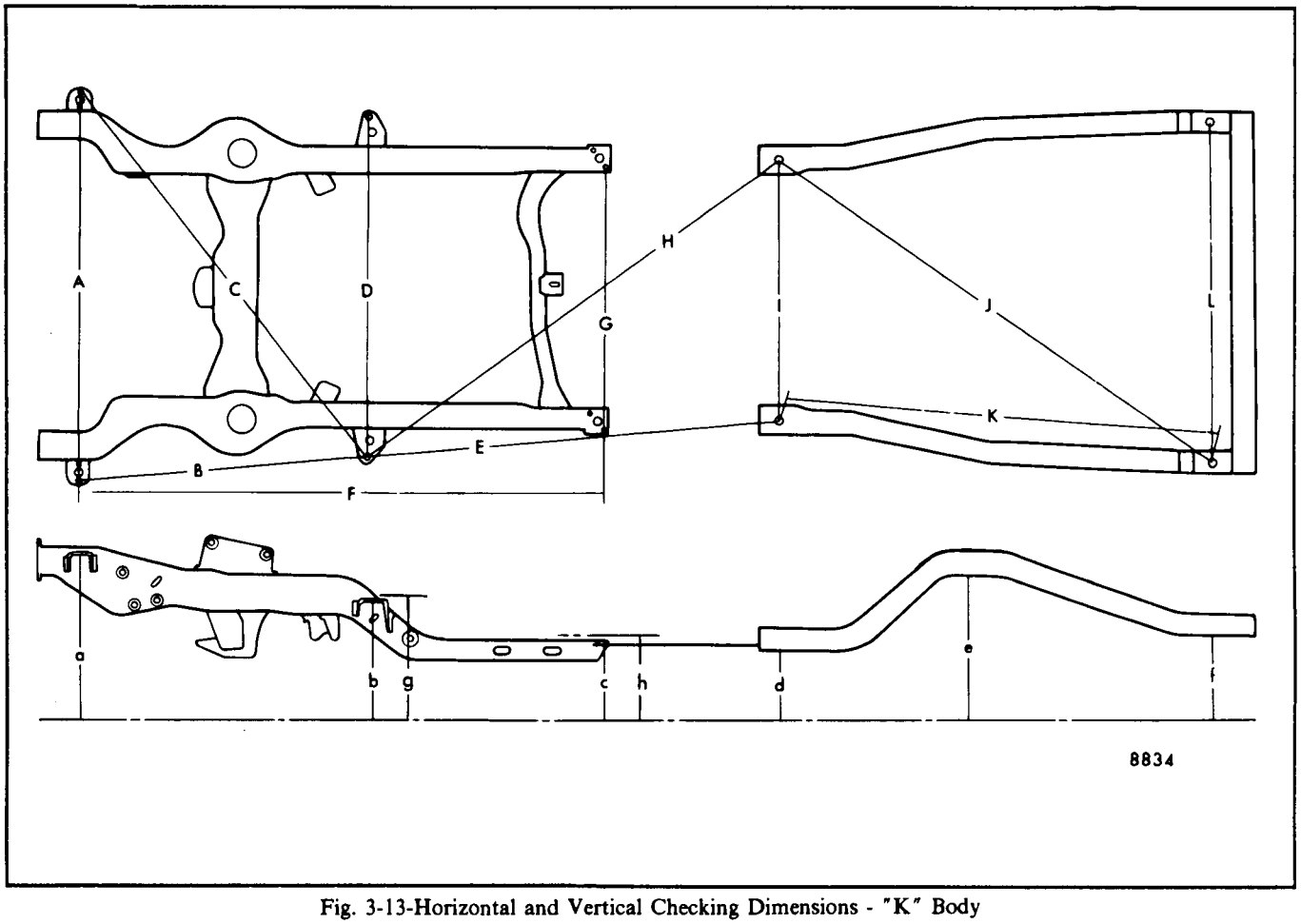


Fig. 3-13-Horizontal and Vertical Checking Dimensions - "K" Body

HORIZONTAL DIMENSIONS - "K" Body (Fig. 3-13)

Fig. Ref.	Dimension	Location
A	50-15/16"	Center of outboard retainer screw (Fig. 3-12) of no. 1 mount (radiator cradle) located approximately 5" rearward of front of frame to center of outboard retainer screw on opposite side of body. NOTE: Removal of anchor nut, large washer and lower rubber pad may be required to gain access to center of retainer screw.
B	38-1/4"	Center of outboard retainer screw of no. 1 mount (radiator cradle) and center of master gage hole adjacent to no. 2 body mount on same side of body.
C	61-1/8"	Center of outboard retainer screw of no. 1 mount (radiator cradle) and center of 5/8" master gage hole adjacent to no. 2 body mount on opposite side of body.
D	44-9/16"	Between centers of 5/8" master gage holes adjacent to no. 2 body mount across body.
E	71-3/4"	Center of 5/8" master gage hole adjacent to no. 2 body mount and center of 5/8" master gage hole in compartment pan side rail on same side of body adjacent to spring front support.
F	69-3/4"	Center of outboard retainer screw of no. 1 mount (radiator cradle) and center of rearmost retainer screw at no. 3 body mount on same side of body (Fig. 3-12).
G	34-1/4"	Between centers of rearmost retainer screws at no. 3 body mounts across body (Fig. 3-12).
H	81-1/2"	Center of 5/8" master gage hole adjacent to no. 2 body mount and center of 5/8" master gage hole in compartment pan side rail on opposite side of body adjacent to spring support.
I	33-5/16"	Between centers of 5/8" master gage holes in compartment pan side rails across body adjacent to spring front supports.
J	75-3/4"	Center of 5/8" master gage hole in compartment pan side rail adjacent to spring front support to center of 3/4" gage hole in compartment pan side rail on opposite side of body approximately 10" rearward of rear shackle attaching bolt to frame. NOTE: Adjust pointer and lever bar if required.
K	64-13/16"	Center of 5/8" master gage hole in compartment pan side rail adjacent to spring front support and center of 3/4" hole in compartment pan side rail on same side of body approximately 10" rearward of rear shackle attaching bolt to frame.
L	45-1/4"	Between center (front or rear edge) of 3/4" holes in compartment pan side rails approximately 10" rearward of center of rear shackle attaching bolt to frame.

VERTICAL DIMENSIONS - "K" Body (Fig. 3-13)

Fig. Ref.	Dimension	Location
a	15"	Center of outboard retainer screw of no. 1 mount (radiator cradle) located approximately 5" rearward of front of frame. NOTE: Removal of anchor nut, large washer and lower rubber pad may be required to gain access to center of retainer screw.
b	9-3/4"	Center of 5/8" master gage hole adjacent to no. 2 body mount.
c	4"	Center of rearmost retainer screw at no. 3 body mount (Fig. 3-12).

Fig. Ref.	Dimension	Location
d	4-5/16"	Center of 5/8" master gage hole in compartment pan side rail adjacent to spring front support.
e	15-3/4"	Lower surface of compartment pan side rail at kick-up rear of rear axle housing (30-1/2" forward of center of hole "f").
f	11-1/2"	Center of 3/4" hole in compartment pan side rail approximately 10" rearward of center of rear shackle attaching bolt to frame.
g	11-1/16"	Bottom surface of dash brace adjacent to no. 2 body mount (on body).
h	4-5/16"	Bottom surface of body floor pan side rail at rear edge of stub frame (on body).

FLOOR PAN INSULATORS

Floor pan insulators have been designed specifically for the higher floor pan temperatures that result from the use of the catalytic converter in the exhaust system. Therefore, when servicing a vehicle in the field, it is essential that any insulators that may have been disturbed or removed be reinstalled in the original sequence and location. Also, if it becomes necessary to replace an insulator, the proper material specified for that particular location on the floor pan must be used.

The type of materials are listed below. Refer to following figures for the type of material specified for each area.

1. Insulator floor pan (Cerra Blanket thermal) - consists of 3/8 inch thick Aluminum Silica (Type 1).
2. Insulator floor pan (Amberlite) - consists of 3/8 inch thick Resinated Fibers (Type 2).

   NOTE: The above parts are 48" wide; order by linear foot and cut to fit.
3. Insulator floor pan (Phenolic Bonded Fiber Glass) cut to size, 12" x 18", (Type 3).

   NOTE: All of the above materials must meet Motor Vehicle Safety Standard No. 302 for flammability.

When servicing or replacing interior insulators, the following instructions must be observed.

1. Insulators must be installed in the original position and sequence. Pieces should be butted together properly in order to avoid gapping or overlapping.
2. If it becomes necessary to replace an insulator, it is essential that the specified material be used.
3. Use original part to determine the amount of replacement material required and as a template for cutting and fitting the new piece to the floor pan.
4. When installing insulator do not enlarge cutouts or holes that are used for the attachment of interior components such as seats or seat belts.
5. Cross body harnesses for interior components such as power seats, electric seat back locks, lap belt warning light and buzzer, or rear speakers must be routed over the floor pan insulators in the original location and properly clipped in place.
6. Spray-on deadeners and trim adhesives should not be applied to the top of the floor pan at area directly over the catalytic converter or muffler(s).

   NOTE: The following insulator locations are typical for styles indicated; however, any insulator service repair or replacement should be the same thickness, size and location as original installation in car.

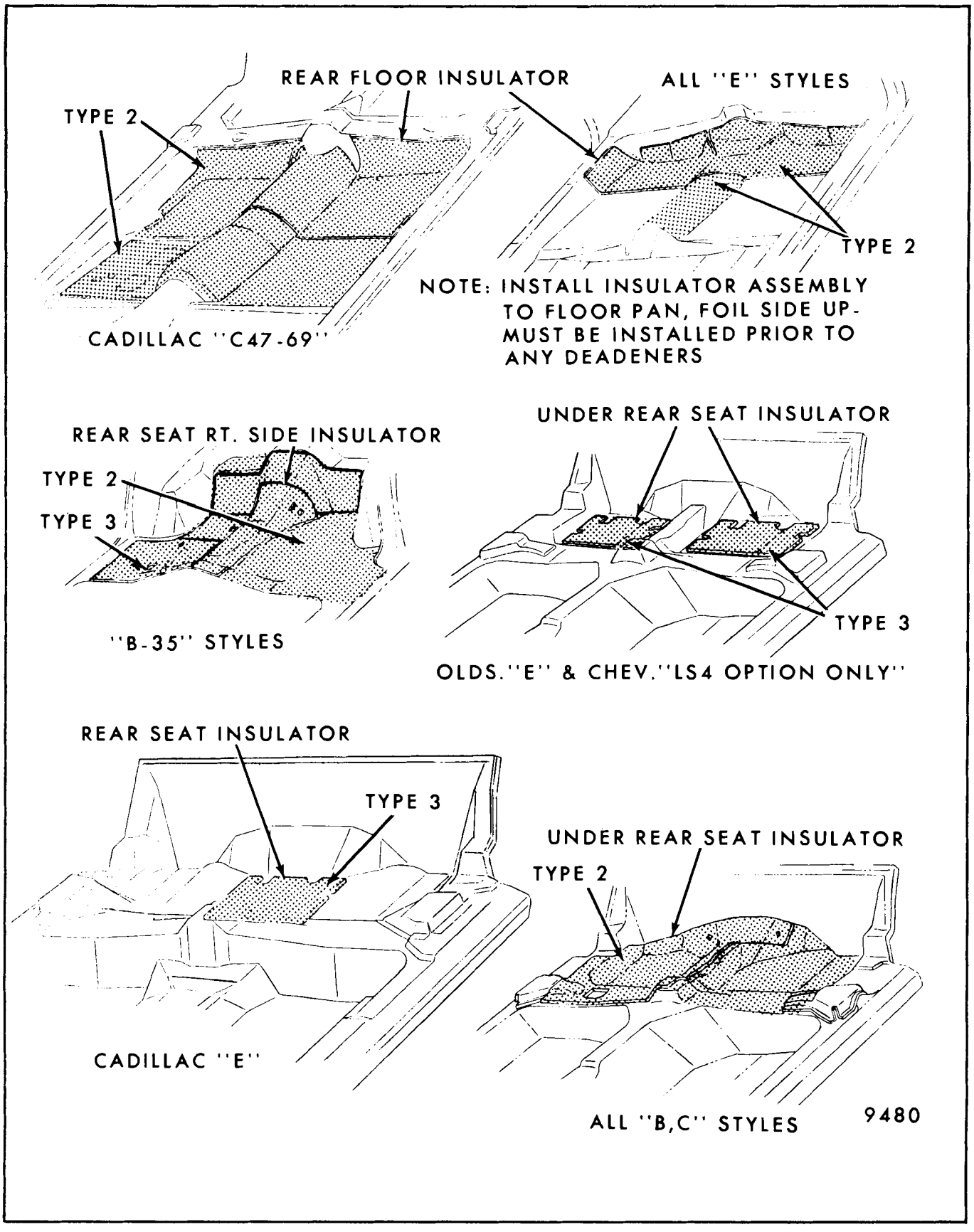


Fig. 3-14-Rear Floor and Rear Seat Pan Insulators

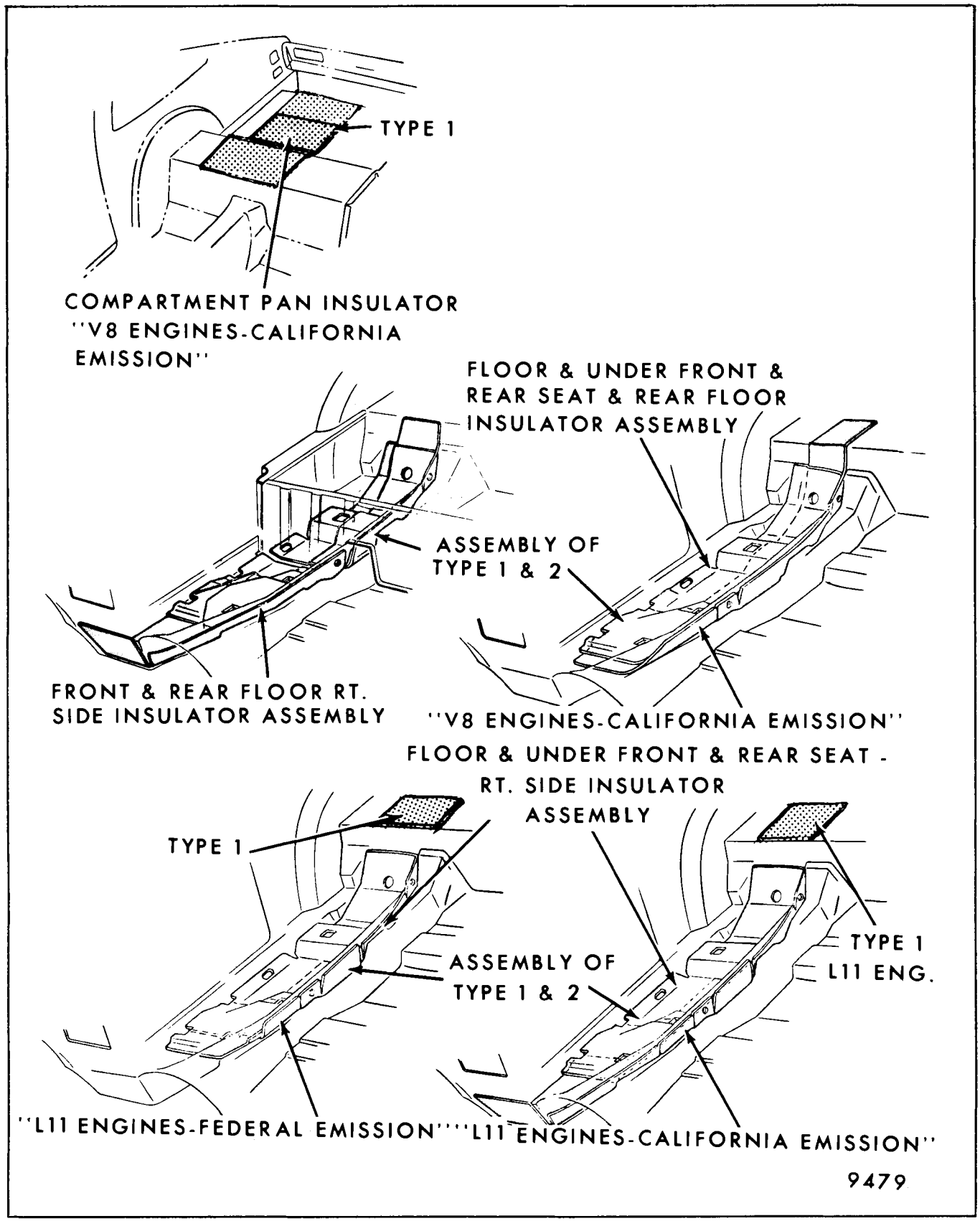


Fig. 3-15-Floor, Under Front and Rear Seat and Compartment Pan Insulators - "H" Styles

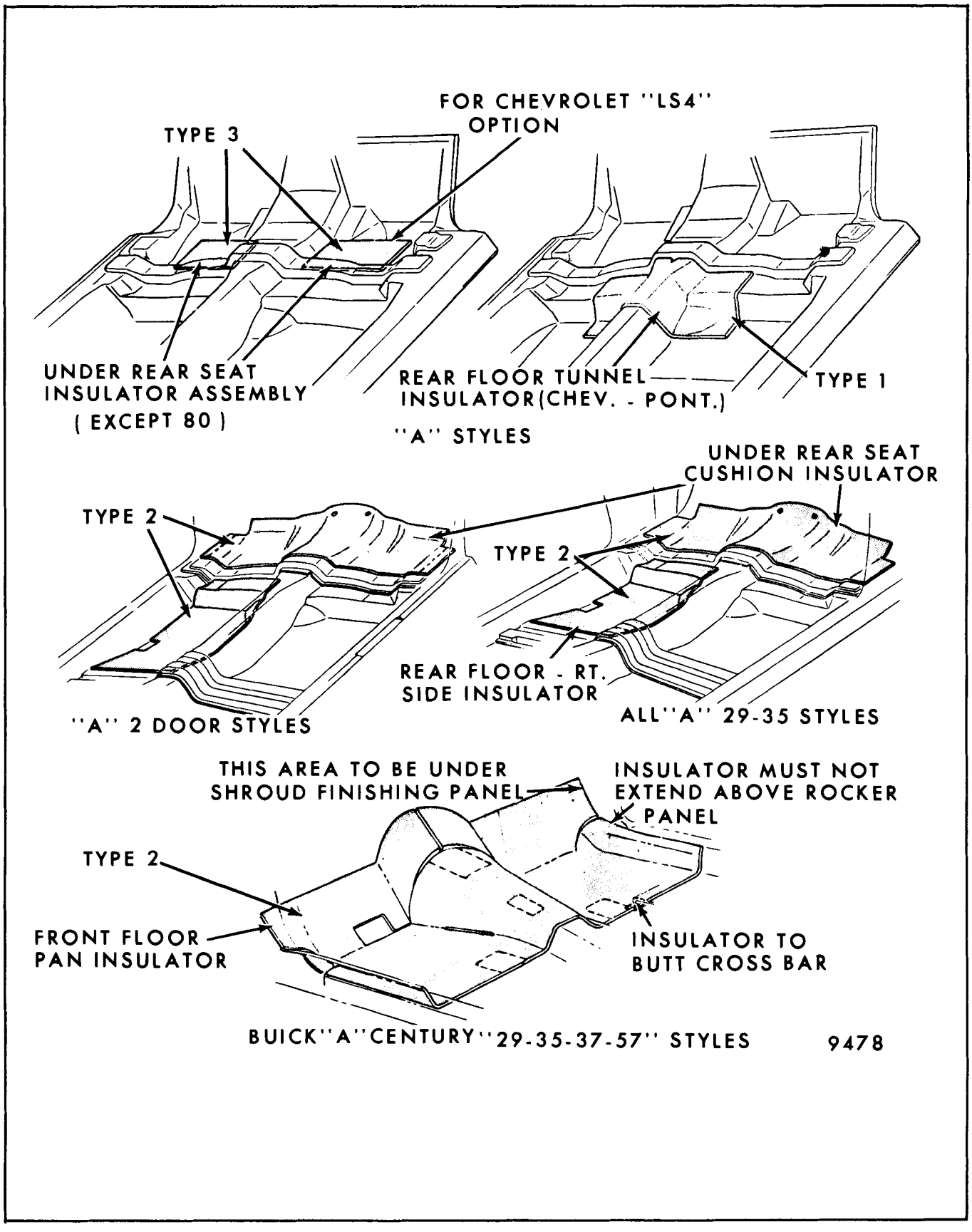


Fig. 3-16-Front and Rear Floor and Under Rear Seat Insulators - "A" Styles

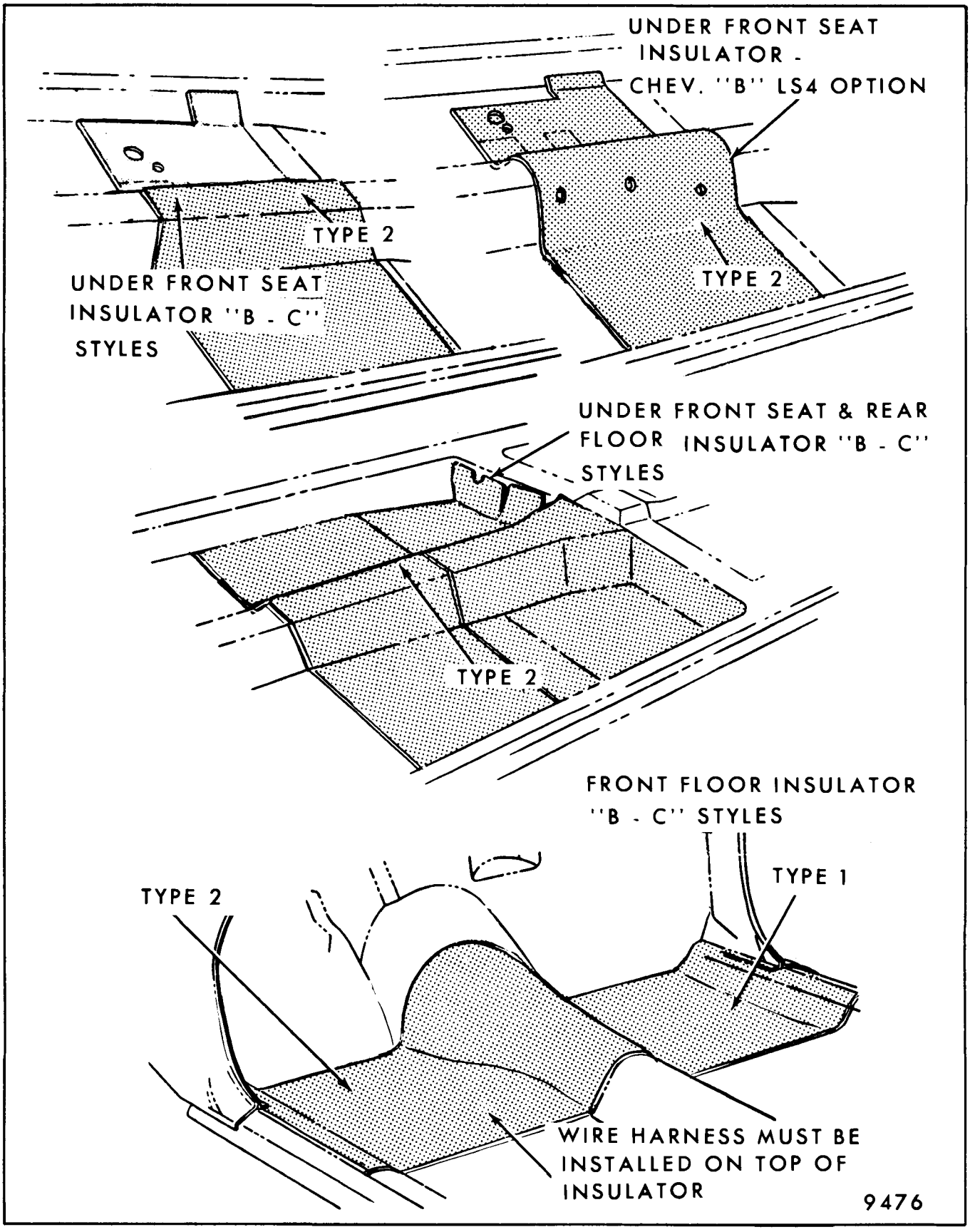


Fig. 3-17-Front and Rear Floor Insulators

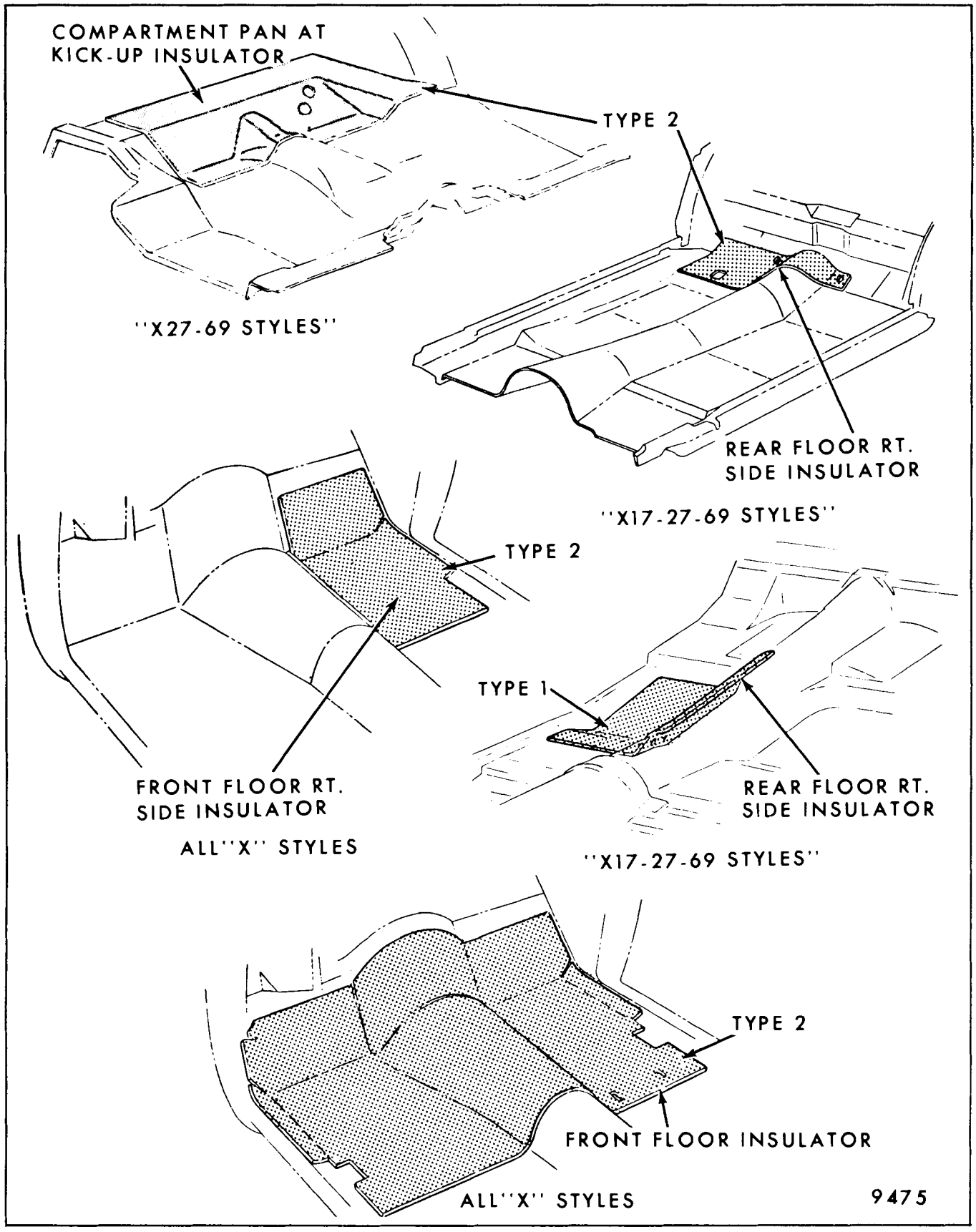


Fig. 3-18-Front and Rear Floor and Compartment Pan at Kick-up Insulators - "X" Styles

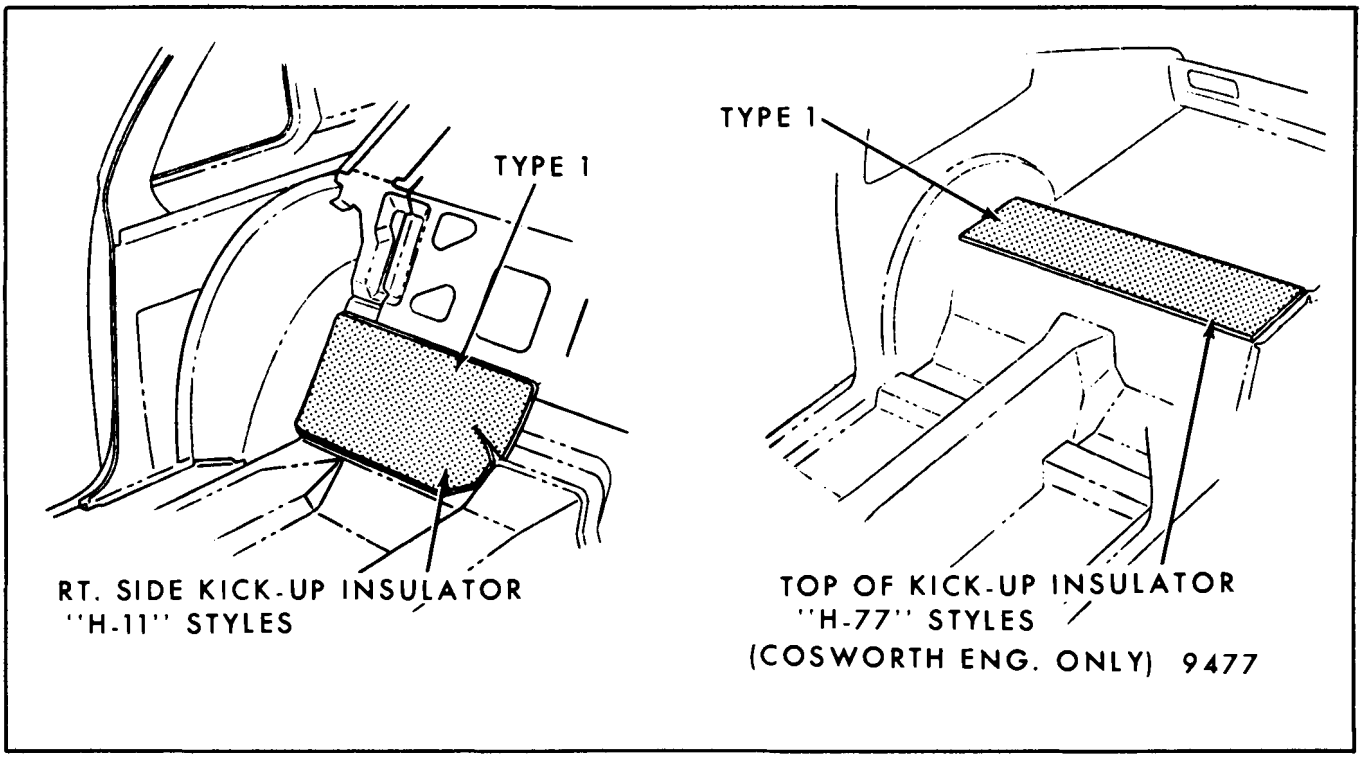


Fig. 3-19-Compartment Pan Kick-up Insulator - "H-11, 77" Styles

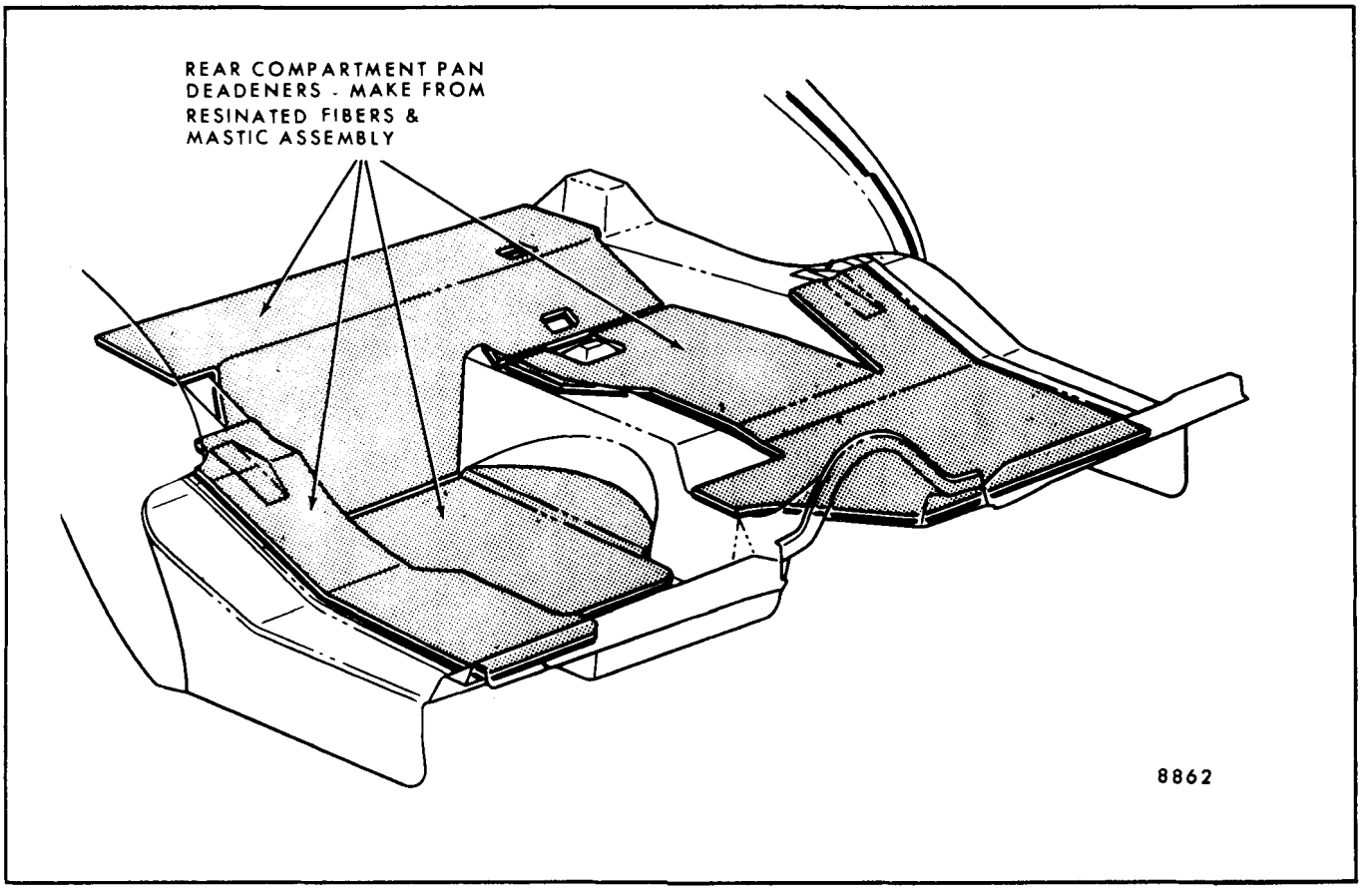


Fig. 3-20 - Rear Compartment Deadeners - "K" Body

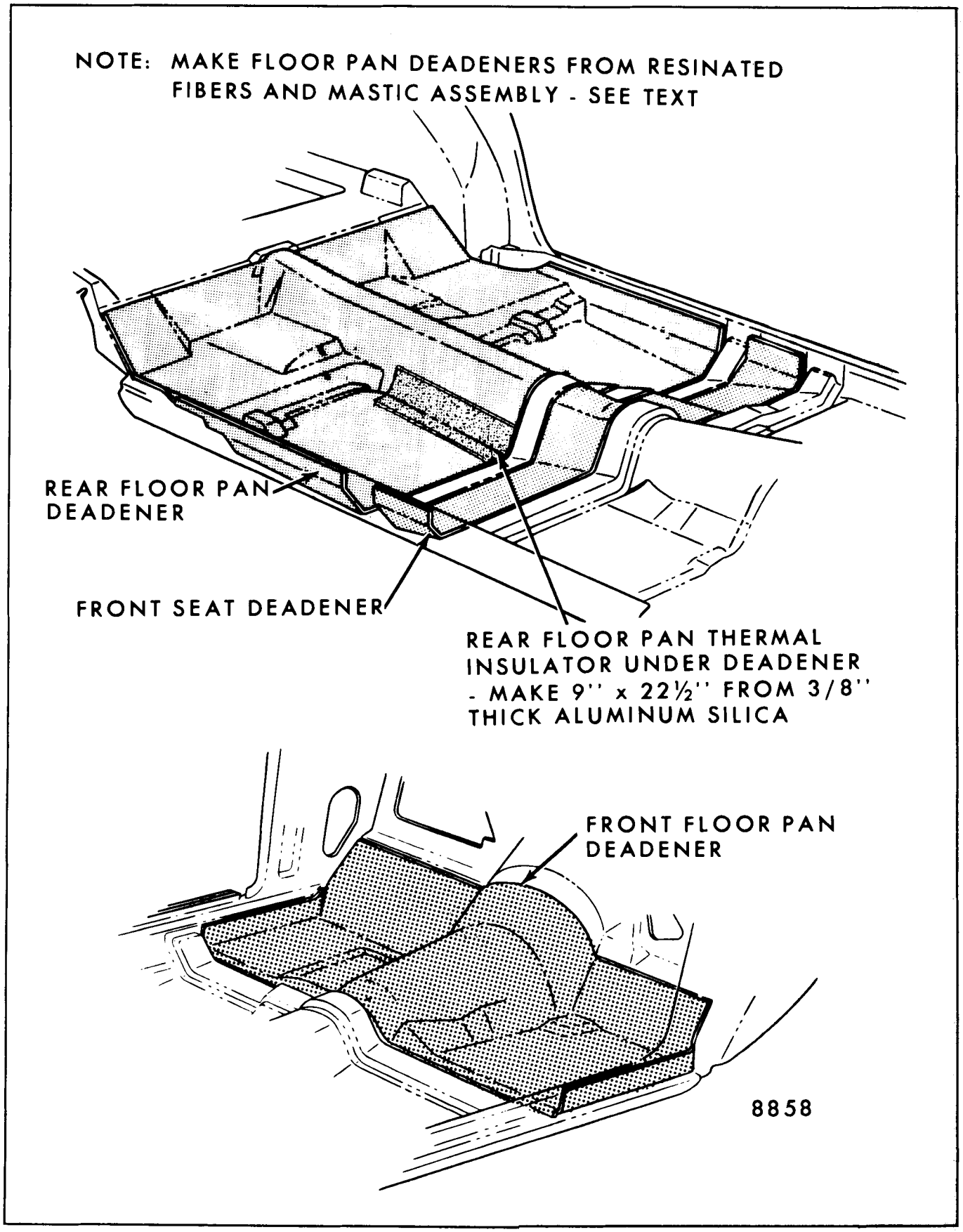


Fig. 3-21 - Floor Pan Deadeners and Insulators - "K" Body

FLOOR CARPET

The "D" style floor carpet consists of a molded one-piece front and a one-piece rear carpet over the front and rear floor pan. All other style floor carpets consist of a molded one-piece carpet over both front and rear floor pan. To remove or install carpet, it will be necessary to remove front seat assembly, rear seat cushion and front and rear door sill plates.

SECTION 4

FRONT END

TABLE OF CONTENTS

SUBJECT	PAGE
Body Ventilation	
Nonair Conditioned Styles	4-1
Shroud Center Duct High Level Air Outlet and Door - "A,E" Styles	4-2
Low-Level Air Duct Outlet, Door and Grille - "A, E" Styles	4-2
Shroud Center Duct High-Level Air Outlet and Door - "F" Styles	4-4
Shroud Side Finishing Panel	4-4
Shroud Side Trim Panel - "K" Styles	4-7
Rear Shroud Side Trim Panel - "K"	4-8
Shroud Duct Panel and Door Assembly	4-8
Pressure Relief Valve	4-9
Pressure Relief Louver	4-9
Hood Latch Release Cable - "A,B,C,E,K" Styles	4-11
Front End Sheet Metal - "H" Styles	
Hood Assembly	4-12
Hood Latch Striker	4-12
Hood Latch Assembly	4-13
Control Assembly-Hood Latch Release	4-14
Hood Latch Auxiliary Release Tool	4-14
Front Fender	4-15
Body Front End Panel	4-17
Exterior Moldings, Name Plates and Emblems	4-17

BODY VENTILATION

DESCRIPTION (Nonair Conditioned Styles)

Body ventilation systems on nonair conditioned styles are comprised of a low-level system or a combination of a low-level and a high-level system depending upon body style.

The "B,C" nonair conditioned styles differ in that ventilation is accomplished by a heater vent module which is mounted to the dash panel. Refer to the chassis service manual for module service procedures. On "K" styles, ventilation is controlled through the automatic climate control system. Refer to the chassis service manual for operation.

All styles (less "B,C") utilize a fresh air intake at the front plenum chamber. On "F,H,X" styles, the low-level ventilation system consists of fresh air outlets in each shroud side panel and is standard equipment on all styles. On "A and E" styles, the low- level system air outlets are located in the lower wall of the right shroud vent side duct panel and the lower wall at left end of shroud vent duct center panel (Fig. 4-1).

On "K" styles, fresh air is introduced at the front plenum chamber and into the automatic climate control system through a vacuum door in the right side shroud.

The body ventilation system on "H" body nonair conditioned styles is comprised of only a low-level system.

The fresh air intake is located at the front plenum chamber. In addition to the plenum chamber, the ventilation system consists of:

1. Duct openings in right and left shroud side panels (Fig. 4-7).
2. Integral air duct outlet in right and left shroud side finishing panels. Each duct outlet is equipped with a door and control cable (Fig. 4-6).
3. Air exhaust louvers in each quarter outer panel on "H-15" styles.

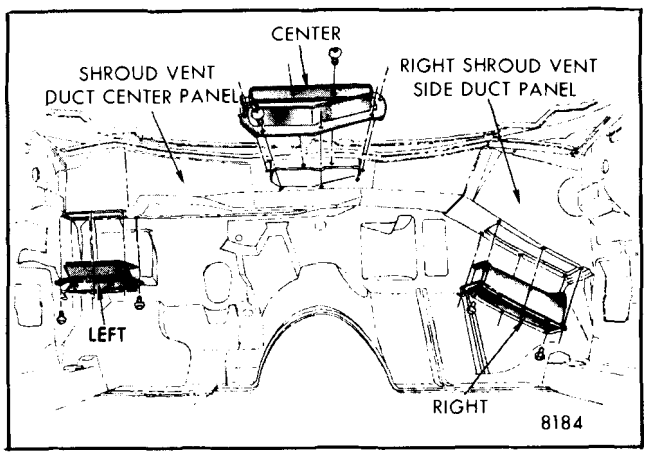


Fig. 4-1-Air Duct Outlet Locations - "A and E" Styles

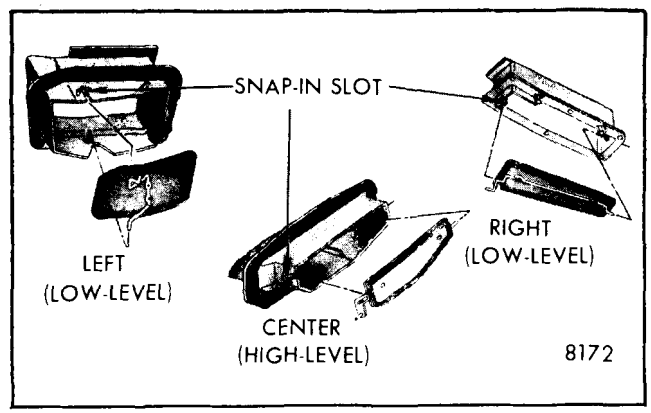


Fig. 4-2-High-Level and Low-Level Air Outlets and Doors - "E" Styles ("A" Styles Similar)

The high-level ventilation system is standard equipment on all "A,E,F" styles.

High-level ventilation systems include the following components:

1. High-level air outlet(s) on instrument panel.
2. Pressure relief valves (air exhaust outlets) on rear body lock pillars.

NOTE: For instructions on operation of the body ventilation system, refer to the Owner's Manual.

Ventilating air enters the front plenum chamber through an air intake grille and/or screen. Air is directed through plenum chamber to high-level air outlet door(s) and/or to low-level air outlet doors. When ventilation controls are operated, air enters past respective doors and into body.

On styles with high-level ventilation, air passes through the body, around the rear seat, and into the rear compartment. The air then passes into the rear quarters and leaves the body passing through the pressure relief valves located on the rear body lock pillars (Figs. 4-20 and 4-21).

On "B,C" styles, air supplied by the heater vent module circulates through the body and exits through relief valves which are located on the front door lock pillars or rear body lock pillars on sedan styles.

Water entering front plenum chamber on "F,X" styles is channeled to base of shroud side panels where it is drained through openings provided for that purpose. On "A and E" styles, water is channeled to outboard ends of the plenum chamber where it is discharged through flat deflection type drain valves.

On "H" body styles, water entering front plenum chamber is channeled around baffles to base of shroud panels and into rocker panels where it is drained to the outside through openings provided for that purpose.

SHROUD CENTER DUCT HIGH-LEVEL AIR OUTLET AND DOOR - "A and E" Styles

The outlet and door are shown in Figures 4-1 and 4-2.

To remove door from air duct outlet, disengage control cable from door and slide crank end of door from snap-in slot in duct assembly and remove door.

The high-level air duct outlet is sealed with a gasket at attaching flanges and is secured to center duct panel with screws.

NOTE: If gasket becomes damaged, duct outlet can be sealed to center duct panel with medium-bodied sealer.

LOW-LEVEL AIR DUCT OUTLET, DOOR AND GRILLE - "A and E" Styles

To remove grille from air duct outlet on "E" styles, remove grille to air outlet attaching screw(s). The left grille is retained by one screw and the right grille by two screws (Fig. 4- 3). Disengage grille from retaining tabs on outlet and remove grille. On "A" styles, the left grille is retained by one screw and the right grille is an integral part of the air duct outlet. To install, reverse removal procedure.

To remove air outlet door, remove grille as previously described, remove control cable to door crank retainer and disengage control cable from crank (Fig. 4-4). Disengage crank end of door from snap-in slot of air outlet and remove door. To install, reverse removal procedure.

To remove air duct outlet, remove grille and disconnect control cable as previously described. Remove air duct outlet attaching screws and remove duct outlet assembly.

NOTE: In case of gasket damage, seal duct outlet to duct opening with medium-bodied sealer.

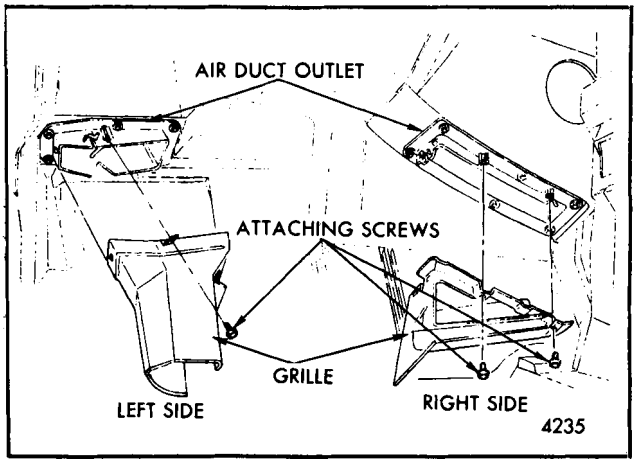


Fig. 4-3-Low-Level Air Outlet Grilles - "E" Styles ("A" Style Similar)

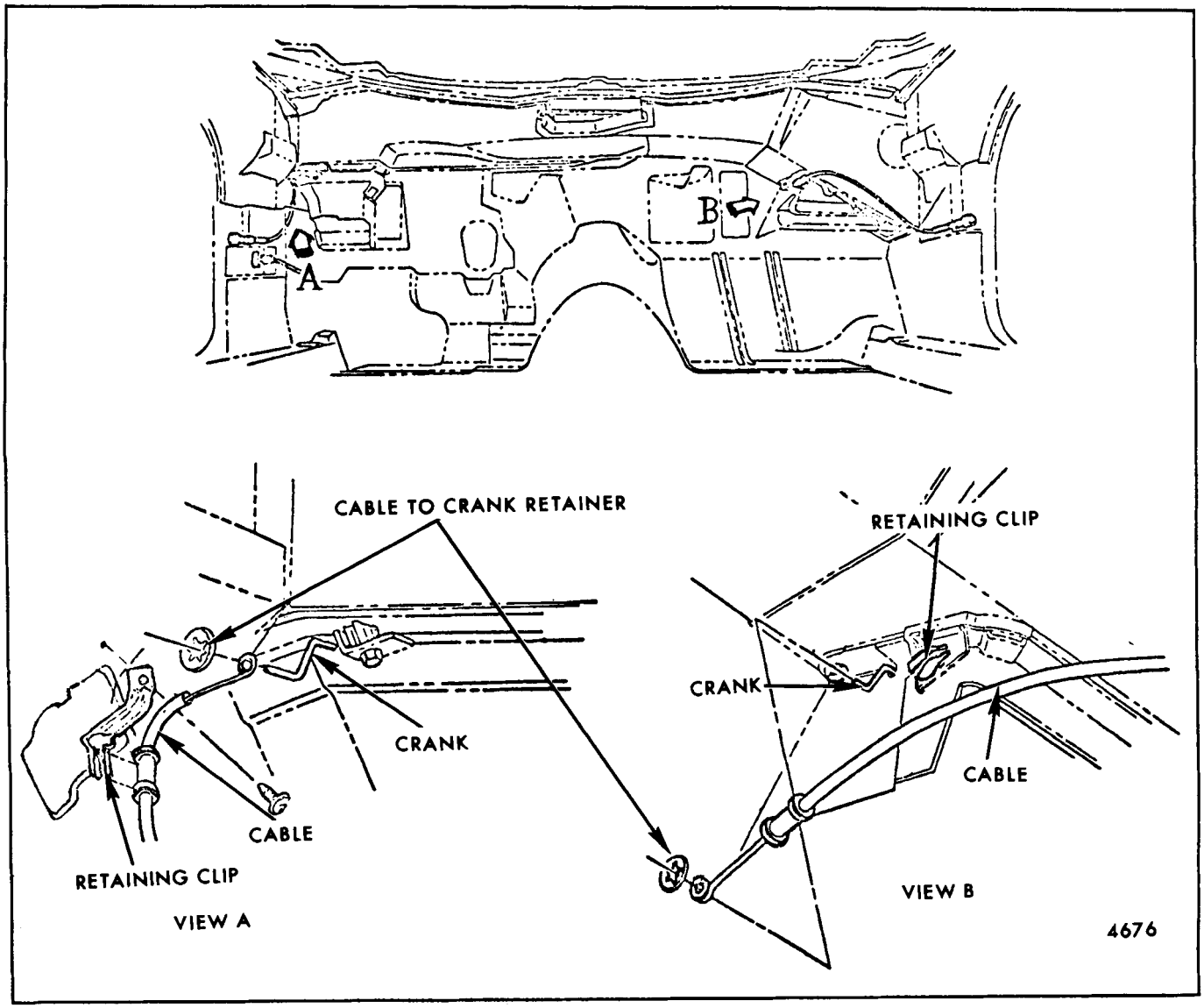


Fig. 4-4-Low-Level Air Outlet Control Cables

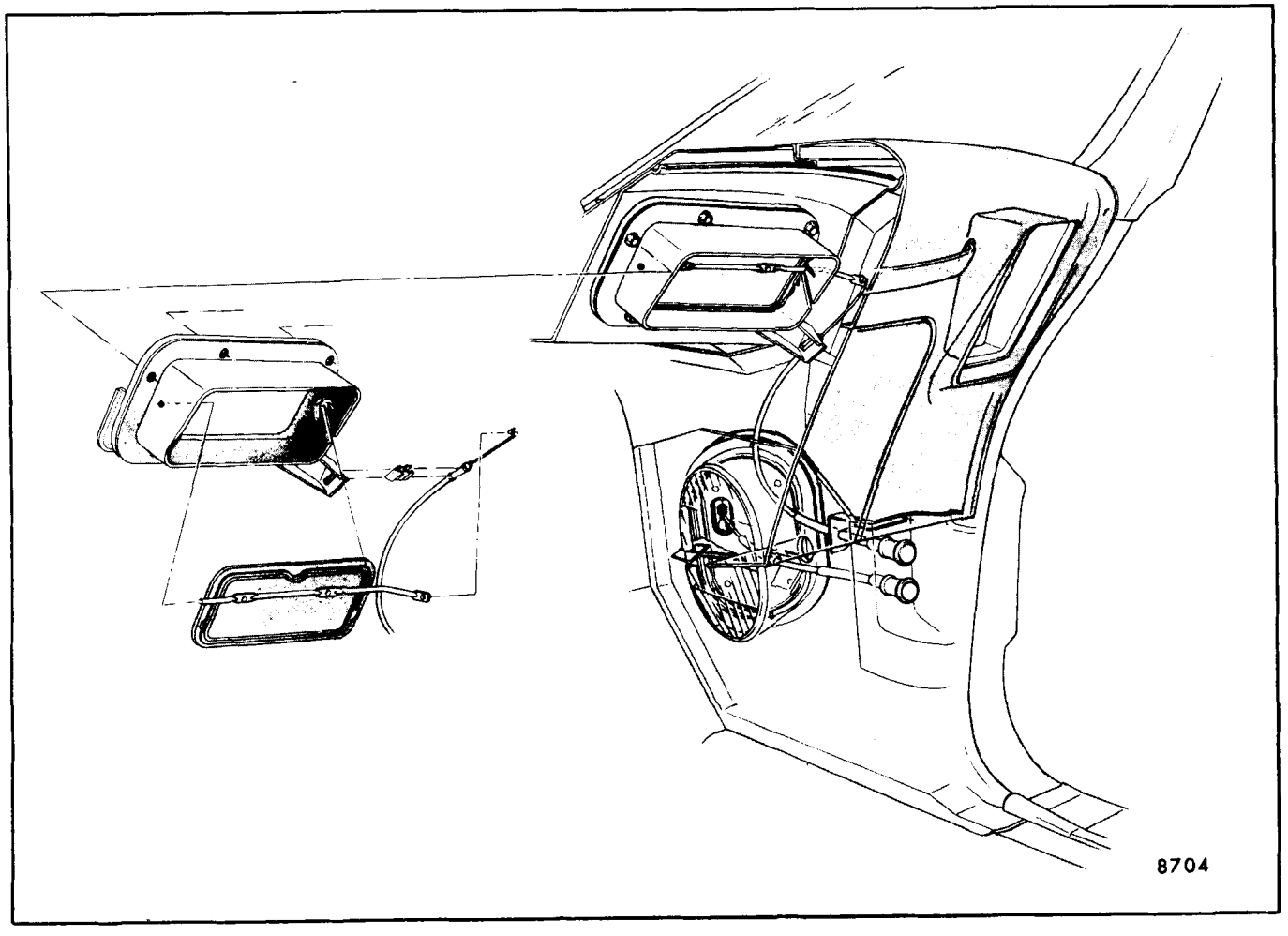


Fig. 4-5-Shroud Center Duct High-Level Air Outlet and Door - "F" Styles

SHROUD CENTER DUCT HIGH-LEVEL AIR OUTLET AND DOOR - "F" Styles

The air duct outlet, door and control cable attachment is illustrated in Figure 4-5.

The door can be removed by removing retaining clip (Fig. 4-5), control cable from retaining clip and rotating control cable out of crank on door. Disengage snap-in type control rod from duct assembly and slide door out of duct opening.

To remove duct outlet, disengage control cable from door and remove duct outlet to center duct panel attaching screws. To install, reverse the removal procedure.

NOTE: In case of gasket damage, seal duct outlet to center duct panel with medium-bodied sealer.

SHROUD SIDE FINISHING PANEL

On "F, X and H" styles, the shroud side finishing panel is designed with an integral air duct outlet and hinge pillar pinchweld finishing lace. The following are added to the finishing panel before installation: air outlet door and upper and/or lower vent control cables. The attaching flanges of the panel must be sealed to the contacting panel. If original seal is damaged or disturbed, apply medium-bodied sealer around attaching flanges (Fig. 4-11). The finishing panel is secured by screws at the side panel. A snap-in type grille completes the installation on "X" styles. The grille on "F and H" styles is an integral part of the finishing panel.

Removal of the low-level air duct door and/or upper and lower vent control cable requires removal of the

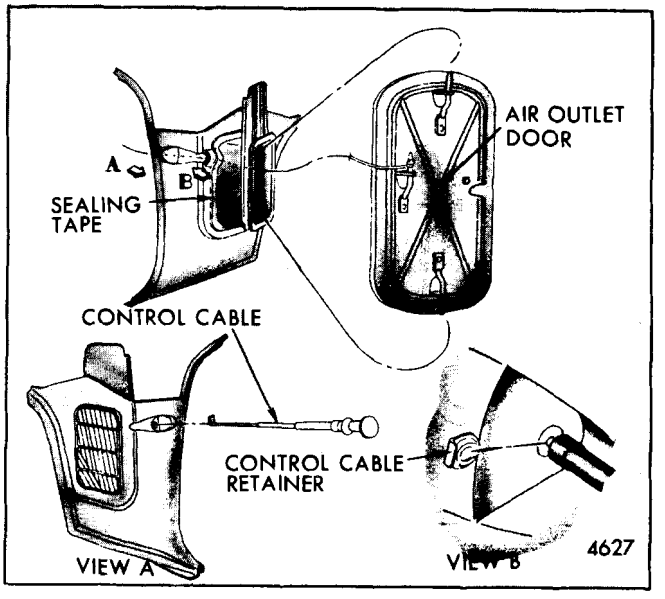


Fig. 4-6-Shroud Side Duct Air Outlet and Door

finishing panel. (Figures 4-7, 4-8, 4-9, and 4-10 depict types of finishing panels and their installation).

On "A and E" styles the shroud side finishing panel is designed with an integral hinge pillar pinchweld finishing lace. A lower vent control cable is added to each finishing panel and a hood latch release cable to the left panel before installation. The left finishing panel is secured by two screws, the right by one screw at the shroud side panel and one screw in each panel at the hinge pillar (Fig. 4-8).

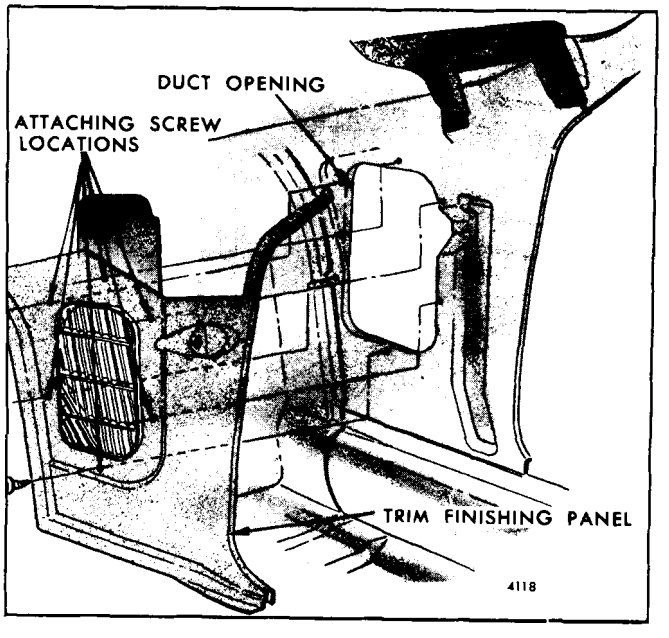


Fig. 4-7-Shroud Side Trim Finishing Panel

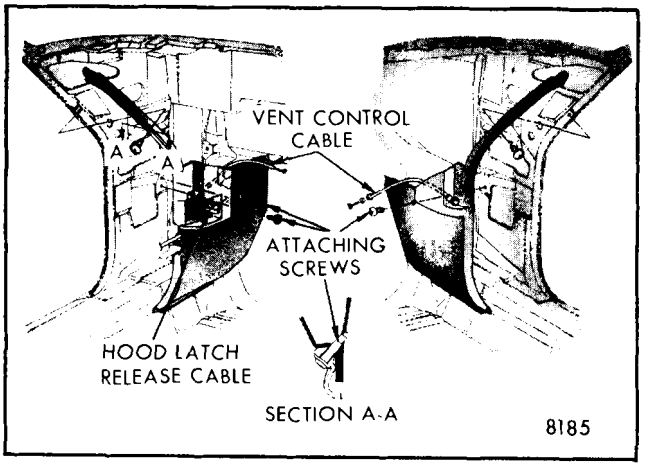


Fig. 4-8-Shroud Side Finishing Panel - "E" Styles ("A" Styles Similar)

Removal and Installation

1. Remove sill plate.
2. Remove shroud side finishing panel attaching screws (Fig. 4- 7).
3. Move finishing panel inboard to disengage air duct outlet from body opening, then rearward to disengage panel from hinge pillar. The upper end of the finishing lace portion of panel can then be slipped from under windshield side garnish molding.
4. To install, reverse the removal procedure.

NOTE: On "F, H and X" styles, if the sealing tape on the attaching flanges of the finishing panel has been damaged, seal attaching flanges with medium-bodied sealer prior to installation of finishing panel.

Removal of vent control cable or door requires removal of shroud side finishing panel.

To remove control cable after finishing panel removal, slide eye of the control cable off pin on door assembly, remove control cable retainer (Fig. 4-6) located flush against back surface of finishing panel and remove control cable from finishing panel. To install, reverse the removal procedure.

To remove air outlet door after finishing panel removal, slide eye of control cable off the pin on the door assembly, push downward on door to disengage upper pivot and lift door out of lower pivot. To install, reverse the removal procedure.

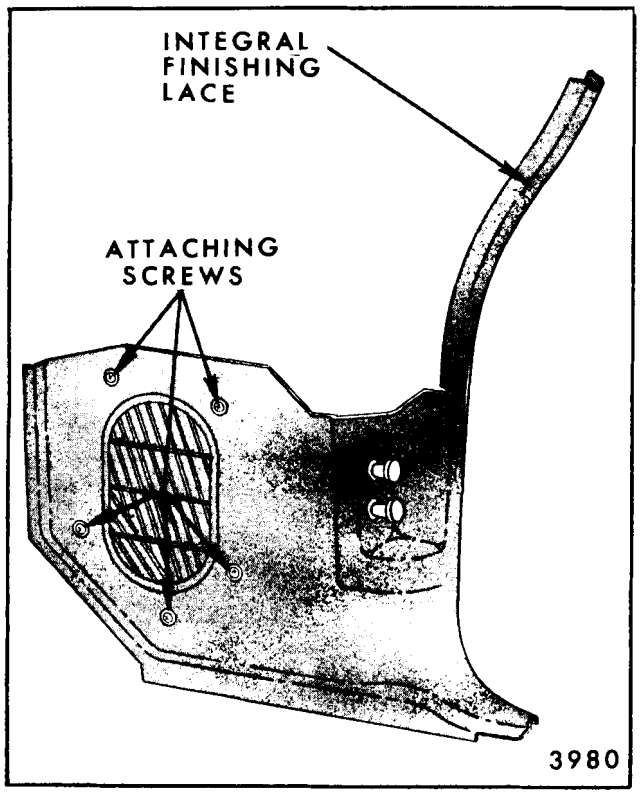


Fig. 4-9-Shroud Side Finishing Panel - "F" Styles

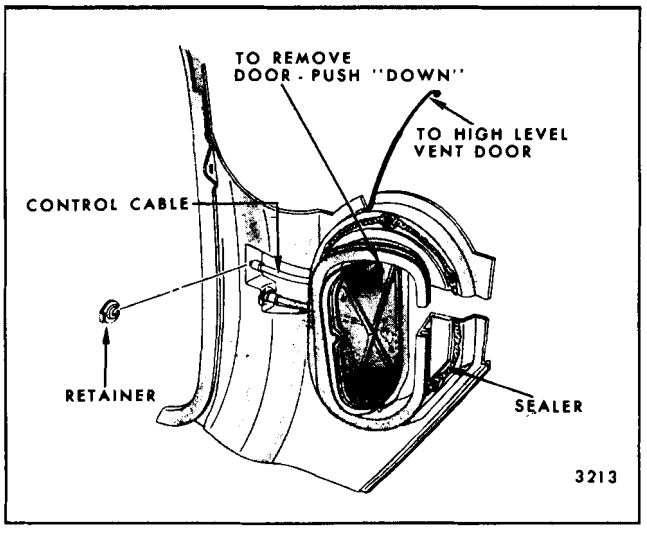


Fig. 4-11 - Shroud Side Finishing Panel Sealing - "F,X" Styles Shown - "H" Styles Similar

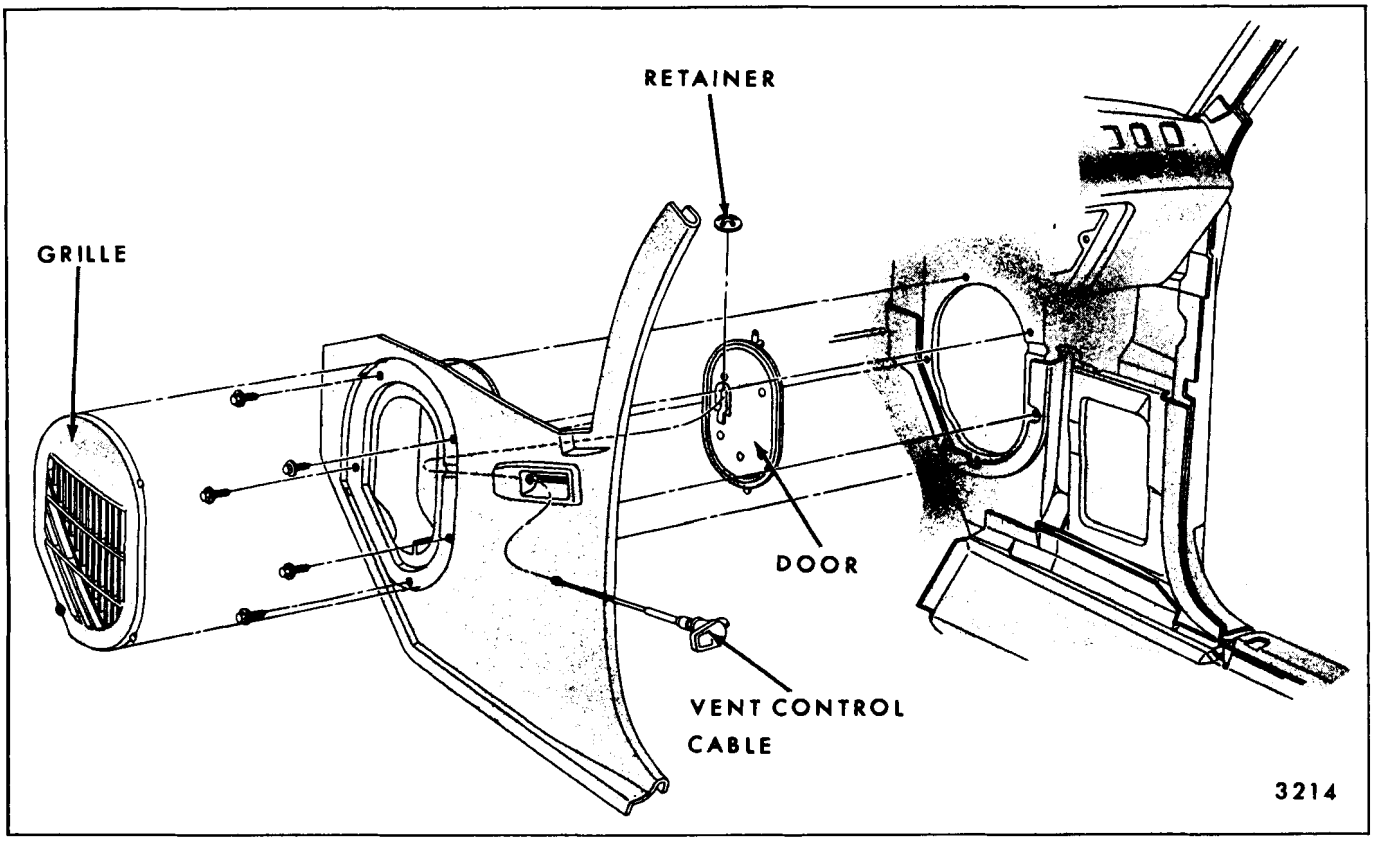


Fig. 4-10-Shroud Side Finishing Panel - "X" Styles

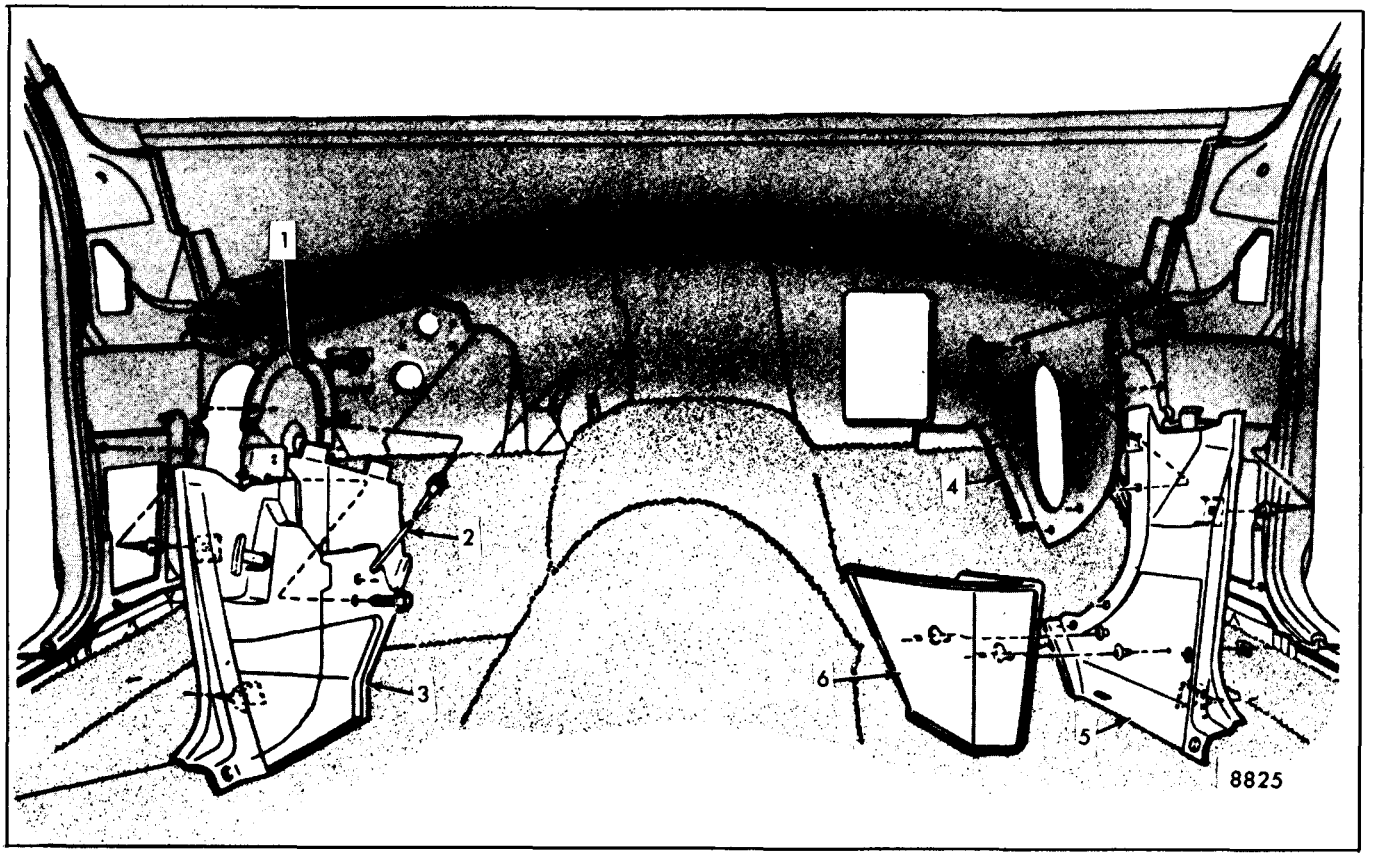


Fig. 4-12 - Front End Component Identification (Typical)

1. Shroud Side Cover Assembly (Left Side)
2. Hood Release Cable Assembly
3. Shroud Side Trim Panel
4. Side Duct Panel and Door Assembly (Right Side)
5. Rear Shroud Side Trim Panel (Right Side)
6. Litter Container

FRONT END COMPONENT IDENTIFICATION

Figure 4-12 identifies interior front end components as installed on "K" styles.

SHROUD SIDE TRIM PANEL - RIGHT AND LEFT SIDES - "K" STYLES

The left side shroud panel consists of a trim panel and hood release cable assembly (items 2 and 3, Fig. 4-12). The cable must be removed as an assembly during shroud side trim panel removal.

The right side shroud panel consists of a side duct panel and door assembly ("4", Fig. 4-12), a rear shroud side trim panel ("5", Fig. 4-12) and a litter container ("6", Fig. 4-12).

Removal and Installation - Left Side

1. Remove sill plate.
2. Raise hood and disengage hood release cable from hood latch. Block latch to prevent inadvertent hood locking until cable has been reinstalled onto latch.
3. Remove screw securing release cable grommet to firewall and remove grommet from cable (Fig. 4-13).
4. Remove two screws securing trim panel to side shroud; then using trim removal tool J-24595, BT 7323 or equivalent, disengage two trim fasteners from side shroud panel (Fig. 4-14).
5. To install, reverse removal procedure.

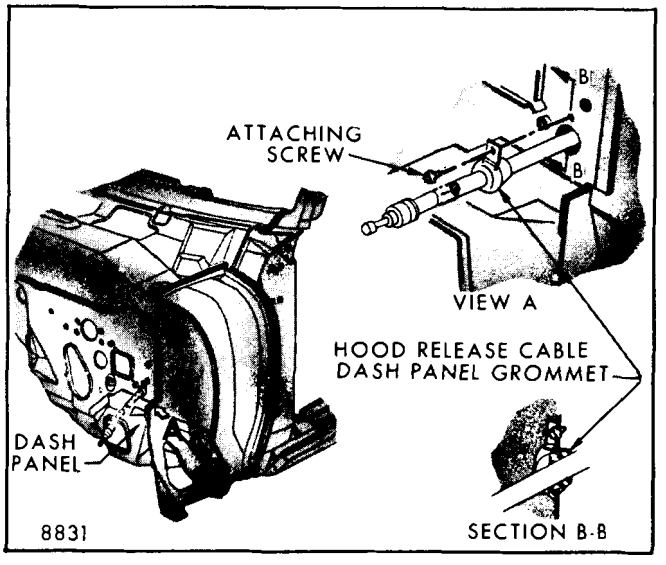


Fig. 4-13 - Hood Release Cable Dash Panel Grommet

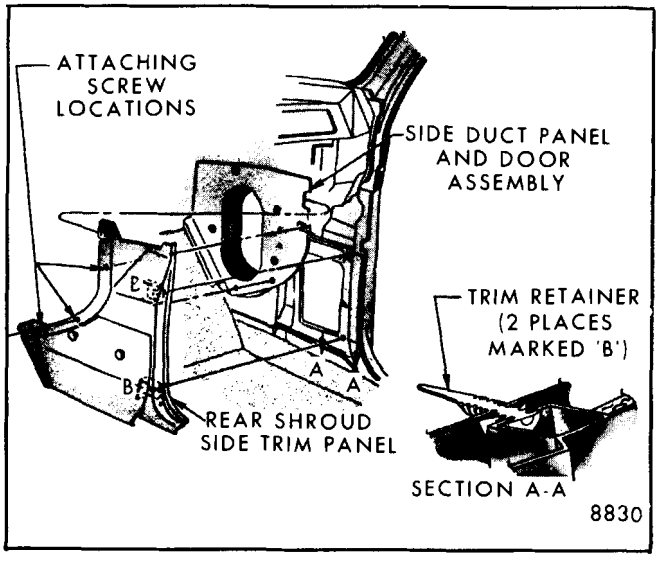


Fig. 4-15 - Rear Shroud Trim Panel - Right Side

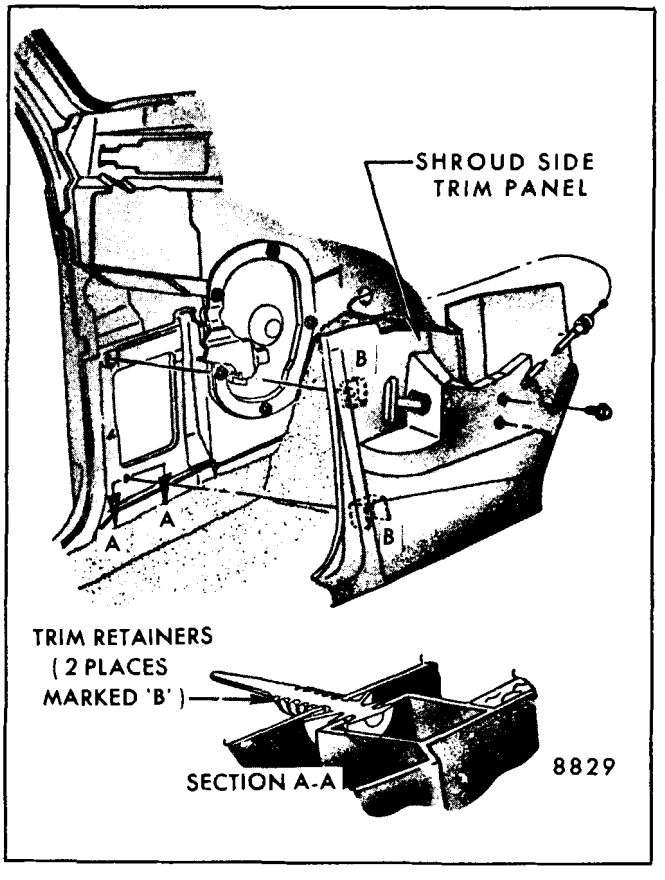


Fig. 4-14 - Shroud Side Trim Panel (Left Side)

REAR SHROUD SIDE TRIM PANEL - RIGHT SIDE - "K" STYLES

Removal and Installation

1. Remove litter container and sill plate.
2. Remove three screws securing rear trim panel to side shroud; then using trim removal tool J-24595, BT 7323 or equivalent, disengage two trim fasteners from side shroud panel (Fig. 4-15).
3. To install, reverse removal procedure.

SHROUD DUCT PANEL AND DOOR ASSEMBLY - RIGHT SIDE

Removal and Installation

1. Remove rear shroud side trim panel as previously described.
2. Remove division furnished vacuum door actuator and heater assembly as described in Section 1 of the chassis service manual.
3. Remove four side duct panel to side shroud panel attaching screws (Fig. 4-16); then remove duct panel and door assembly.

NOTE: Prior to reinstallation apply a minimum 1/4" bead of pumpable medium-bodied sealer completely around attaching flange of assembly as shown in Figure 4-17 to prevent water entry.

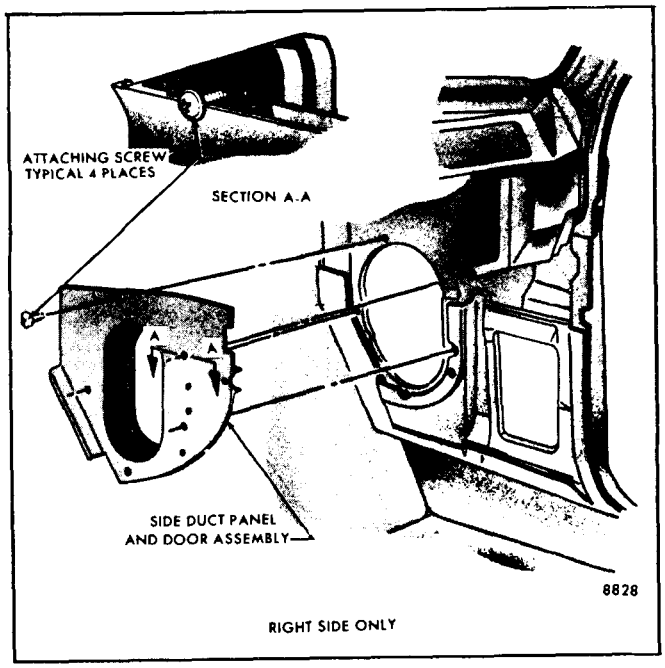


Fig. 4-16 - Side Duct Panel and Door Assembly

4. To install, reverse removal procedure. Use care not to disturb peripheral seal around door assembly (Fig. 4-17).

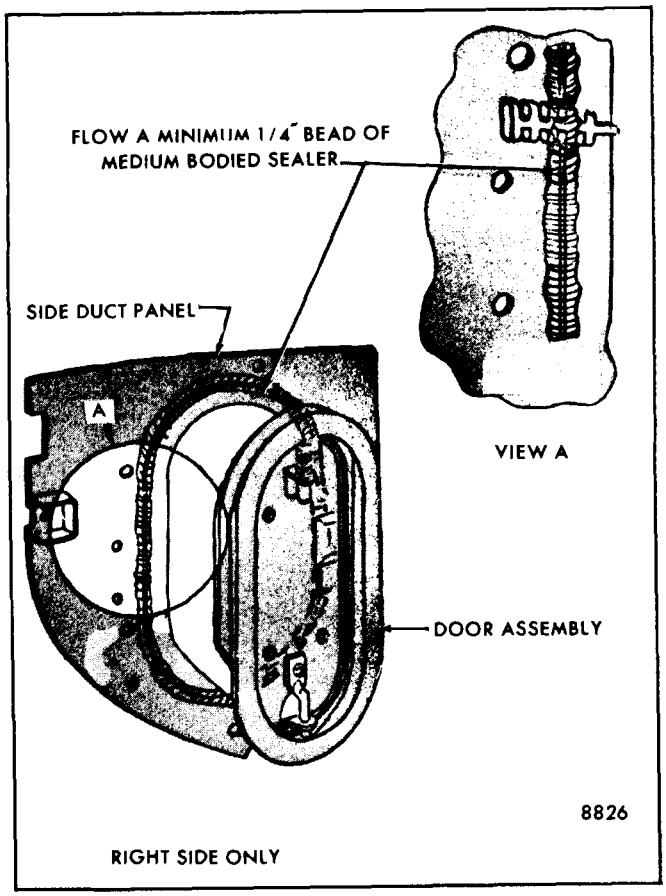


Fig. 4-17 - Side Duct Panel and Door Assembly Sealing

PRESSURE RELIEF VALVE TYPICAL - All Except "X-17", Standard "X-27" and "H-07 and 15" Styles

On all "A,B,C,E,F,K,X and H" (less "H-07,15, X-17 and standard X-27") styles, pressure relief valves are attached to rear lock pillars (in door opening below belt) with screws. Figures 4-20 and 4-21 show pressure relief valve installations.

PRESSURE RELIEF LOUVER - "X-17, Standard X-27, X-69", and "H- 07 and 15" Styles

On "X-17, standard X-27" and "H-07" styles, air is exhausted through louvers in the body lock pillars (above belt). On the "X- 69" style, the right and left roof sail panel louvers are dummy louvers. The "X-69" style utilizes conventional pressure relief valves in the rear body lock pillars (in door opening below belt). Figures 4-18 and 4-19 show typical louver installations.

On the "H-15" style, air is exhausted through louvers in the rear quarter panel.

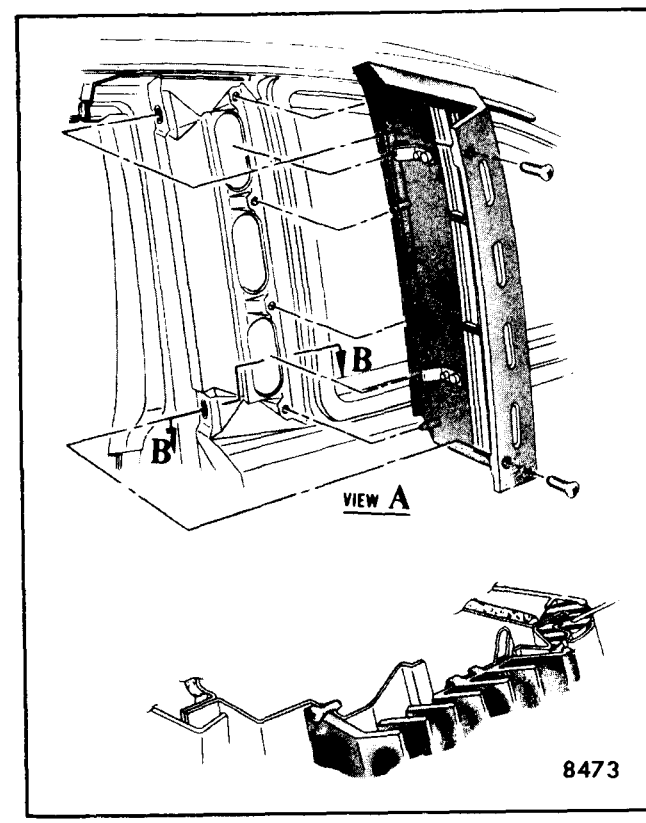


Fig. 4-18-Louver Assembly - "X-17 and Standard X-27" Styles

Removal and Installation - "X-17 and Standard X-27" Styles

1. Remove two louver to lock pillar attaching screws located in the door opening (Fig. 4-18).
2. Slide louver forward to disengage two hook-type attaching clips and complete removal.
3. To install, reverse removal procedure.

Removal and Installation - "X-69" Styles

1. Remove rear quarter upper (sail) trim panel as described in Quarter Trim, Section 6, of this manual.
2. Remove four louver to body lock pillar upper attaching nuts from sail area.
3. To install, reverse removal procedure.

Removal and Installation - "H-07" Styles

1. Remove two louver to body lock pillar (above belt) attaching screws (Fig. 4-19).
2. Remove side roof rail front garnish molding.

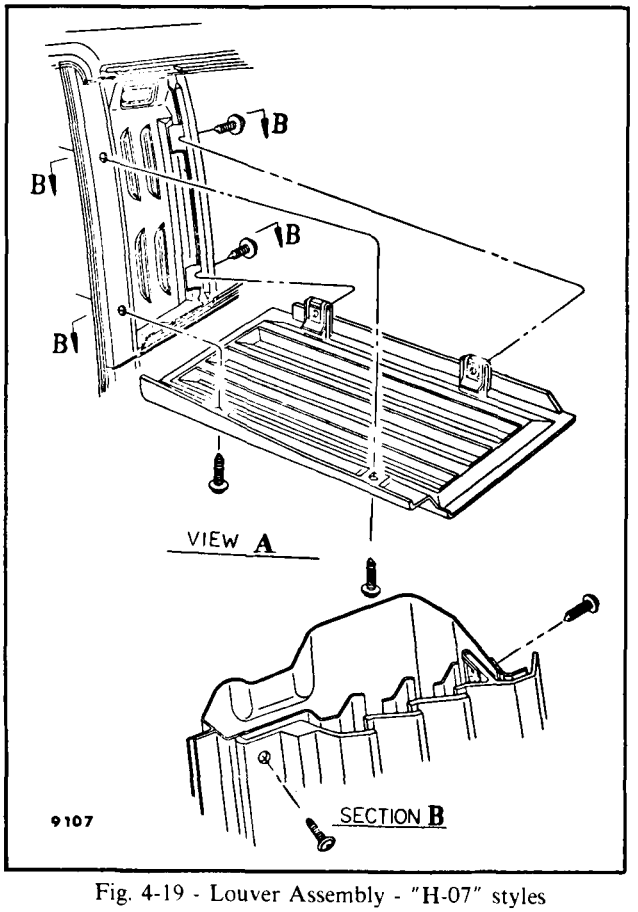


Fig. 4-19 - Louver Assembly - "H-07" styles

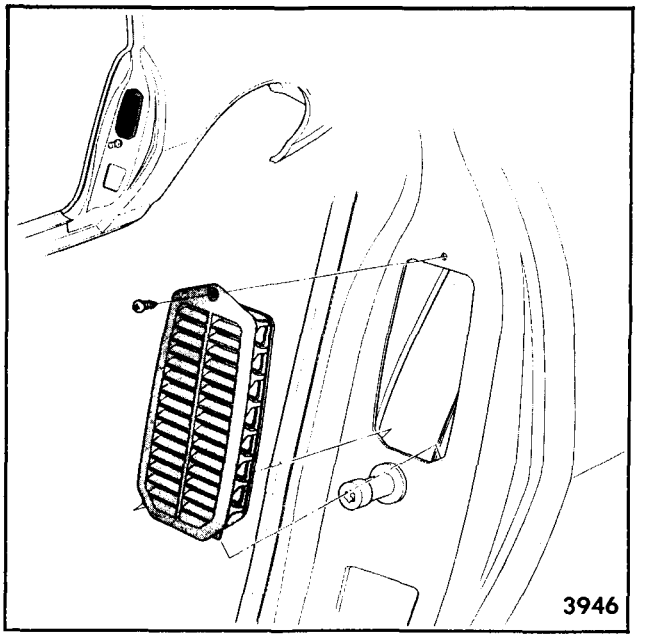


Fig. 4-20-Pressure Relief Valve - "F" Styles ("H-11,27, 77" Styles Similar)

3. Loosen front of side roof rail rear garnish molding to permit loosening of upper portion of body lock pillar quarter trim.
4. Using putty knife or other suitable flat-bladed tool, loosen body lock pillar portion of quarter trim at rear flange of body lock pillar to gain access to louver attaching screws.
5. Remove two louver to body lock pillar attaching screws from body upper lock pillar and remove louver (Fig. 4-19).
6. To install, reverse removal procedure.

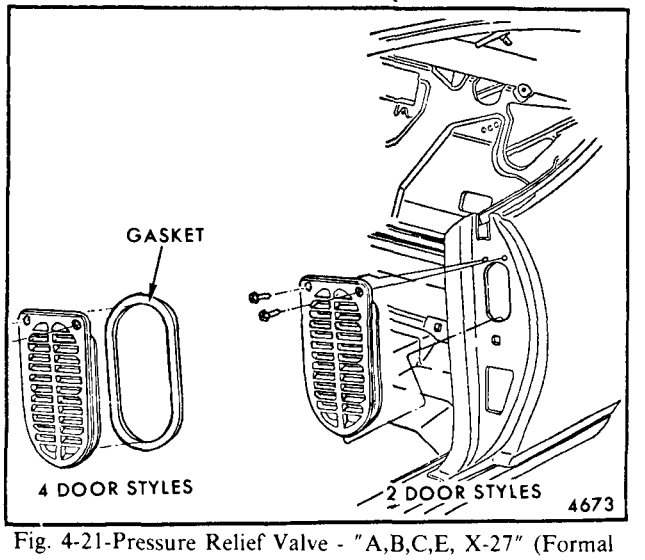


Fig. 4-21-Pressure Relief Valve - "A,B,C,E, X-27" (Formal Roof) and "X-69" Styles

HOOD LATCH RELEASE CABLE - "A,B,C,E,K" STYLES

DESCRIPTION

The one-piece hood latch release cable includes pull handle, control cable and housing. The control cable is installed through the left shroud side trim panel (Fig. 4-23). A sealing grommet attached to dash panel completes the assembly.

Removal and Installation

1. Raise hood and disengage cable from hood latch assembly. Block latch to prevent inadvertent hood locking until cable has been reinstalled.
2. Remove screw securing release cable grommet to dash panel (Fig. 4-13); then remove grommet from cable.
3. Remove left shroud side trim panel, including cable assembly, sliding control cable through hole in dash panel.
4. Disengage control assembly housing from snap-in slot of trim panel (Fig. 4-23 and 4-22) and remove cable assembly from panel pulling toward pull handle end.
5. To install, reverse the removal procedure. When installing grommet, hold cable taut and force grommet into hole in dash panel. Reinstall grommet to dash panel attaching screw.

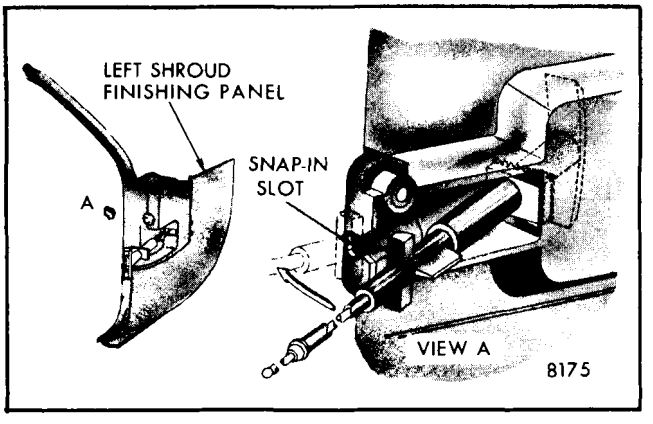


Fig. 4-22-Hood Latch Release Cable

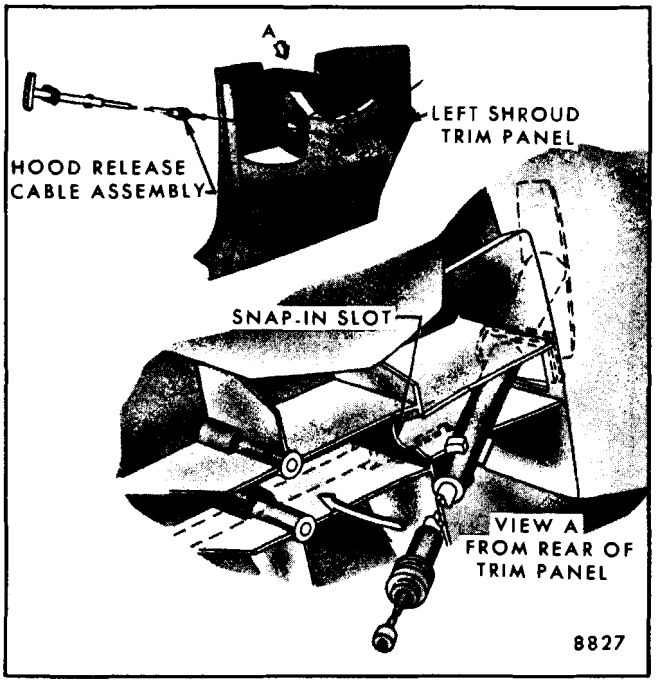


Fig. 4-23 - Hood Latch Release Cable - "K" Style

FRONT END SHEET METAL - ALL "H" STYLES

DESCRIPTION

This section includes items of front end sheet metal that are attached by bolts, screws or clips and related accessory components.

HOOD ASSEMBLY

Description

The "H" (less "07,27") style hood assembly is hinged at the front edge. The hood hinge is welded to the body and the hood is attached to the hinge with two attaching screws on each side.

The "H-07,27" style hood is hinged at the rear. The hood hinge is welded to the hood side and bolted to the body side (Fig. 4-24).

Removal and Installation - "H" Less "07,27" Styles

1. Raise hood and secure in open position with prop of suitable length.
2. Remove hood to hinge attaching screws.
3. With aid of a helper, disengage each hinge from its respective hinge support and remove hood assembly.
4. To install, reverse the removal procedure.

Removal and Installation - "H-07,27" Style

1. Raise hood and secure in open position with hood prop.
2. With aid of helper, remove two hinge to upper shroud attaching bolts (Fig. 4-24) and remove hood and hinge from body.
3. To install, reverse removal procedure.

Fig. 4-24-Hood Hinge - "H-07,27"

HOOD LATCH STRIKER

Removal and Installation

1. Raise hood and remove striker attaching screws. Remove striker (Fig. 4-25 for all "H" less "07,-27", Fig. 4-26 for "H-07, 27" style).

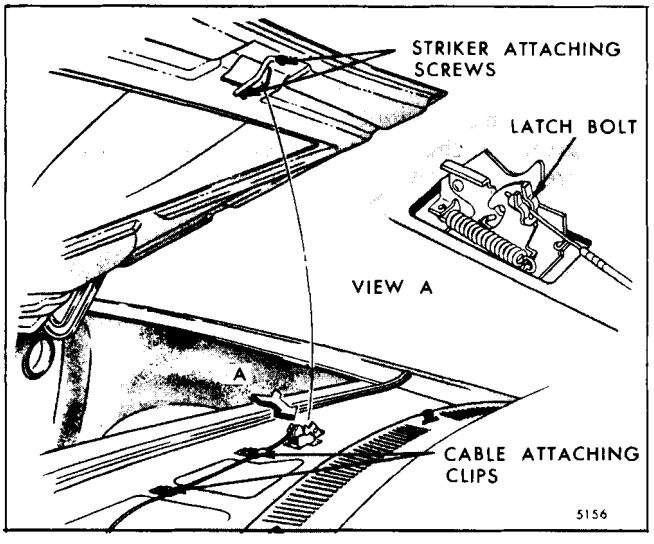


Fig. 4-25-Hood Latch and Hood Latch Striker - "H-11, 15 and 77" Styles

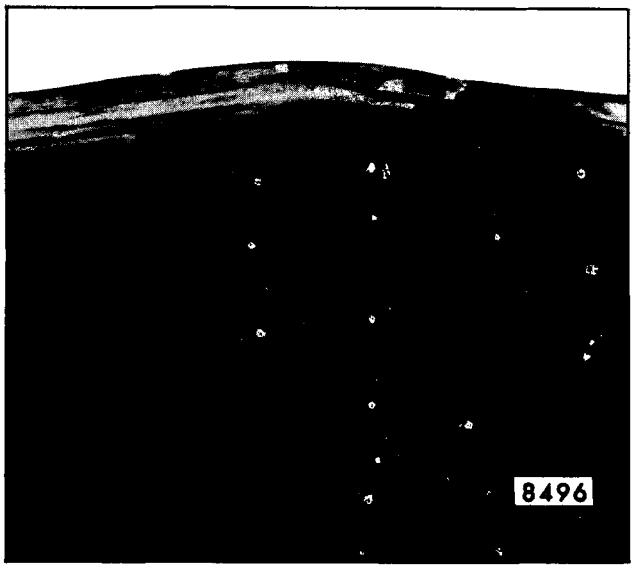


Fig. 4-26-Hood Latch Striker - "H-07,27"

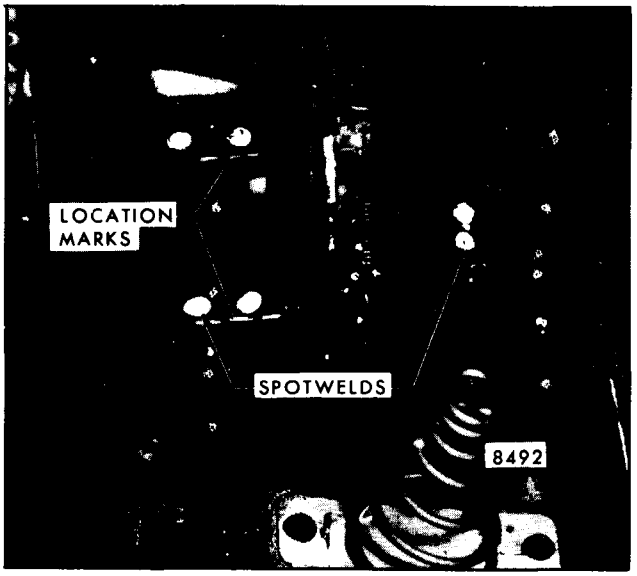


Fig. 4-27-Hood Latch Assembly - "H-11, 15 and 77"

2. To install, reverse removal procedure. Adjust striker laterally for proper engagement with hood latch before tightening striker attaching screws.

HOOD LATCH ASSEMBLY

Description - "H" Less "07,27" Styles

The hood latch assembly on "H" body styles (less "H-07,27") is mounted to the underside of the shroud upper panel with six spot welds (Fig. 4-27). The latch is therefore not adjustable.

Removal

1. Open hood and disconnect hood latch cable from hood latch assembly as described in subsequent procedure.

2. Scribe position of right and left side of latch onto shroud upper panel, as shown in Figure 4-27 to provide proper location for replacement latch assembly.

3. Using spotweld cutter, tool J-8943-01 or equivalent, drill out each spotweld attaching latch to shroud upper panel.

   NOTE: A slight amount of weld may still retain the latch to the shroud upper panel. Working through adjacent cutouts in panel, drive a chisel between latch and panel to complete separation of retaining weld.

4. Remove latch through adjacent cutout in shroud upper panel.

Installation

1. Position new latch to previously scribed lines on shroud upper panel.

2. Clamp latch to shroud upper panel with clamping-type pliers.

3. Braze latch to panel through drilled out spotweld holes in shroud upper panel.

4. Connect hood latch cable onto latch assembly.

Description - "H-07,27" Style

The hood latch assembly on the "H-07,27" style is attached between the front end upper tie bar and the front end upper tie bar support by four attaching screws (Fig. 4-28).

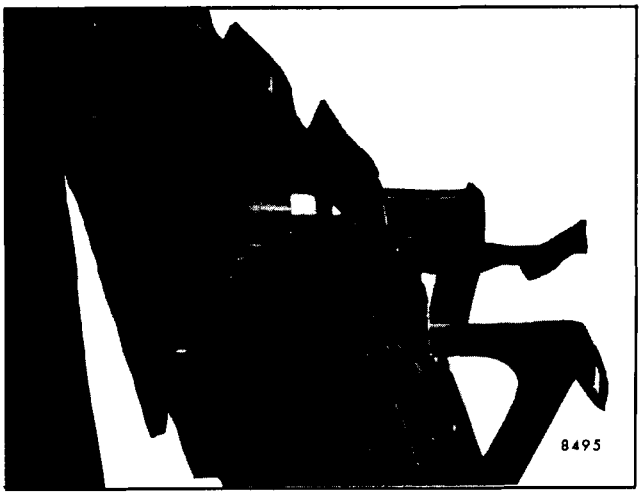


Fig. 4-28-Hood Latch Assembly - "H-07,27"

Removal and Installation

1. Remove motor division upper bumper cover panel as described in the car division chassis manual.
2. Remove four front end tie bar to hood latch assembly attaching screws.
3. Pull latch assembly forward to remove.
4. To install, reverse removal procedure.

CONTROL ASSEMBLY - HOOD LATCH RELEASE - "H" Body (Less "07,27" Style)

Removal

1. Under instrument panel, remove screws securing hood latch release to mounting bracket. Disengage release cable grommet from opening in shroud side panel (Fig. 4-29).
2. With hood open, remove clips securing hood latch release cable to shroud upper panel (Fig. 4-25).
3. Detach cable from latch bolt. Remove hood latch release assembly toward body interior by pulling cable through plenum chamber and through hole in side shroud panel (Fig. 4-29).
4. To detach cable from release assembly, remove clip securing cable to release handle (Fig. 4-30).

Installation

1. On inside of body, insert end of cable assembly through hole in side shroud panel and route cable through plenum and up over top of shroud panel (Figs. 4-25 and 4-29).
2. Insert cable end into hood latch bolt. Slide cable housing outboard to eliminate free travel in cable and secure cable to shroud upper panel with clips.
3. On inside of body, secure hood latch release assembly to mounting bracket.
4. Position cable grommet in hole in shroud side panel.

Fig. 4-29-Hood Latch Release Assembly Attachment - "H" Body (Less "07,27" Style)

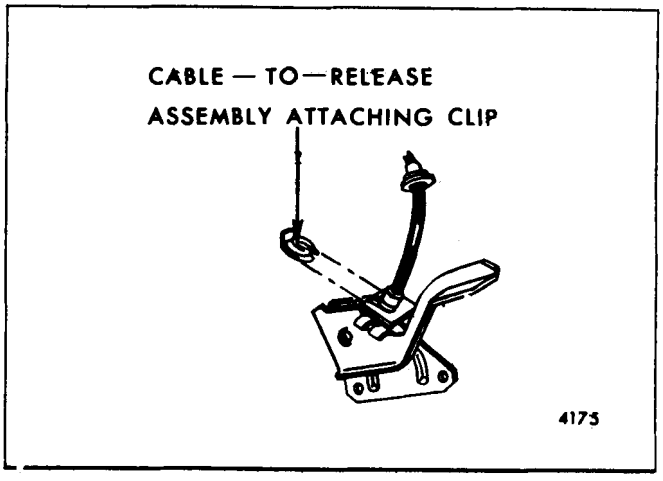


Fig. 4-30-Hood Latch Cable-to-Release Handle Attachment - "H" Body (Less "07,27" Style)

HOOD LATCH AUXILIARY RELEASE TOOL - "H" Body (Less "07,27" Style)

If the hood latch will not operate due to collision damage, etc., tool No. J-23581 or equivalent (Fig. 4-31) may be used to release latch, allowing hood to be opened. The tool is designed to be used as follows:

1. Apply masking tape just above score line on tool to prevent possible paint damage to body. Insert tool through seventh slot to the left of the right hand wiper transmission in vent grille.
2. Guide tool through hole in vent grille to center duct reinforcement until score line on shank of tool is approximately 1/2" below top surface of vent piercing. Be certain tool passes to left of hood latch bolt.
3. Rotate tool toward right side of body to actuate hood latch bolt and release latch. Hand pressure downward on hood at latch area may be required to decrease operating effort of tool.

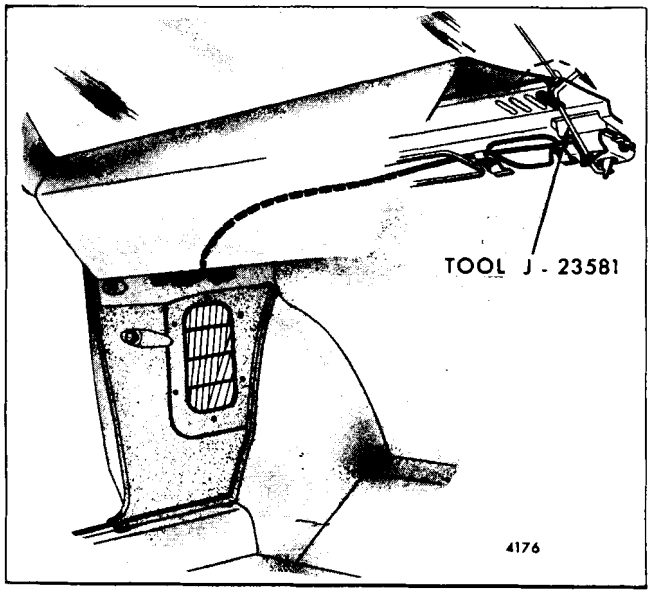


Fig. 4-31-Hood Latch Auxiliary Release Tool - "H" Body (Less "07,27" Style)

FRONT FENDER - "H" Body (Less "07, 27" Style)

Removal and Installation

1. Remove headlamp door and headlamp assembly, and side marker lamp. Bumper removal is optional.
2. Remove fender-to-front end panel attaching bolts at headlamp area.
3. Remove fender to front valance panel screws.
4. Open door and remove screws securing fender to rear facing of body hinge pillar.
5. Remove fender to lower shroud screw.
6. Remove fender to motor compartment side panel and upper shroud screws and remove fender.
7. To install, reverse removal procedure.

FRONT FENDER - "H-07,27" Style

Removal and Installation

1. Remove front fender wheel opening molding.
2. Remove front wheelhouse outer panel (Fig. 4-32).
3. Working between front inner wheelhouse and front fender (at front), remove five front end filler panel to front fender attaching nuts (Fig. 4-33).
4. Pull filler panel forward and remove two motor compartment panel to front fender attaching screws.
5. Remove the remaining fender attaching bolts as follows:
   a. Five at top of fender, under hood.
   b. Two in front door opening.
   c. One at underside of fender, rearward of wheel opening.
   d. One at underside of fender, forward of wheel opening, then remove fender.
6. To install, reverse removal procedure.

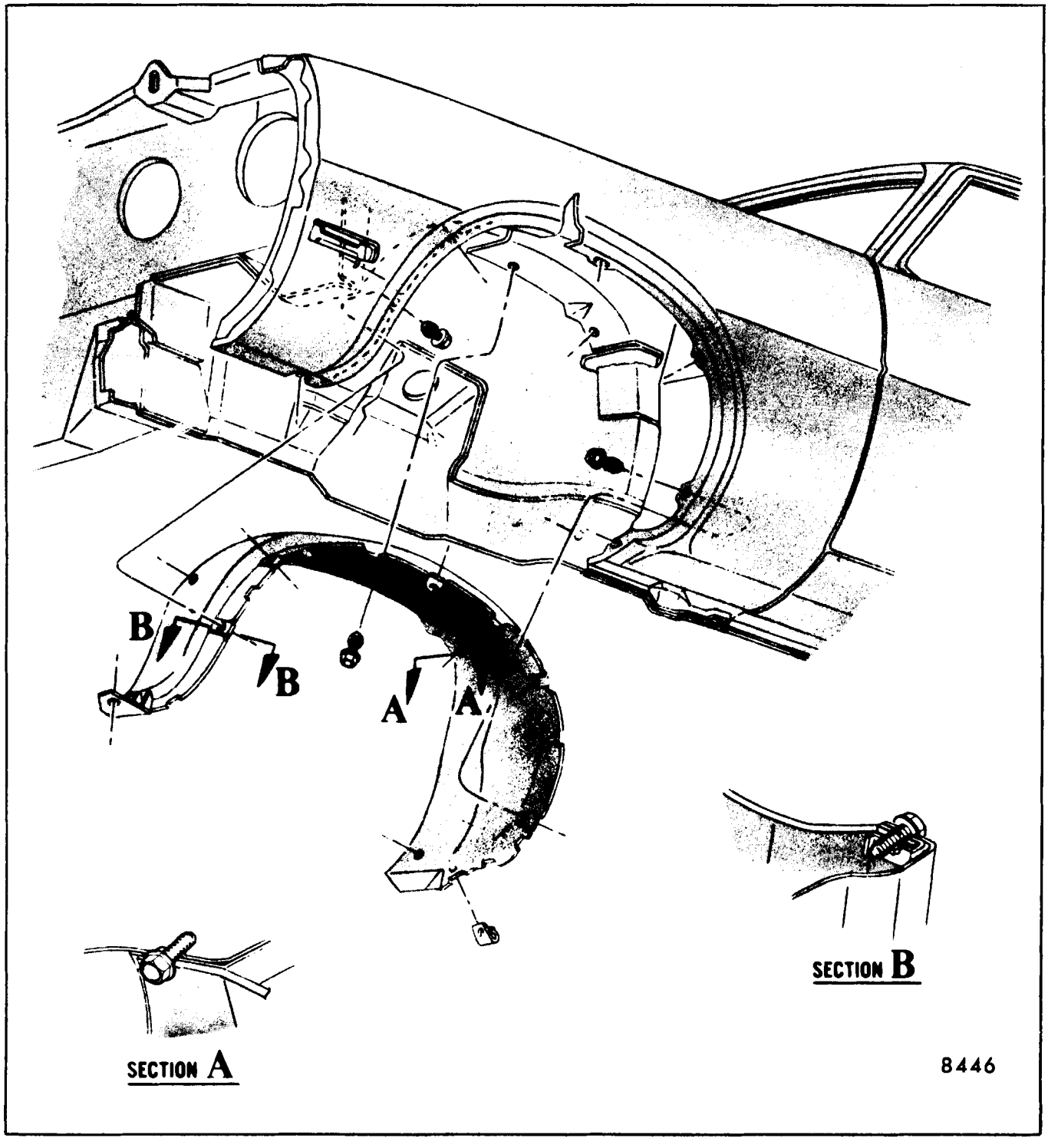


Fig. 4-32-Front Wheelhouse Outer Panel Retention

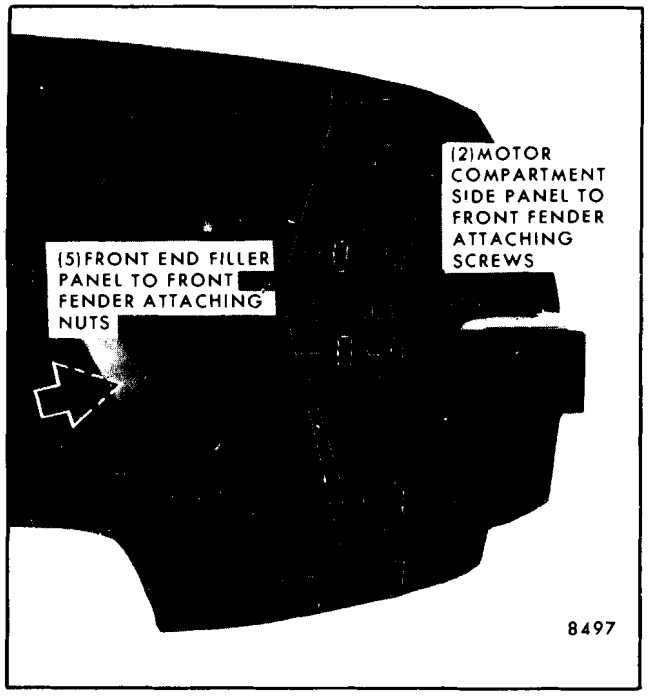


Fig. 4-33-Front of Front Fender Attachments

BODY FRONT END PANEL - "H" Body (Less "07,27" Style)

Removal and Installation

1. Remove headlamps and grille assembly.
2. Remove screws attaching front end panel to fenders and motor compartment front panel.
3. To install, reverse removal procedure.

EXTERIOR NAME PLATES AND EMBLEMS

Description

The front end exterior name plates and emblems are attached to the body metal with either metal or plastic clips or by adhesive which is part of the emblem or name plate assembly.

Figures 4-34 and 4-35 illustrate typical emblem and name plate attachments. When servicing exterior name plates or emblems, all adjacent finishes should be protected with masking tape to prevent paint damage. Proper tools and care should be employed to prevent damage to part being serviced.

NOTE: Procedures and illustrations for servicing adhesive backed body side moldings are covered in the General Information Section of this manual.

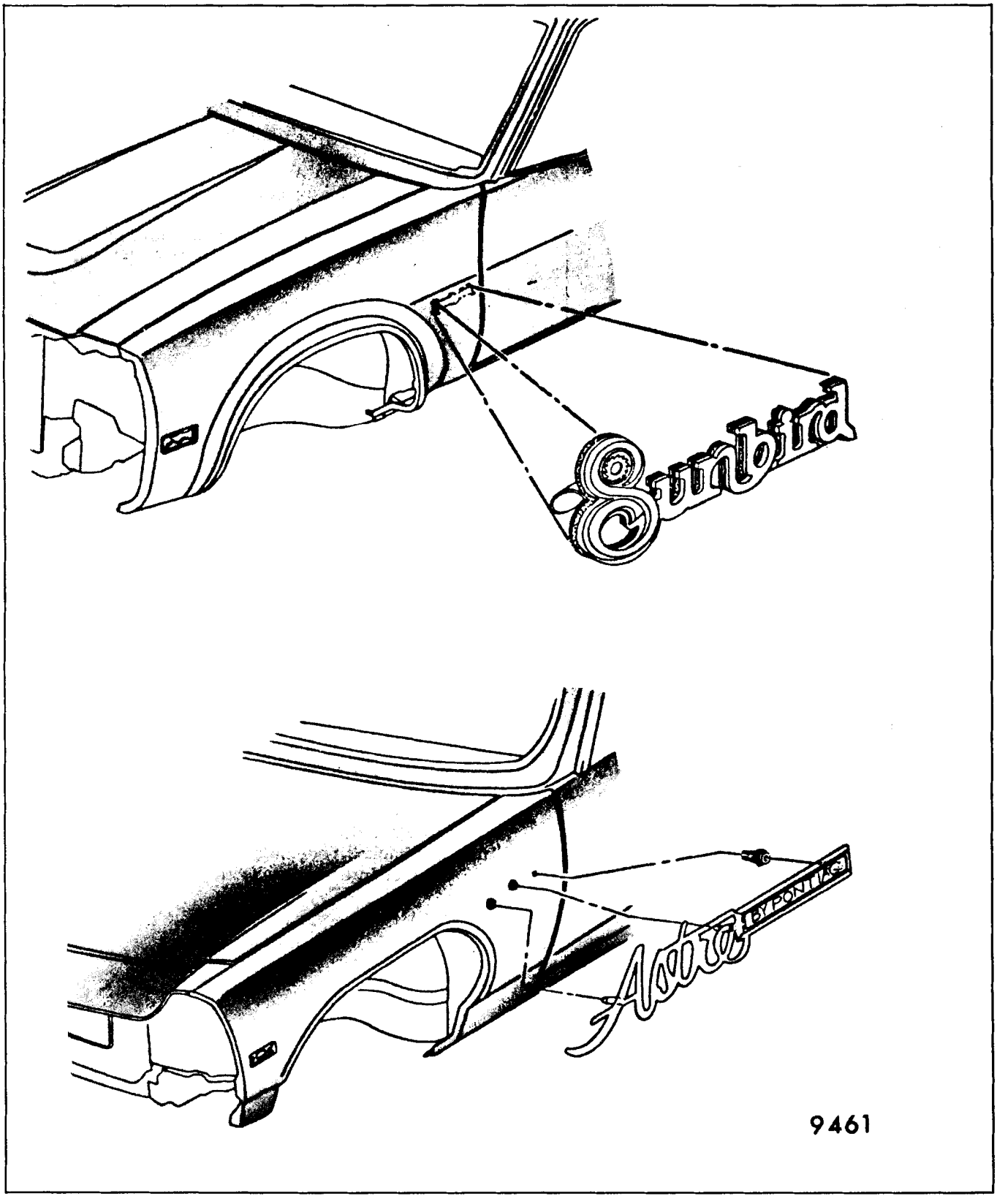


Fig. 4-34 - Emblem and Name Plate Attachments

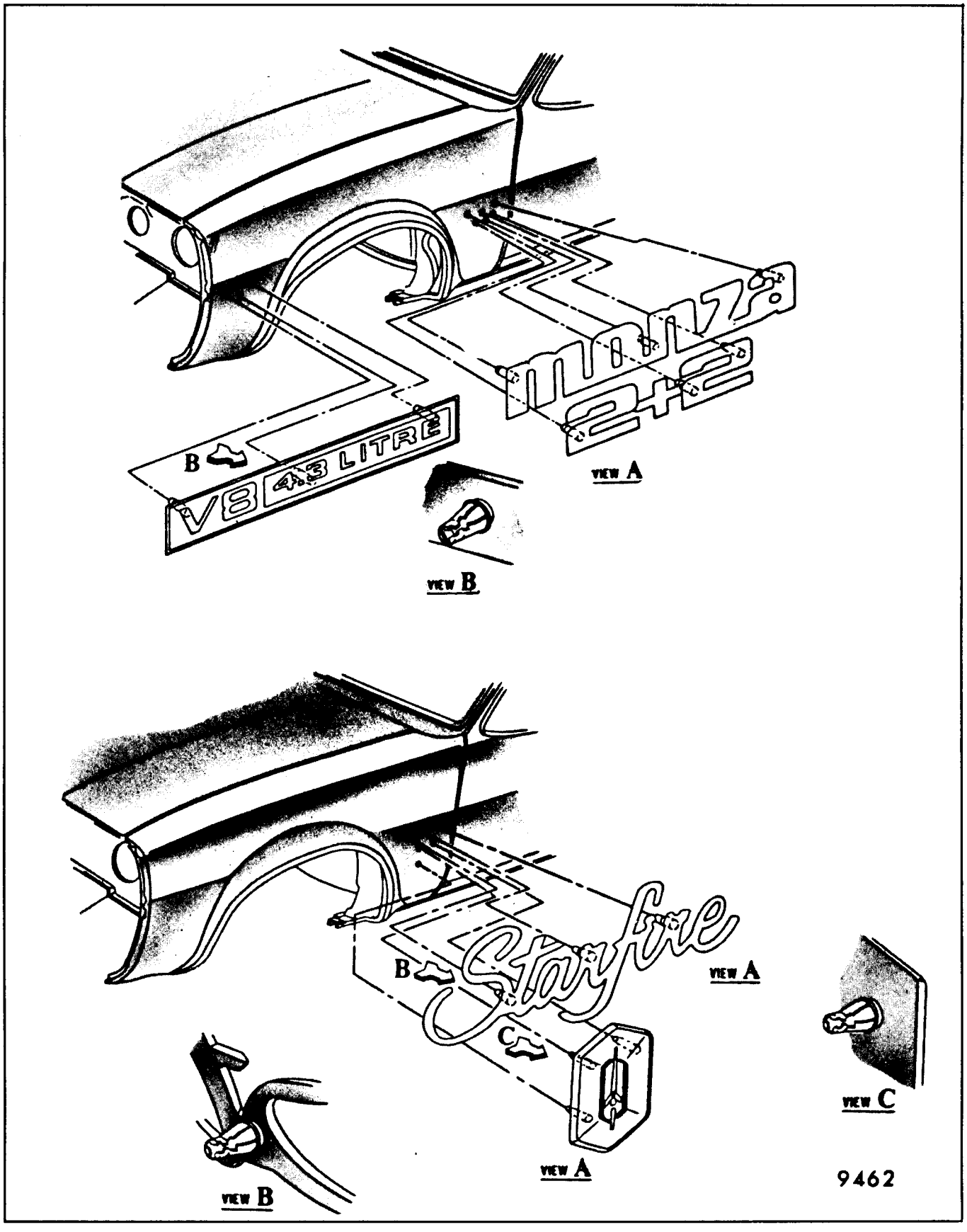


Fig. 4-35 - Emblem and Name Plate Attachments

SECTION 5

DOORS

TABLE OF CONTENTS

SUBJECT	PAGE
Door and Center Pillar Trim	
Inside Pull Handles (Straps)	5-2
Door Armrests	5-4
Mirror Remote Control and Escutcheons.	5-5
Inside Handles and Cover Plates	5-7
Door Trim Assemblies	5-11
Electric Window Control Pull Handle and Escutcheon - "K" Styles	5-15
Trim Panel Moldings and Appliques	5-15
Center Pillar Trim	5-16
Exterior Moldings	5-17
Front and Rear Doors	
Weatherstrips, Sealing Strips	5-21
Inner Panel Water Deflector	5-25
Clips, Locking and Connecting Rods	5-25
Inside Handles	5-26
Outside Handles	5-27
Lock Cylinders	5-28
Lock Strikers	5-30
Door Locks	5-31
Power Lock System	5-36
Inner Panel Cam	5-36
Lower Sash Channel Cam	5-36
Window Regulator Motor	5-38
Hardware Lubrication	5-47
Hardware Attachment Thread Locking	5-47

SUBJECT	PAGE
Front Doors	
Door Adjustment and Removal	5-68
Hinges (Except "H and X" Styles)	5-68
"X" Styles	5-69
"H" Styles	5-72
Outside Mirrors	5-74
Window Alignment, Removal,	
"A" Styles	5-76
"B,C" Styles	5-79
"E" Styles	5-80
"F" Styles	5-83
"K" Styles	5-85
"H,X" Styles	5-85
Window Regulator	5-86
Window Guides and Channels	5-90
Rear Doors	
Door Adjustment and Removal	5-100
Hinges	5-100
Window Alignment, Removal,	
"A" Styles	5-101
"B,C" Styles	5-103
"K" Styles	5-103
"X" Styles	5-104
Stationary Vent Window	5-104
Window Regulator	5-105
Window Guides and Channels	5-107

INTRODUCTION

This section of the manual contains the service operations necessary for the removal, installation, adjustment and sealing of door assemblies and individual hardware and trim components. It is divided into five subsections:

1. DOOR AND CENTER PILLAR TRIM - removal and installation procedures for all door and center pillar trim items
2. EXTERIOR MOLDINGS - procedures for attaching exterior door moldings
3. FRONT AND REAR DOORS - items common to both front and rear doors, including door and side roof rail weatherstrip and all lock system components
4. FRONT DOORS - items pertaining only to front doors
5. REAR DOORS - items pertaining only to rear doors

Body series and style references are explained in Section 1 - General Information. Unless otherwise stated, the procedures in the Door section apply to all body styles.

DOOR AND CENTER PILLAR TRIM

DOOR INSIDE PULL HANDLES

Door inside pull handles are secured to the trim pad with rivets, screws or stud nuts on the outboard (reverse) side of the trim assembly prior to trim installation. In addition, on some styles, the handles are secured to the door inner panel with screws installed from the inboard side after trim installation. With this method of installation, the pull handle and trim pad are removed from the door as an assembly (Figs. 5-1 through 5-6).

To remove the door trim assembly on any style equipped with a door pull handle requires removal of the screws inserted through the handle base into the door inner panel. On styles with snap-on escutcheons covering the handle screws, carefully disengage the escutcheons from the retainers using a flat-bladed tool (Figs. 5- 1, 5-2, 5-3 and 5-4).

NOTE: To open escutcheon on Cadillac "C" styles, insert trim removal tool BT-7323 or equivalent between head of female portion of snap and escutcheon, then twist tool in direction of arrow to unsnap escutcheon (Fig. 5-3).

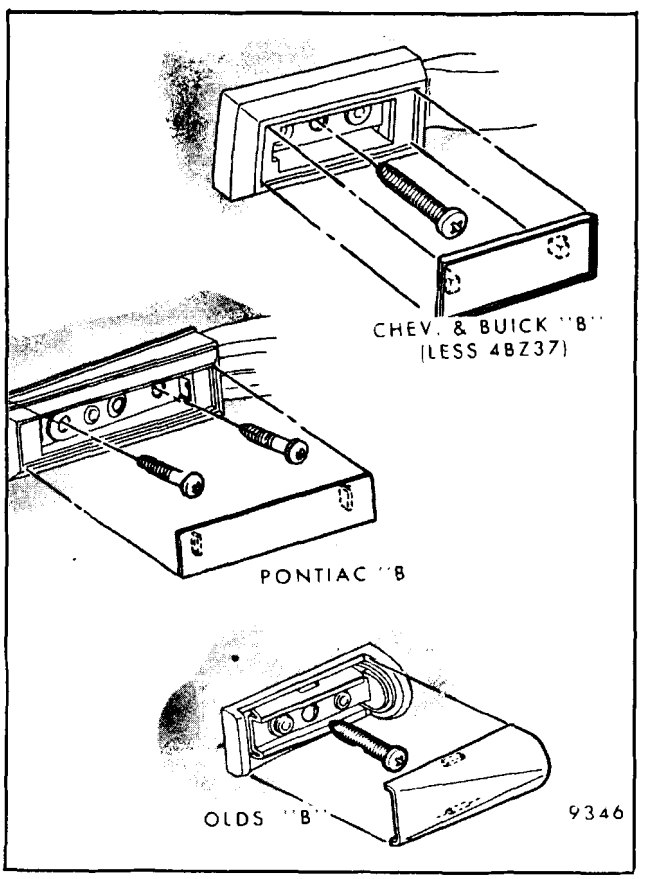


Fig. 5-1-Typical Door Pull Handle Attachment - "B" Body Styles

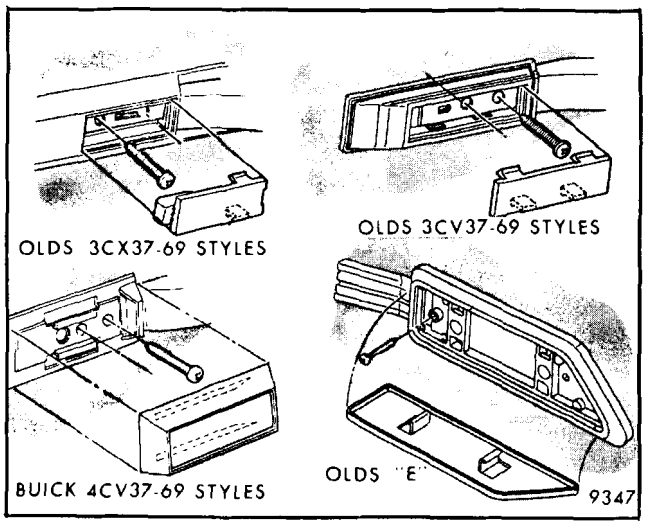


Fig. 5-2 - Typical Door Pull Handle Attachment - Buick "C" and Oldsmobile "C and E" Styles

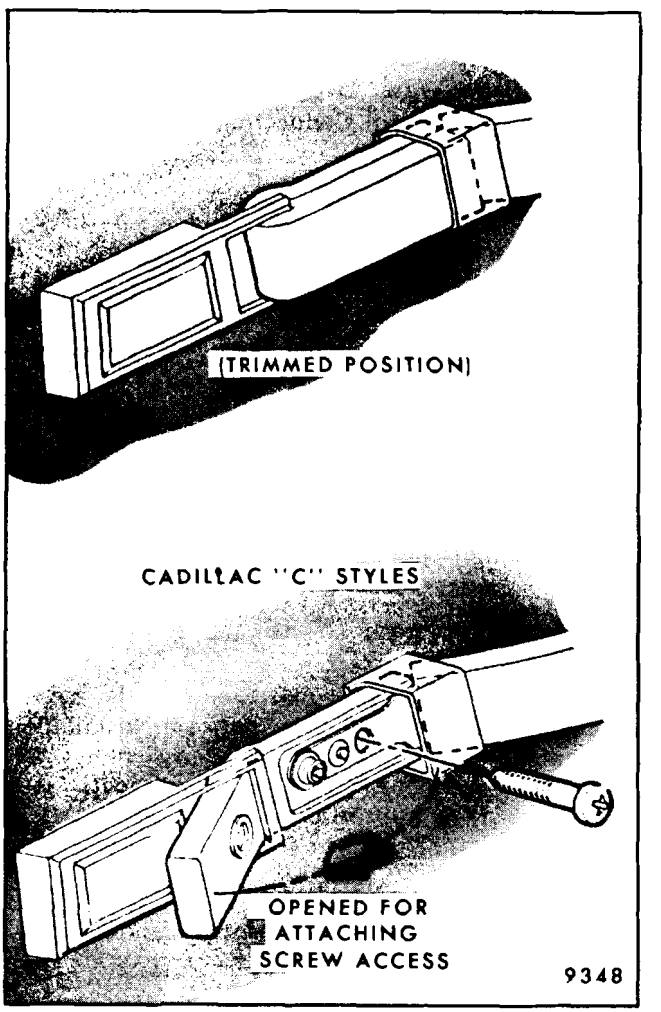


Fig. 5-3 - Typical Door Pull Handle Attachment - Cadillac "C" Styles

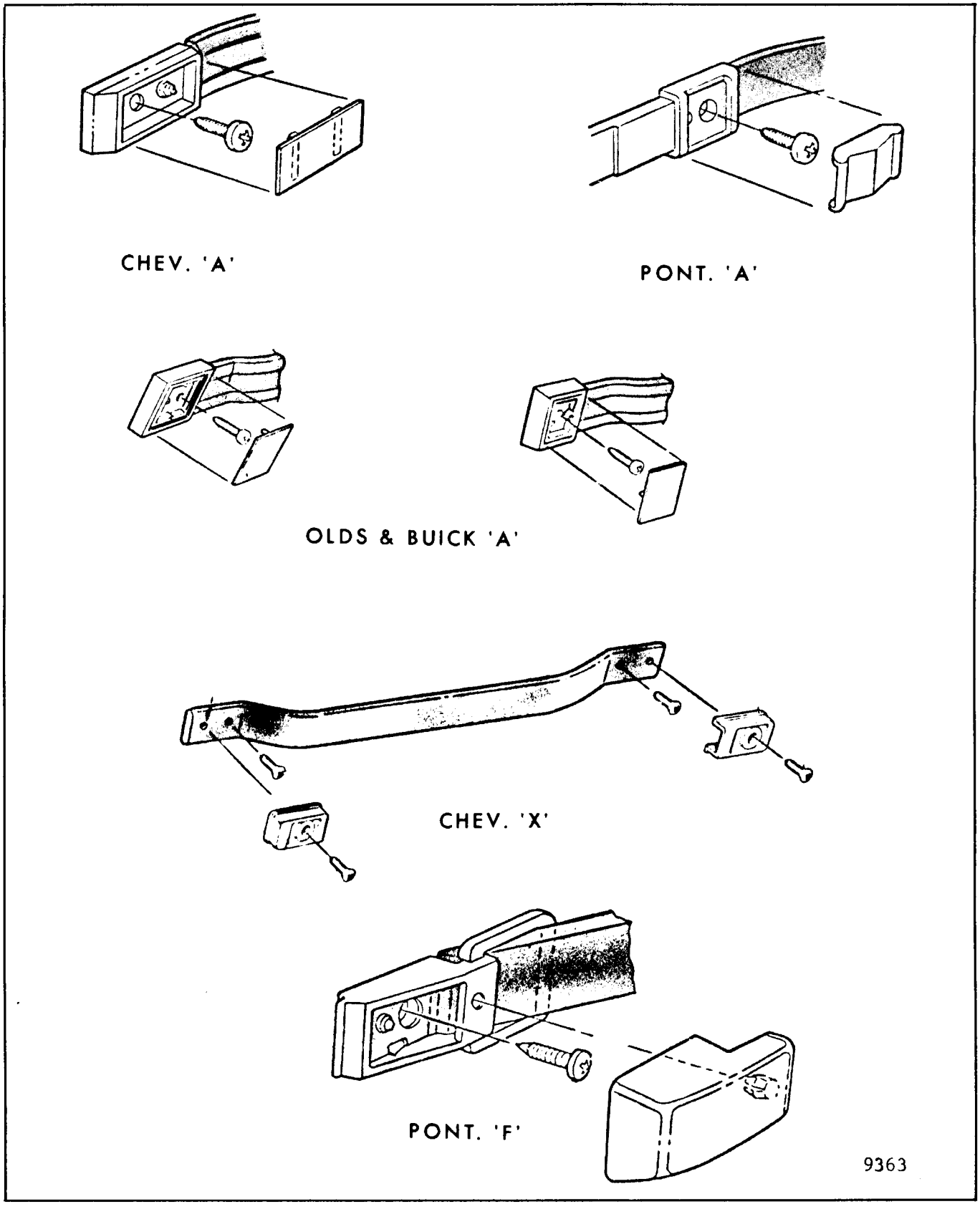


Fig. 5-4-Typical Door Pull Handle Attachment - "A, F and X" Styles

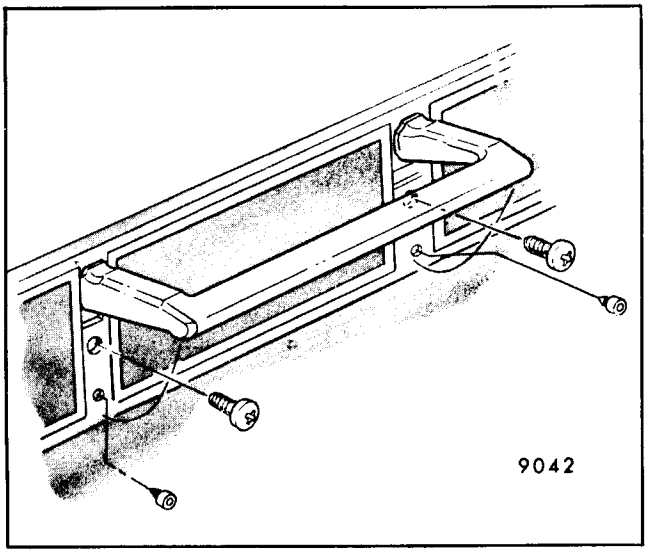


Fig. 5-5-Typical Door Pull Handle Attachment - Buick 4BZ37 and "C" and Cadillac "E and K" Styles

DOOR ARMRESTS - "B, F, H and X" Styles

There are two basic types of door armrests: those applied after door trim installation and those which are an integral part of the door trim assembly. For removal of the first type armrests, refer to Figures 5-6 and 5-7.

NOTE: For armrest removal on "B" style rear doors, remove armrest ash tray, then remove armrest cover attaching screw and pull cover forward to gain access to armrest attaching screws.

NOTE: "C" body and Buick 4BZ37 styles utilize a separate armrest preassembled to the door trim panel prior to trim panel attachment. For this reason the "C" body armrest is considered to be an integral component of the trim assembly (Fig. 5-8).

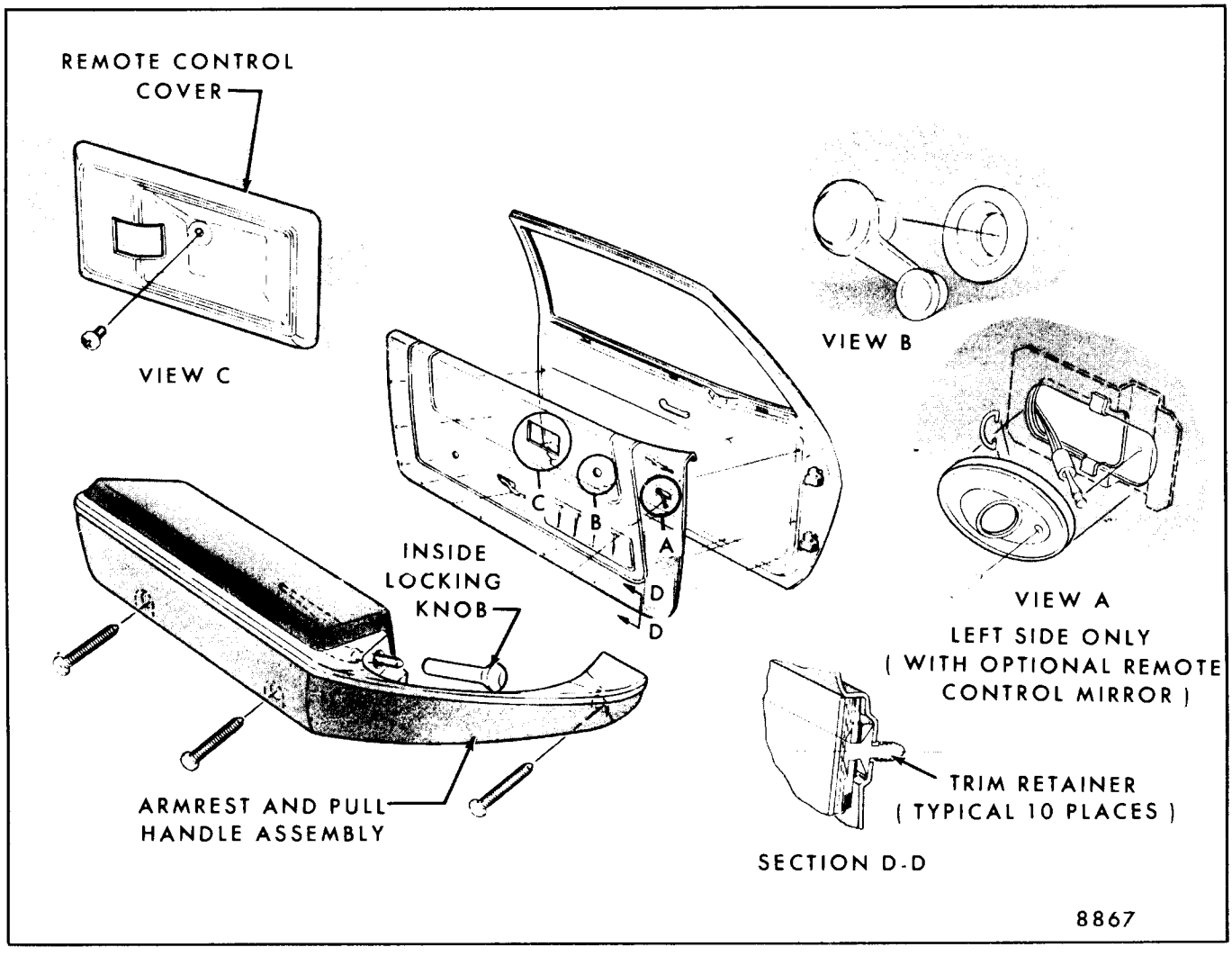


Fig. 5-6-Door Armrest and Pull Handle - Typical Attachment for "F, H and X" Styles

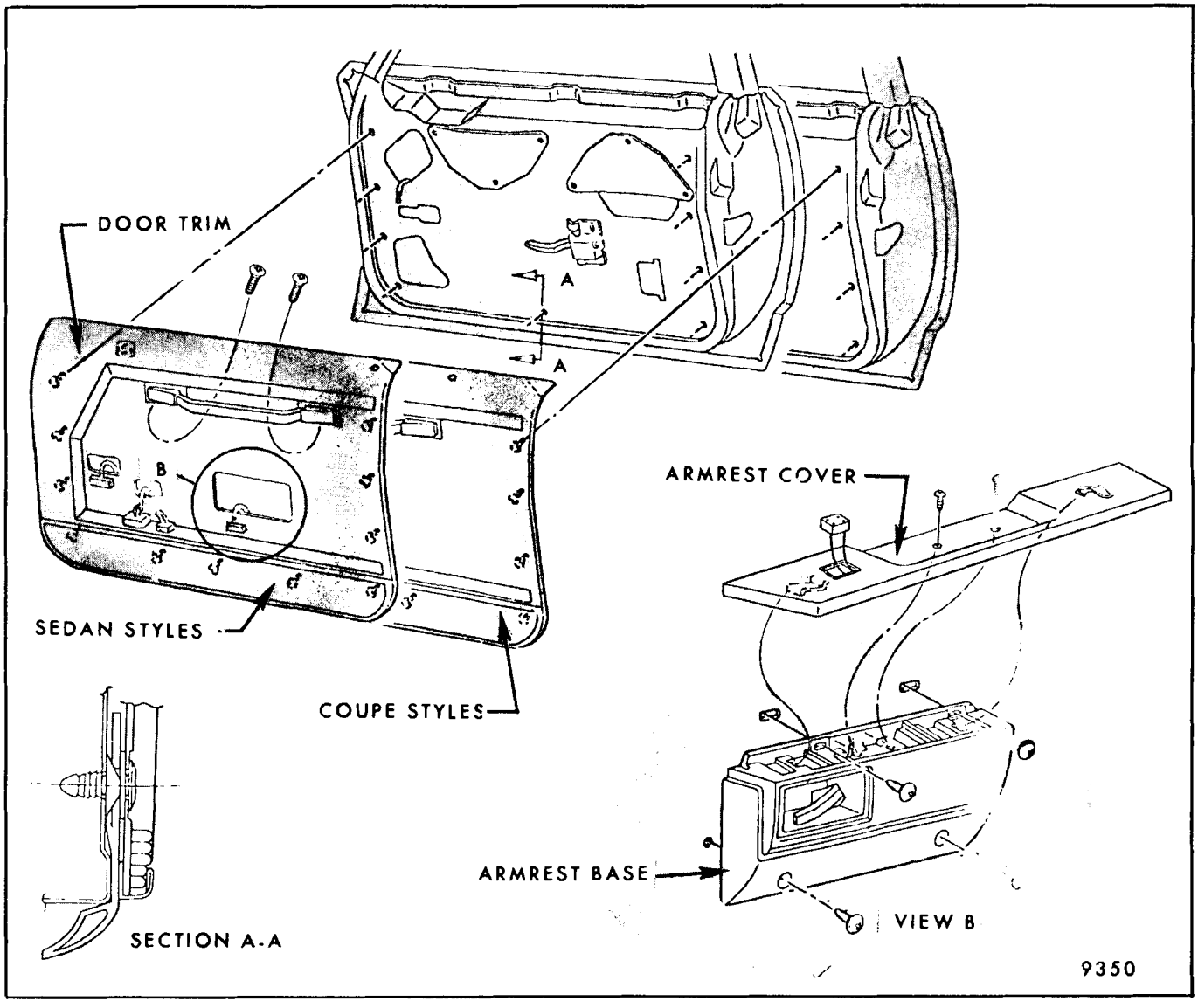


Fig. 5-7 - Door Armrest and Trim Panel Attachment - "B" Less 4BZ37 Styles

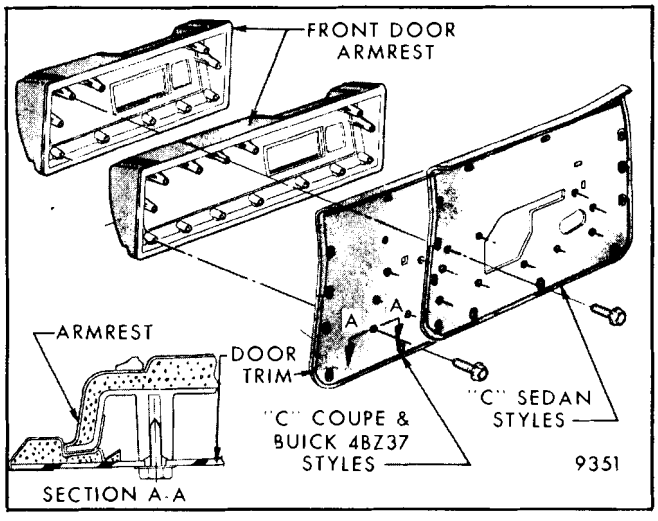


Fig. 5-8 - Preassembly of Door Armrest to Trim Panel Assembly - "C" and Buick 4BZ37 Styles

DOOR OUTSIDE MIRROR REMOTE CONTROLS AND ESCUTCHEON

On most styles with remote control door outside mirrors, the remote control mirror cable must be disengaged from the door trim assembly or armrest to permit trim assembly removal. To disengage the remote cable from the door trim assembly, refer to Figures 5- 9, 5-10, 5-11 and 5-12.

On "A" body styles, remove upper door trim assembly. Grasp retainer with long nosed pliers and rotate 90 degrees to separate remote control cable from previously installed escutcheon (see Fig. 5-9).

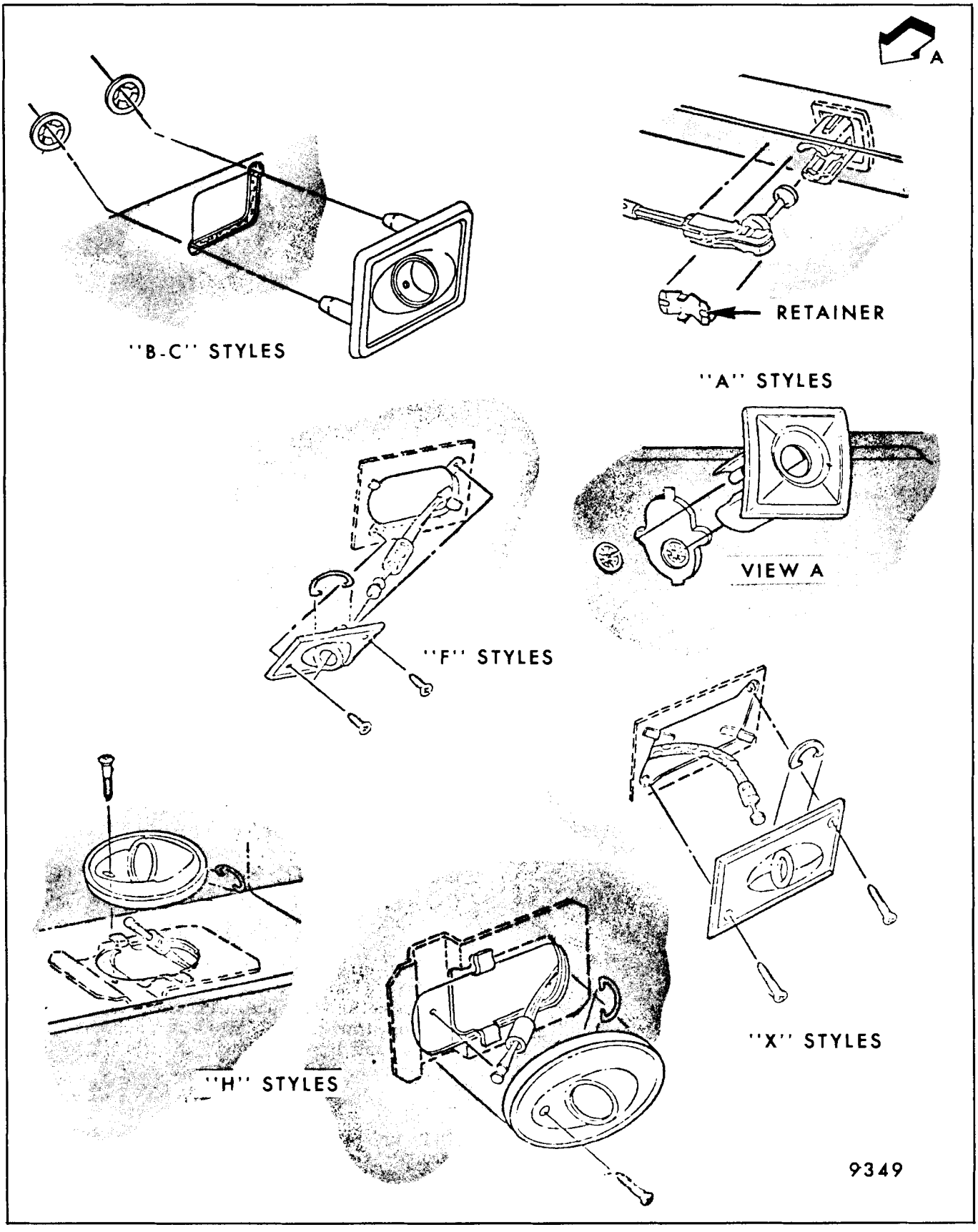


Fig. 5-9-Typical Remote Mirror Cable and Escutcheon Attachment

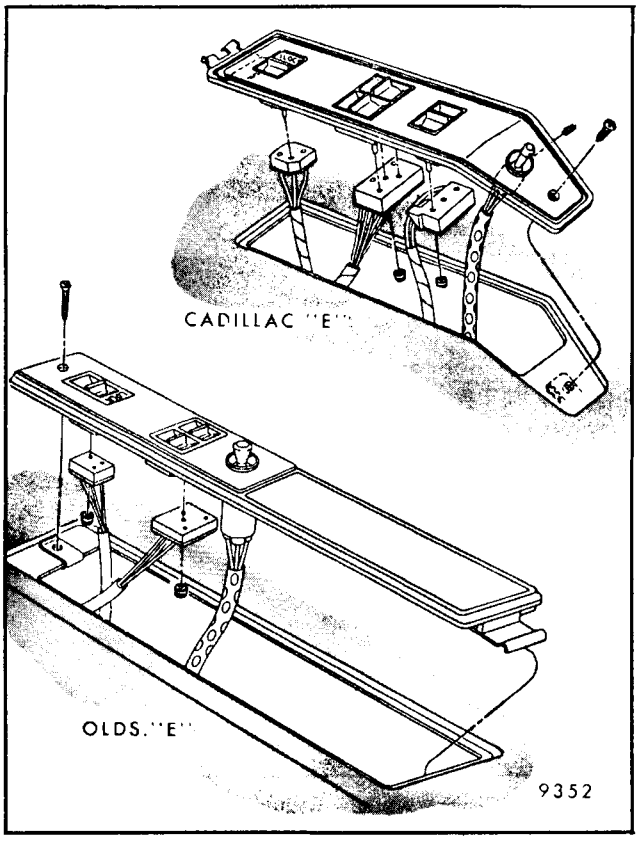


Fig. 5-10-Door Armrest Switch Cover Plate and Remote Mirror Cable Attachment - "E" Styles

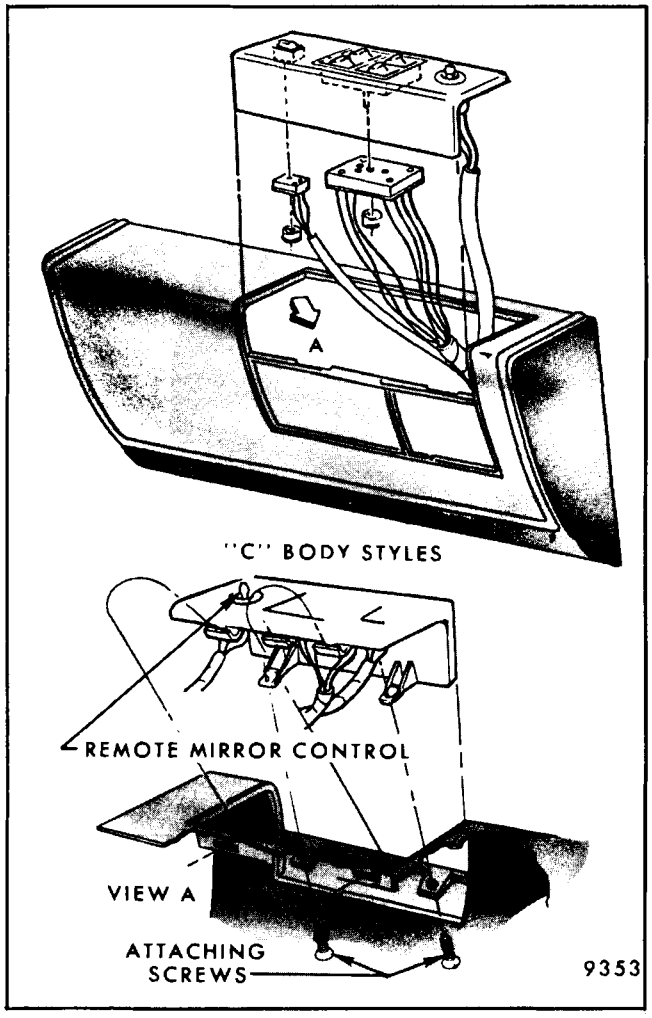


Fig.5-11 - Door Armrest Switch Cover Plate and Remote Mirror Cable Attachment - "C" Styles

DOOR INSIDE HANDLES AND COVER PLATES

Door inside handles are retained by either screws, pop rivets or spring clips (Figs. 5-14 and 5-15). On styles equipped with screw or rivet retained handles, the screws or rivets are covered by a remote control handle cover plate that can be removed as shown in Figures 5-6 and 5-16.

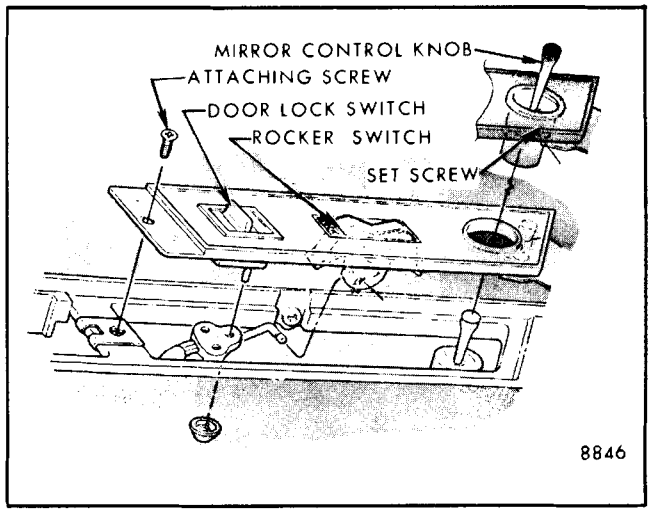


Fig. 5-12 - Door Armrest Cover and Remote Mirror Cable Attachment - "K" Styles

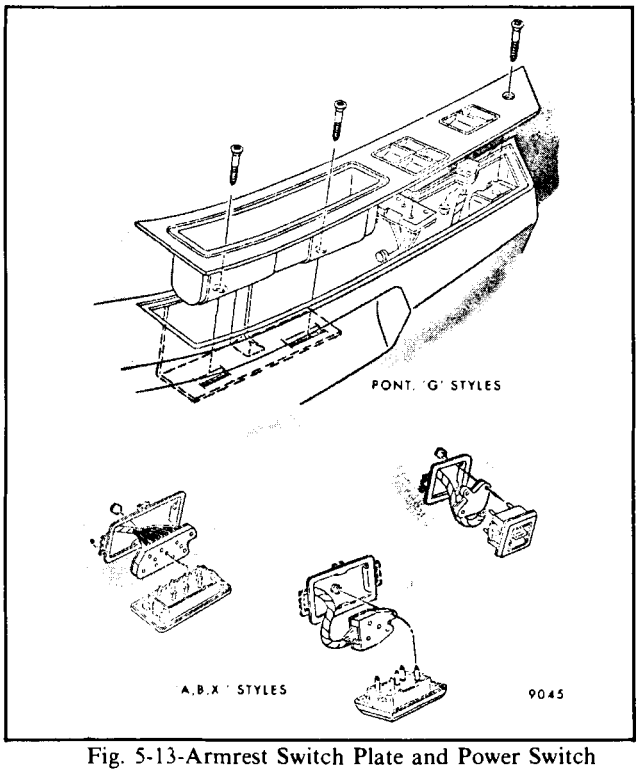


Fig. 5-13-Armrest Switch Plate and Power Switch Attachment - "A B, G and X" Styles

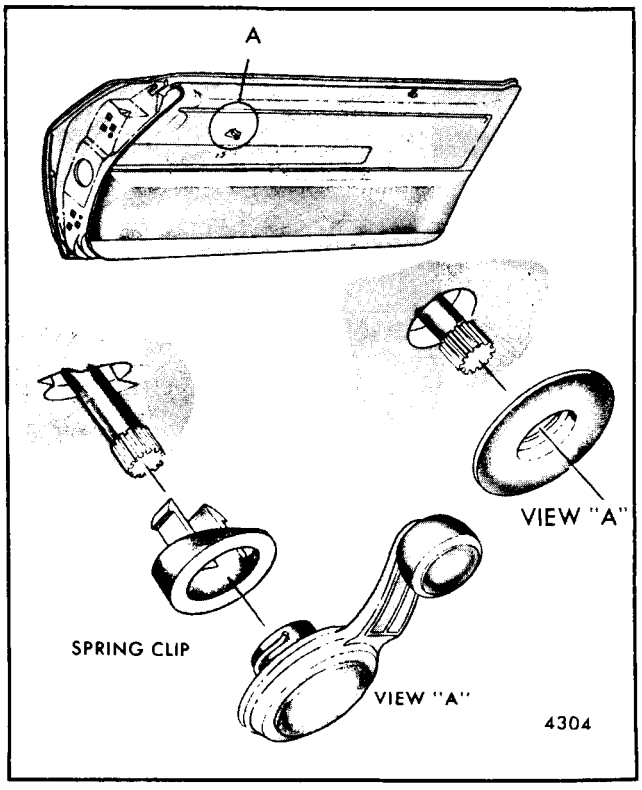


Fig. 5-15-Typical Window Regulator Handle Installation

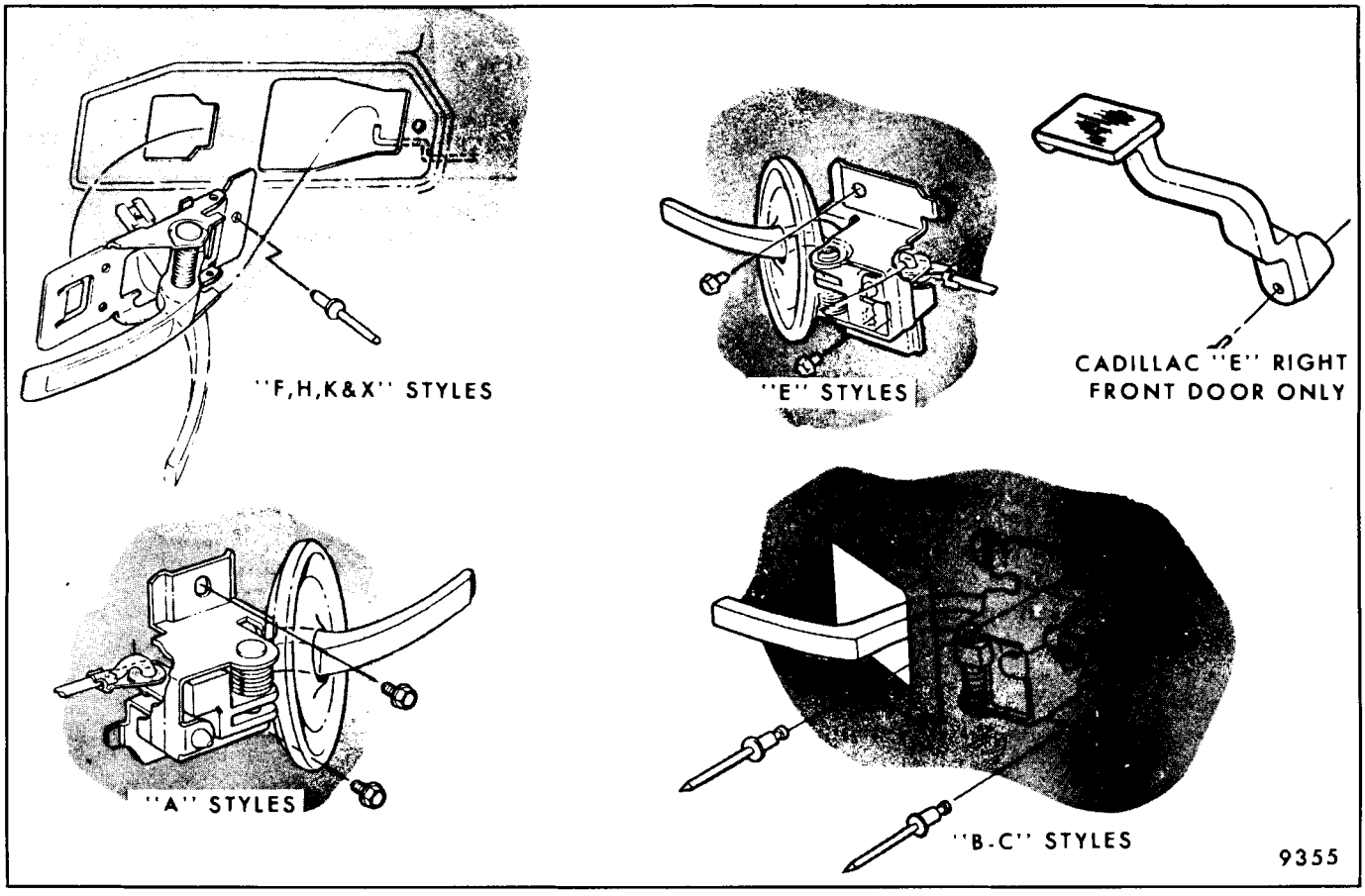


Fig. 5-14-Typical Door Lock Remote Control Handle and Cover Plate Installations

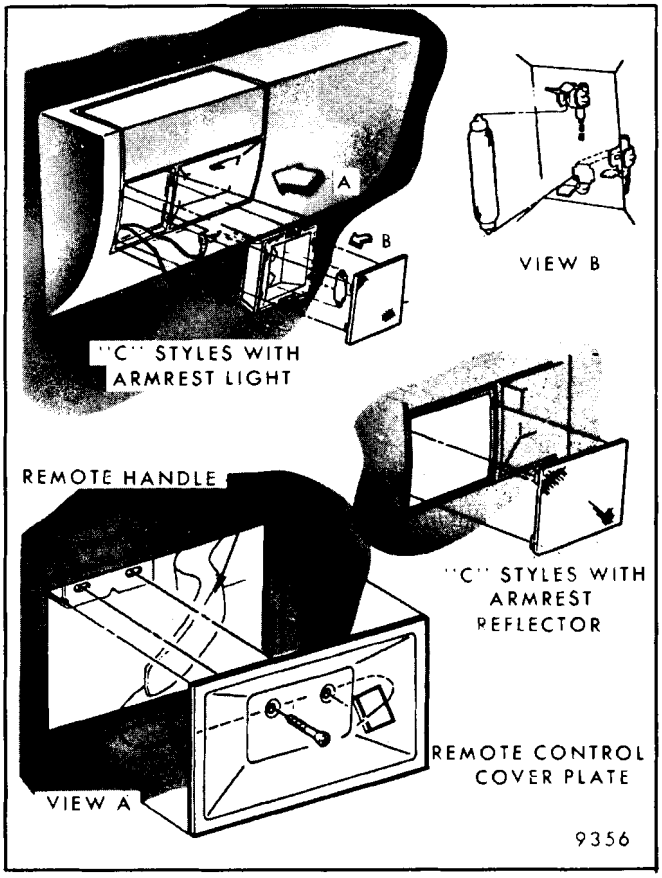


Fig. 5-16-Typical Remote Control Handle Cover Plate and Courtesy Lamp - "C" Body Styles

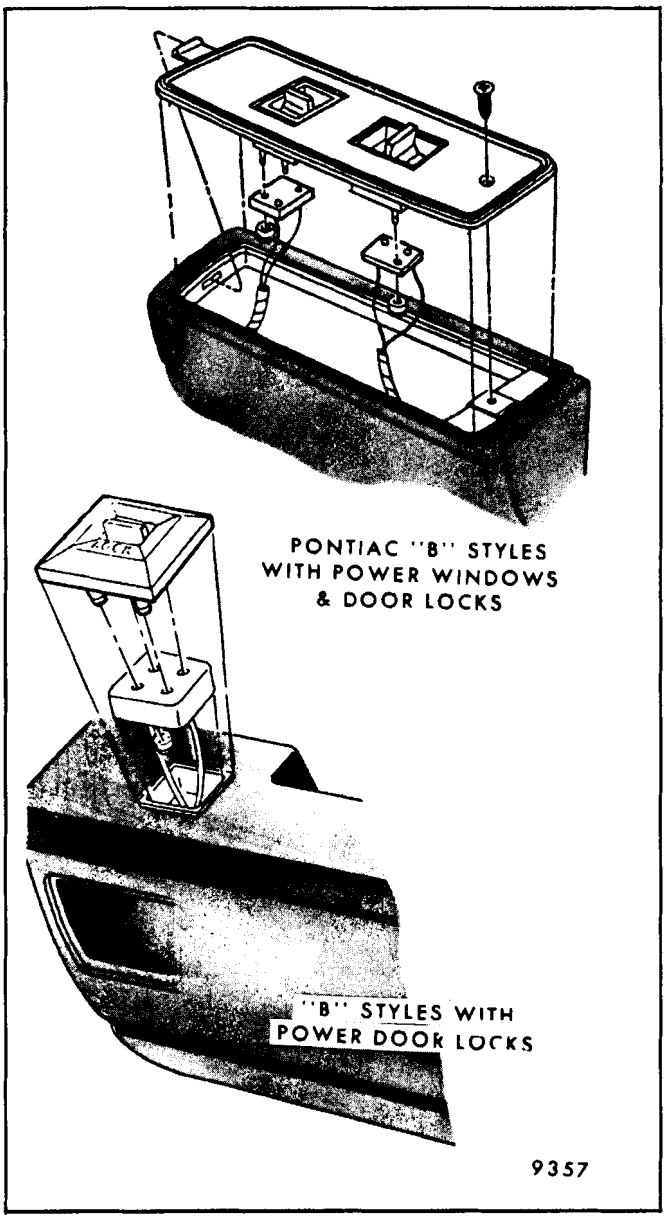


Fig. 5-17 - Armrest Switch Plate and Power Switch Attachment - "B" Styles

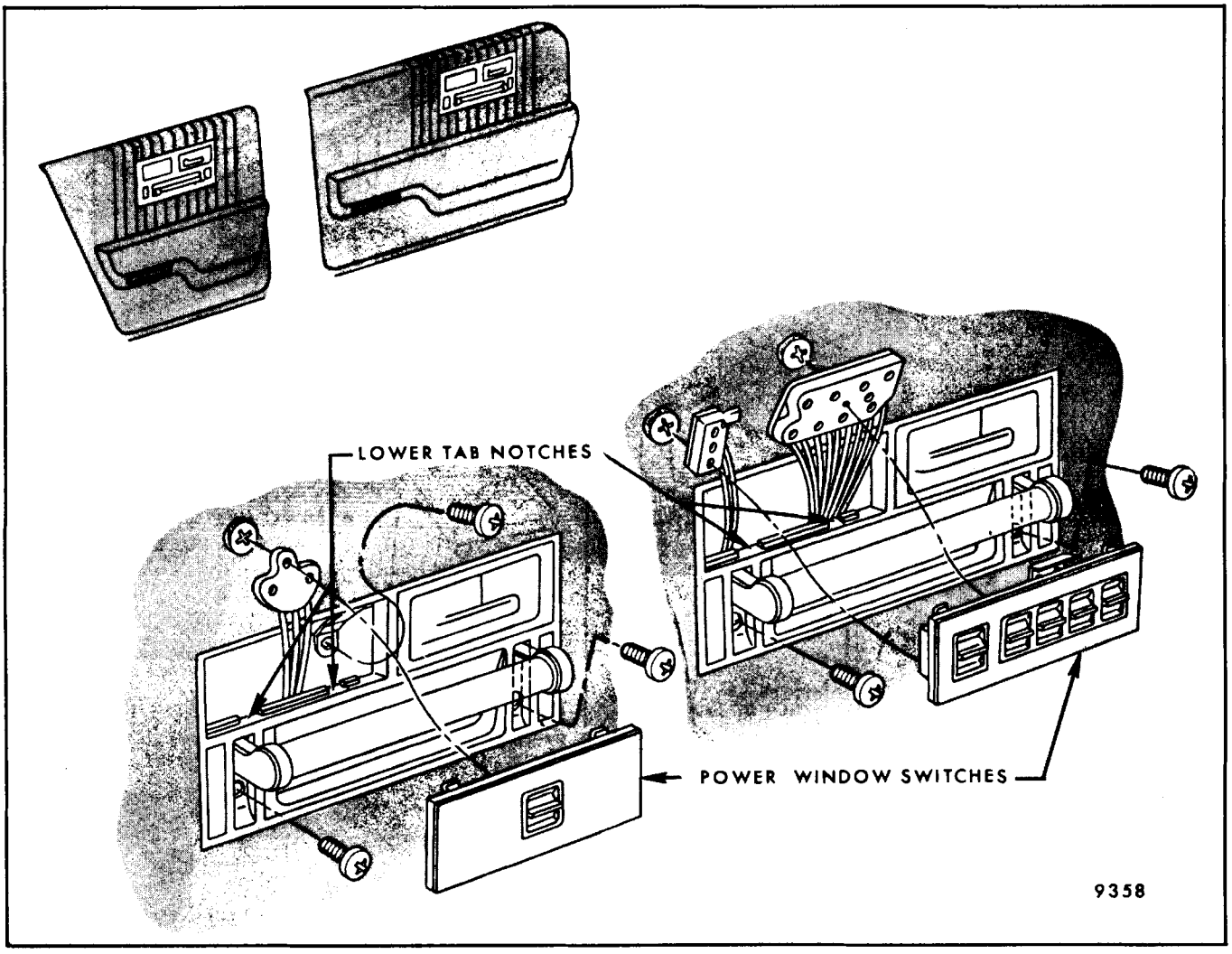


Fig. 5-18 - Power Window Control Switch Plate - "K" Style

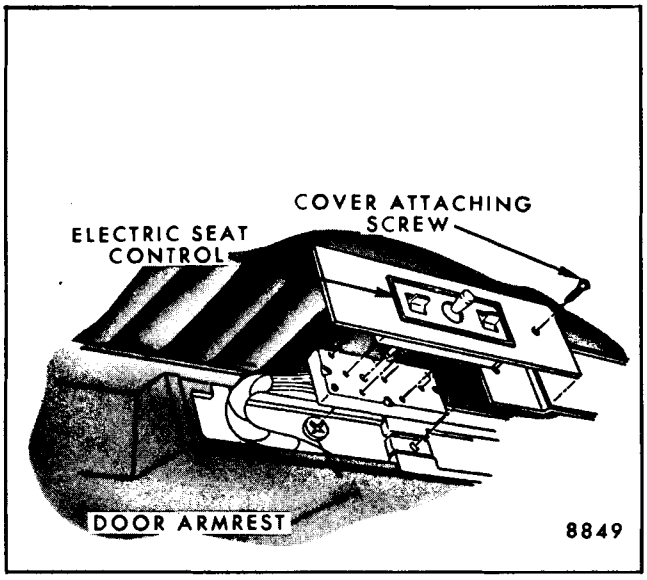


Fig. 5-19 - Front Seat Adjuster Control Cover Plate - "K" Style

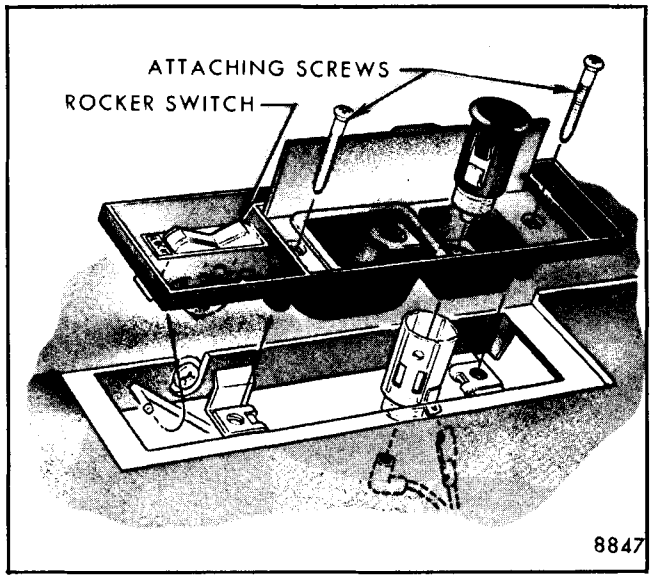


Fig. 5-20 - Rear Door Armrest Cover - "K" Style Shown, Other Styles Similar

Removal and Installation

1. Clips hidden by window regulator handles (Fig. 5-15) can be disengaged by depressing door trim assembly sufficiently to permit inserting tool J-9886 or equivalent between handle and trim panel or plastic bearing plate (Fig. 5-21). Then, with tool in same plane as inside handle, push tool as indicated to disengage clip. Pull handle inboard to remove from spindle.

2. To install window regulator handles, engage retaining clip on handle. Position handle at same angle as opposite side handle and press handle outboard until clip engages regulator spindle.

DOOR TRIM ASSEMBLIES

There are two basic types of door trim assemblies, a one-piece trim assembly that is used on "B, C, 1FS87, H, K and X" styles and a two-piece trim that is used on "A, F (less 1FS87) and E" styles.

On all styles with one-piece trim except "H-11, 15 and 77" styles, the one-piece trim hangs over the door inner panel across the top and is secured by clips down the sides, and across the bottom. (Figs. 5-6, 5-7 and 5-22 illustrate the various types of door trim panel fasteners).

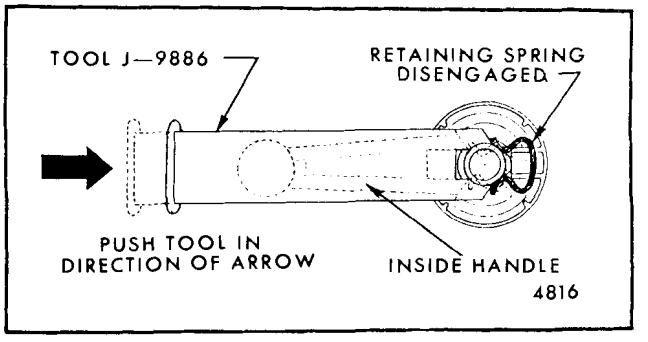


Fig. 5-21-Clip Retained Door Inside Handle Removal

On "H-11,15 and 77" styles, the trim assembly is retained at the top, bottom and sides with plastic clips. Attaching screws located in the pull cup provide additional retention.

On "A, E and F" styles with the two-piece trim, the upper portion hangs over the door inner panel across the top and is secured by trim nails or screws across the bottom. The lower portion is retained by screws across the top and by clips down the sides and across the bottom. Figure 5-23 shows typical two-piece trim panel retention methods.

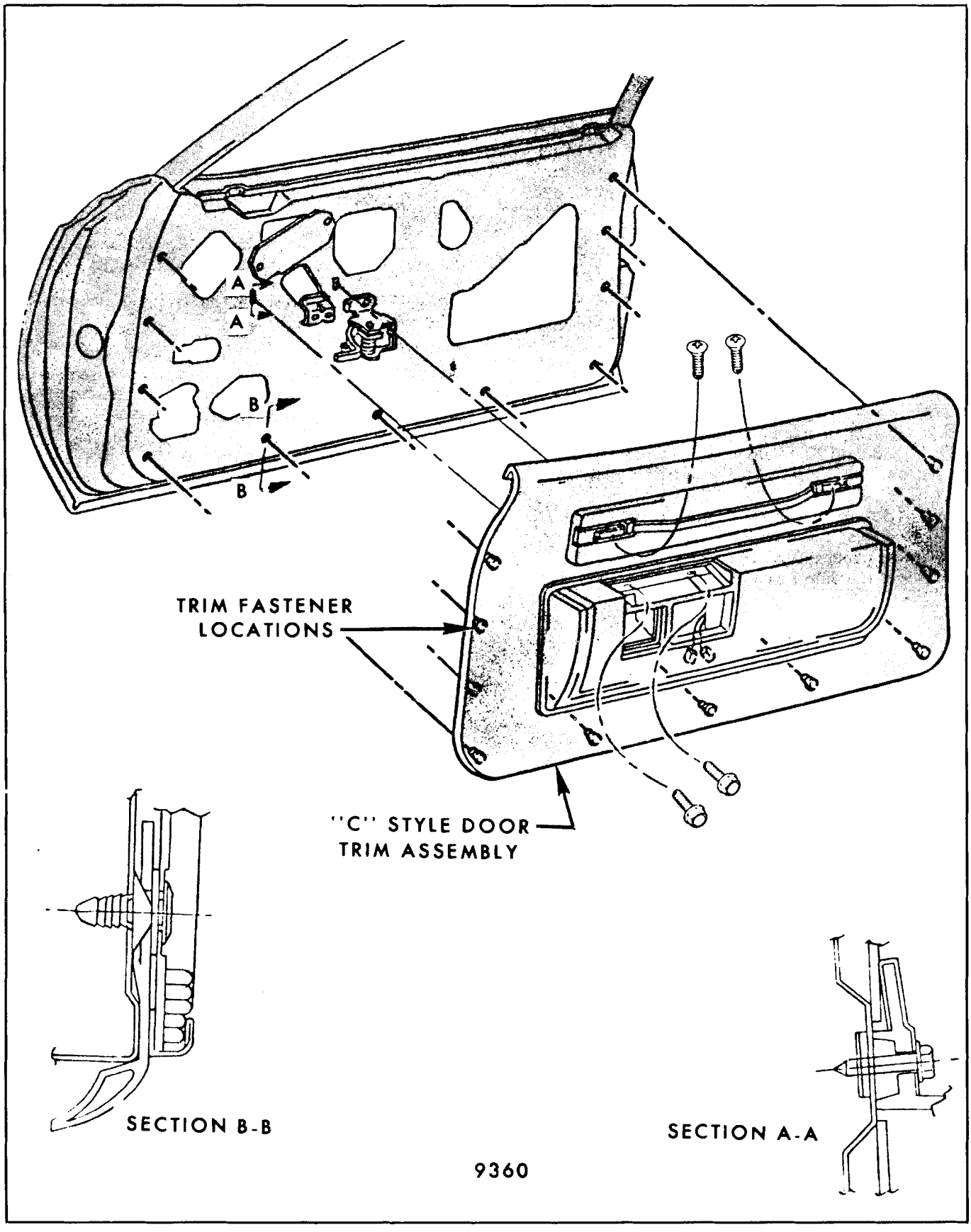
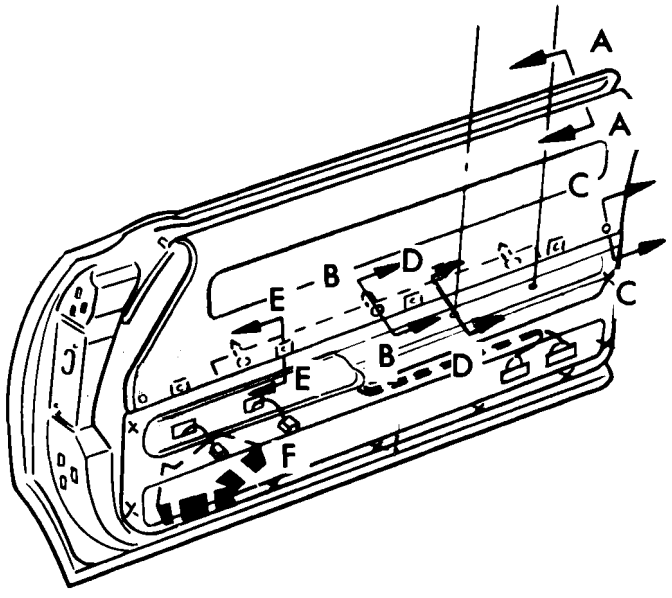
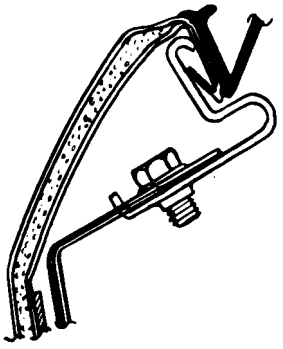


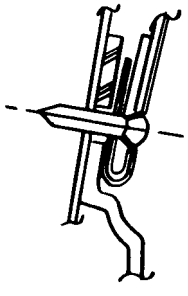
Fig. 5-22 - Typical Door Trim Panel Assembly Attachment - "C" Styles Shown "K" and Buick 4BZ37 Similar



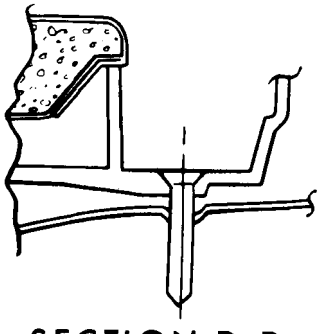


SECTION A-A
TYPICAL 2 PLACES

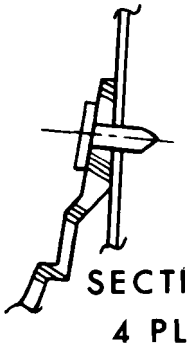
SECTION B-B
3 PLACES



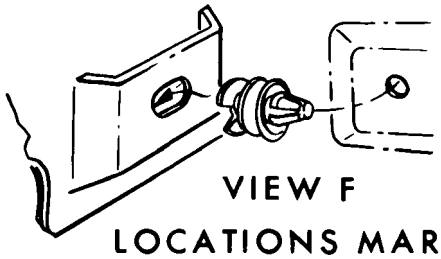
SECTION C-C
2 PLACES



SECTION D-D
2 PLACES



SECTION E-E
4 PLACES



VIEW F
LOCATIONS MARKED 'X'

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Fig. 5-23-Typical Two-piece Door Trim Retention

Removal

1. Remove all door inside handles as previously described.

2. Remove door inside locking rod knob.

3. On styles equipped with door pull handles, remove screws inserted through handle into door inner panel. (For location of screws, refer to Figs. 5-1, 5-2, 5-3, 5-4, 5-5 and 5-6.)

4. On styles with remote control mirror assemblies, remove remote mirror escutcheon and disengage end of mirror control cable from escutcheon as previously described (Figs. 5-9, 5-10, 5-11 and 5- 12).

5. On "K" body styles, remove power window control (Fig. 5-18) described immediately after this procedure, and disconnect locking rod from door lock rocker switch retaining clip (Fig. 5-12).

   On styles equipped with switch cover plate in door armrest, remove screws securing cover plate and disconnect switches and cigar lighter (if so equipped) from wire harness connectors (Figs. 5-10, 5-11, 5-12, 5-13, 5-17, 5-19, and 5-20).

6. Remove remote control cover plates (Figs. 5-6 and 5-16) and remove exposed screws securing cover plate to door inner panel.

7. On styles with integral armrest, remove screws inserted through pull cup into armrest hanger support (Sec. D-D, Fig. 5-23). On "C" styles and Buick 4BZ37 style, remove attaching screws behind armrest deflector or courtesy lamp and remote control cover plate (Figs. 5-16 and 5-24). On styles with armrest applied after door trim installation (Figs. 5-6 and 5-7), remove armrest to door inner panel attaching screws.

8. On styles, with two-piece trim assemblies, remove attaching screws located at each side of upper trim assembly (Sec. C-C, Fig. 5-23). Then, using tool BT-7323 or equivalent, disengage retaining nails from plastic cups inserted in door inner panel along lower edge of upper trim if present (Sec. B-B, Fig. 5-23). Remove upper trim from door by lifting upward and sliding slightly rearward to disengage from door inner panel at beltline (Sec. A-A, Fig. 5- 23).

   NOTE: On styles with electric switches located in door trim assembly, disconnect wire harness at switch assembly (Figs. 5-7 and 5-13).

   To remove lower trim, remove attaching screws along upper edge of lower trim assembly (Sec. E-E, Fig. 5-23). Then, starting at a lower corner, insert tool BT-7323 or equivalent between door inner panel and trim assembly and disengage retaining clips down both sides and across bottom (View F, Fig. 5-23).

   NOTE: On styles with courtesy lamps or reading lamps located in trim assembly, disconnect wire harness at lamp assembly (Figs. 5-16 and 5-24).

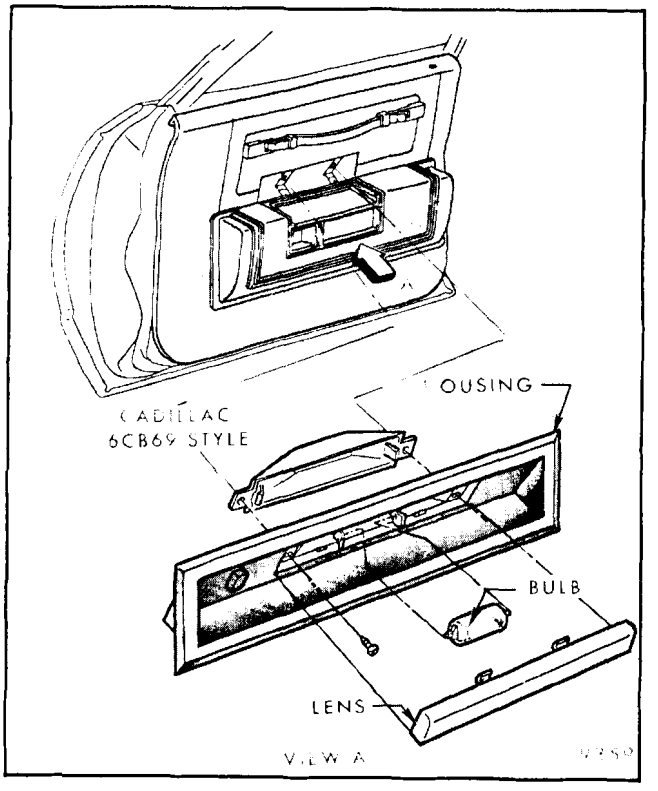

Fig. 5-24 - Reading Lamp Removal and Installation - Cadillac 6CB69 Style

9. On styles with one-piece trim assemblies, remove all clips around perimeter of door trim pad using tool BT-7323 or equivalent (Figs. 5-6, 5-7 and 5-22).

   To remove trim assembly, push trim assembly downward and outboard to disengage from door inner panel at the beltline. On styles with courtesy lamps at lower area of trim, disconnect wire harness and remove trim assembly from door.

10. On styles with insulator pad cemented to the door inner panel, remove pad by lifting edge and separating from inner panel with a putty knife or similar tool.

11. To install insulator pad, apply an approved trim

adhesive such as 3M General Trim Adhesive No. 8080 or equivalent along top edge of door inner panel and insulator pad at areas where original adhesive is visible. Then press pad in place aligning holes to piercings in door inner panel.

Installation

Before installing door trim assembly, check that all trim retainers are securely installed to the assembly and are not damaged; where required, replace damaged retainers as follows:

1. Start retainer flange with 1/4 cutout (View F, Fig. 5-23) into attachment hole in trim assembly; then rotate retainer until flange with 1/4 cutout is inside of attachment hole.
2. Connect electrical components where present.
3. To install door trim assembly, pull door inside handle inward; then position trim assembly to inner panel, inserting door handle through handle hole in panel.
4. Position trim assembly to door inner panel so trim retainers are aligned with attaching holes in panel and tap retainers into holes with a clean rubber mallet.
5. Install all previously removed items.

NOTE: On styles with adjustable trim supports at beltline, the door trim assembly can be adjusted in or out so as not to restrict door window operation (Sec. A-A, Fig. 5-23).

ELECTRIC WINDOW CONTROL, DOOR PULL HANDLE AND ESCUTCHEON ASSEMBLY - "K" Body Style

1. Insert a thin narrow bladed screwdriver through the lower tab notch against the spring steel clip blade (Fig. 5-18). Engage blade of clip with screwdriver, then using screwdriver as a lever, lift spring clip from engagement with edge of pull handle escutcheon. Hold loose edge of plate and repeat operation at adjacent lower clip blade to complete cover plate removal.
2. Disconnect electric window terminal and blockout switch terminal (Fig. 5-18).
3. Remove one escutcheon to door inner panel attaching screw.
4. Lift door pull handle up and remove attaching screws at each handle end (Figs. 5-5 and 5-18).
5. Remove escutcheon from door trim assembly.
6. To install, reverse removal procedure. Position upper retaining clip under flange on pull handle escutcheon first, then snap lower clip blades into tab notches.

DOOR TRIM PANEL MOLDINGS AND APPLIQUES

Door trim moldings and appliques are secured from the outboard side of the door trim panel with several types of metal fasteners (Fig. 5-25) or bend-over tabs.

Removal and Installation (Refer to Fig. 5-25)

1. Remove door trim assembly as previously described.
2. For removal of type "A" fasteners, use tool J-23554 or equivalent.
3. To remove type "B" fasteners, carefully pry up on fastener until there is sufficient working space to insert wire cutter; then cut fastener and discard.
4. For removal of type "C" fasteners, use a crosshead type screwdriver.
5. For removal of type "D" and type "E" fasteners, use a thin- bladed tool to straighten bend-over tabs.
6. To install, reverse removal procedure.

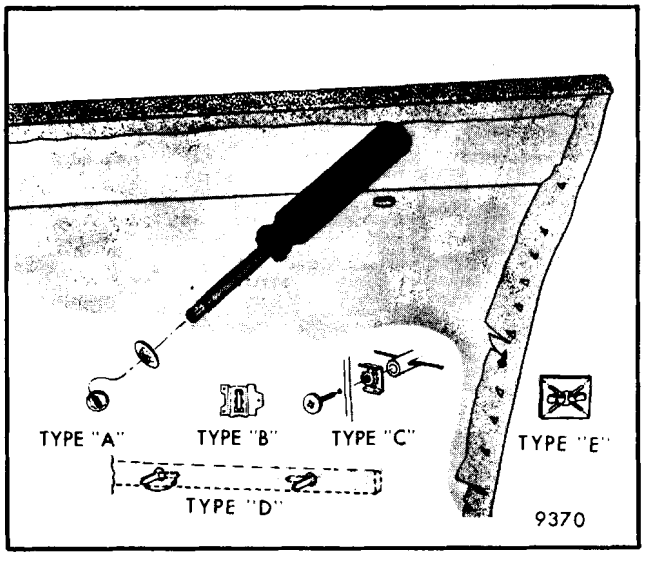

Fig. 5-25-Door Trim Pad Molding and Applique Removal

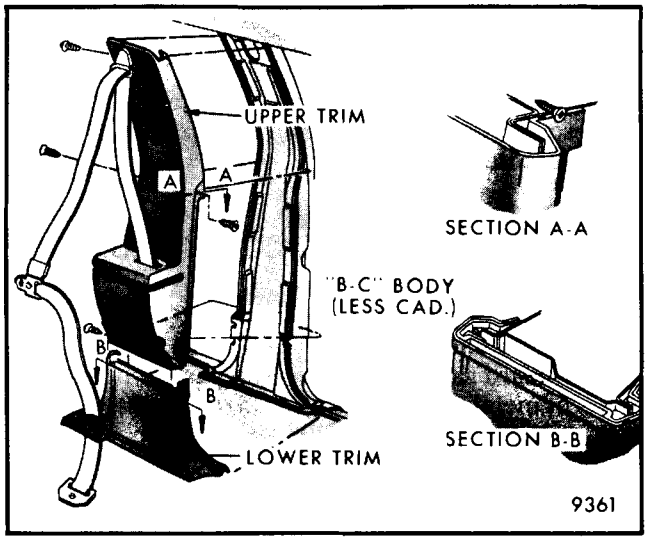

Fig. 5-26-Center Pillar Trim Attachment - "B,C" Styles (Less Cadillac)

CENTER PILLAR TRIM - All Styles Except 6KS69 Style

Removal and Installation - Upper and Lower Trim (Refer to Figs. 5-26 and 5-27)

1. Remove front and rear door sill plates if lower trim removal is required.

2. Remove all attaching screws securing upper trim to center pillar. On "B,C" (less Cadillac) styles, unsnap upper shoulder harness belt loop escutcheon and remove upper loop attaching bolt. On Cadillac "C" styles, after upper trim removal, carefully uncrimp and remove escutcheon covering webbing slot (View C, Fig. 5-27), remove belt webbing and remove upper trim.

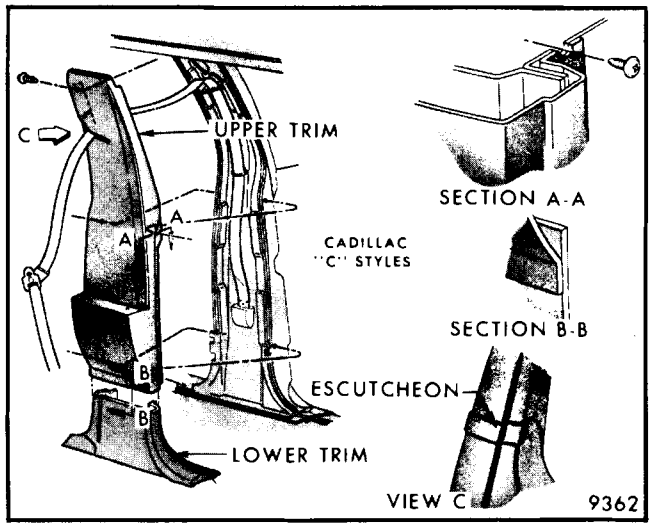

Fig. 5-27 - Center Pillar Trim Attachment - Cadillac "C" Styles

3. To remove lower trim after upper trim removal, lift trim straight up to bypass retaining flanges on center pillar.

4. To install, reverse removal operations. On Cadillac "C" styles, rethread belt webbing into upper trim, then carefully crimp escutcheon over webbing slot.

CENTER PILLAR TRIM COVER - Cadillac 6KS69 Style

Description (Refer to Fig. 5-28)

The center pillar trim finishing panel removal and installation is described in the Restraint Systems portion of the SEAT SECTION (Section 9) of this manual. Center pillar trim cover removal and and installation is described below.

1. Remove one upper and two lower trim cover attaching screws.

2. Using tool J-24595, BT-7323 or equivalent, disengage two trim cover retainers from center pillar.

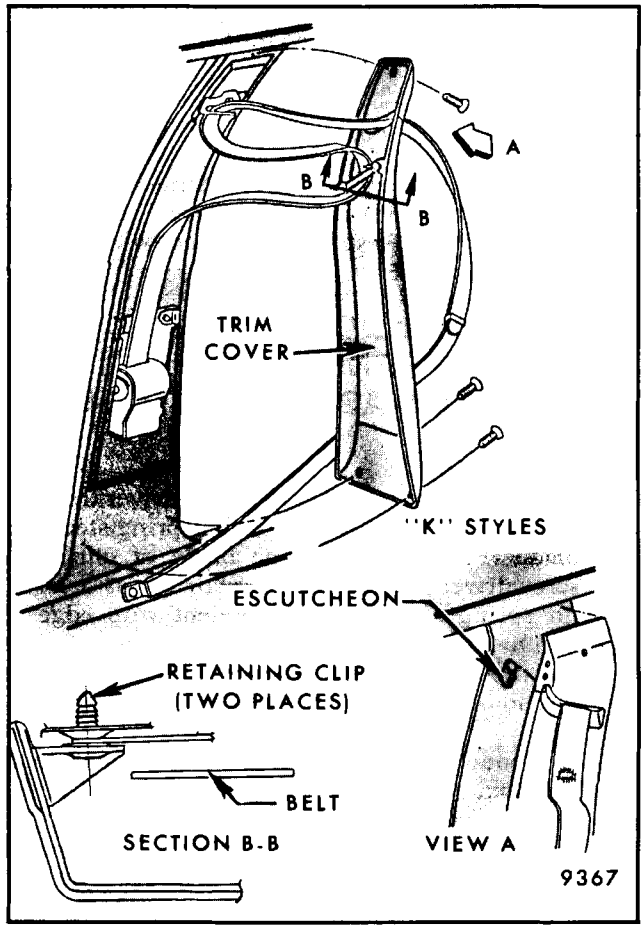

Fig. 5-28 - Center Pillar Trim Cover - Removal and Installation - Cadillac 6KS69 Styles

3. Carefully uncrimp webbing slot escutcheon (View C, Figure 5-28) and remove webbing from slot.

4. Complete trim cover removal from center pillar.

5. To install, reverse removal procedure. Slide webbing into slot and carefully crimp webbing slot escutcheon in place.

EXTERIOR MOLDINGS

DESCRIPTION

The door exterior moldings are secured to the body by any one or a combination of the following attachments. Figure 5-30 illustrates the various door molding attachments.

A. Weld stud retained plastic clip

B. Weld stud retained plastic clip with attaching screws and/or "T" bolt clip and nut retaining molding end(s) in hem flange

C. Adhesive bonded (either tape or urethane sealant)

D. Spring or clinch type (self-retained) - "B, C, H, K and X" Styles

E. Attaching screw (with integral or separate belt molding)

Figure 5-29 identifies all typical door exterior moldings by number. Molding installation chart (Figure 5-31) identifies molding description and specific attachment.

To use molding installation chart, use the following procedure.

1. Using typical exterior molding illustration (Fig. 5-29), locate number of specific molding(s).

2. Locate molding number on installation chart (Fig. 5-31). Chart will then identify molding name, attachment(s) reference to Figure 5-30 and specific style (if difference in attachment exists).

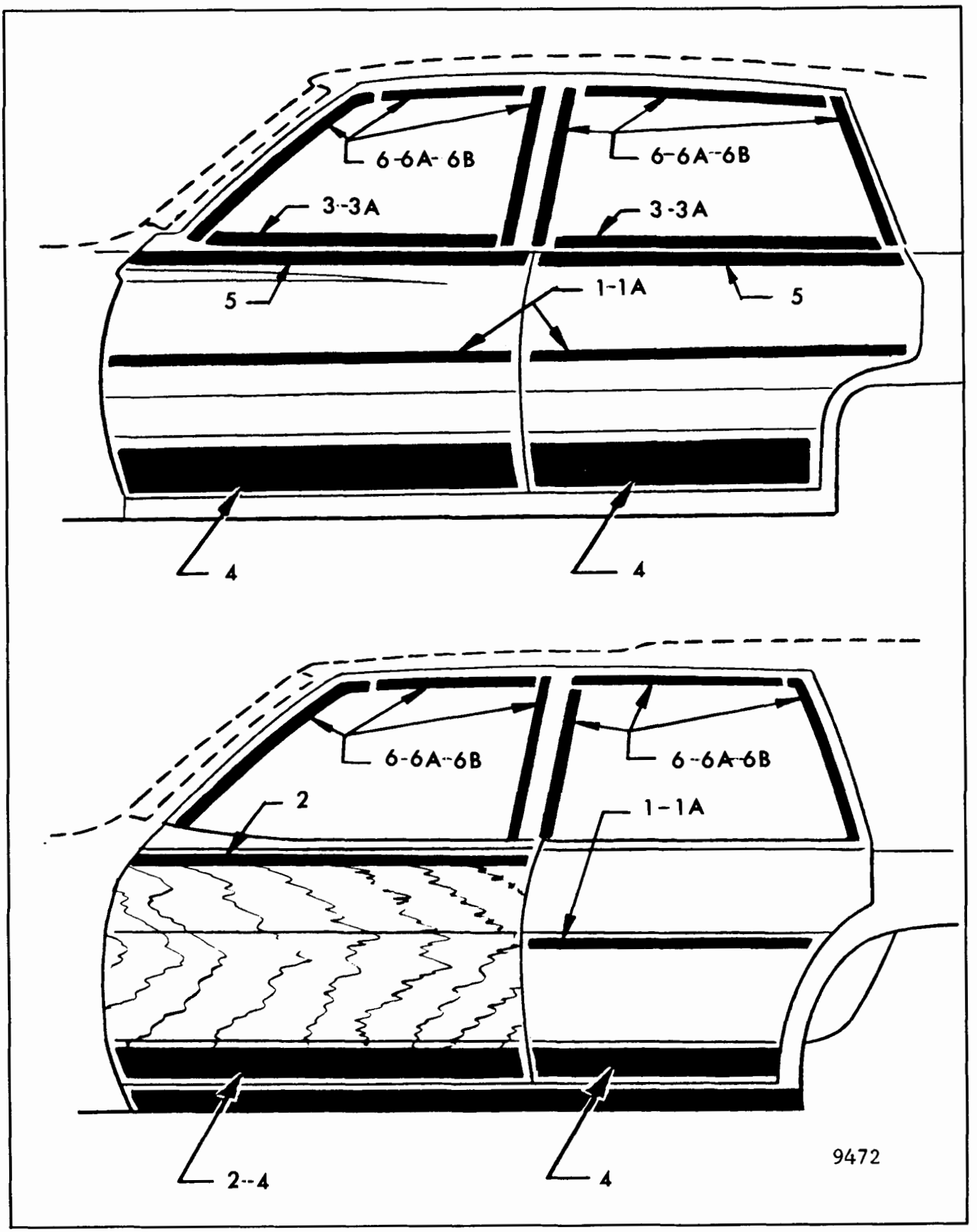

Fig. 5-29 - Typical Door Exterior Moldings

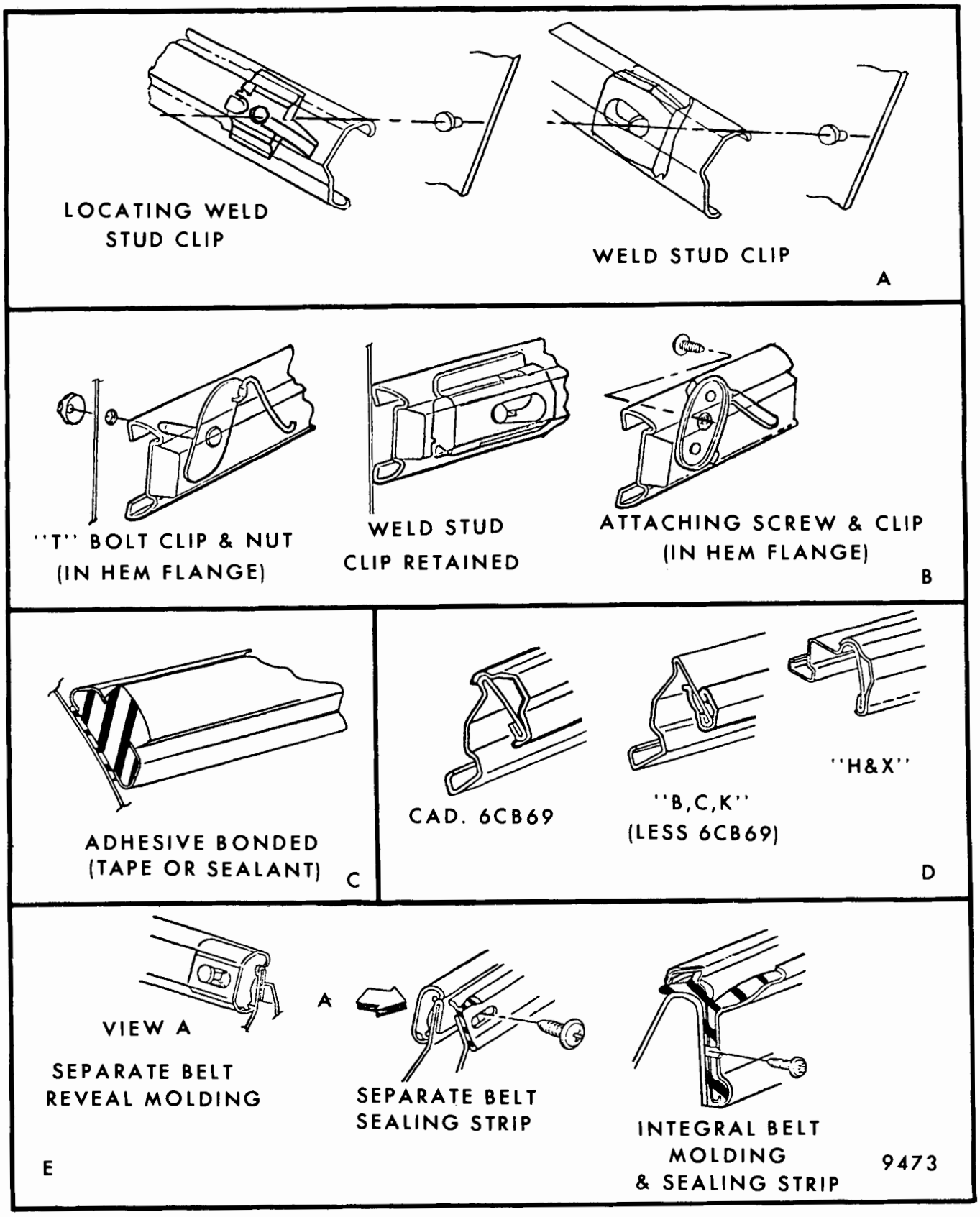

Fig. 5-30 - Door Molding Attachments

MOLDING REFERENCE NUMBER (FIG. 5-29)	MOLDING DESCRIPTION (USAGE)	ATTACHMENT REFERENCE (FIG. 5-30)
1	Body Side (Front and Rear Door)	A or C
1A	Body Side (Front and Rear Door) If attaching screws or nuts are visible in front and/or rear hem of door	B
2	Body Side - Upper and/or Lower - Woodgrain Transfer Finishing (Front and Rear Door)	A or B
3	Door Belt Reveal (Front and Rear Door) When integral part of outer belt sealing strip	E
3A	Door Belt Reveal (Front and Rear Door) When separate from outer belt sealing strip	E
3B	Front Door Belt Reveal - Front "A" Body Styles	E
4	Door Outer Panel - Lower (Front and Rear Door)	B
5	Door Outer Panel - Upper Peak (Front and Rear Door)	A or B
6	Door Window Upper Frame Scalp "B, C, K" Styles Less 6CB69 (Front and Rear Door)	D
6A	Door Window Upper Frame Scalp Cadillac 6CB69 Style (Front and Rear Door)	D
6B	Door Window Upper Frame Scalp "H and X" Styles (Front and Rear Door)	D

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Fig. 5-31 - Door Molding Installation Chart

GENERAL PRECAUTIONS

When removing or installing any door exterior molding, certain precautions should be exercised.

1. Adjacent finishes should be protected with masking tape to prevent damage to finish.
2. Proper tools and care should be employed to guard against molding damage.
3. Holes in body panels for screws, bolts, or clips that would permit water entry into the body interior must be sealed with body caulking compound or presealed screws, nuts, or clips.

MOLDING CLIP REPLACEMENT

If a weld stud on an outer panel becomes damaged or broken off, use the following procedure.

1. Drill a small hole in the panel adjacent to original weld stud location.
2. Insert a self-sealing screw through original clip and into outer panel or replace damaged weld stud with self-sealing, screwtype weld stud.

ADHESIVE BODY SIDE MOLDING

A complete procedure for attaching loose or removed adhesive attached moldings can be found in General Information, Section 1, of this manual.

FRONT AND REAR DOORS

INTRODUCTION

This portion of the manual contains the service operations that are common to front and rear doors and components. Refer to the Door Index to locate a specific procedure.

FRONT AND REAR DOOR WEATHERSTRIPS

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 in the door panels. The serrations on the fastener also seal the openings from water entry (Fig. 5-32). On closed styles, nylon fasteners are used below the beltline only. Weatherstrip adhesive retains the weatherstrip around the door upper frame (Fig. 5-33). On all styles, in addition to the fastener, weatherstrip adhesive is used at the beltline and down the front door hinge pillar.

To disengage nylon fasteners from door panel piercings use tool J- 21104 or equivalent (Fig. 5-32). This tool permits removal of the weatherstrip without damaging the serrations on the fasteners so that the weatherstrip can be reinstalled if desired. Although a replacement door weatherstrip will include nylon fasteners, individual fasteners are also available as service parts.

Removal

1. On all hardtop styles, remove upper portion of door trim pad to gain access to weatherstrip fasteners hidden under trim assembly and remove fasteners (Fig. 5-34).
2. Use a flat-bladed tool to break cement bond between door and weatherstrip. A tool applicable to this usage can be fabricated from tool J-21104 or equivalent (Fig. 5-35). Weatherstrip adhesive is used for a distance of 7" to 9" on door lock pillar and the entire length of the front door hinge pillar (Fig. 5-33). In addition, on closed styles, weatherstrip is retained by weatherstrip adhesive completely around door upper frame. A suitable release agent (Kent Special Release Agent or equivalent) will aid in breaking the weatherstrip adhesive bond.
3. On all styles, use tool J-21104 or equivalent to disengage weatherstrip nylon fasteners.

Installation

1. If previously removed weatherstrip is to be reinstalled, inspect nylon fasteners and replace those that are damaged.
2. Clean off old weatherstrip adhesive from door.
3. On closed styles, apply black weatherstrip adhesive around door upper frame (Fig. 5-33).
4. On styles without door upper frames, position weatherstrip to door and install plastic fasteners at front and rear ends of weatherstrip.
5. On styles with door upper frames, position weatherstrip to door as follows:

a. On front doors, locate weatherstrip from rear upper corner.

b. On rear doors, locate weatherstrip from molded front upper corner.

6. Tap nylon fasteners into door piercing using a hammer and blunt caulking tool.

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 and/or 9" down door lock pillar starting at beltline and down entire hinge pillar facing.

   b. On sedan rear doors, 9" down both door lock pillar and door hinge pillars starting at beltline.

CAUTION: *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 or sealing is required.

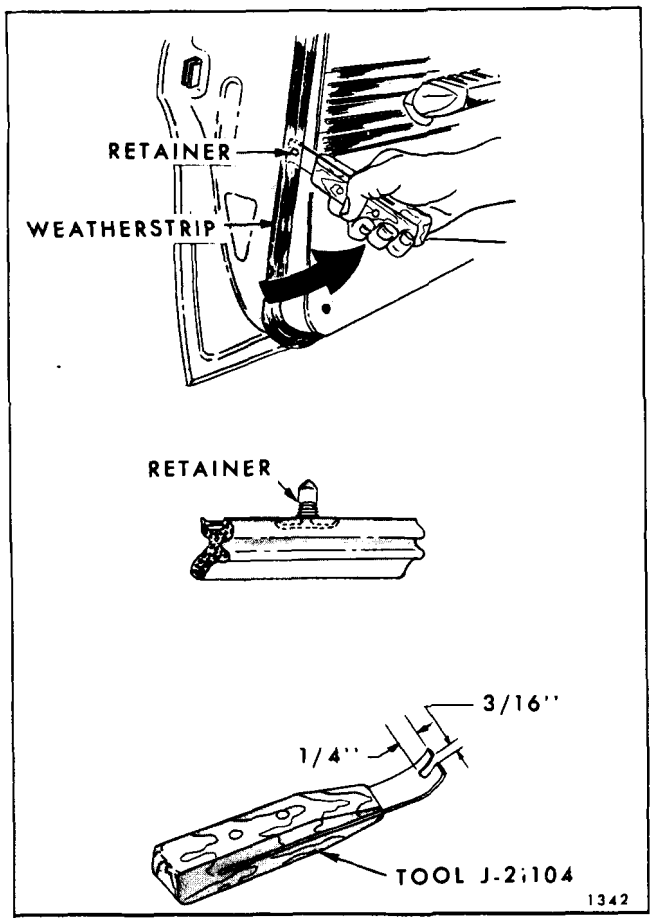


Fig. 5-32-Door Weatherstrip Removal

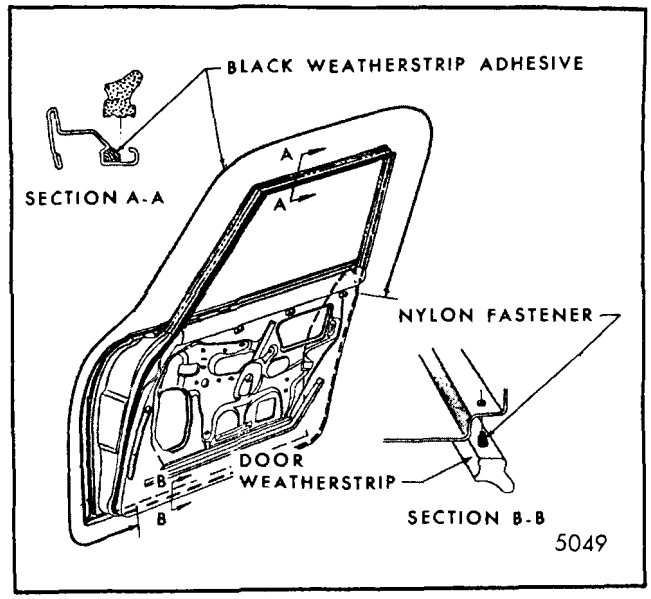


Fig. 5-33-Door Weatherstrip - Closed Styles

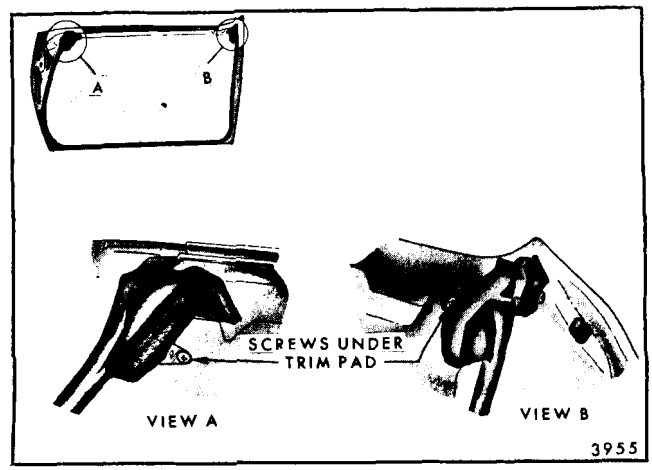


Fig. 5-34-Door Weatherstrip - Hardtop Styles

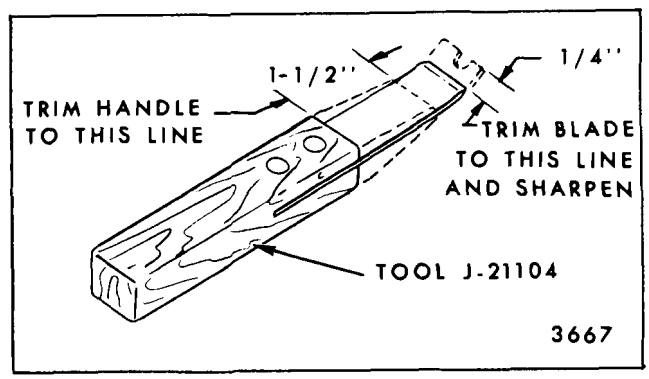


Fig. 5-35-Weatherstrip Removal Tool

WINDOW BELT SEALING STRIPS

Door window belt sealing strips are used to form a seal between the door inner and outer panels and the window at the beltline. The construction and attachment of these strips vary with the body style involved.

On styles with a door window belt reveal molding, the molding is either an integral part of the outer strip assembly or an independent molding attached to the door outer panel. Refer to the Exterior Moldings portion of this section for specific molding attachment and removal procedures.

On styles which utilize the belt reveal molding and outer strip assembly (stapled together at manufacture), the entire assembly is available as a service part.

On styles without door window belt reveal moldings, the outer strip assembly is an independent part that is secured to the door outer panel return flange by clips or screws.

NOTE: To remove strip assemblies, glass must be low enough to gain access to the attachments. In many cases, this will require removal or adjustment of window lower stop supports to permit further lowering of window assembly.

Removal and Installation

1. On styles with screw-retained strip assemblies, remove strip assembly by removing attaching screws.

2. On "H and X" body styles which utilize clip retained outer strip assemblies, remove strip assembly as follows:

   a. Apply cloth-backed tape as a protective cover over painted surface of door outer panel adjacent to strip assembly.

   b. Using a flat-bladed tool that is slotted to fit over tang of clip, disengage clips from slots in door panel return flange as shown in Figure 5-36.

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

   c. To install strip assembly, position strip so that the tangs of each clip start into slot in door panel; then engage clips by pressing downward. Prior to installation, reform tangs on clip to assure positive retention when installed.

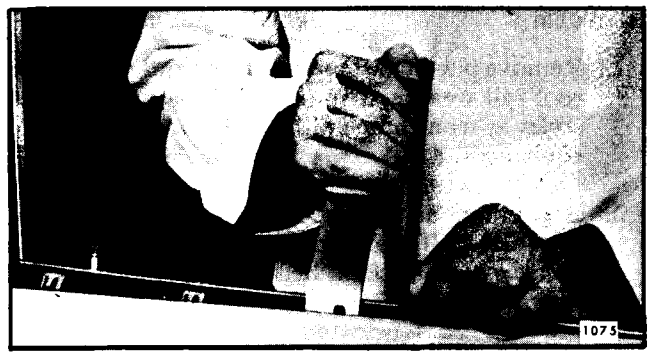


Fig. 5-36-Clip Retained Belt Sealing Strip Removal

SIDE ROOF RAIL WEATHERSTRIP AND RETAINER

The side roof rail weatherstrip is sealed to a weatherstrip retainer which, in turn, is sealed to the body by a nitrile foam material (item 1, Fig. 5-37) bonded to the retainer. Additional pumpable sealer is applied in corner areas to assure a good seal against air and water. Plastic fasteners retain the ends of the weatherstrip to the body.

Side Roof Rail Weatherstrip (Retainer) Adjustment

The side roof rail weatherstrip can be adjusted either inboard or outboard to obtain a better seal with the door or quarter window by repositioning the weatherstrip retainer.

1. Remove the weatherstrip from the retainer as subsequently described and loosen retainer attaching screws.

2. Adjust retainer inboard or outboard as required and replace screws. Reinstall weatherstrip and seal with a pumpable sealer.

   For proper relationship of weatherstrip to door window, refer to Door Window Adjustments.

   NOTE: Major retainer adjustments will require resealing retainer to body at upper corners of retainer(s) and full length of rear body lock pillar retainer on "A" four-door styles as described in step 2 of weatherstrip installation procedure (item 2, Fig. 5-37).

   If additional inboard or outboard adjustment of the retainer is required, it can be accomplished by either elongating the adjusting slots in the retainer or repositioning the retainer and drilling new attaching holes in the rail or pillar assembly.

Removal

1. Remove plastic fasteners at front and rear of side roof rail weatherstrip (Fig. 5-37 is typical of all styles at front hinge pillar) with tool J-21104 or equivalent.

2. Beginning at the front body hinge pillar, carefully pull weatherstrip out of retainer while breaking sealer bond between weatherstrip and retainer with a flat-bladed tool. A tool for this use can be fabricated from tool J-21104 or equivalent as shown in Figure 5-35. A suitable release agent (Kent Special Release Agent or equivalent) will aid in breaking the weatherstrip adhesive bond.

   CAUTION: *This operation must be performed carefully to prevent damaging side roof rail weatherstrip.*

3. With weatherstrip removed, screws securing weatherstrip retainer to side roof rail are exposed. Mark position of retainer on rail or pillar and remove screws from retainer.

Installation

1. Scrape any excess sealer from weatherstrip retainer.

2. Apply a continuous bead of a pumpable type body caulking compound 4" rearward and 4" down from front and rear upper corner of retainer that mates with side roof rail, and along full length of rear body lock pillar retainer on "A" four-door styles (item 2, Fig. 5-37). Apply bead outboard of attaching screw holes.

3. Position retainer to body and install attaching screws.

4. Apply a continuous bead of pumpable sealer to inboard flange of weatherstrip retainer (item 3, Fig. 5-37). Then apply black weatherstrip adhesive to the front and rear end details of the side roof rail weatherstrip.

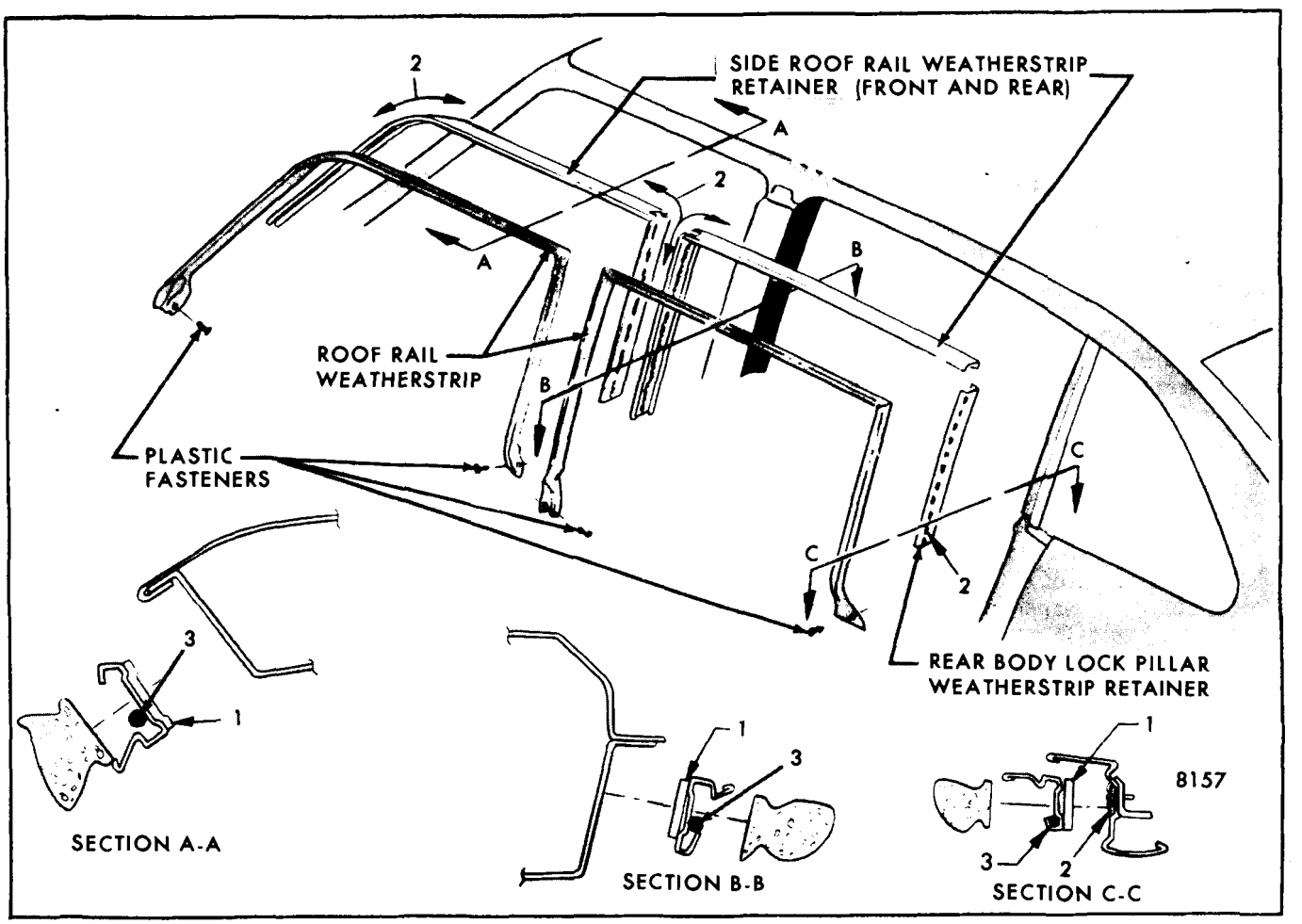


Fig. 5-37-Side Roof Rail Weatherstrip and Weatherstrip Retainer - "A" Four-Door Styles Shown, Other Styles Similar

5. Position front end of weatherstrip to body and install plastic fasteners. Using a flat-bladed tool, engage weatherstrip with retainer, inboard lip first; then outboard lip (refer to Sections "A-A", "B-B" and "C-C", Fig. 5-37).

   NOTE: Replacement plastic fasteners are available as a service part.

6. After weatherstrip has been installed along length of retainer, install plastic fastener at rear end of weatherstrip on styles so equipped.

INNER PANEL WATER DEFLECTOR - All Except "H" Styles

Waterproof deflectors are used to seal the door inner panel and prevent entry of water into the 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 water deflector has been disturbed, the deflector must be properly sealed and taped to the inner panel to prevent waterleaks (refer to Fig. 5-38). For service sealing, body caulking compound or strip caulking 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. Water deflector roll stock is available as a service part.

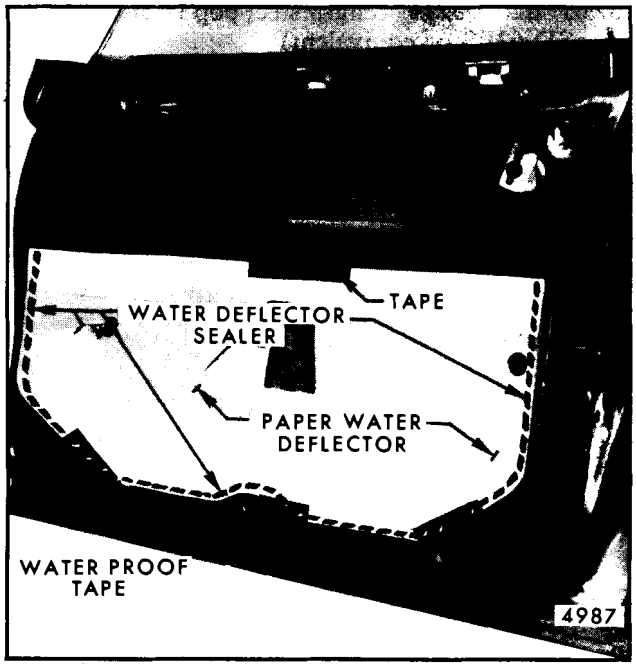


Fig. 5-38-Door Inner Panel Sealing

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 (Refer to Fig. 5-38)

1. Remove the door trim assembly.

2. Remove waterproof body tape securing top of water deflector to door inner panel.

3. Using a flat-bladed tool such as a putty knife, carefully break sealer 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 embedded in sealer.

4. Carefully remove tape from inner panel at lower edge of water deflector. Disengage water deflector from inner panel drain slot and remove deflector.

Installation

1. Inspect water deflector and, where necessary, repair any tears or holes with waterproof body tape applied to both sides of deflector. If a new deflector is to be installed, use old deflector as a template. Make sure sealer bead is continuous (has no gaps) and will guide water into drain slots.

2. 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.

   If old sealer does not effect a satisfactory seal, apply additional body caulking compound or strip caulking to inner panel at unsealed areas.

3. Seal lower edge of deflector by reapplying previously removed tape or new pieces of waterproof body tape.

4. On styles with door inner panel hardware attachments that are below and outboard of water deflector, seal attaching screw head and panel piercing with body caulking compound.

SPRING CLIPS

Spring clips are used to secure handle connecting rods and inside locking rods to door lock levers and handle levers. A slot in the clip provides for disengagement of the rod.

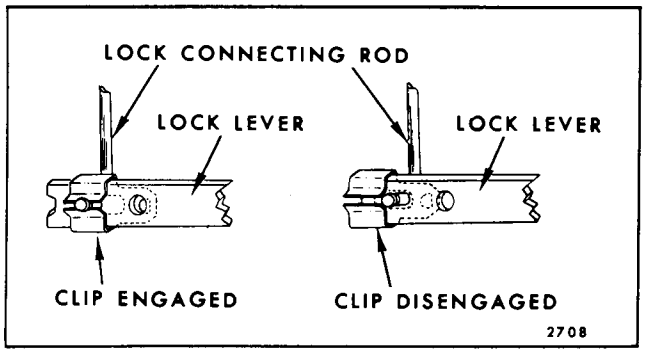


Fig. 5-39-Spring Clip Disengagement

Fig. 5-40-Outside Handle Push Rod Access Hole Plug - "H" Styles

Removal and Installation

To disengage a spring clip, use a screwdriver, or other suitable thin-bladed tool, to slide clip out of engagement as shown in Figure 5-39 and disengage connecting rod. To install, press clip fully on lever, then press rod through hole in lever until fully engaged by clip.

On "H" styles, remove door outside handle to lock push rod access hole plug to gain access to spring clip (Fig. 5-40).

INSIDE LOCKING ROD

Removal and Installation - "A and E" Coupe Styles

1. Remove all door trim. Peel inner panel water deflector back sufficiently to gain access to inside locking rod retainers ("12" in Fig. 5-73 is typical).
2. Slide inside locking rod to door inner panel plastic retainers in direction of arrows shown in Figure 5-73 (at "12").
3. Disengage rod from lock and remove locking rod through beltline.
4. To install, reverse removal procedure.

Removal and Installation - Sedan Styles

1. Remove all door trim. Peel inner panel water deflector back sufficiently to gain access to spring clip at door lock locking lever.
2. Disengage spring clip securing locking rod to door lock locking lever as previously described.
3. Lift locking rod out through beltline of door.
4. To install, reverse removal procedure.

CONNECTING RODS, PUSH RODS, BELL CRANKS

Connecting rods and push rods are attached to components by spring clips, plastic clips, or self-retaining ends. Spring clips are disengaged as described previously. Plastic clips are disengaged by unsnapping portion engaging connecting rod and then pulling rod out of attaching hole (clip remains in hole until rod is removed).

Rivet attached bell cranks are removed by punching out attaching rivet center pin and then drilling out rivet with 3/16" drill bit. Attach bell crank with 3/16" dia. x 5/16" length steel pop rivet (USM part no. SD-62BS or equivalent).

INSIDE REMOTE HANDLE

All inside remote handles are the pull-in type except for the rear remote handle (right side only) on the Cadillac "E" style which is a pull-up (spindle) type. All remote handles actuate the door lock through a connecting rod. Remote handles are attached to the door inner panel with screws or rivets.

Removal and Installation

1. Raise door window, remove door trim panel (on "A and E" styles, remove upper and lower portion of door trim assembly) and detach inner panel water deflector.

   NOTE: Attachment of both Cadillac "E" right hand door remote handles is similar.

2. If handle is rivet attached, drive out rivet center pin with punch and drill out rivet with 3/16" diameter drill bit.

3. Disengage lock connecting rod and remove remote handle. Disconnect wire to switch on styles equipped with automatic door lock option.

4. If remote handle to lock connecting rod is to be removed, also disengage spring clip retaining rod to lock lever.

5. To install, reverse removal procedure. For rivet attached handle, use steel pop rivets, 3/16" dia. x 5/16" length (USM part no. SD-62BS or equivalent) to secure handle.

OUTSIDE HANDLES

There are three basic types of door outside handles: push- button, lift-bar and pull-out. The removal and installation procedure is similar for all types.

Removal and Installation (Refer to Figs. 5-41, 5-42 and 5-43)

1. Raise door window. Remove door trim assembly and detach upper rear corner of inner panel water deflector sufficiently to gain access to outside handle attaching nuts.

   a. On "F" styles, remove rear guide upper bracket to inner panel and guide assembly attaching screws (item 6 and 7, Fig. 5- 75) and remove guide bracket from door. Then, working through access hole, disconnect door outside handle to lock push rod at handle assembly (Fig. 5-42).

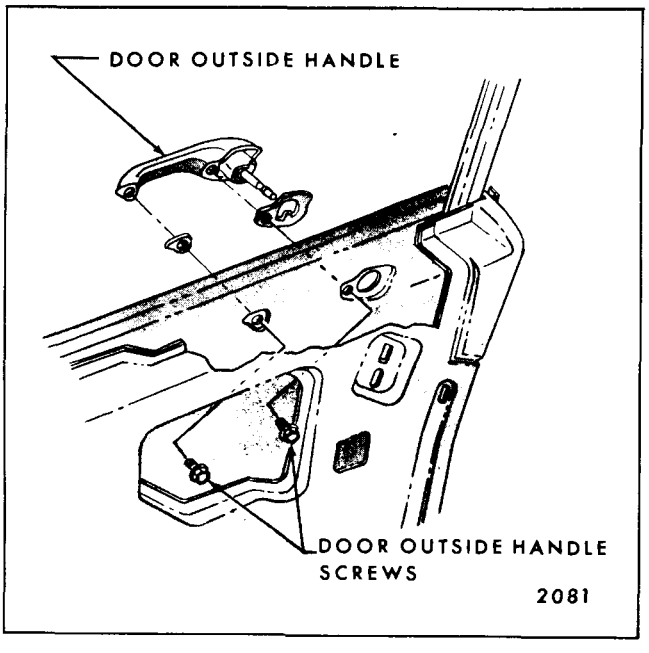


Fig. 5-41-Outside Handle Removal (Push-Button Type)

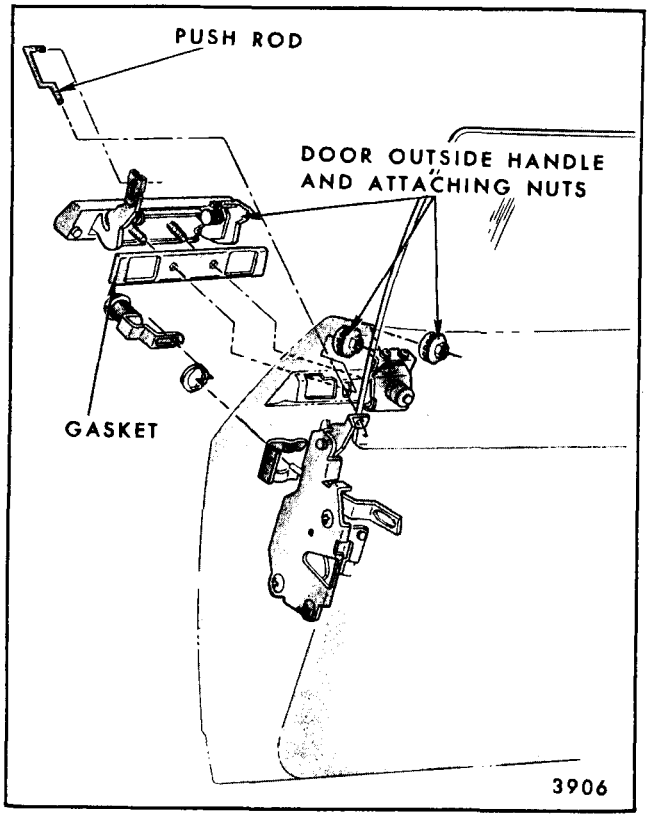


Fig. 5-42-Outside Handle Removal (Lift Bar Type)

   b. On styles with optional illuminated lock cylinder, disconnect fiber optic wire harness at door guard beam prior to removal of the handle (Fig. 5-44).

   c. On "A-29 and 35" styles, remove rear guide (item 7, Fig. 5-66) to provide easier access to handle.

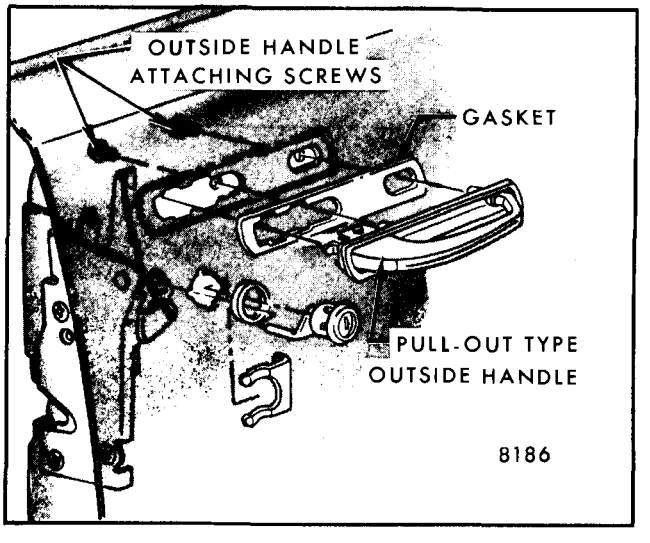


Fig. 5-43-Outside Handle Removal (Pull-Out Type)

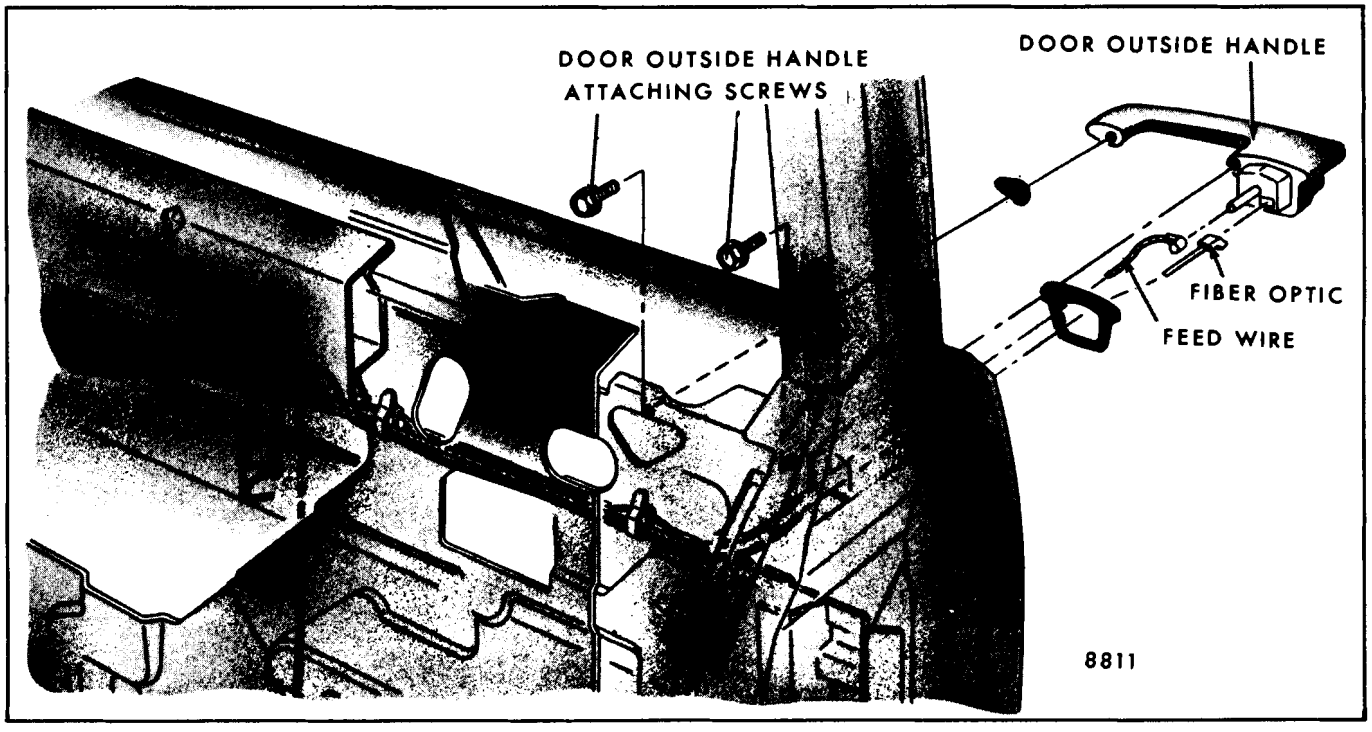


Fig. 5-44-Illuminated Lock Cylinder - "B, C and K" Styles (Push-Button Handle Shown)

2. On all other styles, remove handle attaching nuts (or screws) through access hole and remove door handle and gaskets from outside of body.

3. To install, reverse removal procedure.

Disassembly - All Push Button-Type Handles

1. Remove door outside handle as previously described.

2. Depress retainer slightly and rotate 1/4 turn in either direction. Remove retainer, spring, push button and shaft and sealing washer from handle (refer to Fig. 5-45).

3. To assemble, reverse disassembly procedure.

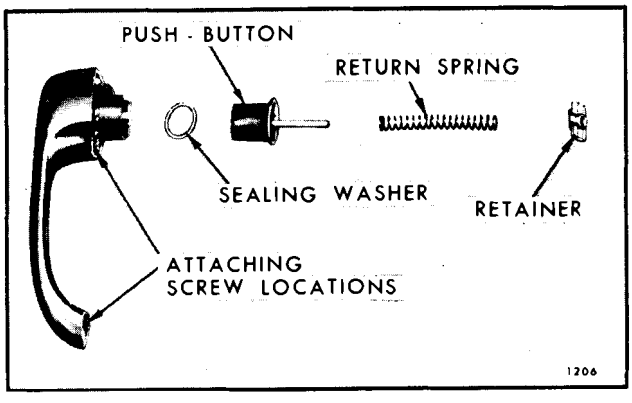


Fig. 5-45 - Outside Push-Button Handle Disassembly

LOCK CYLINDER

Removal and Installation

1. Remove all door trim. Raise door window and detach inner panel water deflector. On styles equipped with antitheft system disconnect wire at door guard beam (Fig. 5-48).

2. With a screwdriver or other comparable tool, slide lock cylinder retaining clip (on door outer panel) out of engagement and remove lock cylinder from door (Fig. 5-46).

3. To install, reverse removal procedure.

4. Lubricate cylinder with WD-40, 3M 4-Way, or equivalent spray lubricant.

Disassembly and Assembly

1. Remove lock cylinder from door as previously described.

2. With a pointed tool, disengage pawl retaining clip and remove pawl (Fig. 5-47).

3. With a flat-bladed tool, straighten out crimped-over edges of lock cylinder housing scalp and remove scalp and lock cylinder from housing.

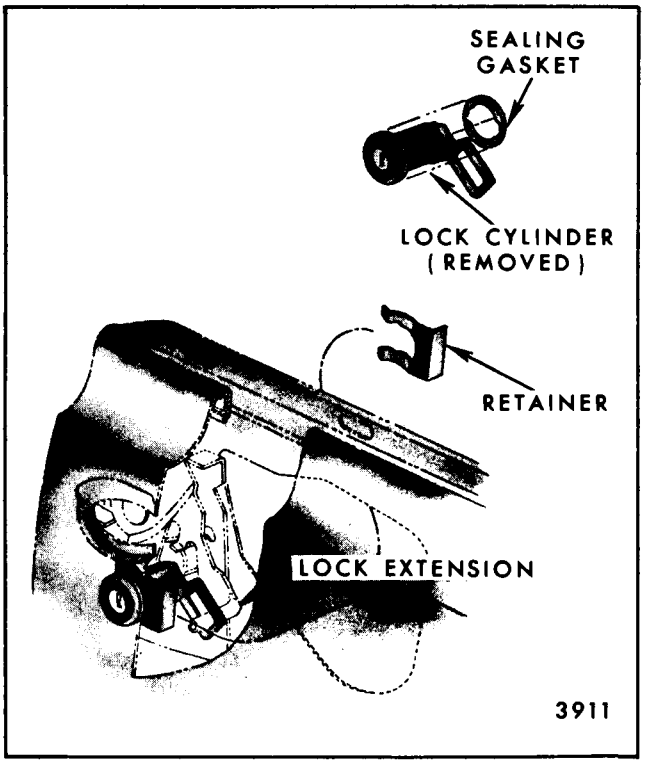


Fig. 5-46-Door Lock Cylinder Removal

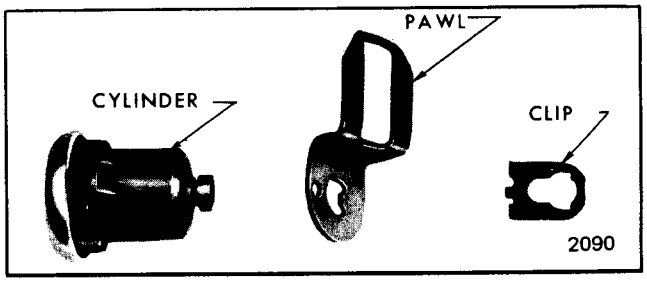


Fig. 5-47-Door Lock Cylinder Assembly

NOTE: Refer to General Information Index (Section 1 of this manual) for lock cylinder coding.

4. To assemble, reverse disassembly procedure.

NOTE: The lock cylinder housing scalp is usually damaged in removal procedure and, therefore, must be replaced. Replacement scalps are available as service parts.

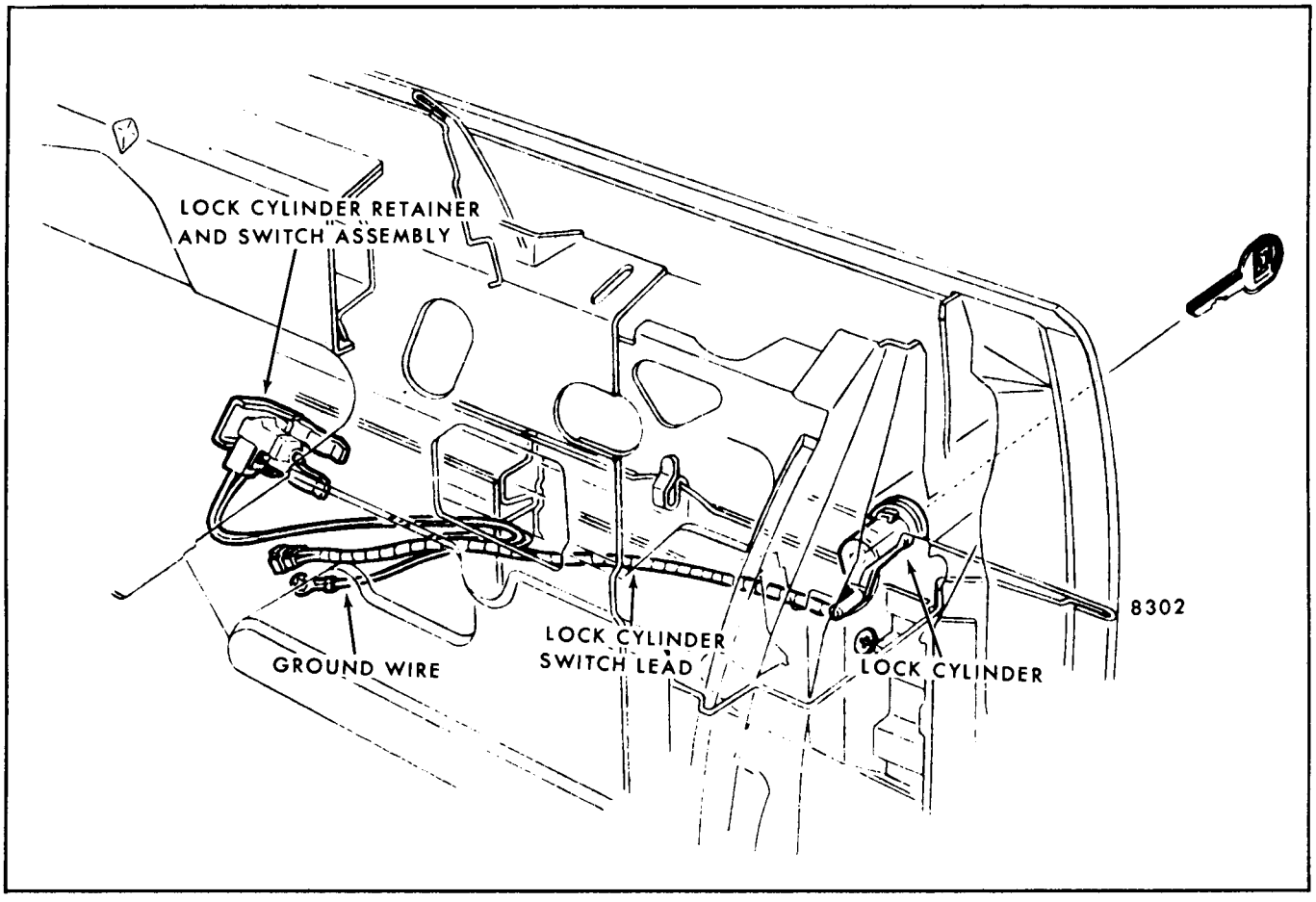


Fig. 5-48 - Antitheft Door Lock Assembly

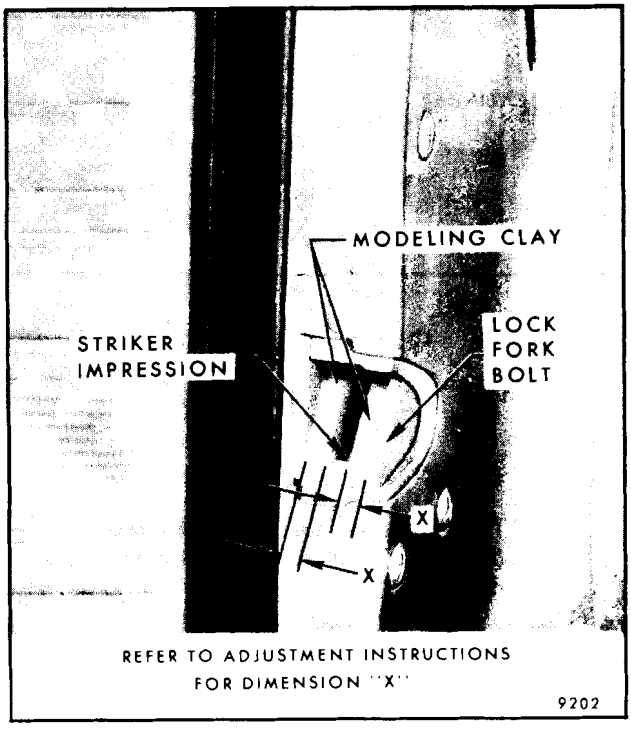


Fig. 5-49-Lock-to-Striker Fore and Aft Adjustment

DOOR LOCK STRIKER

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.

Adjustment

1. To adjust striker up or down, or in or out, insert tool J- 23457, BT-7107 or equivalent into the star-shaped recess in the head of the striker and loosen striker bolt. Shift striker as required, then tighten. Torque striker bolt to 50 to 60 N·m (35 to 45 ft-lb). Touch-up any exposed unpainted surface on lock pillar.

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 5-49.

   c. Close door only as far as necessary for striker bolt to form an impression in clay or caulking compound as shown in Figure 5-49.

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

   d. Striker impression should be centered fore and aft as shown in Figure 5-49. Allowable minimum measurement for dimension "X" is as follows:

      2.5 mm (3/32") minimum - "F, H, K and X" style front doors

      3.5 mm (1/8") minimum - all other doors

   e. The following spacers are available as service parts and can be used individually or in combination to achieve the desired alignment.

      2 mm (5/64") spacer - part no. 20020724 or 9827154 or equivalent

      4 mm (5/32") spacer - part no. 20020725 or 9827155 or equivalent.

Removal and Installation

1. Mark position of striker on body lock pillar.

2. Insert tool J-23457, BT-7107 or equivalent into the star-shaped tool recess in the head of the striker bolt and remove striker (refer to Fig. 5-50).

3. To install, reverse removal procedure. Make certain striker is positioned within mark. Torque striker bolt to 50 to 60 N·m (35 to 45 ft-lb).

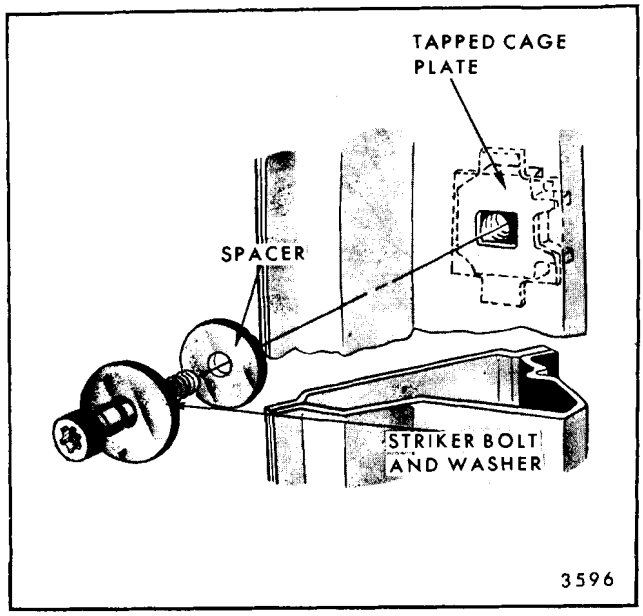


Fig. 5-50-Door Lock Striker Installation

CAUTION: *The door lock striker is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.*

CAUTION: *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.*

DOOR LOCKS

All styles use the fork bolt lock design which includes a safety interlock feature. The door is secured in a closed position when the door lock fork bolt engages the striker bolt. Front and rear doors can be locked from the inside by depressing the door lock button. All doors can be locked from the outside by simply depressing the interior door lock button and closing the door. The front doors can also be locked by using the appropriate key.

Figures 5-51 through 5-54 depict typical door locks. These illustrations are to be used only for identifying locking problems.

CAUTION: *Do not attempt to repair lock discrepancies. Make corrections by replacing the lock.*

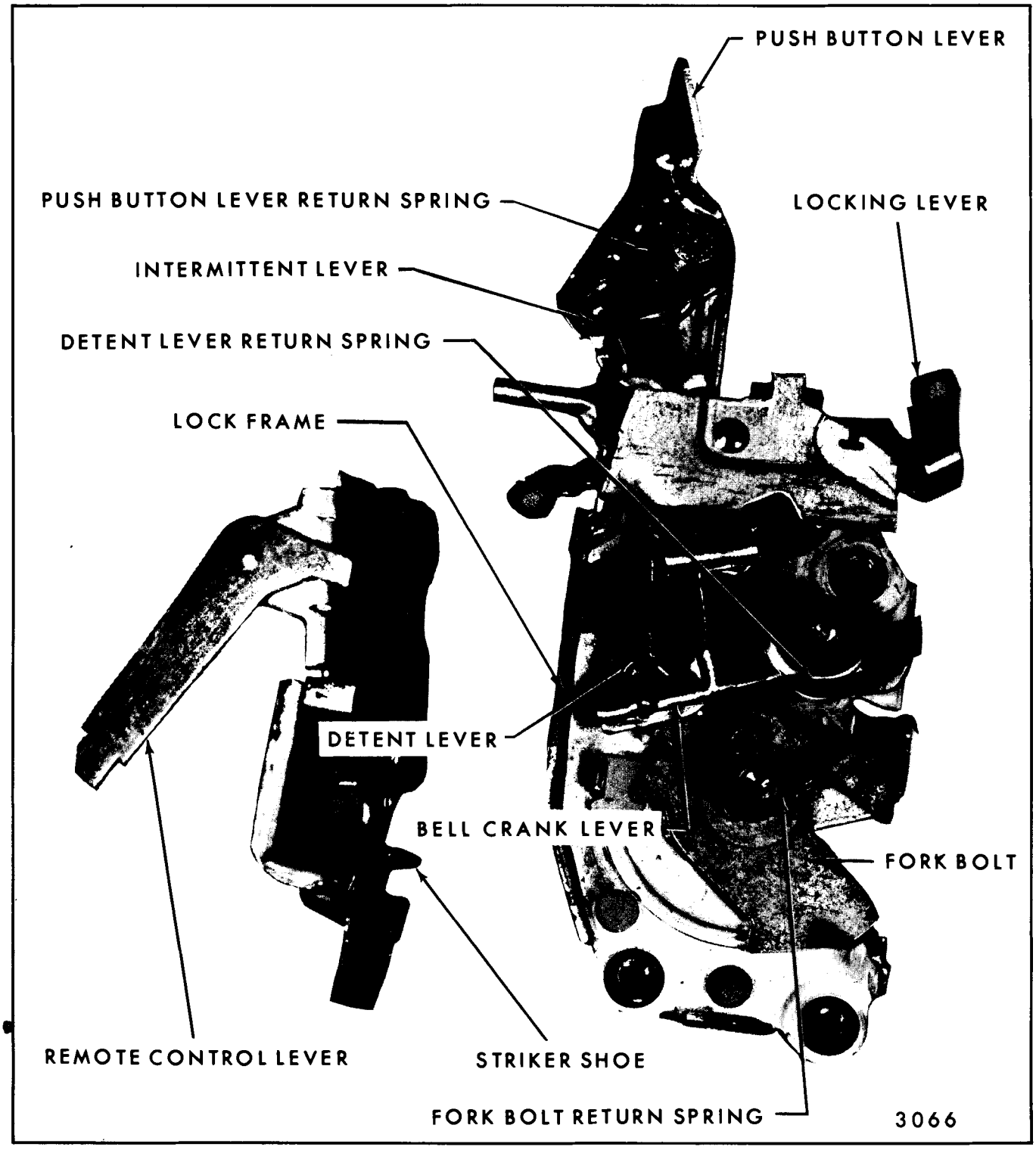


Fig 5-51-Front Door Lock - "F, H, K and X" Styles

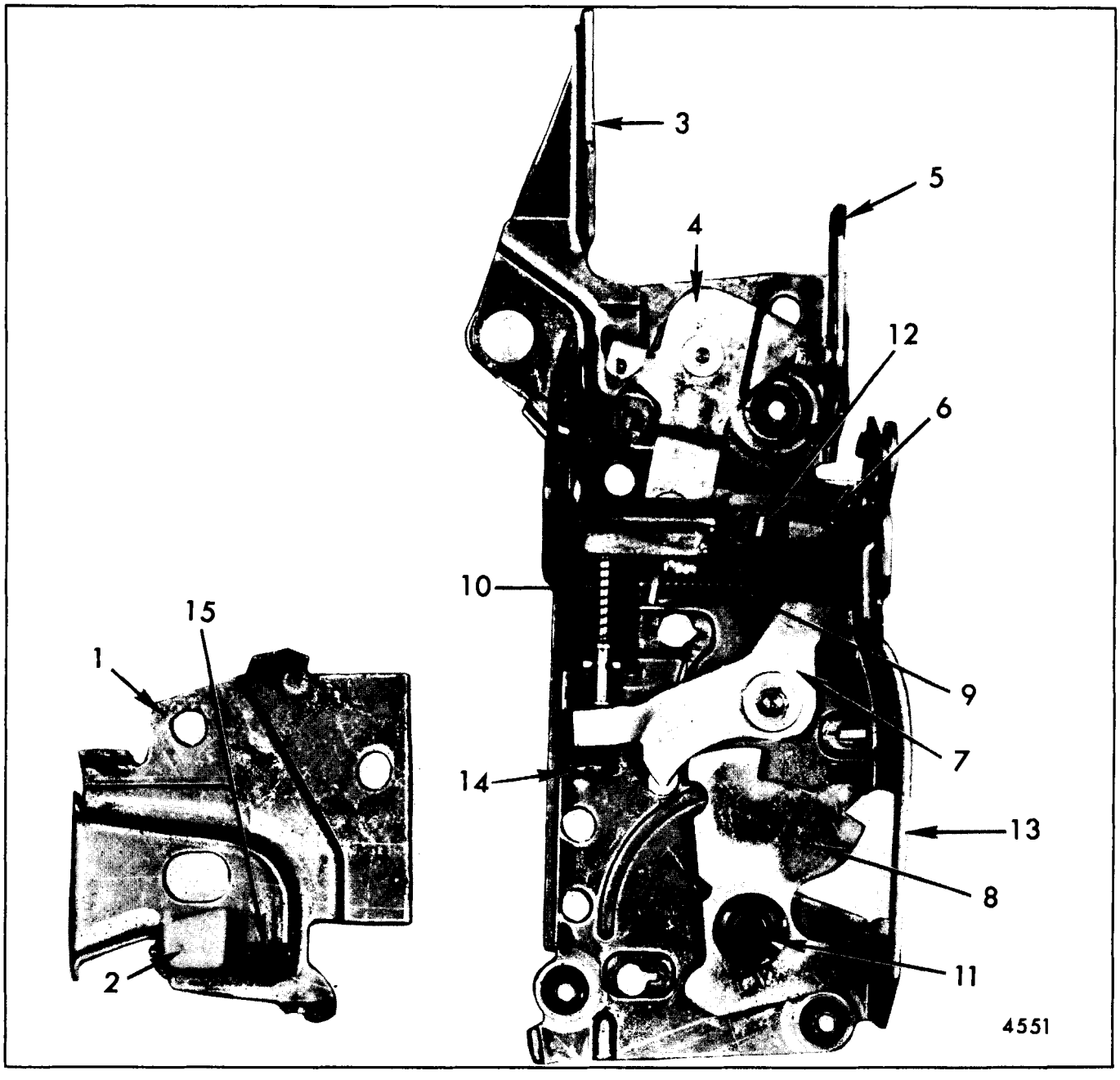


Fig. 5-52-Front Door Lock - "A, B, C and E" Styles

1. Lock Back Plate
2. Sliding Shoe
3. Push Button Lever
4. Transfer Lever
5. Remote Control Lever
6. Locking Lever
7. Detent Lever
8. Fork Bolt
9. Push Button Return Spring
10. Detent Spring
11. Spring Tension Washer (Replaces Fork Bolt Return Spring)
12. Intermittent Lever
13. Lock Frame
14. Lock Silencer
15. Sliding Shoe Pin and Spring

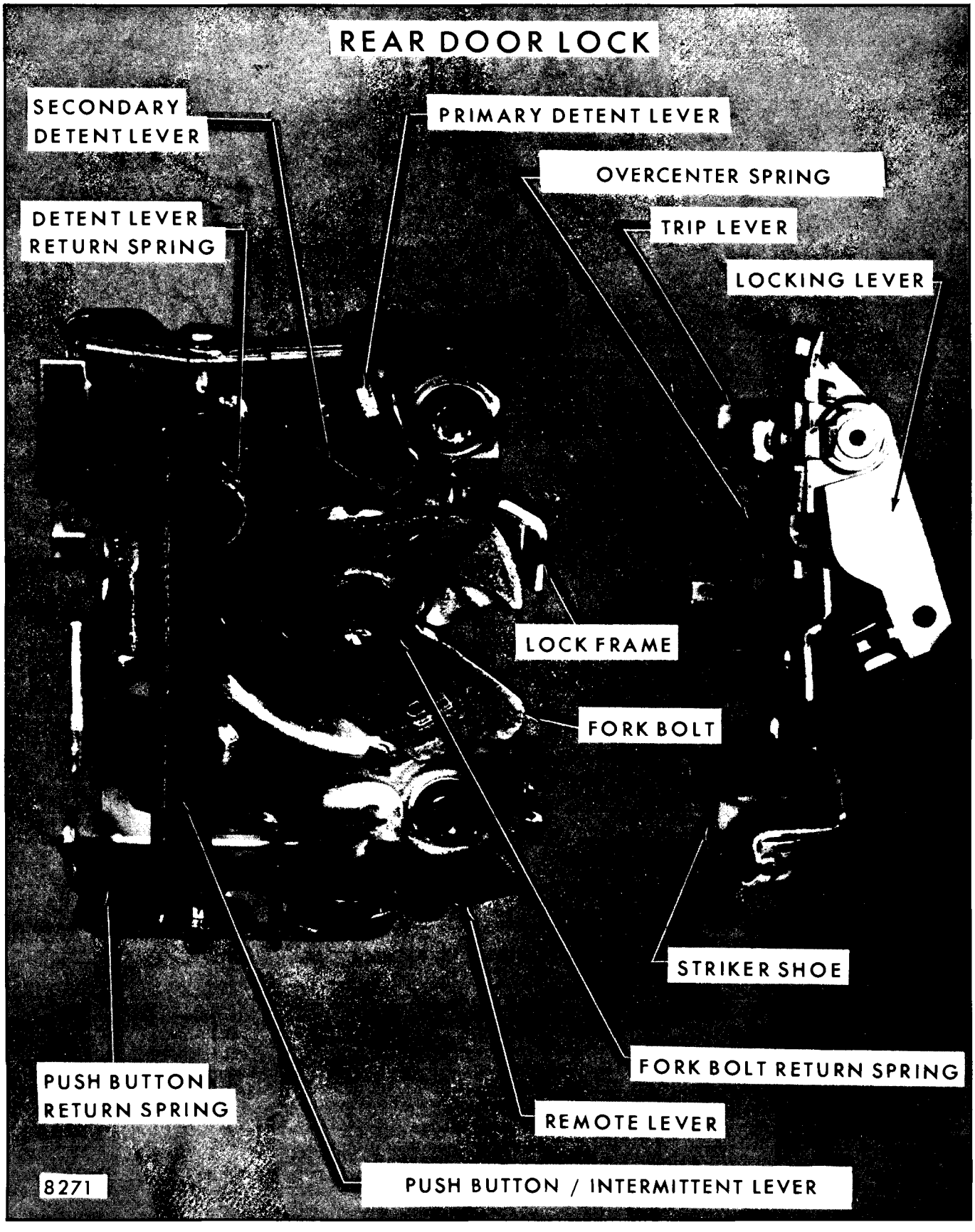


Fig. 5-53-Rear Door Lock - "K and X" Styles

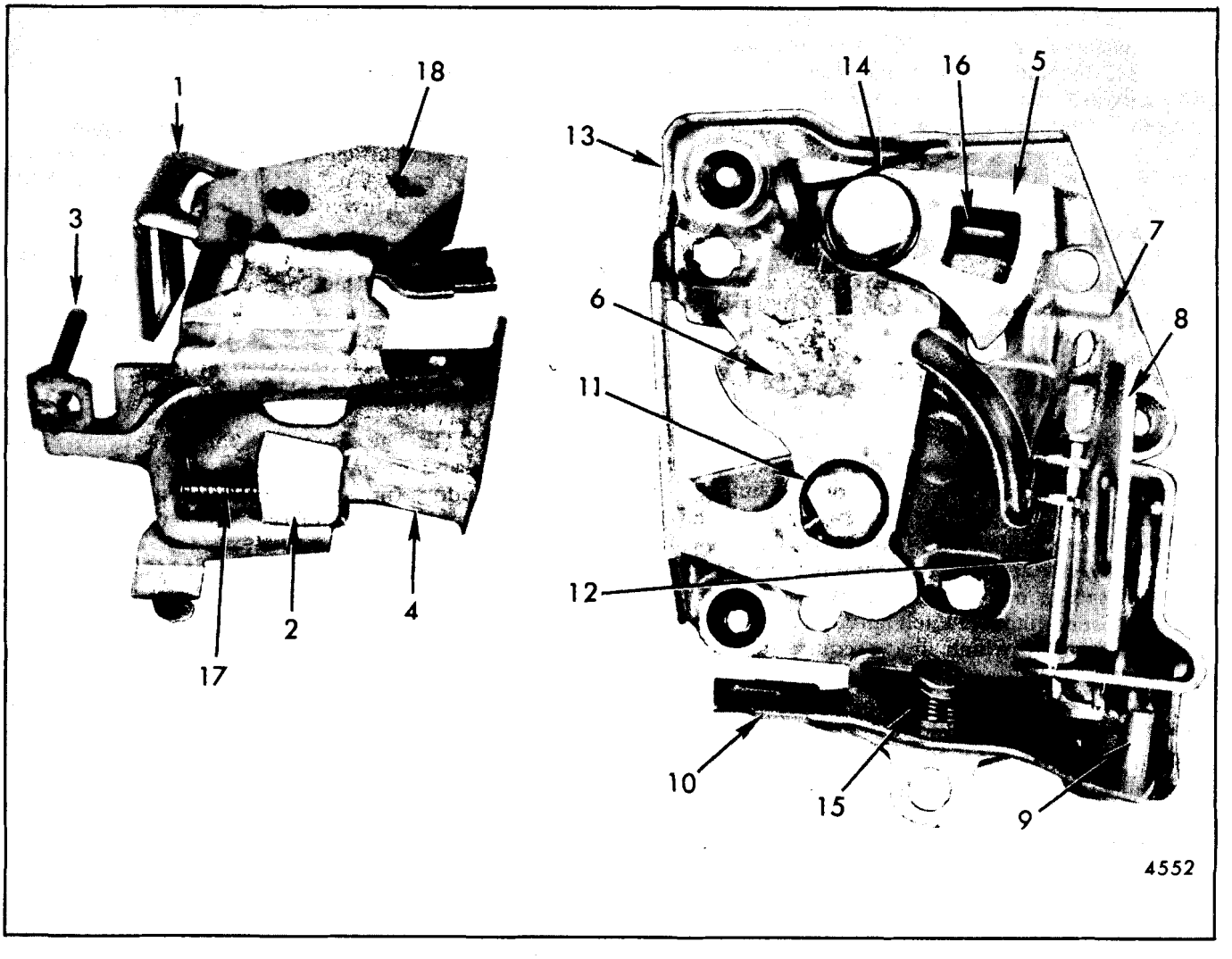


Fig. 5-54-Rear Door Lock - "A, B, and C" Styles

1. Locking Lever
2. Sliding Shoe
3. Intermittent Guide Pin
4. Lock Back Plate
5. Detent Lever
6. Fork Bolt
7. Intermittent Lever
8. Push Button Lever
9. Transfer Lever
10. Remote Control Lever
11. Spring Tension Washer
12. Push Button Pin
13. Lock Frame
14. Detent Return Spring
15. Push Button Return Spring
16. Lock Silencer
17. Sliding Shoe Pin and Spring
18. Overcenter Spring

Removal and Installation

1. Remove all door trim and peel back inner panel water deflector sufficiently for access to lock. On "K" styles, remove inner panel cam for easier access. On all except "K" rear doors, work with glass raised.

2. Disengage inside handle and power lock connecting rods as required (refer to Spring Clip disengagement described previously). On front doors, it may be necessary to remove power lock actuator. On "K" front door, remove actuator and bell crank as a unit. On "K" style rear door, remove inside handle and connecting rod as a unit.

   NOTE: On some styles it may be necessary to remove inside handle and then remove lock and connecting rod as a unit.

3. Disengage locking rod on rear door locks and front door locks with remote lock button. Locking rod is removed with lock on doors with locking button directly above lock. On "X" style rear doors, work through trim pad clip hole to disengage spring clip.

4. On "B and C" style rear doors, remove vent division channel. On "K" style rear door, loosen vent division channel attachments, pull channel forward at top and remove vent window; then pull channel full forward at bottom.

5. Remove lock attaching screws and remove lock. On "B, C and K" front doors, slide lock down to clear door frame extension.

6. To install, reverse removal procedure. Torque door lock attaching screws to 9 to 11 N·m (80 to 100 in-lb).

POWER DOOR LOCK SYSTEM

The optional power door lock system incorporates either a motor actuator or a solenoid actuator in each door which actuates the lock through a linkage. The system is actuated by a control switch on each front door ("F" styles have an instrument panel switch). All doors lock and unlock simultaneously from any control switch or manually from each door in the conventional manner. Each actuator has an internal circuit breaker which may require up to three minutes to reset.

Removal and Installation

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

2. Punch out actuator attaching rivet center pins, then drill out rivets with 1/4" drill bit. Disconnect rod and wire harness, then remove actuator through access hole (Fig. 5-55).

3. To install, connect actuator to lock linkage and wire harness. Attach actuator to door panel with 1/4-20 screws (part no. 9419723 or equivalent) and "U" nuts (part no. 3916700 or 3982098 or equivalent).

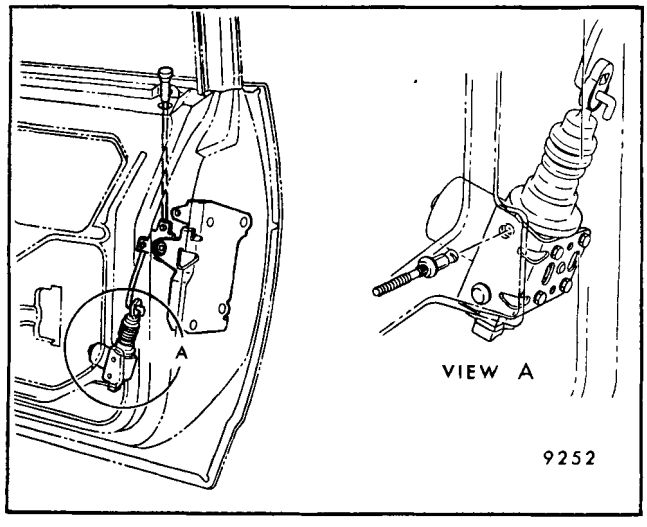


Fig. 5-55-Power Door Lock Actuator - Typical Installation

DOOR INNER PANEL CAM

Removal and Installation

1. Remove door trim and detach inner panel water deflector sufficiently to gain access to the inner panel cam. On "A" style front doors, remove upper and lower door trim.

2. With window in raised position, remove inner panel cam attaching screws and slide cam off regulator balance arm roller.

3. To install, reverse removal procedure. Torque attaching screws to 8 N·m (72 in-lb).

   NOTE: The ends of the cam have provisions for up and down adjustment to correct a rotated window (not parallel with top of door upper frame or side roof rail weatherstrips).

LOWER SASH CHANNEL CAM

On most doors with upper frames, the door window lower sash channel cam is bonded to the glass with either a plastisol (tan) or urethane (black) adhesive and is removed from the door along with the glass. If glass or sash channel requires replacement and plastisol (tan color) adhesive was used, both glass and sash channel must be replaced. If urethane (black color) adhesive was used, the following removal procedure may be used to separate sash channel from glass.

Removal of Urethane Bonded Glass

1. Remove door trim panel assembly, inner panel water deflector and door window as previously described.

2. If channel is attached to glass and glass is to be reused, mark location of channel on glass at front and rear with crayon marker or masking tape.

3. Remove channel from glass by applying heat from welding torch with no. 2 or 3 tip along full bottom length of channel. Slowly pass tip back and forth for 60 to 90 seconds, then grip channel with pliers and pull loose. If channel does not easily separate, repeat heating operation.

WARNING: DURING THE URETHANE BURN-OUT OPERATION, AVOID DIRECT INHALATION OF THE FUMES BEING EMITTED.

4. Thoroughly clean replacement glass. If original glass is to be used, scrape all traces of urethane adhesive off with sharp bladed tool. If original

channel is to be reused, clamp in vise and burn out remaining urethane adhesive with welding torch. While still hot, wire brush urethane traces from channel and remove remaining adhesive from glass and channel with lacquer thinner. Complete cleaning operation with water.

Installation of Glass to Sash Channel

1. If replacement glass is being installed, locate the front of sash channel to lower front edge of glass (Dimension "A" in Figure 5-56) as follows:

   220 mm (8-3/4") for "B, C-35,69" Front Door

   145 mm (5-3/4")for "B,C-35,69" Rear Door

   400 mm (15-3/4") for "B, C-37,47"

   11-1/2" for "H-07"

   12"for "H-27"

   9-1/4" for "K" Front Door

   4" for "K" Rear Door

   11-1/8" for "X-17,27"

   8-3/4" for "X-69" Front Door

   5-3/4" for "X-69" Rear Door

2. To bond channel to glass, a two-part adhesive such as 3M Structural Adhesive No. 8101, Loctite Clear Epoxy, Loctite Fast Cure Epoxy 45 or equivalent is required. Thoroughly mix approximately one and one-half tablespoons (two Loctite mixer cups) of adhesive per package instructions. Place adhesive into channel at three locations indicated in Fig. 5-56.

3. Install spacer clips (part no. 1696671 or equivalent) in channel approximately 1/2" from each end.

4. Apply channel to glass at previously determined location and immediately tape channel to glass using cloth-backed body tape. Allow adhesive to cure for one hour minimum prior to reinstallation into car.

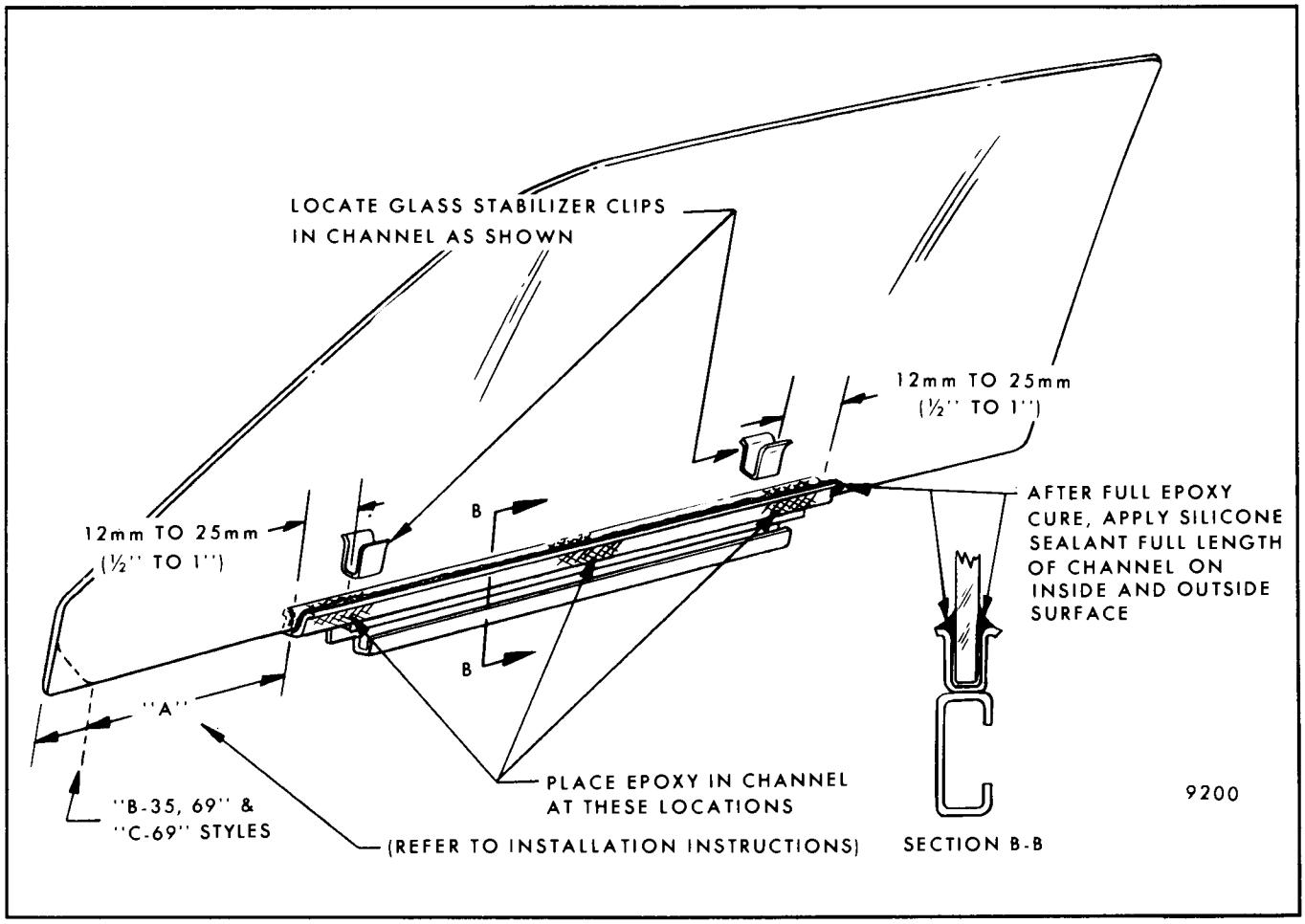


Fig. 5-56-Glass to Sash Channel Bonding

5. After adhesive cure, flow a thin bead of silicone adhesive such as Dow Corning RTV 732 Silastic, 3M Super Silicone part no. 8661 or equivalent the full length of channel surface to prevent water entrapment in channel (Fig. 5-56).

6. Reinstall glass, water deflector and door trim assembly.

WINDOW REGULATOR MOTOR

The optional power-operated window system incorporates an electric motor and an independent control switch for each door window. The driver's door incorporates a master window control switch permitting operation of all windows from driver's position. Cadillac styles incorporate a window blockout (cutout) switch. When the blockout switch is in the lock position, the windows will operate only from the master control switch.

The electric motor which powers the window regulator 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.

On all styles, the electric motor can be removed without removing the window regulator if the door glass IS INTACT AND ATTACHED TO THE REGULATOR. If the door glass is broken or detached from the regulator, the regulator must be removed first (except for "X" rear door regulators without counterbalance springs). Motor removal and installation procedures for both conditions follow.

Removal and Installation - Glass Intact and Attached to Regulator

WARNING: THIS PROCEDURE CAN BE USED ONLY IF DOOR GLASS IS INTACT AND ATTACHED TO THE REGULATOR. THE REGULATOR LIFT ARMS ARE UNDER TENSION FROM THE COUNTERBALANCE SPRING AND THE WEIGHT OF THE DOOR GLASS IS REQUIRED TO NEUTRALIZE THE SPRING DURING MOTOR REMOVAL. IF DOOR GLASS HAS BEEN BROKEN OR REMOVED, REFER TO THE NEXT PROCEDURE IN THIS SECTION.

1. Remove door trim assembly and inner panel water deflector and raise window. Disconnect harness at motor.

2. On "X" style rear doors with no counterbalance spring (Fig. 5- 65), tape window to frame with pieces of cloth-backed body tape to prevent glass from dropping when regulator motor is removed.

   CAUTION: *Be sure to perform step 2. The regulator counterbalance spring balances the weight of the door glass. If regulator has no counterbalance spring, glass may drop into door when motor is removed unless glass is taped or blocked in up position.*

3. For all except "B and C" styles and "A" style front doors, refer to Figures 5-57 through 5-63 and select the appropriate template for locating window motor to regulator attaching bolts by using window regulator to door inner panel attaching rivets as reference points.

   NOTE: "B and C" style doors have locating dimples in the inner panel and template is not required - proceed to step 6. On "A" front door regulators, motor attaching bolts are on outboard side of motor (Fig. 5-64) and template is not required. Use 7/16" wrench to remove motor attaching bolts, then disconnect wire harness and remove motor. Proceed to step 8.

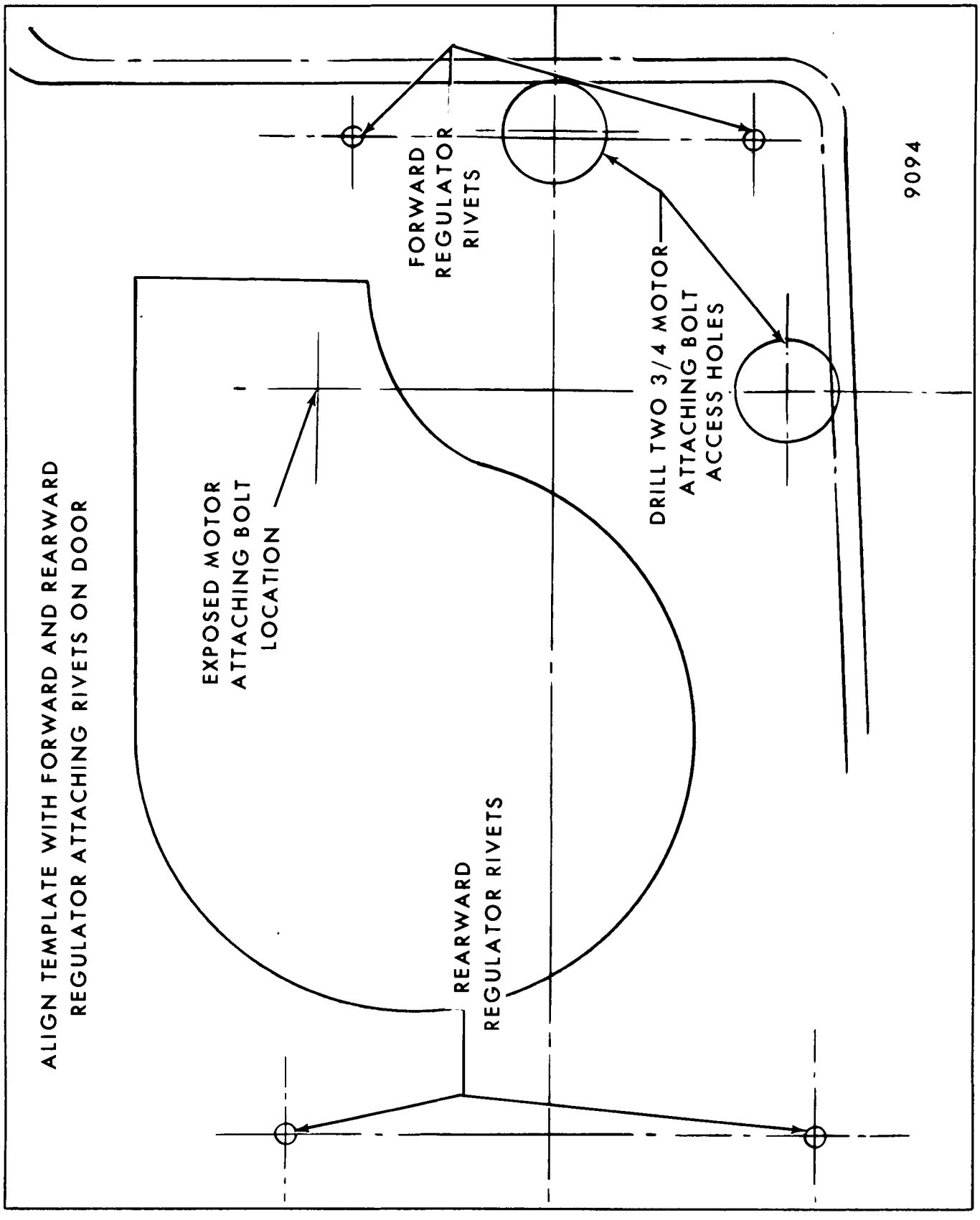


Fig. 5-57-Window Regulator Reference Points for Locating Window Motor to Regulator Attaching Bolts - "A" Styles, Rear Door

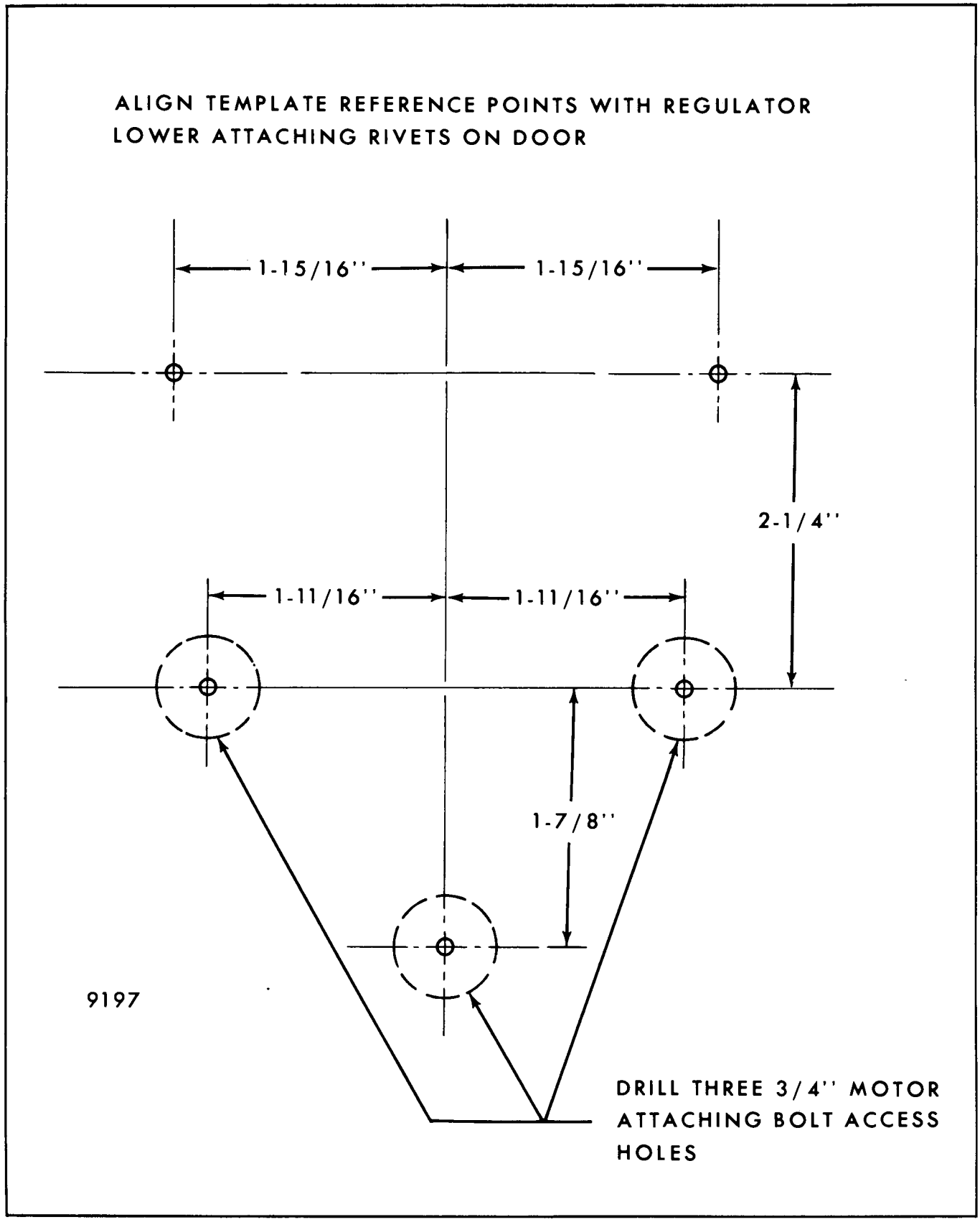


Fig. 5-58-Window Regulator Reference Points for Locating Window Motor to Regulator Attaching Bolts - "E" Styles

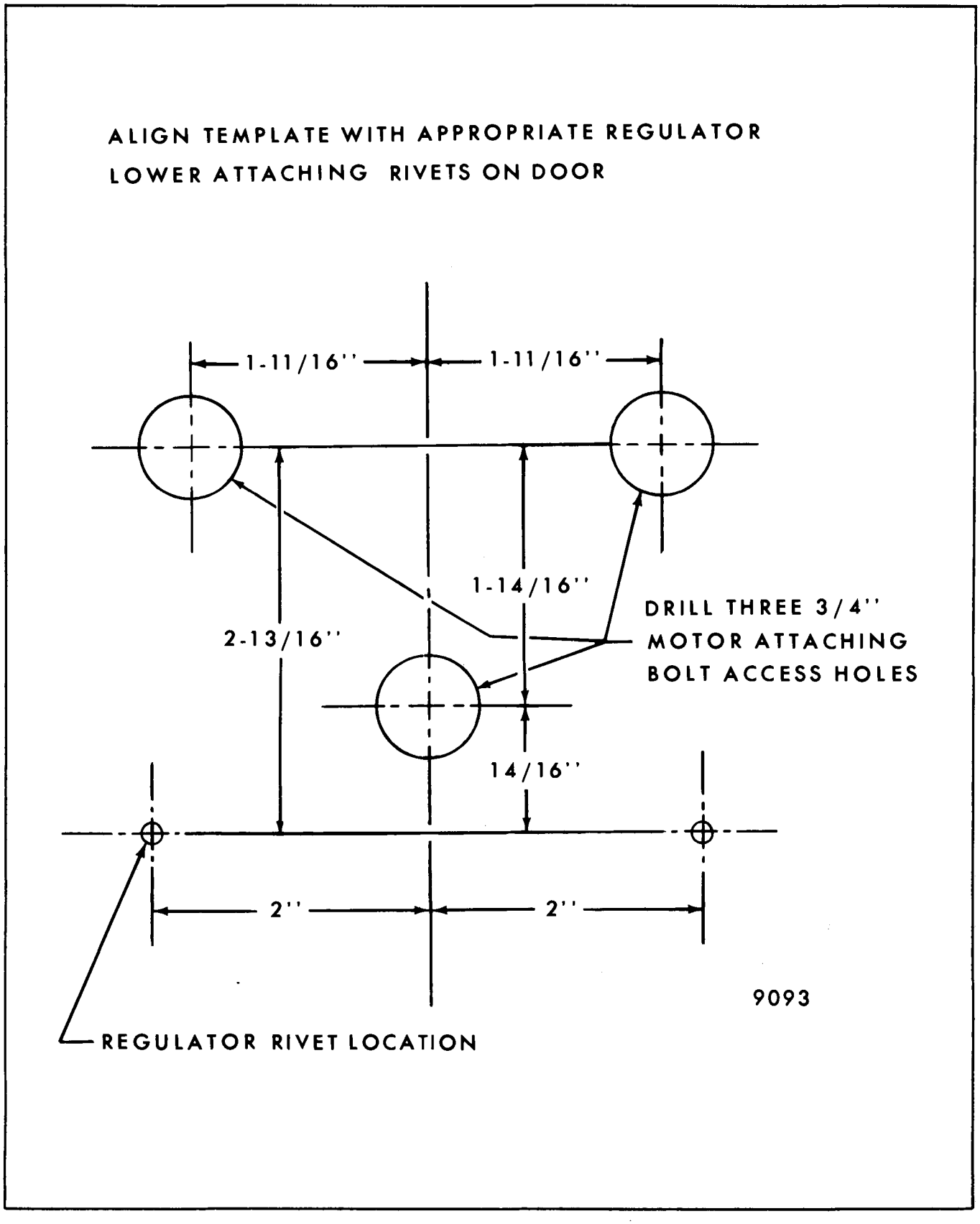


Fig. 5-59-Window Regulator Reference Points for Locating Window Motor to Regulator Attaching Bolts - "F" Styles

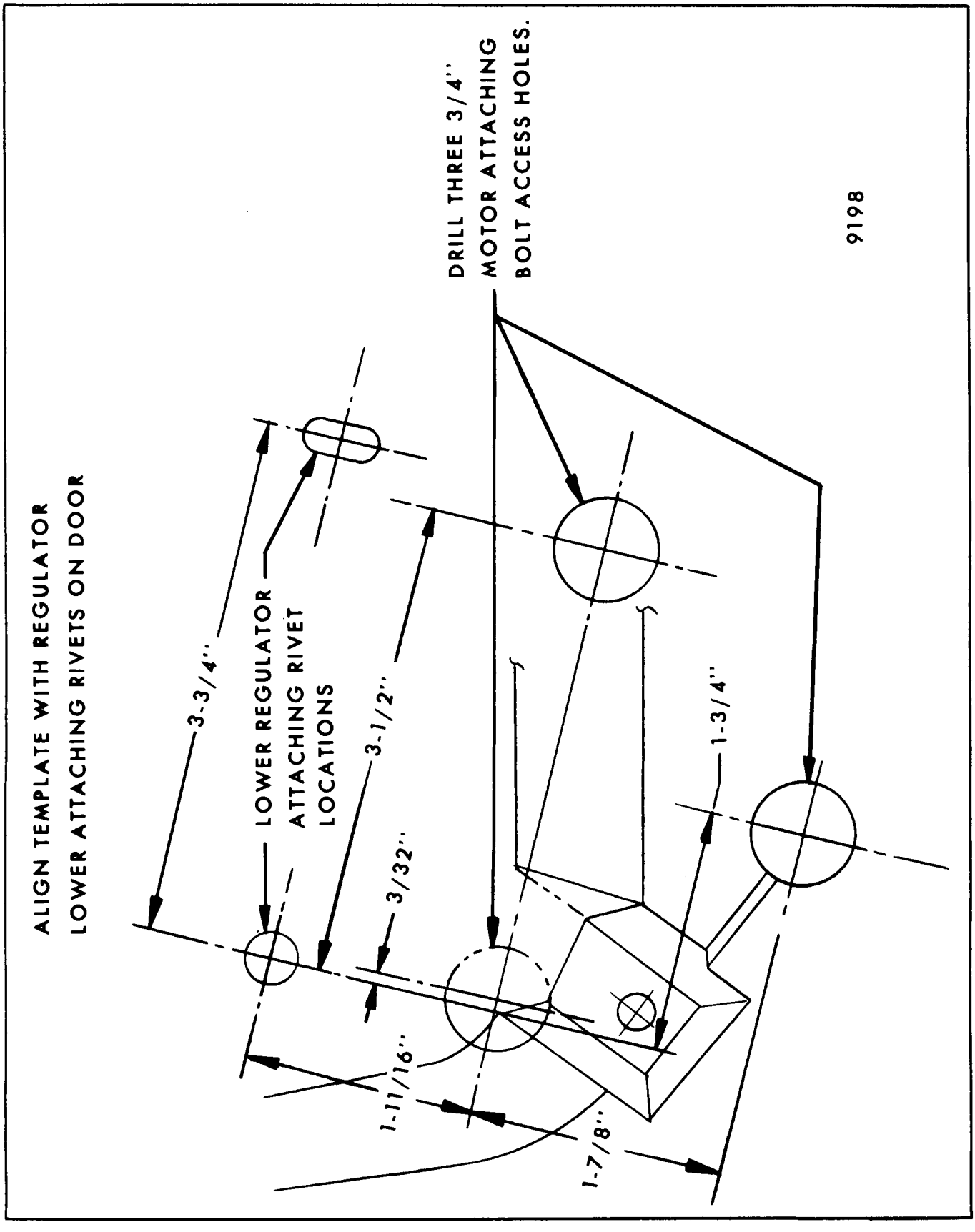


Fig. 5-60-Window Regulator Reference Points for Locating Window Motor to Regulator Attaching Bolts - "K" Style, Front Door

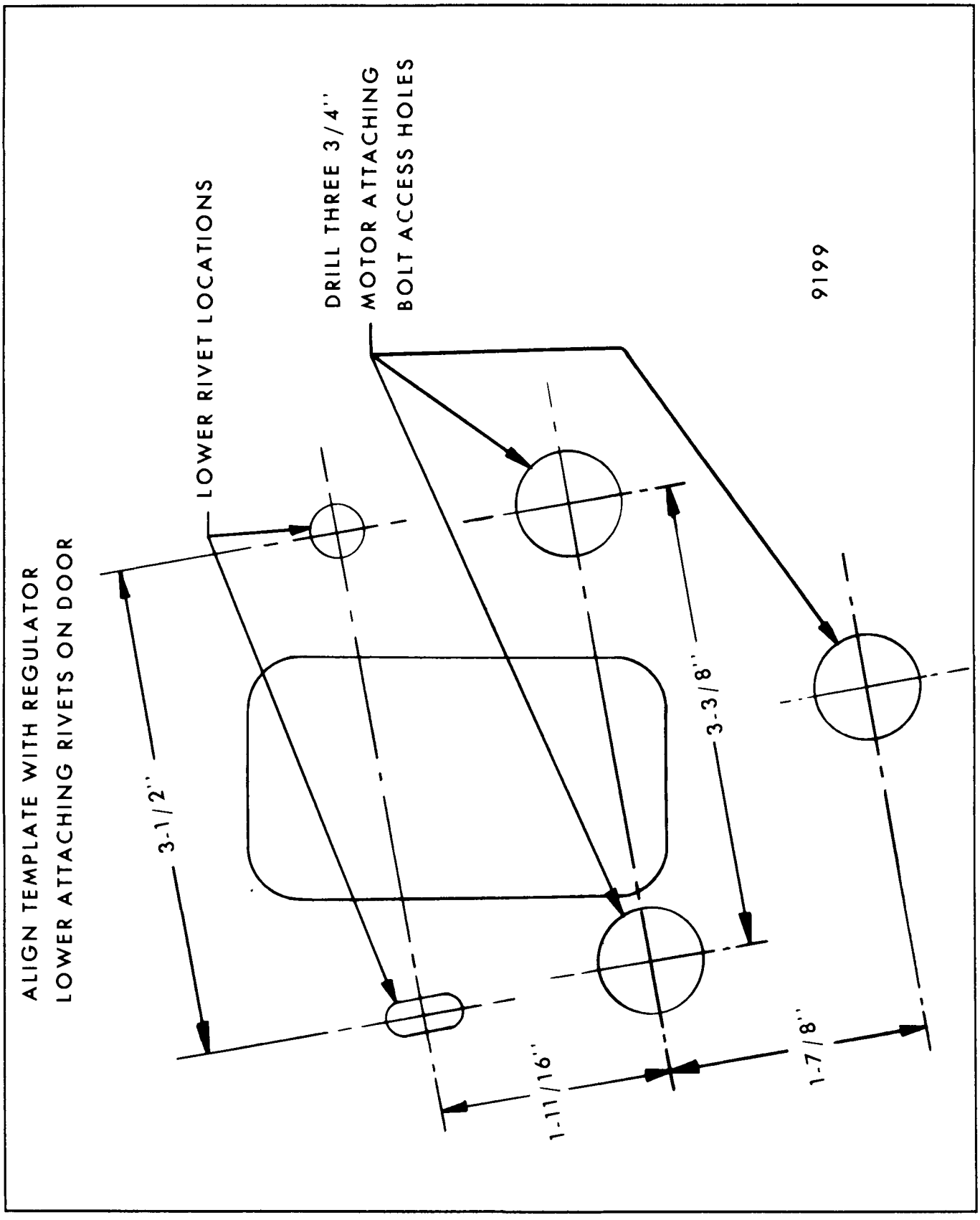


Fig. 5-61-Window Regulator Reference Points for Locating Window Motor to Regulator Attaching Bolts - "K" Style, Rear Door

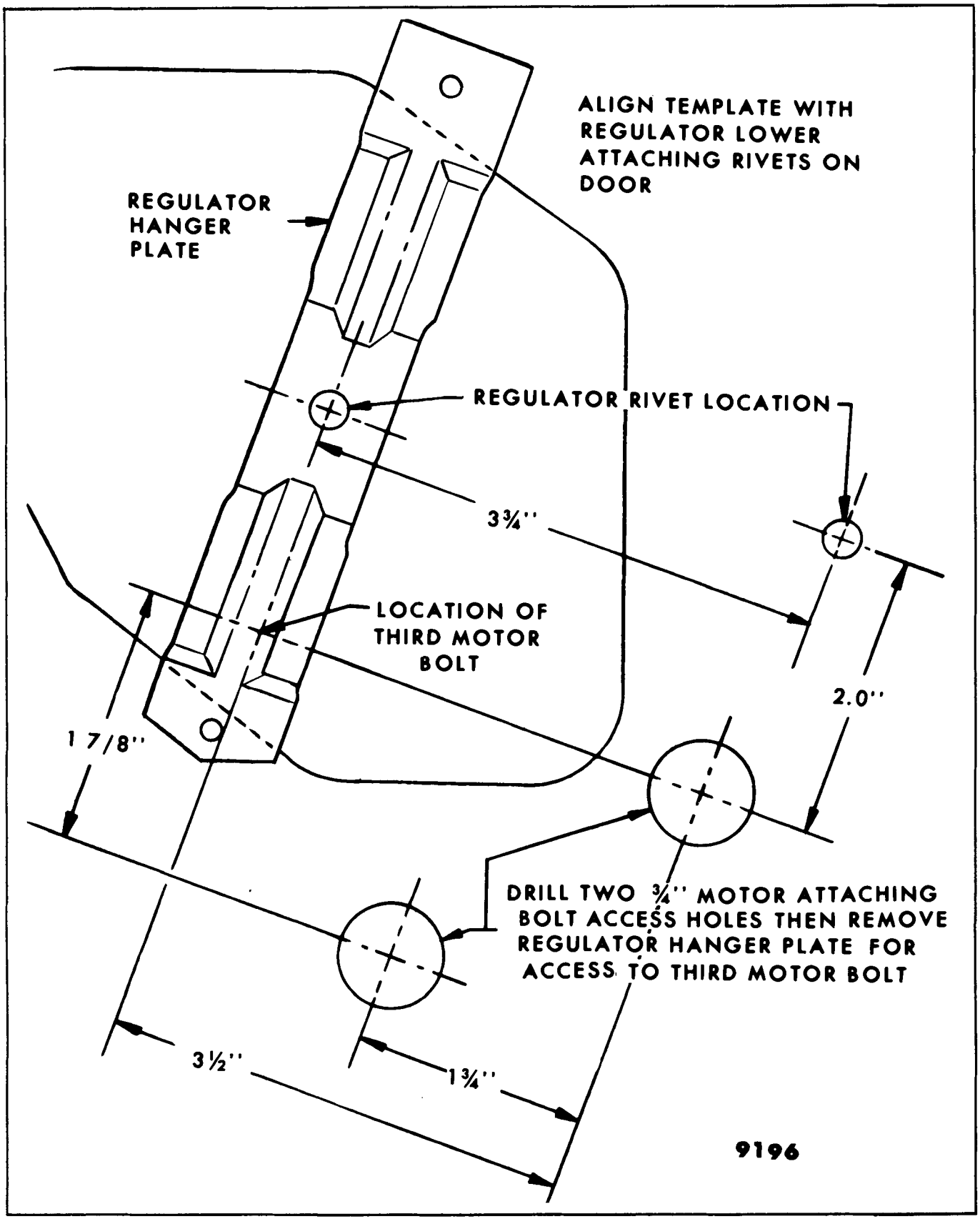


Fig. 5-62-Window Regulator Reference Points for Locating Window Motor to Regulator Attaching Bolts - "X" Styles, Front Door

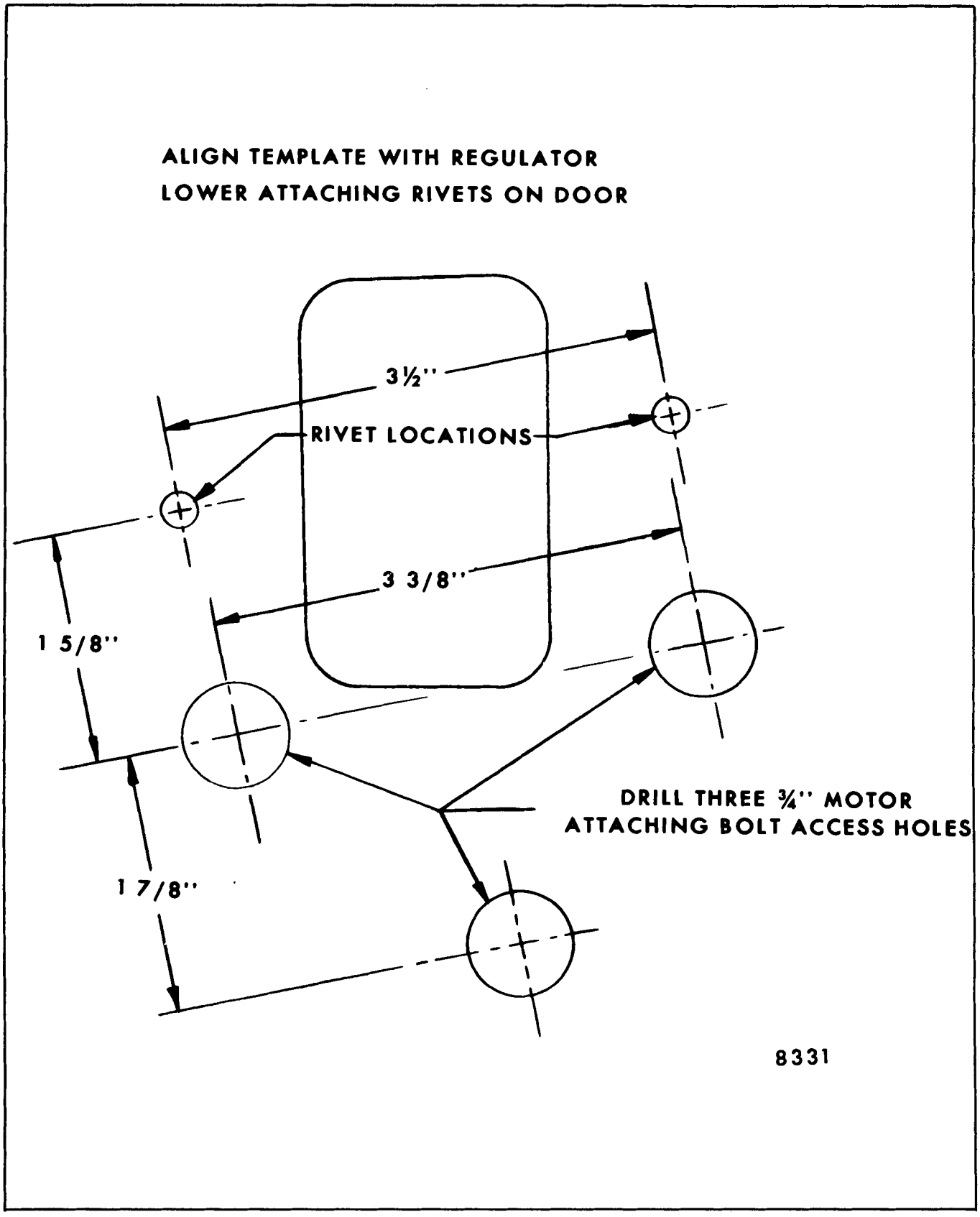


Fig. 5-63-Window Regulator Reference Points for Locating Window Motor to Regulator Attaching Bolts - "X" Styles, Rear Door

4. Align regulator rivet locations specified on template with appropriate regulator attaching rivets on door. Secure template in place with a piece of tape.

5. Using a center punch, dimple the door inner panel at the center of each of the 3/4" holes to be drilled as indicated on the template.

6. Using a 3/4" hole saw, drill three 3/4" motor to regulator attaching bolt access holes as indicated.

7. Remove motor attaching bolts and remove motor through access hole.

   NOTE: Although window regulator lift arm is under tension of counterbalance spring, weight of window assembly prevents lift arm from moving. If necessary, window can be moved manually to clear access holes.

8. Prior to installation, lubricate motor drive gear and regulator sector teeth.

9. Attach motor to regulator making sure drive gear properly engages sector gear teeth before installing motor attaching bolts.

10. Use waterproof tape to seal any holes outside water deflector sealing area. Remove tape securing glass in full-up position ("X" styles) and reinstall trim.

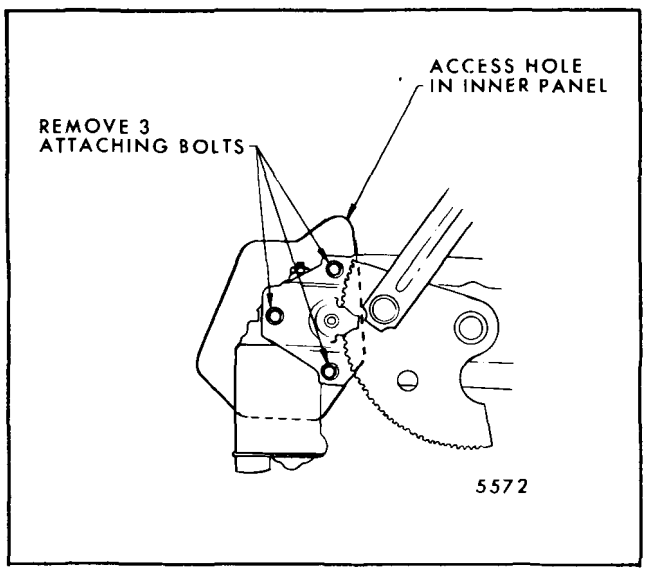


Fig. 5-64-Front Door Electric Window Motor Viewed from Door Outer Panel Side - "A" Styles

Removal and Installation - Glass Broken or Not Attached to Regulator

1. Remove window regulator as described in the Front Door or Rear Door portion of this section.

2. In process of removal, lift regulator to gain access to motor harness, and disconnect harness.

WARNING: STEP 3 MUST BE PERFORMED WHEN REGULATOR IS REMOVED FROM DOOR. THE REGULATOR LIFT ARMS ARE UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE SERIOUS INJURY IF THE MOTOR IS REMOVED WITHOUT LOCKING THE SECTOR GEAR IN POSITION.

3. Drill a hole through the regulator sector gear and back plate (Fig. 5-65) and install a screw and nut to lock sector gear in position. DO NOT drill hole closer than 1/2" to edge of sector gear or back plate.

   NOTE: Step 3 is not necessary for "X" style rear door regulators without a counterbalance spring.

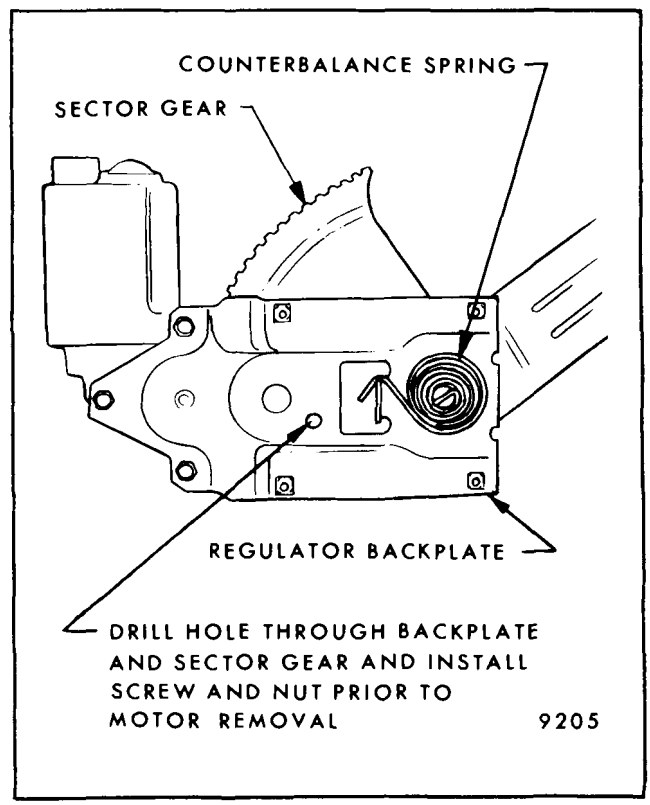


Fig. 5-65-Front Door Window Regulator Motor Removal

4. Remove regulator motor attaching bolts and remove motor assembly from regulator.

5. Prior to installation, lubricate the motor drive gear and regulator sector teeth.

   NOTE: The lubricant used must be cold weather approved to a minimum of minus 20 degrees F.

6. Install regulator motor to regulator. Make sure the motor pinion gear teeth mesh properly with the sector gear teeth before installing the three motor attaching bolts. When teeth are properly meshed, drive and tighten motor attaching bolts.

7. Remove screw locking sector gear in a fixed position.

8. Reinstall regulator with "U" nuts (part no. 3916700 or 3982098 or equivalent) and screws (part no. 9419723 or equivalent) as described in Front Door or Rear Door portion of this section. Connect wire harness to motor prior to attaching regulator to inner panel.

DOOR HARDWARE LUBRICATION

The mechanical components of the door assembly are lubricated during assembly. If additional lubrication is required to any door hardware mechanism, lubricate with Fisk Bros. No. 777 Lo-Temp Lubriplate or equivalent. Door hinge pins and rollers should be lubricated at normal service intervals with engine oil. Do not lubricate hinge roller to hold open link contacting surfaces.

HARDWARE ATTACHMENT THREAD LOCKING

All door hardware production attaching screws contain an epoxy thread-locking compound to insure that the minimum original torque setting will be maintained. The screws can be reinstalled or adjusted up to five times before the thread-locking compound becomes ineffective.

Service attaching screws do not contain a thread-locking compound. To prevent loosening of service screws or to renew thread-locking characteristics of production screws, the threads of the fastener(s) can be treated with Loctite 75 (G.M. part no. 1051343 - Group 8.800) or equivalent.

Loctite 75 is a two-part material applied to the hardware attachment as a liquid. Upon installation and torquing, the adhesive cures to bond the attachment and prevent loosening or back out. The adhesive bond does not prevent future attachment removal if required. Loctite 75 or equivalent can be used on any threaded fastener.

FRONT DOORS

INTRODUCTION

Information in this section concerns operations applicable to front doors only. Procedures for removal of water deflectors, weatherstrips, door handles, door lock system components, sash channel cam, inner panel cam, window regulator motor, and door trim are outlined in the Front and Rear Doors and Door Trim portions of this section.

Figures 5-66 through 5-85 illustrate front doors for the various body styles with the trim and inner panel water deflector removed. These figures identify the component parts of the front door assembly and various attaching points.

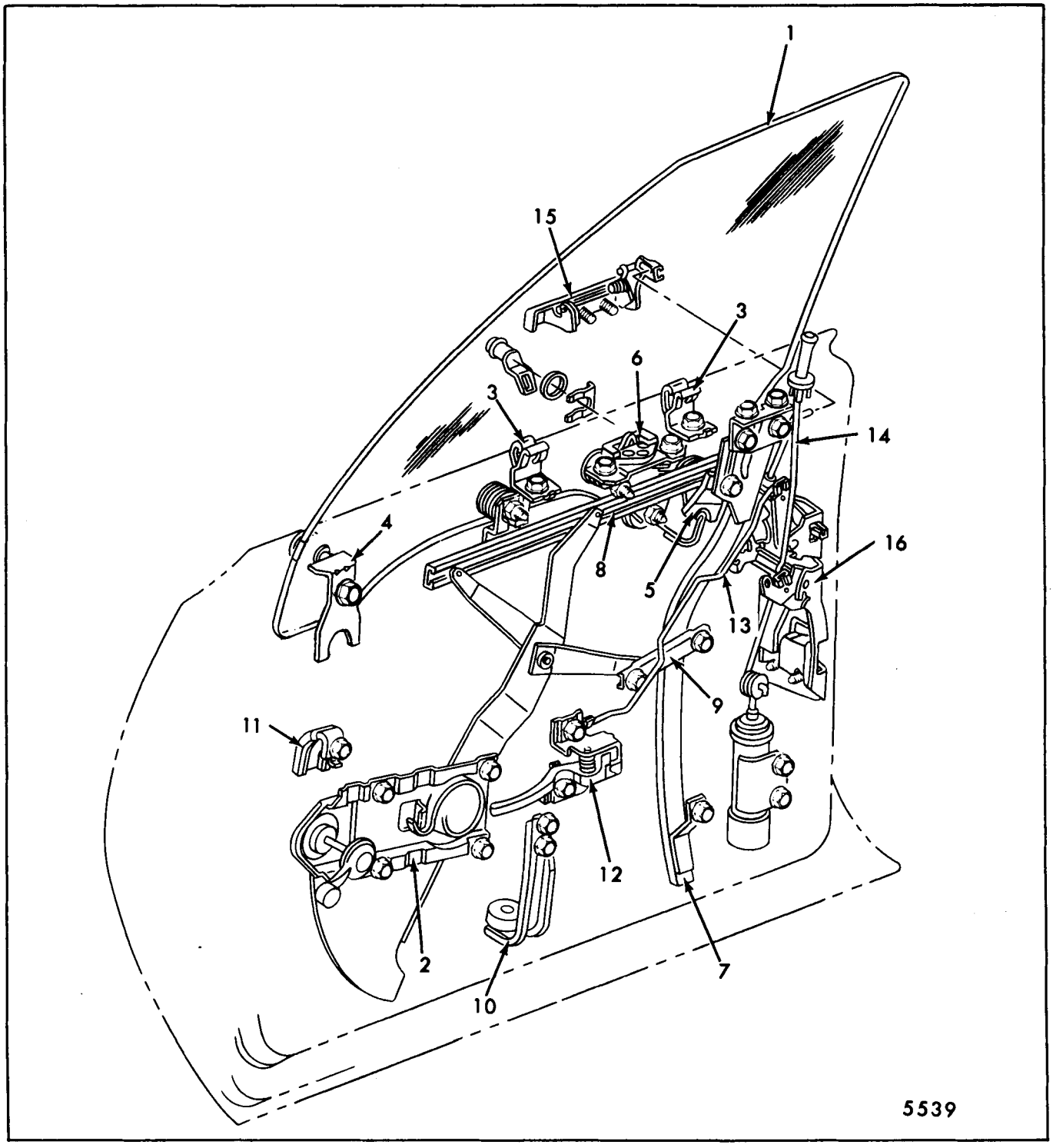


Fig. 5-66-Front Door Hardware - "A-29, 35" Styles

1. Window Assembly
2. Window Regulator
3. Trim Support Retainers
4. Front Up-Travel Stop
5. Rear Up-Travel Stop
6. Stabilizer Guide (on Inner Panel)
7. Rear Guide and Upper Attaching Bracket
8. Lower Sash Channel Cam
9. Inner Panel Cam
10. Down-Travel Support
11. Glass Stabilizer Plate (on Inner Panel)
12. Inside Remote Handle
13. Inside Handle to Lock Connecting Rod
14. Inside Locking Rod
15. Outside Handle
16. Door Lock

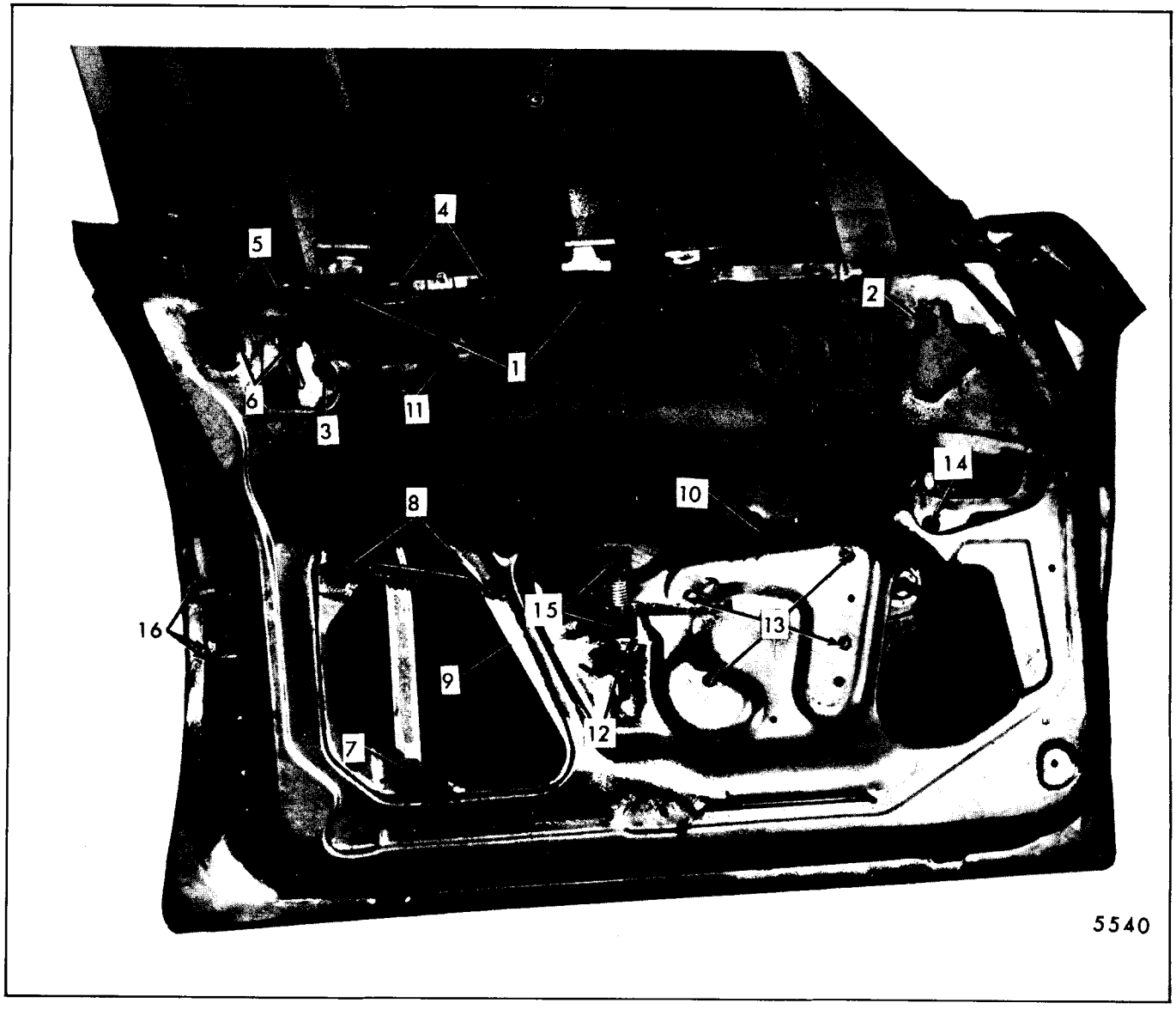


Fig. 5-67-Front Door Hardware Attachments - "A-29, 35" Styles

1. Trim Support Retainer Screws
2. Front Up-Travel Stop Screw
3. Rear Up-Travel Stop Screw
4. Stabilizer Guide (on Inner Panel) Screws
5. Rear Guide Upper Bracket Screws
6. Rear Guide Upper Screws
7. Rear Guide Lower Screw
8. Inner Panel Cam Screws
9. Lower Sash Channel Cam to Glass Rearward Attaching Nut Access
10. Lower Sash Channel Cam to Glass Forward Attaching Nut Access
11. Lower Sash Channel Cam to Glass Center Attaching Nut Access
12. Down-Travel Stop Screw
13. Window Regulator Rivets
14. Glass Stabilizer Plate (on Inner Panel) Screw
15. Inside Remote Handle Screws
16. Door Lock Screws

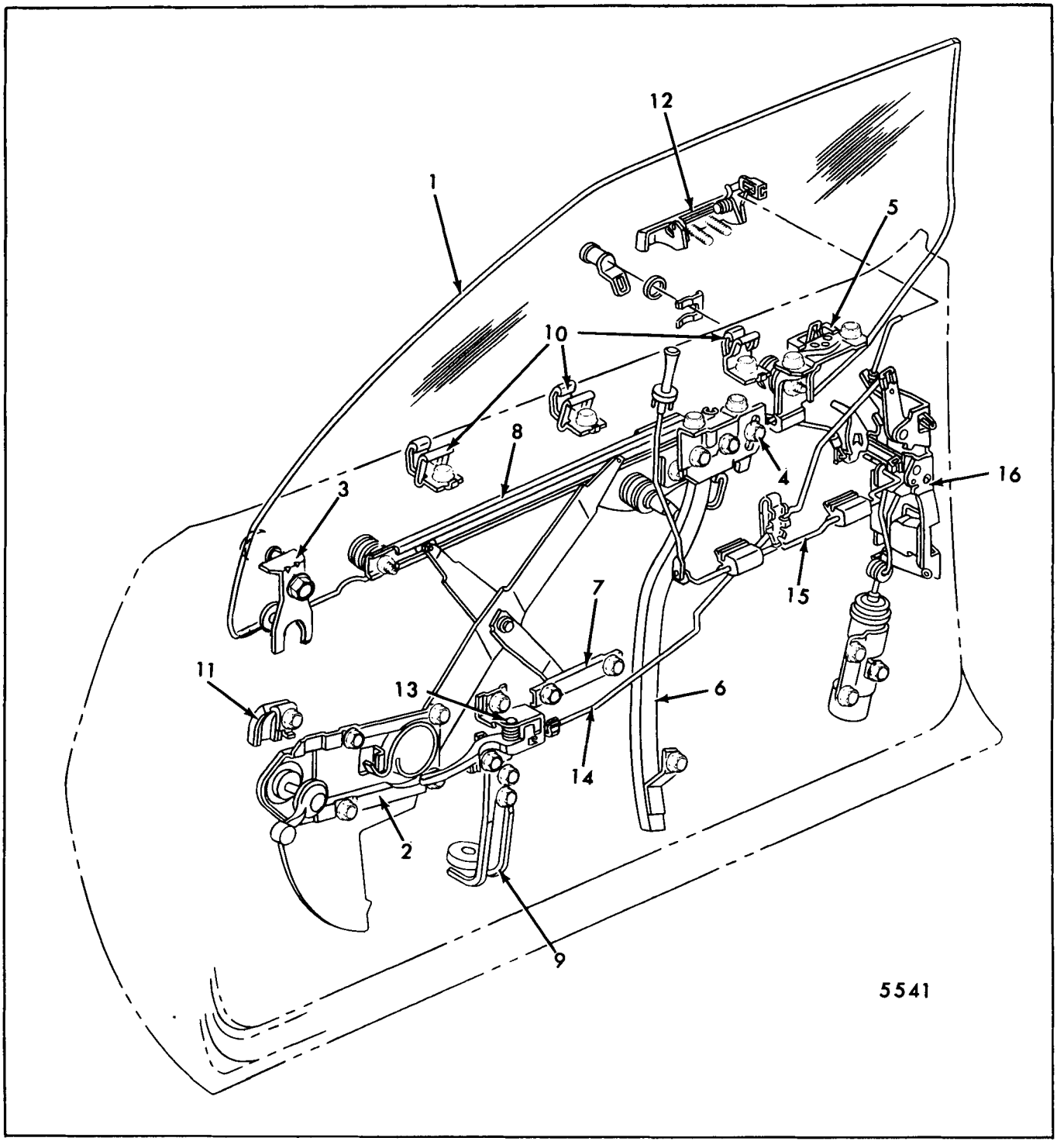


Fig. 5-68-Door Hardware - "A-37, 57, 80" Styles

1. Window Assembly
2. Window Regulator
3. Front Up-Travel Stop
4. Rear Up-Travel Stop
5. Stabilizer Guide
6. Rear Guide and Upper Attaching Bracket Assembly
7. Inner Panel Cam
8. Lower Sash Channel Cam
9. Down-Travel Stop
10. Trim Support Retainers
11. Glass Stabilizer Plate (on Reinforcement)
12. Outside Handle
13. Inside Remote Handle
14. Inside Handle to Lock Connecting Rod
15. Inside Locking Rod
16. Door Lock

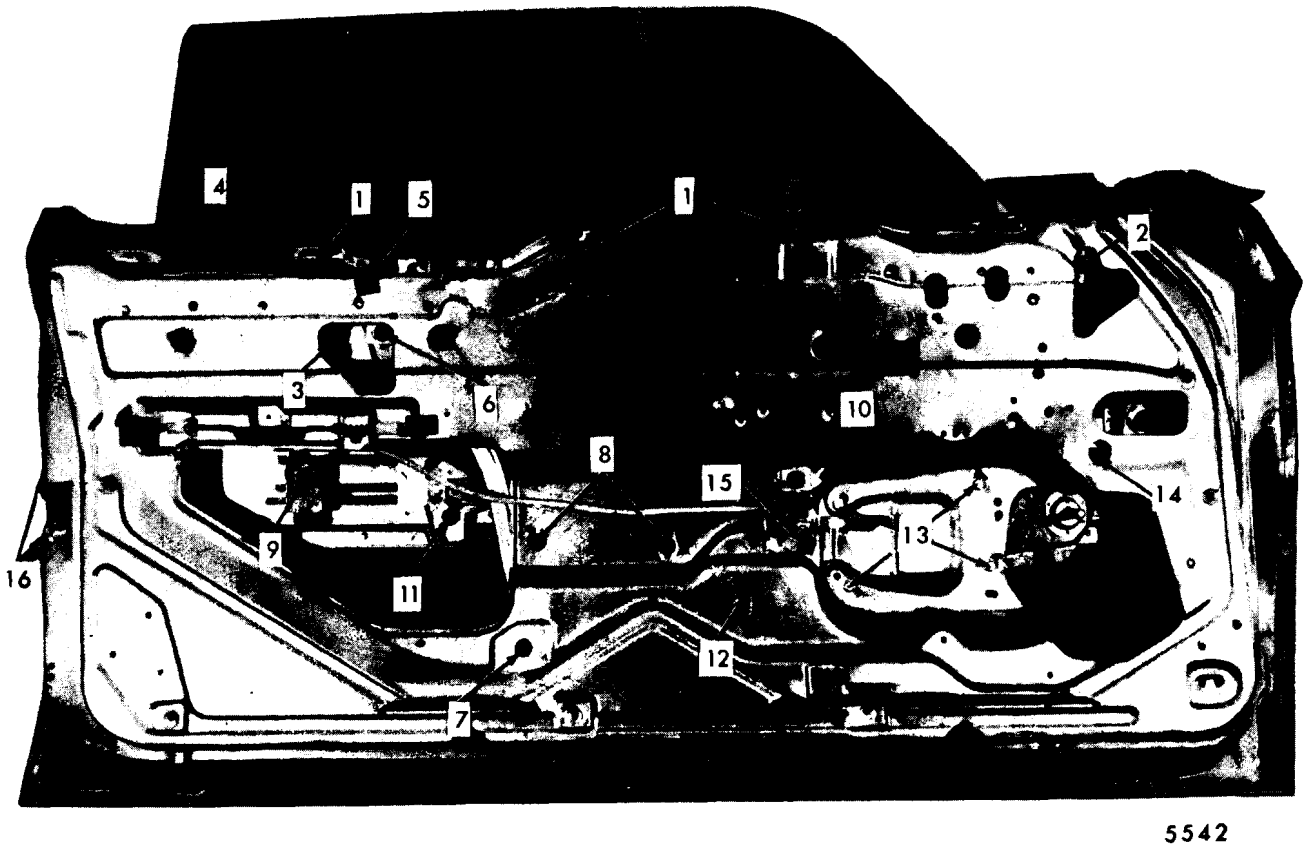


Fig. 5-69-Door Hardware Attachments - "A-37, 57, 80" Styles

1. Trim Support Retainer Screws
2. Front Up-Travel Stop Screw
3. Rear Up-Travel Stop Screw
4. Stabilizer Guide Screws
5. Rear Guide Upper Bracket Screws
6. Rear Guide Upper Screws
7. Rear Guide Lower Screw
8. Inner Panel Cam Screws
9. Stabilizer to Glass Guide Attaching Nut
10. Lower Sash Channel Cam to Glass Front Attaching Nut
11. Lower Sash Channel Cam to Glass Rear Attaching Nut
12. Down-Travel Support Screw
13. Window Regulator Rivets
14. Glass Stabilizer Plate (on Reinforcement) Screws
15. Inside Remote Handle Screws
16. Door Lock Screws

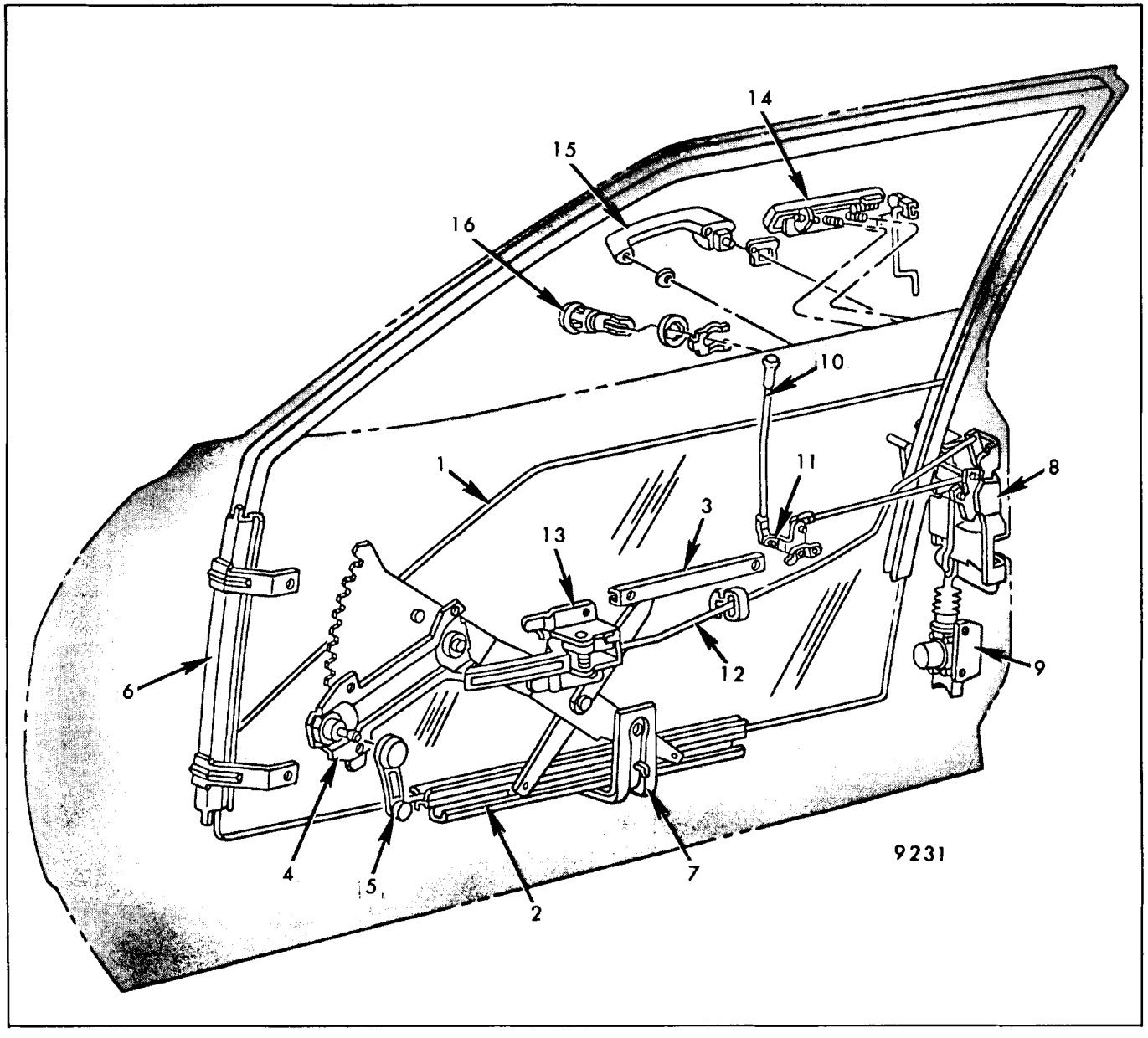


Fig. 5-70-Front Door Hardware - "B, C" Styles (Coupe Door Shown, Sedan Door Similar)

1. Window Assembly
2. Lower Sash Channel Cam
3. Inner Panel Cam
4. Window Regulator
5. Window Regulator Handle
6. Glass Run Channel Retainer
7. Down Stop
8. Door Lock
9. Power Lock Actuator
10. Inside Locking Rod
11. Locking Rod Bell Crank
12. Inside Handle Connecting Rod
13. Inside Remote Handle
14. Outside Handle (Lift Bar Type)
15. Outside Handle (Push Button Type)
16. Lock Cylinder

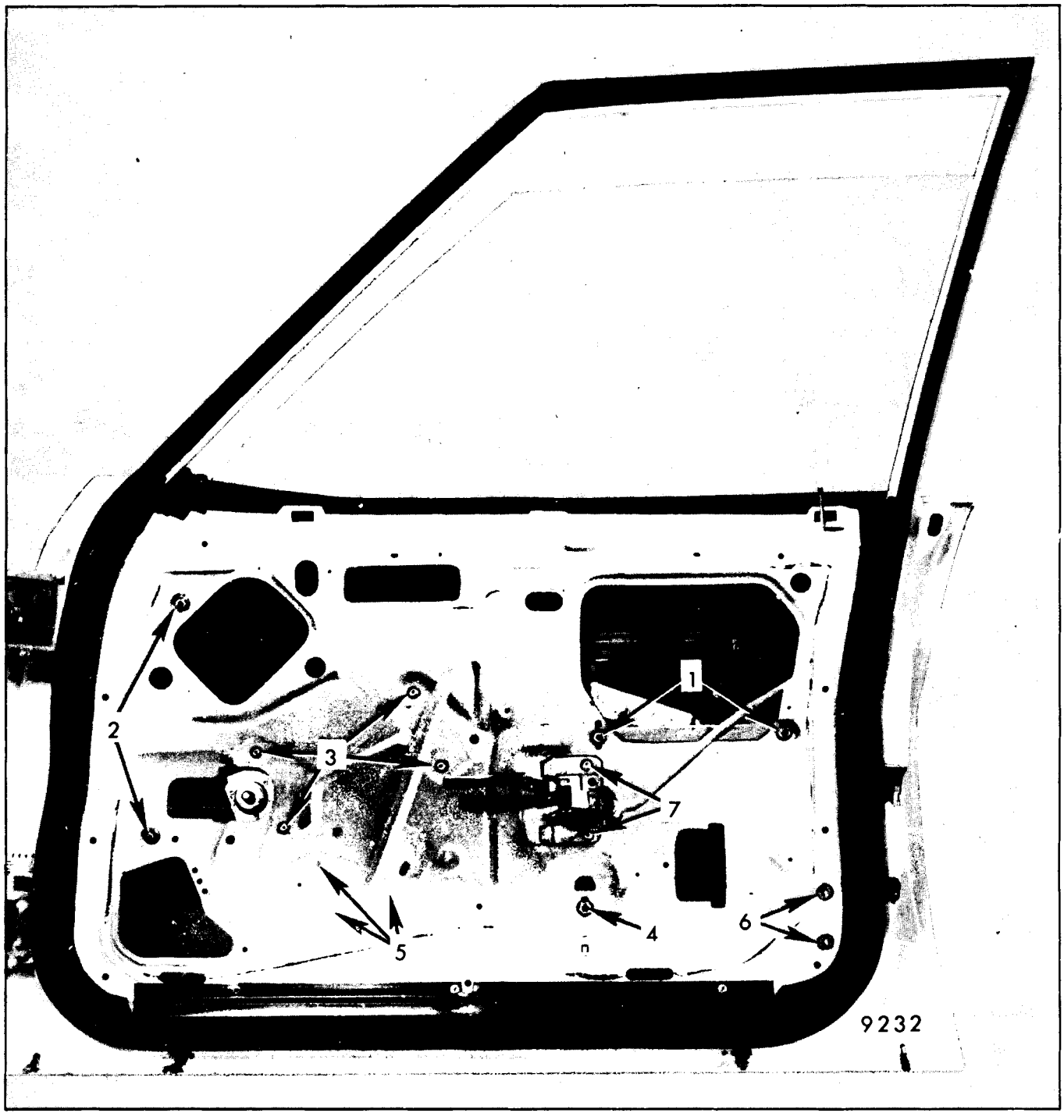


Fig. 5-71-Front Door Hardware Attachments - "B, C" Styles (Sedan Door Shown, Coupe Door Similar)

1. Inner Panel Cam Screws
2. Front Run Channel Retainer Screws
3. Window Regulator Rivets
4. Down Stop
5. Window Regulator Motor Bolt Locating Dimples
6. Power Door Lock Actuator Rivets
7. Inside Remote Handle Rivets

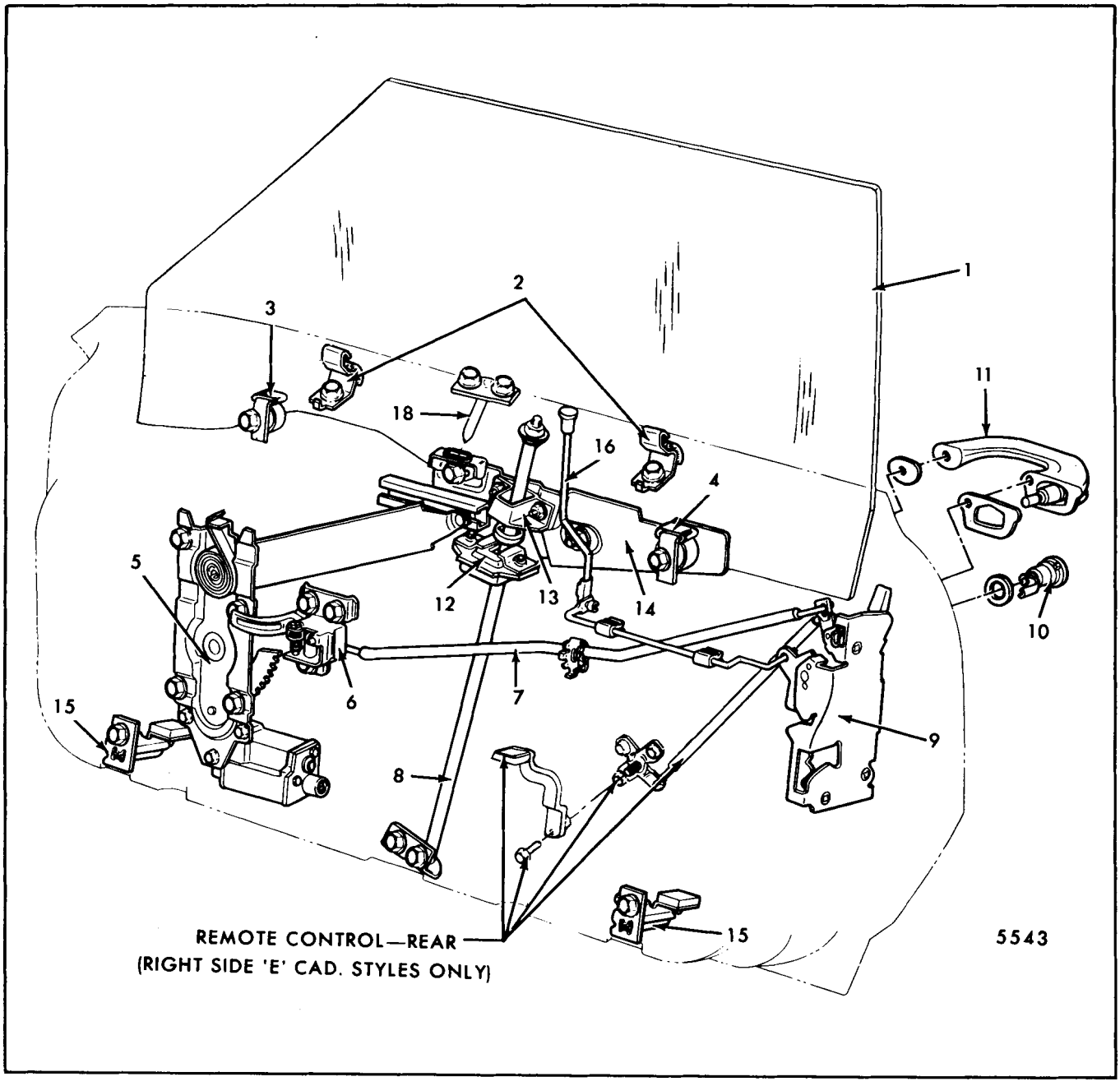


Fig. 5-72-Door Hardware - "E" Styles

1. Window Assembly
2. Trim Support Retainers
3. Front Up-Travel Stop
4. Rear Up-Travel Stop
5. Window Regulator
6. Inside Remote Handle
7. Inside Handle to Lock Connecting Rod
8. Window Guide Tube
9. Door Lock
10. Lock Cylinder
11. Outside Handle
12. Lower Sash Lower Guide
13. Lower Sash Upper Guide
14. Lower Sash Guide Plate
15. Down-Travel Support
16. Inside Locking Rod
18. Guide Pin Stabilizer

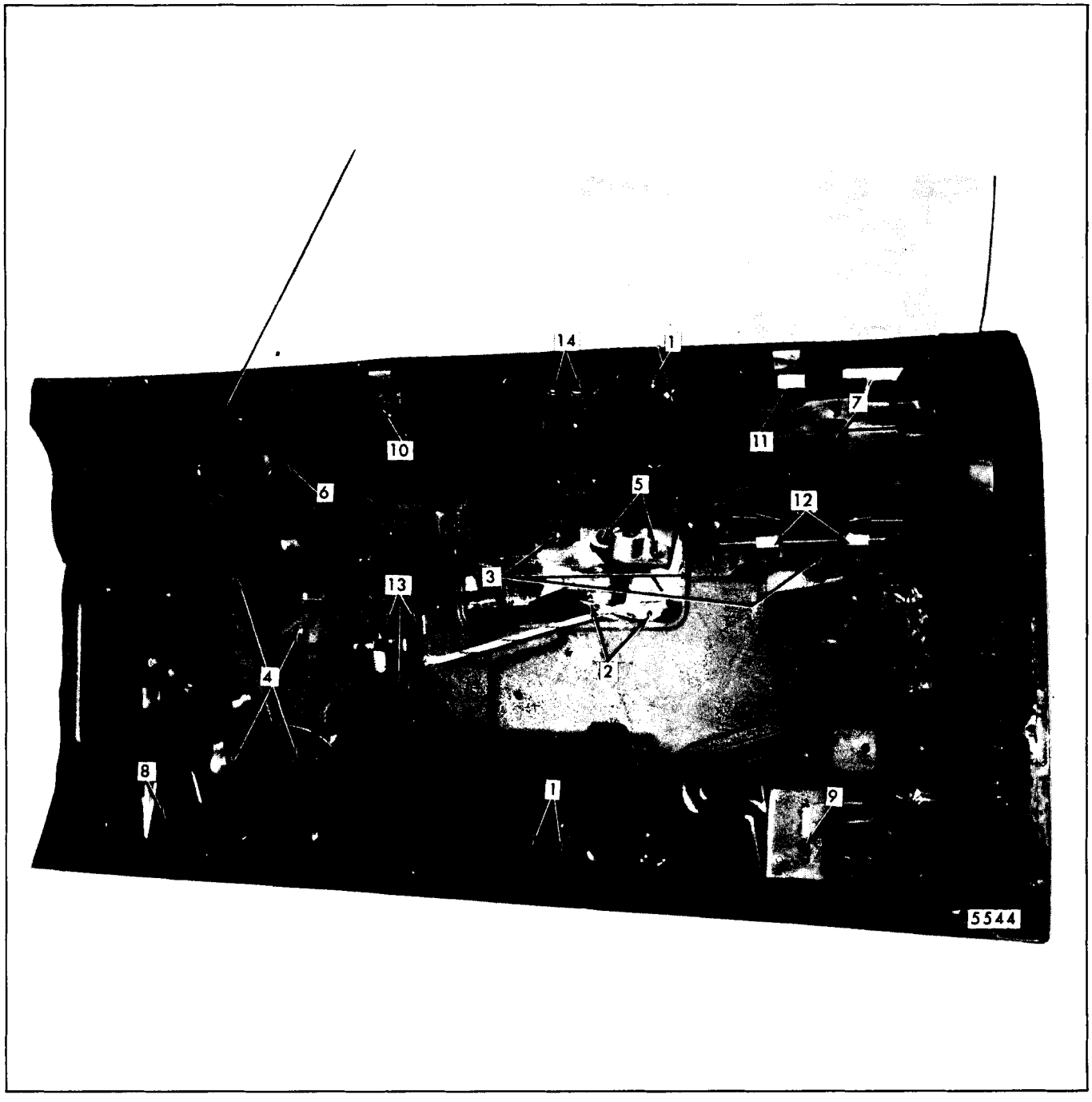


Fig. 5-73-Door Hardware Attachments - "E" Styles

1. Window Guide Tube Screws and Nut
2. Lower Sash Lower Guide Screws
3. Lower Sash Guide Plate Nuts
4. Window Regulator Rivets
5. Lower Sash Upper Guide Nuts
6. Front Up-Travel Stop Screw
7. Rear Up-Travel Stop Screw
8. Front Down-Travel Stop Screw
9. Rear Down-Travel Stop Screw
10. Front Trim Support Retainer Screw
11. Rear Trim Support Retainer Screw
12. Inside Locking Rod Retainers
13. Inside Remote Handle Screws
14. Guide Pin Stabilizer Screws

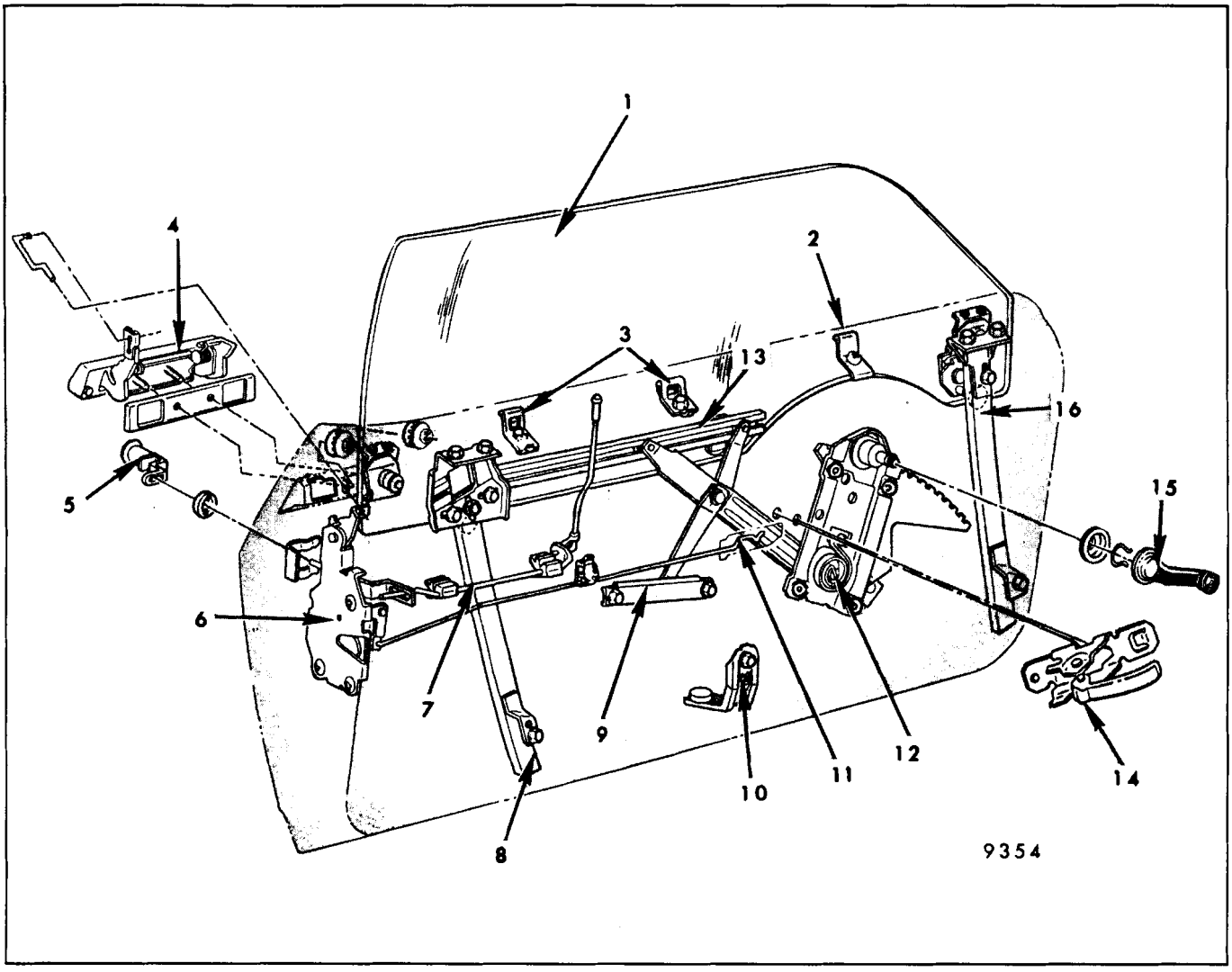


Fig. 5-74-Door Hardware - "F" Styles

1. Window Assembly
2. Trim Pad Retainer
3. Trim Support Retainers
4. Outside Handle
5. Lock Cylinder
6. Door Lock Assembly
7. Inside Locking Rod
8. Rear Guide
9. Inner Panel Cam
10. Down-Travel Stop
11. Inside Handle to Lock Connecting Rod
12. Window Regulator
13. Lower Sash Channel Cam
14. Inside Remote Handle
15. Window Regulator Handle
16. Front Guide

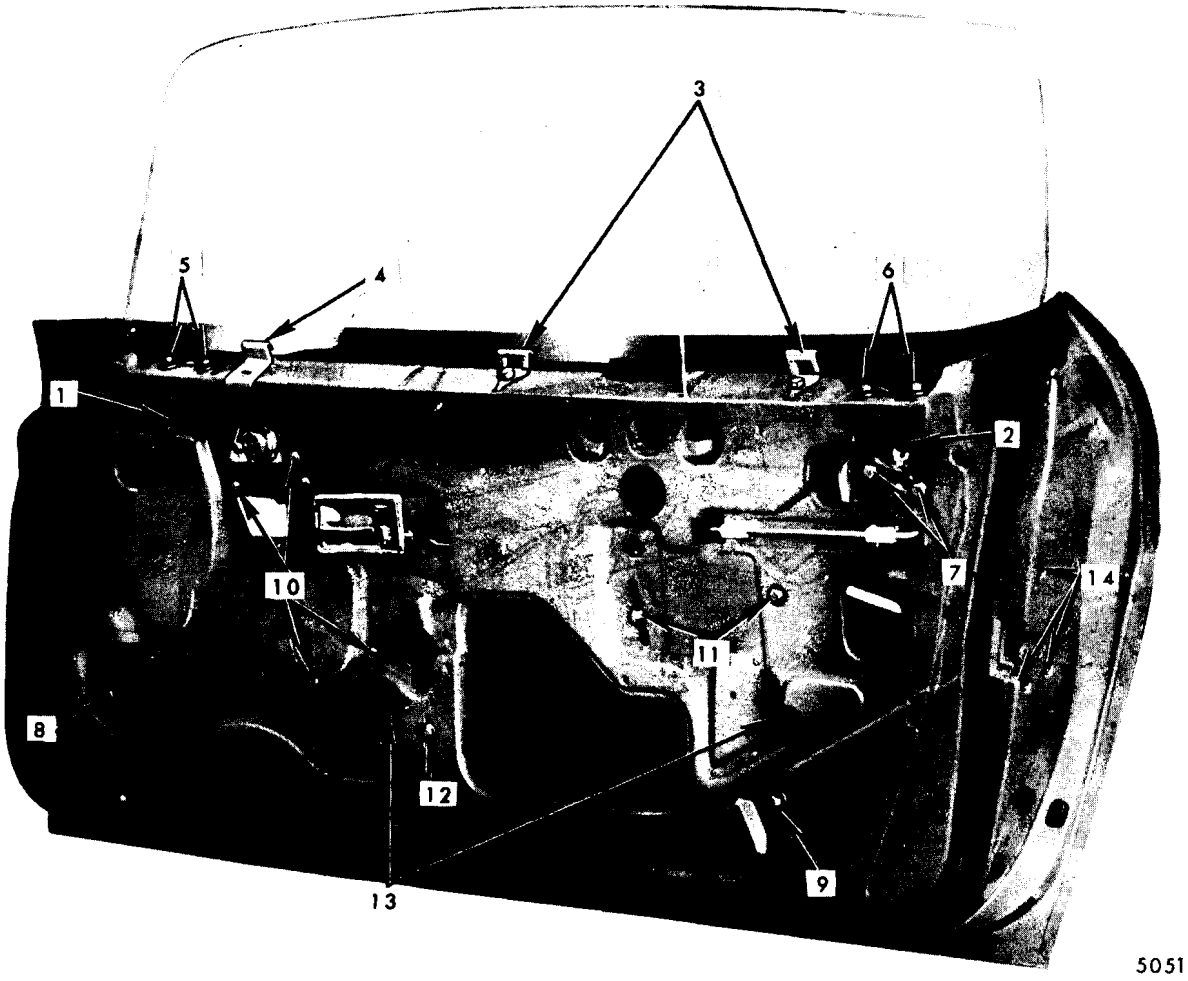


Fig. 5-75-Door Hardware Attachments - "F" Styles

1. Front Up-Travel Stop Screw
2. Rear Up-Travel Stop Screw
3. Trim Support Retainer Screws
4. Trim Retainer Screws
5. Front Guide Upper Screws
6. Rear Guide Upper Bracket Screws
7. Rear Guide Upper Screws
8. Front Guide Lower Screw
9. Rear Guide Lower Screw
10. Window Regulator Rivets
11. Inner Panel Cam Screws
12. Down-Travel Stop Screw
13. Lower Sash Channel Cam Nut Access Holes
14. Door Lock Screws

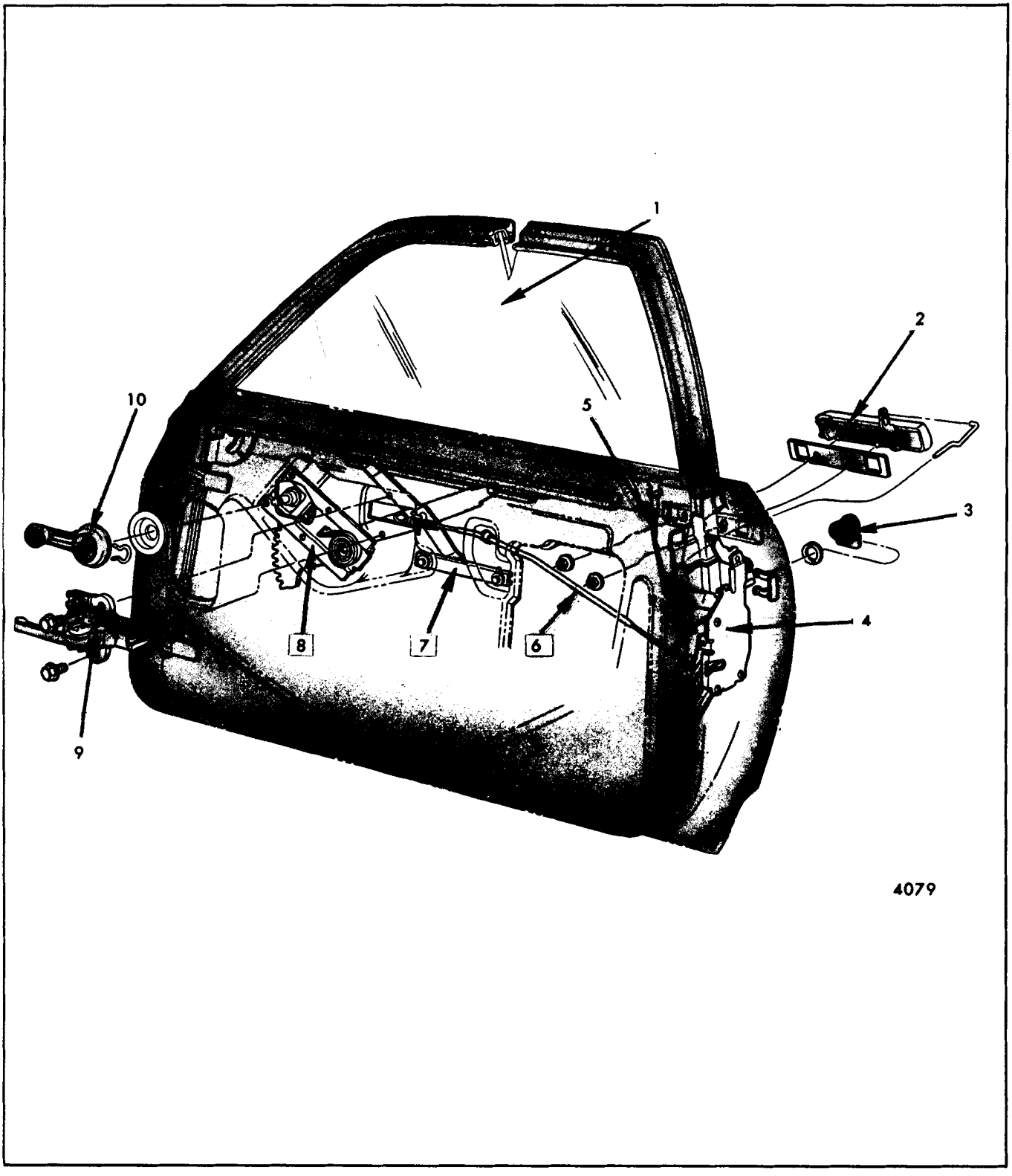


Fig. 5-76-Door Hardware - "H-11,15,77" Styles

1. Window Assembly
2. Outside Handle
3. Lock Cylinder
4. Lock Assembly
5. Inside Locking Rod
6. Inside Handle to Lock Connecting Rod
7. Inner Panel Cam
8. Window Regulator
9. Inside Remote Handle
10. Window Regulator Handle

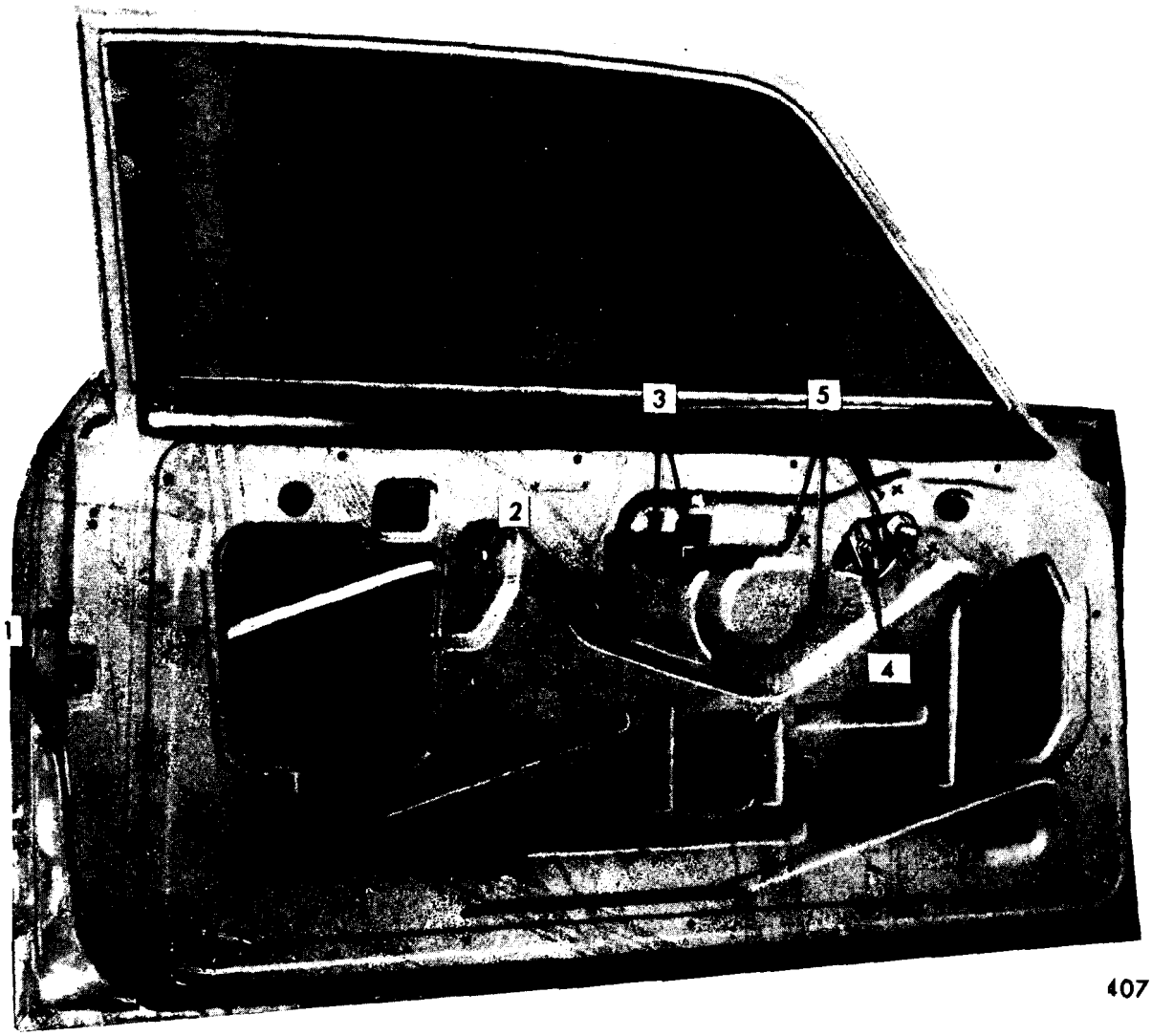


Fig. 5-77-Door Hardware Attachments - "H-11,15,77" Styles

1. Door Lock Screws
2. Inner Panel Cam Screws
3. Inside Remote Handle Screws
4. Window Regulator Down-Travel Stop Screw
5. Replacement Window Regulator Attaching Holes

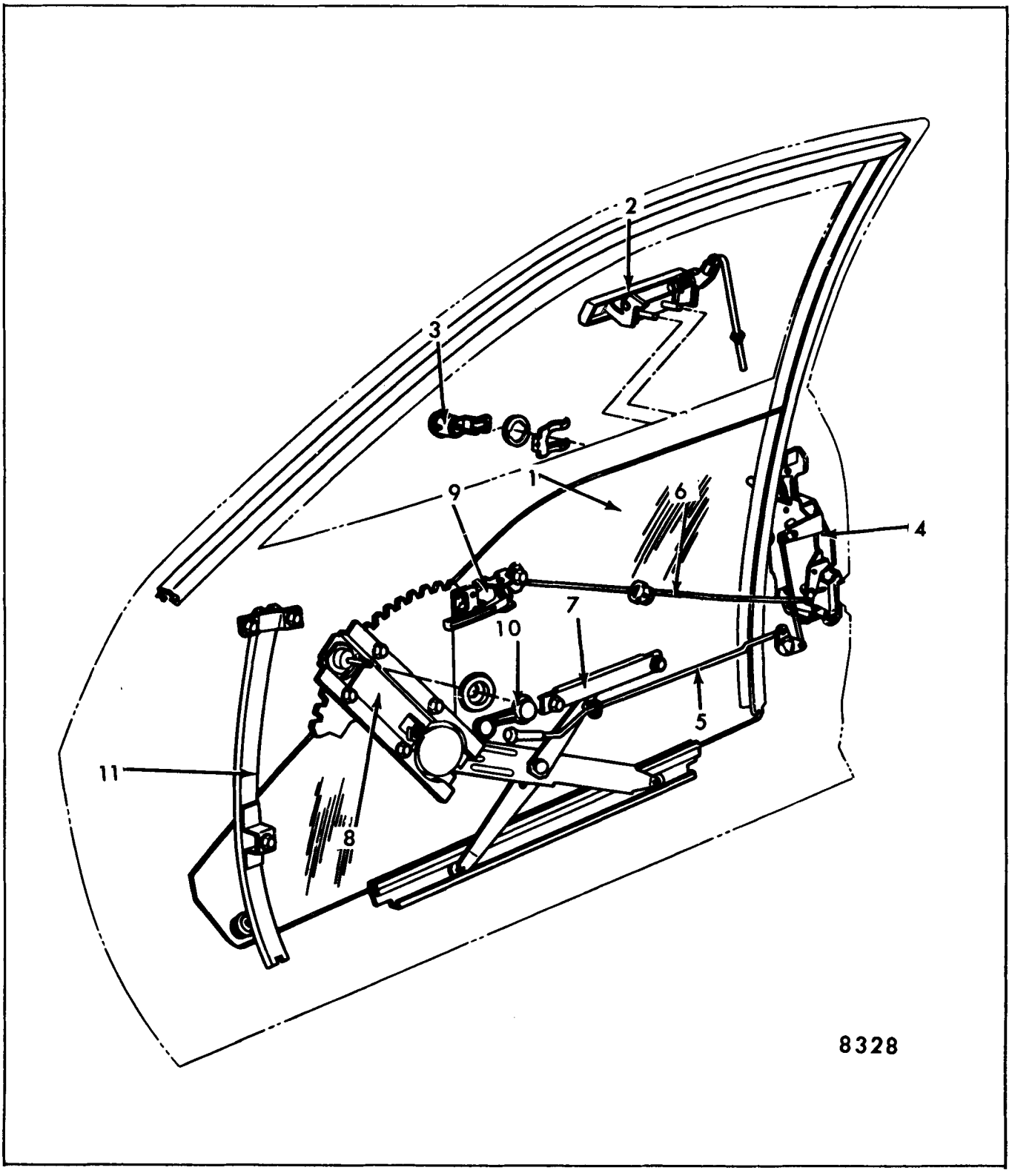


Fig. 5-78-Door Hardware - "H-07" Styles

1. Window Assembly
2. Outside Handle
3. Lock Cylinder
4. Door Lock
5. Inside Locking Rod
6. Inside Handle to Lock Connecting Rod
7. Inner Panel Cam
8. Window Regulator
9. Inside Remote Handle
10. Window Regulator Handle
11. Front Guide

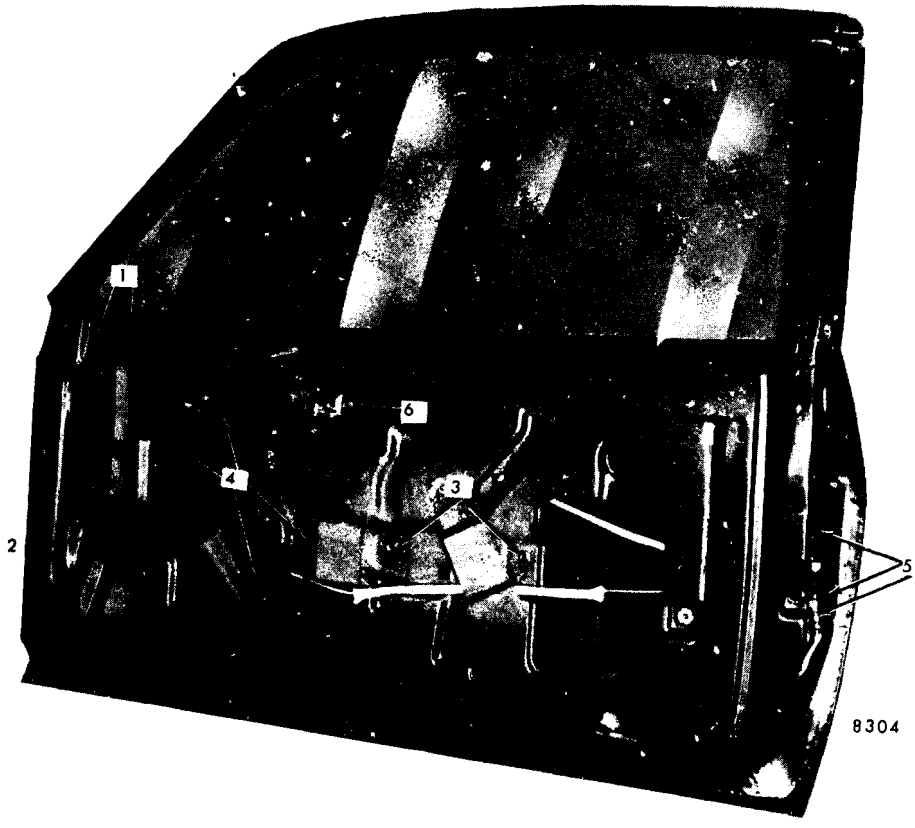


Fig. 5-79-Door Hardware Attachments - "H-07" Styles

1. Front Guide Upper Screws
2. Front Guide Lower Screws
3. Inner Panel Cam Screws
4. Replacement Window Regulator Attaching Holes
5. Door Lock Screws
6. Inside Remote Handle Rivet

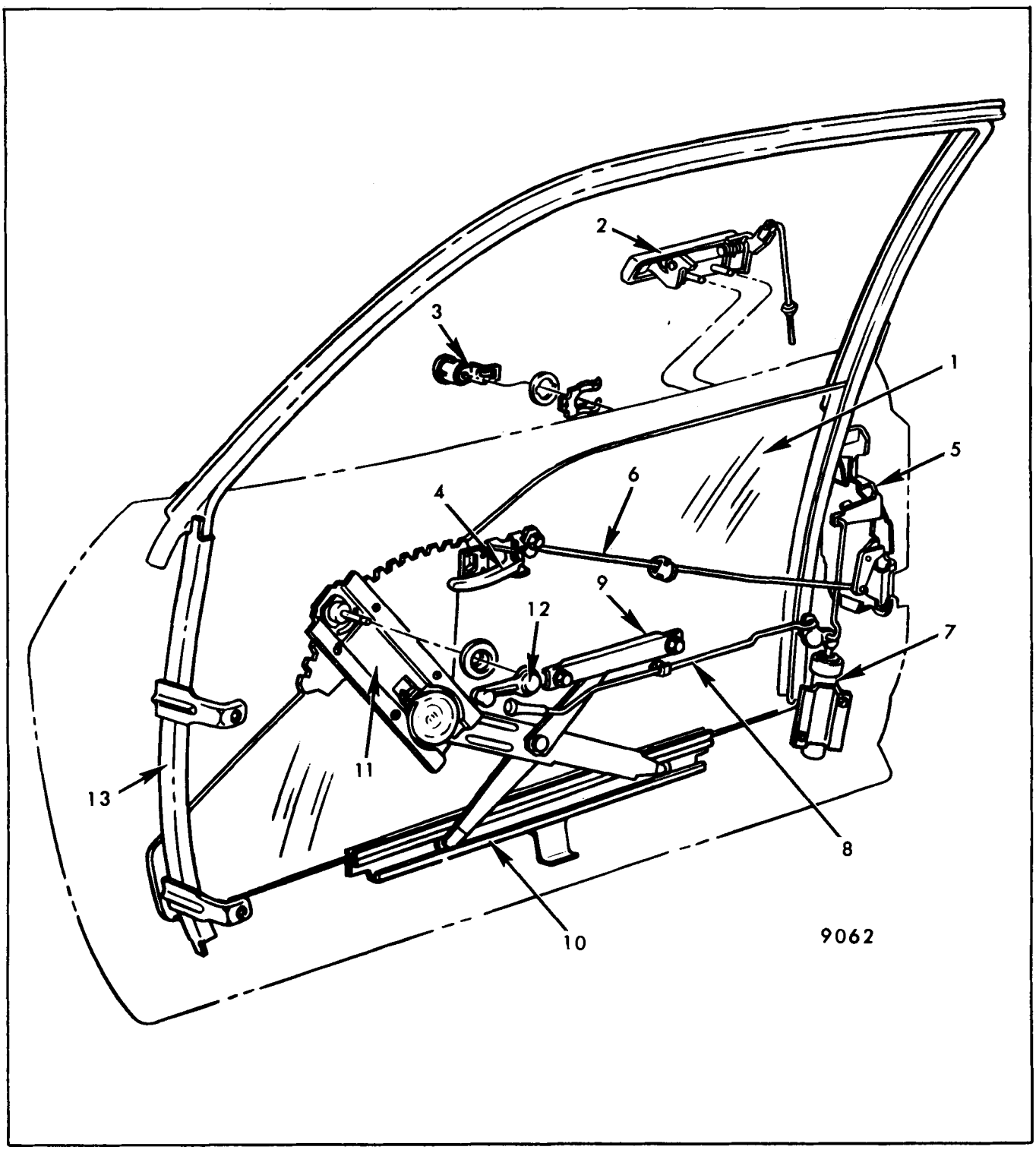


Fig. 5-80 - Door Hardware - "H-27" Style

1. Window
2. Outside Handle
3. Lock Cylinder
4. Inside Remote Handle
5. Door Lock
6. Inside Handle to Lock Connecting Rod
7. Power Door Lock Solenoid (Opt.)
8. Inside Locking Rod
9. Inner Panel Cam
10. Lower Sash Channel and Cam
11. Window Regulator
12. Window Regulator Handle
13. Glass Run Channel Retainer

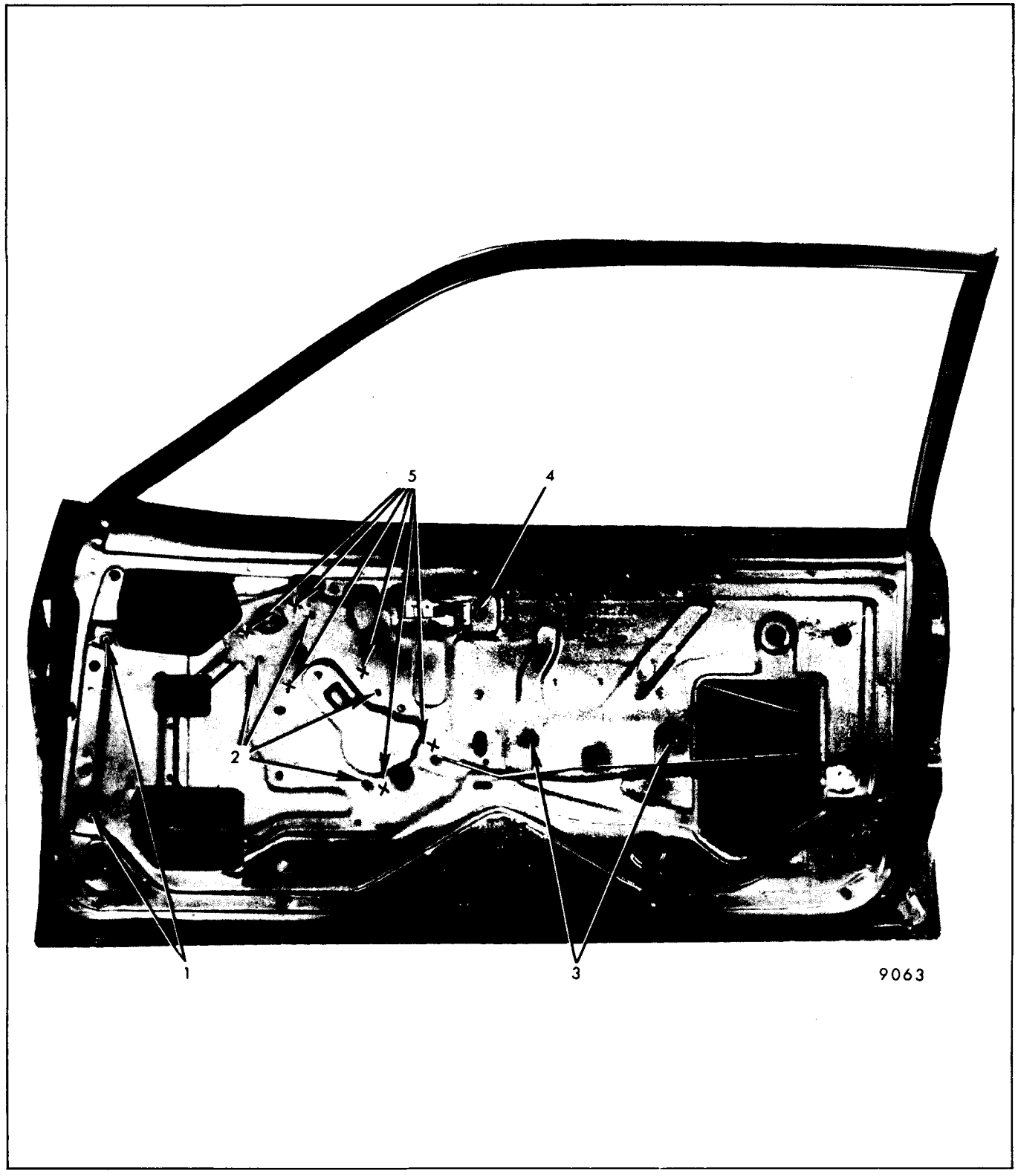


Fig. 5-81 - Door Hardware Attachments - "H-27" Style

1. Glass Run Channel Screws
2. Replacement Window Regulator Attaching Holes
3. Inner Panel Cam Screws
4. Inside Remote Handle Rivet
5. Window Regulator Weld Locations

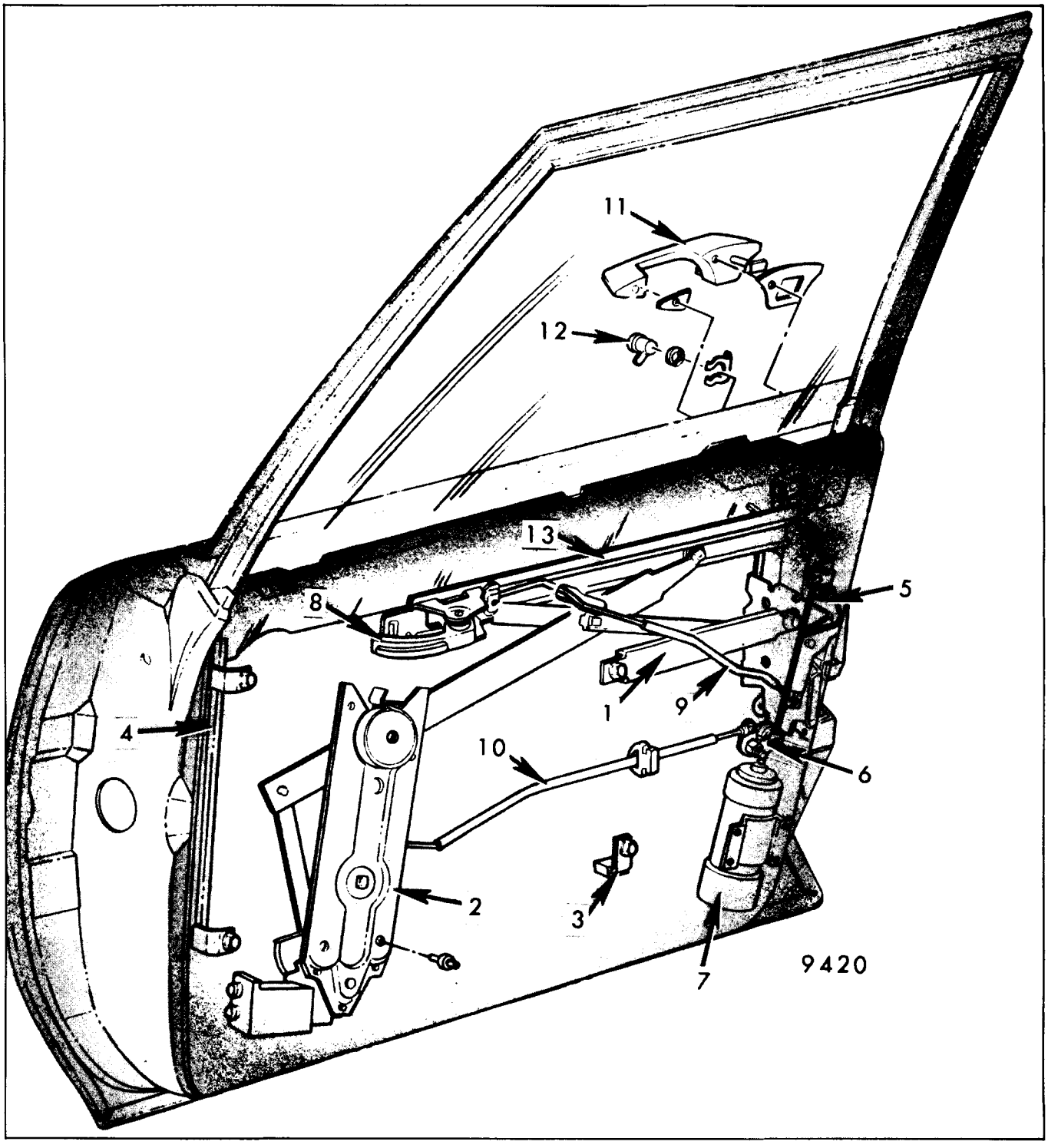


Fig. 5-82-Front Door Hardware - "K" Styles

1. Inner Panel Cam
2. Window Regulator
3. Down Stop
4. Glass Run Channel Retainer
5. Door Lock
6. Locking Rod Bell Crank
7. Power Lock Actuator
8. Inside Remote Handle
9. Handle to Lock Connecting Rod
10. Inside Locking Rod
11. Outside Handle
12. Lock Cylinder
13. Lower Sash Channel Cam

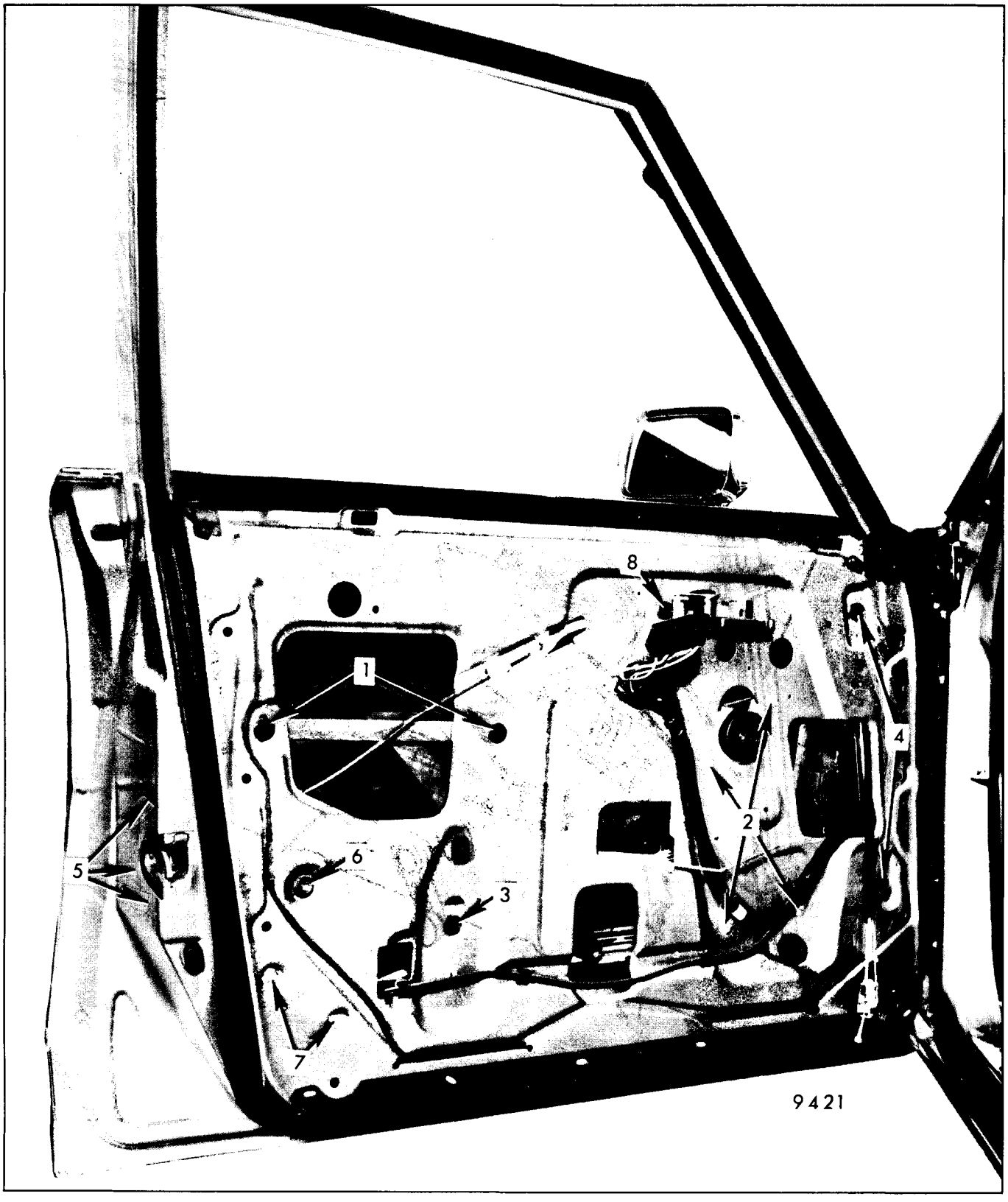


Fig. 5-83-Front Door Hardware Attachments - "K" Styles

1. Inner Panel Cam Screws
2. Window Regulator Rivets
3. Down Stop Screw
4. Glass Run Channel Retainer Screws
5. Door Lock Screws
6. Locking Rod Bell Crank Nut
7. Power Lock Actuator Rivets
8. Inside Handle Rivet

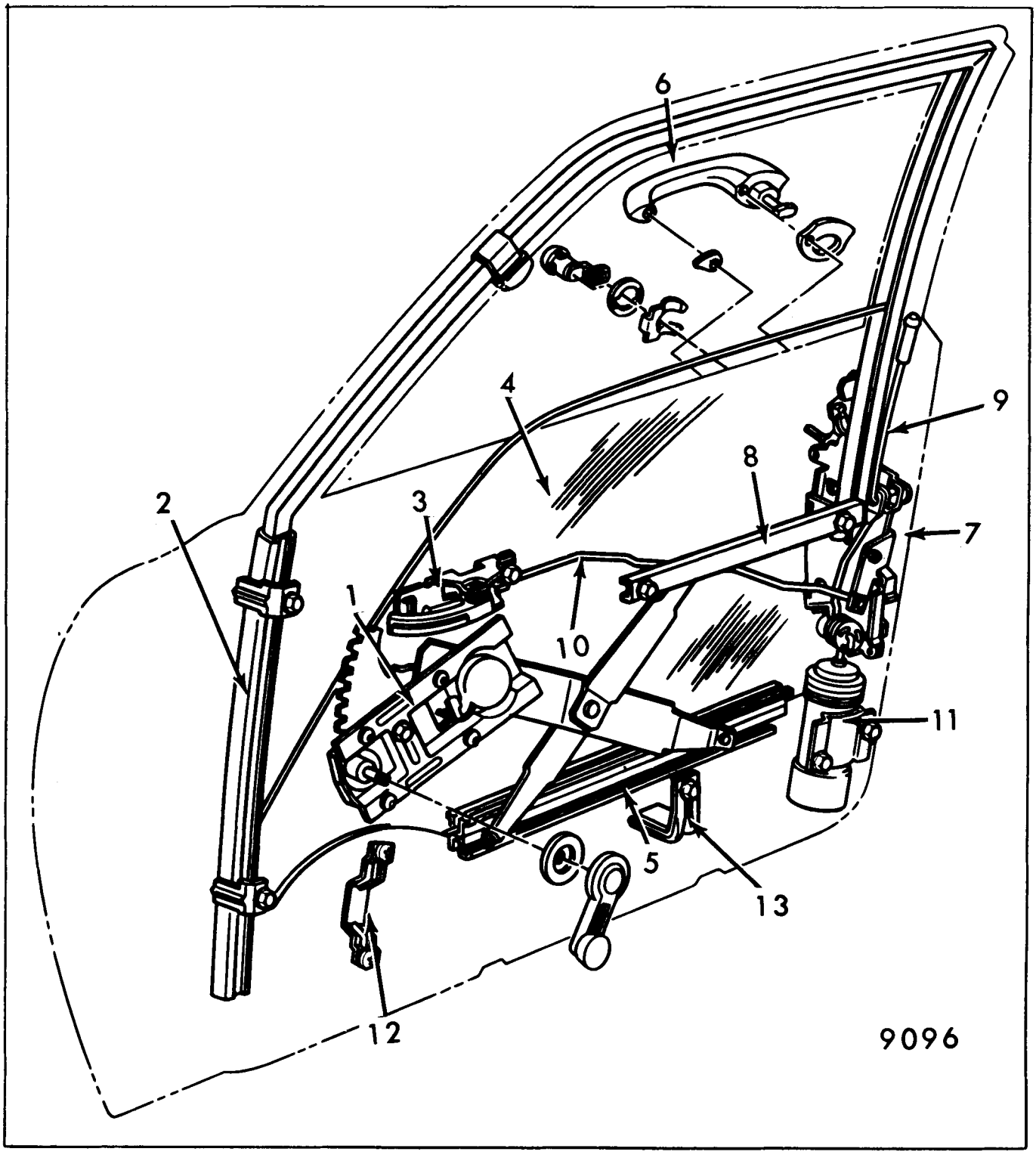


Fig. 5-84-Front Door Hardware - "X" Styles

1. Window Regulator
2. Glass Run Channel Retainer
3. Inside Remote Handle
4. Window Assembly
5. Lower Sash Channel Cam
6. Outside Handle
7. Door Lock
8. Inner Panel Cam
9. Inside Locking Rod
10. Inside Handle to Lock Connecting Rod
11. Power Door Lock Actuator (Opt.)
12. Antirattle Support
13. Down Stop

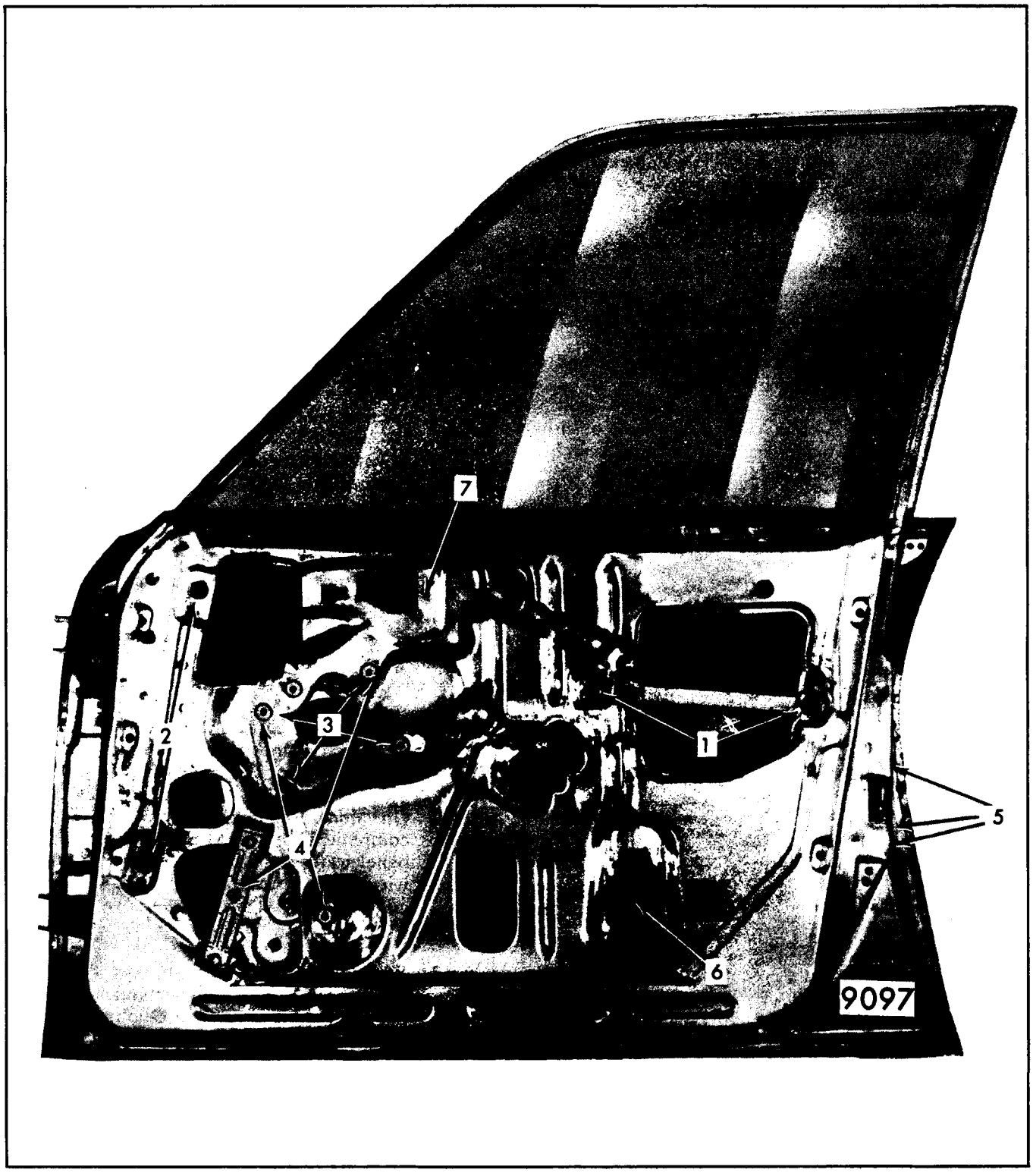


Fig. 5-85-Front Door Hardware Attachments - "X" Styles

1. Inner Panel Cam Screws
2. Glass Run Channel Screws
3. Window Regulator Rivets (Manual Regulator)
4. Window Regulator Rivets (Power Regulator)
5. Door Lock Screws
6. Down Stop Screw
7. Inside Handle Attaching Hole

FRONT DOOR ADJUSTMENT - All Except "H and X" Styles

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

NOTE: When making door adjustments, refer to door lock striker engagement specifications in the Front and Rear Door portion of this section.

1. Adjust door up and down and/or fore and aft at body hinge pillar attachments.

   NOTE: If REARWARD adjustment of either front door is made, replace the jamb switch as described in Section 10 - Electrical.

2. Adjust door in and out at door hinge pillar attachments.

3. For removal or adjustment of front door hinge to body attaching bolts, use tool J-26614 (13 mm socket) or equivalent for "B C, E, and K" styles; use tool J-24353 (1/2" socket) or equivalent for "A and F" styles (Fig. 5-87). After hinge adjustment, torque attaching bolts to 20 to 29 N·m (14 to 22 ft-lb).

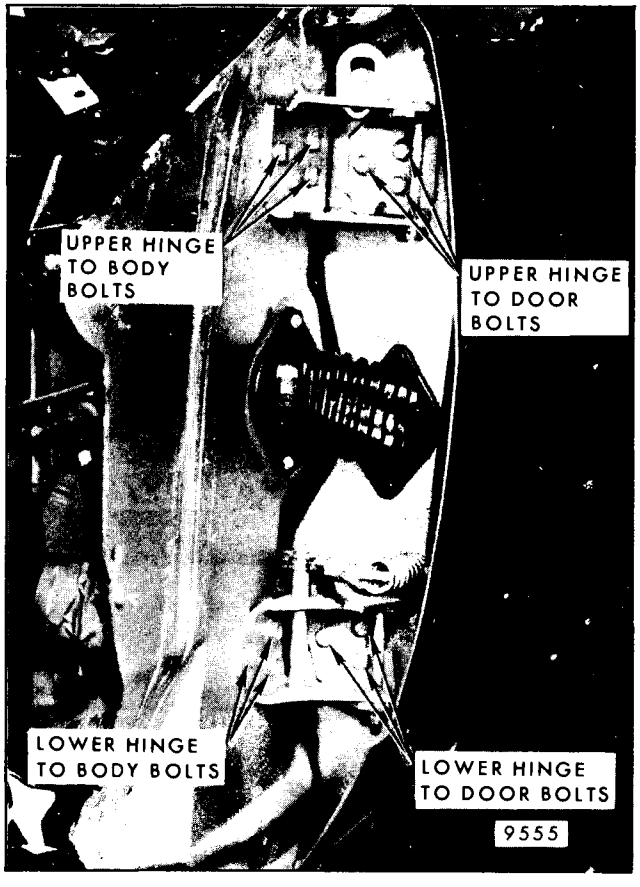


Fig. 5-86-Typical Front Door Bolt-On Hinge Attachment - All Except "H and X" Styles

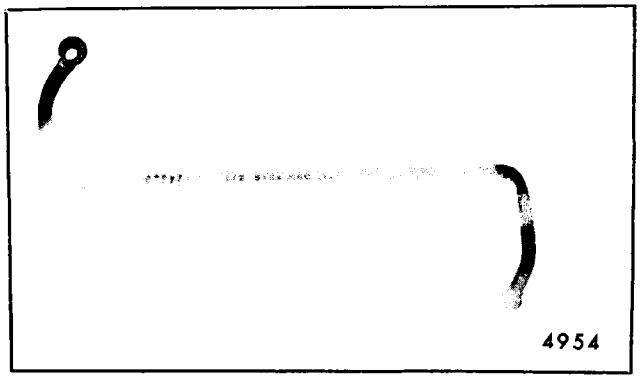


Fig. 5-87-Front Door Hinge Tool J-26614 (metric) or J-24353 (inch) - All Styles with Bolt-on Hinges

DOOR REMOVAL AND INSTALLATION - All Except "H and X" Styles

When removing the door only, it is recommended that the door be removed from the hinges because of easier access to the door side bolts.

1. Prior to loosening any hinge bolts, mark position of hinge on door to facilitate adjustment when reinstalling door on hinge.

2. On doors equipped with power operated components remove trim panel and detach inner panel water deflector sufficiently to disconnect wire harness from components. Detach rubber conduit from door and remove wire harness from door.

3. With aid of a helper, support door in open position and remove upper and lower hinge to door hinge pillar attaching bolts (Fig. 5-86).

4. To install, reverse removal procedure. Adjust door as outlined in previous adjustment procedure. Torque hinge attaching bolts to 20 to 29 N·m (14 to 22 ft-lb).

HINGE REMOVAL AND INSTALLATION - All Except "H" and "X" Styles

1. If door has no power-operated components installed, remove door as previously described, then remove hinge after marking position on pillar. Proceed to step 5.

2. Loosen front fender, if necessary, along the lower edge as outlined in chassis service manual.

3. Support door in the full-open position and remove hinge to door and body hinge pillar attaching bolts (Fig. 5-86).

4. Loosen body hinge pillar bolts on remaining hinge as required. Remove affected hinge from body.

5. To install, reverse removal procedure. Prior to installation of hinge, apply a coat of heavy-bodied sealer to surface of hinge that contacts door and body hinge pillar for protection against corrosion. Align door as previously described. Torque hinge attaching bolts to 20 to 29 N·m (14 to 22 ft-lb).

NOTE: On all styles, removal of upper and lower hinges from body hinge pillar can be accomplished with the door removed and without loosening front fender.

FRONT DOOR HINGES - "H and X" Styles

All "H and X" front door hinges are constructed of steel and are welded to the door and body hinge pillars. Because of the positive attachment of the hinge assembly, all adjustment provisions have been eliminated. However, a removable hinge pin has been provided for removal of the door assembly from the body. Replacement hinges are serviced as an assembly. DOOR SIDE hinges are pierced to permit bolt-on installation into tapped anchor plates. Tapped anchor plates must be used instead of nuts and washers to insure structural integrity when replacing a hinge assembly. Anchor plates are not furnished with the hinge assembly and must be ordered separately. BODY SIDE of service replacement hinges DO NOT have bolt-on provisions and must be arc-welded to the body hinge pillar. In addition, door side and body side hinge straps, hinge pins, bushings and retainers are available as separate service parts. Both "H and X" doors have an integral two stage hold-open feature that is found on the "X" lower and "H" upper hinges.

DOOR REMOVAL - "X" Styles

1. Remove "E" ring (snap retainer) from lower end of both upper and lower hinge pins (Fig. 5-88).

WARNING: BEFORE PERFORMING THE FOLLOWING STEP, COVER SPRING WITH TOWEL TO PREVENT SPRING FROM "FLYING" AND POSSIBLY CAUSING PERSONAL INJURY OR DAMAGE.

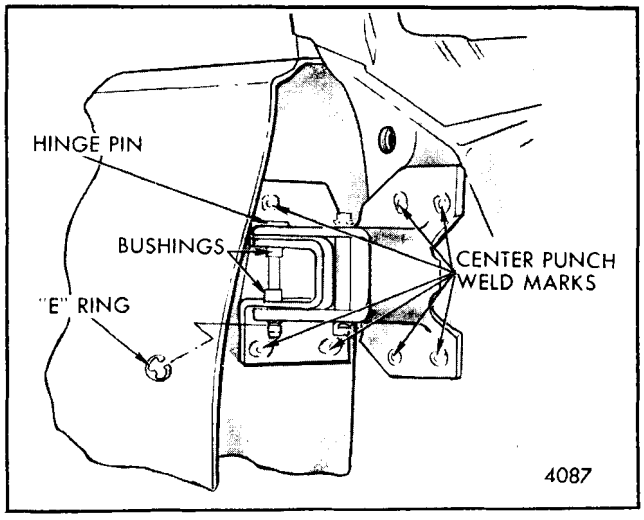


Fig. 5-88-Front Door Hinge "E" Ring Removal - "X" Styles

2. Disengage door hold-open spring from lower hinge assembly by prying upward against spring with a suitable prying tool (Fig. 5-89). Use care not to damage hold-open link.

3. Using tapered type tool, drive wedge between head of hinge pin and hinge. This will raise pin sufficiently to force serrated shoulder on the upper end of the hinge pin out of hinge.

4. With aid of a helper to support door at rear edge, remove loosened hinge pins. Then remove door assembly.

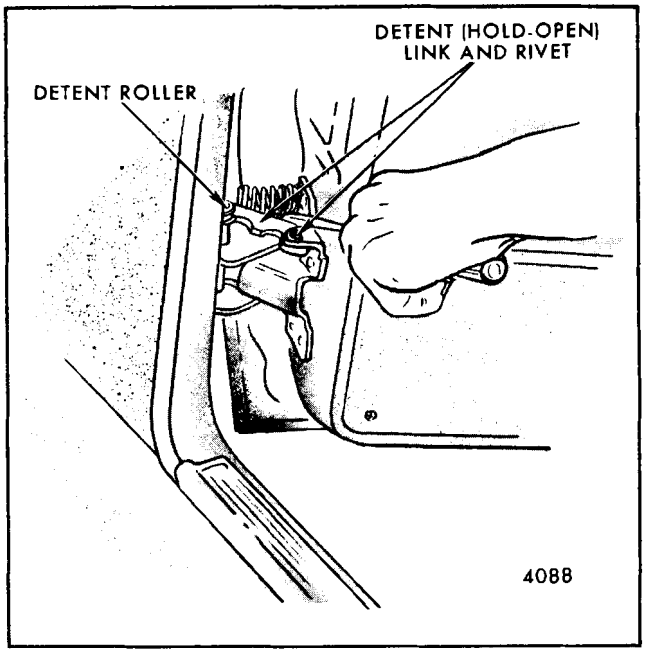


Fig. 5-89-Front Door Hinge Hold-Open Spring Removal - "X" Styles

DOOR INSTALLATION - "X" Styles

1. With aid of a helper, place door into position and insert hinge pins and "E" rings.

WARNING: IN THE FOLLOWING STEP BE SURE SPRING IS SEATED PROPERLY BEFORE COMPRESSING TO PREVENT THE SPRING FROM SLIPPING OUT OF THE TOOL AND POSSIBLY CAUSING DAMAGE OR PERSONAL INJURY.

2. Using spring compressing tool (J-23497 or equivalent), install hold-open spring in lower hinge (Figs. 5-90 and 5-91).

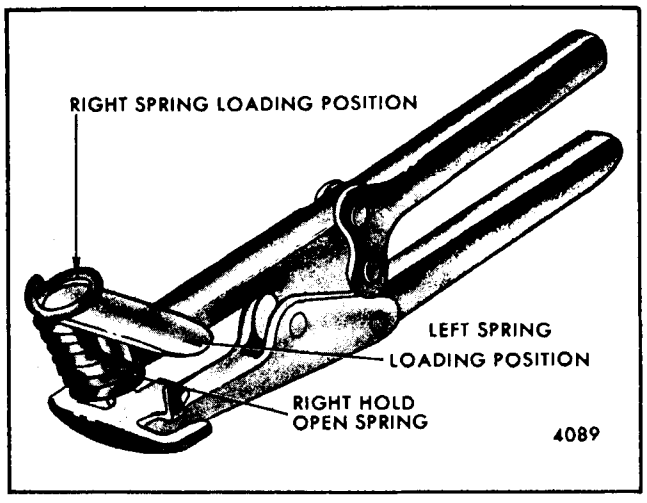


Fig. 5-90-Hold-Open Spring, Loading Positions Using Tool J-23497 or Equivalent - "X" Styles

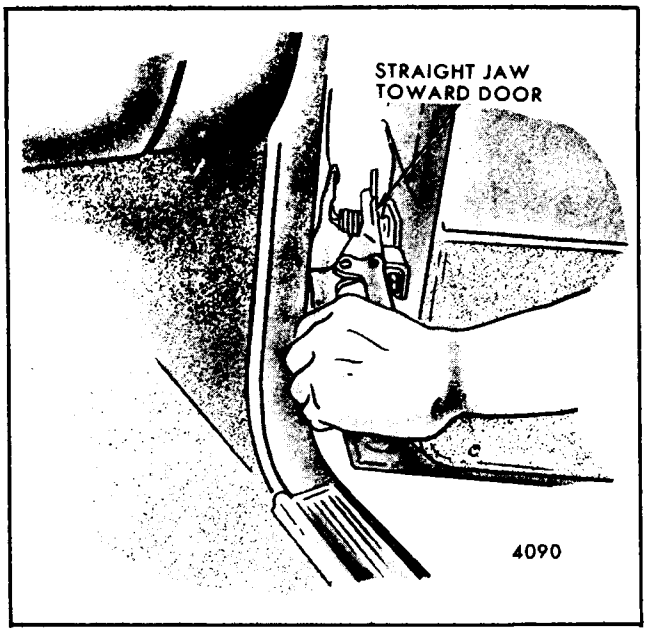


Fig. 5-91-Front Door Hinge Hold-Open Spring Installation Using Tool J-23497 or Equivalent - "X" Styles

NOTE: When installing hold-open spring on tool J-23497 or equivalent, position spring so that the cut end of the spring is in line with the center of the blade on the straight jaw. Figure 5-90 illustrates position of spring for right side installation (left side installation would utilize the other end of the blade). The other end of the spring should be seated over the hook on the opposite jaw of the tool.

DOOR SIDE HINGE STRAPS - "X" Styles

Removal

1. Remove door trim assembly and inner panel water deflector, as previously described.
2. Remove door from body as previously described.
3. Center punch and scribe location of hinge on door hinge pillar (refer to Fig. 5-92).
4. Center punch visible weld marks on hinge base as shown in Figure 5-88 and drill a 1/8" pilot hole completely through welds at center punch marks.
5. Using 1/8" hole as a guide, drill out welds with a 1/2" drill bit.

   CAUTION: *When drilling out welds, drill only deep enough to penetrate hinge base to release hinge from panel as shown in Figure 5-93.*

6. A slight amount of weld may still retain hinge base to panel. Drive a chisel between panel and hinge base to separate hinge from panel.

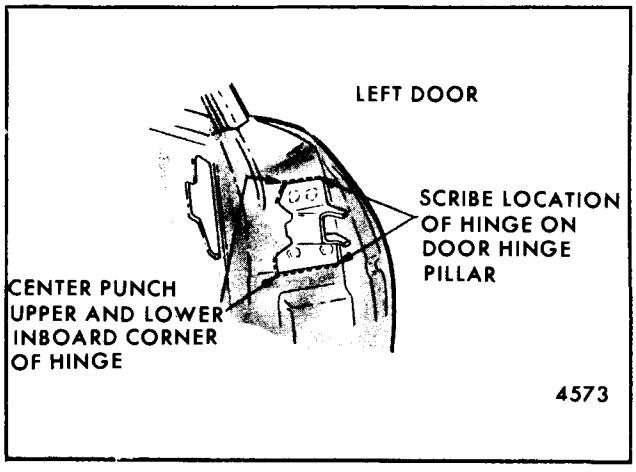


Fig. 5-92-Locating Hinge on Door Hinge Pillar - "X" Styles

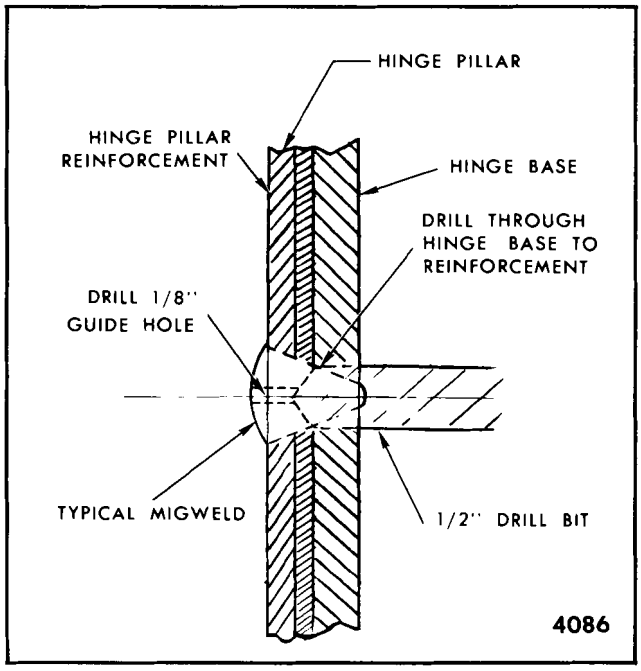


Fig. 5-93-Typical Weld

Installation

1. Position the replacement bolt-on hinge within scribe marks on the hinge pillar facing and center punch bolt hole locations.

2. Using a 1/2" drill bit, drill hinge attaching holes. The 1/2" holes in the hinge pillar will provide for some in and out adjustment when reinstalling the door assembly.

3. Coat surface of hinge that mates with hinge pillar with medium bodied sealer and install hinge using specified 5/16" x 1-1/2" bolts and service hinge anchor plates previously described. Torque hinge attaching bolts 17 to 22 ft-lb.

4. Install door to body as previously described.

BODY SIDE HINGE STRAP - "X" Styles

Removal

1. Remove door assembly from body as previously described.

2. Locate hinge position on body hinge pillar (refer to Fig. 5- 94).

   a. Scribe location of upper and lower hinge tabs on hinge pillar.

   b. Measure exactly 1-3/4" rearward from upper and lower forward flange of hinge. Center

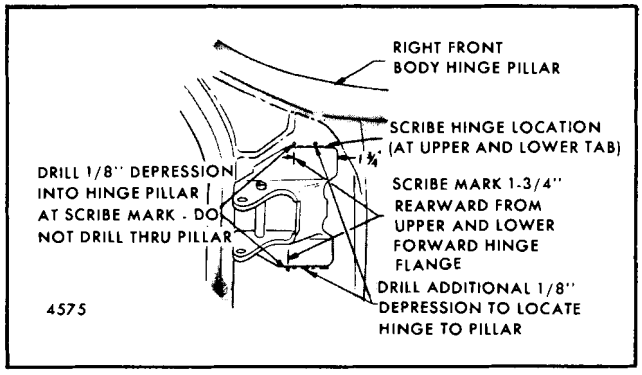


Fig. 5-94-Locating Hinge Position on Body Hinge Pillar - "X" Styles

punch and drill indentation at this location into (not through) hinge pillar facing with 1/8" drill bit.

NOTE: Drill indentation will serve as a locator for the replacement hinge and will not be lost during torching operation.

   c. Drill additional 1/8" locator at the upper and lower hinge tab immediately forward of the measured locator.

3. Protect the carpet and door sill plate area adjacent to the front body hinge pillar with wet cloths.

4. Using a cutting torch, separate main portion of hinge from upper and lower tabs. After main portion has been removed, vertically cut upper and lower hinge tabs with cutting torch as shown in Figure 5-95.

5. Mig welds holding separated hinge tabs can be broken by twisting or rotating the individual hinge tab segments with suitable tool, such as grip type pliers, pipe wrench, etc., (refer to Fig. 5-96).

6. Dress and prepare hinge pillar facing as required for replacement hinge.

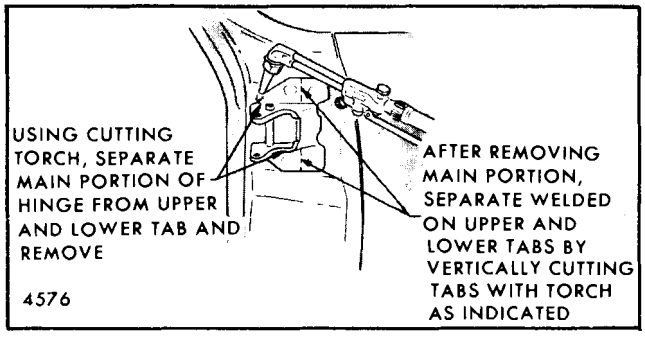


Fig. 5-95-Body Side Hinge Strap Removal - "X" Styles Shown, "H" Styles Similar

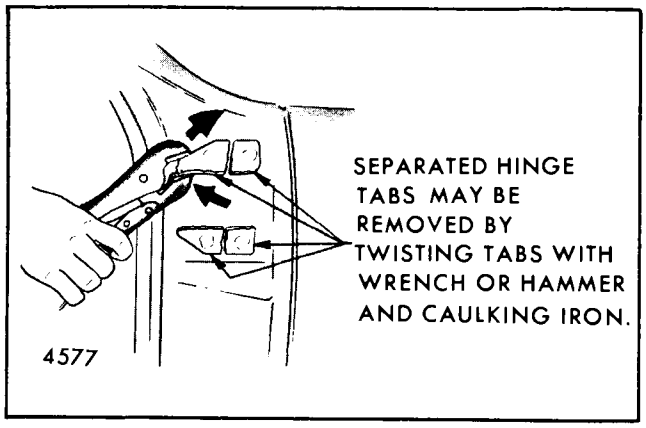


Fig. 5-96-Body Side Hinge Strap Removal

Installation

1. Measure 1-3/4" rearward from upper and lower weld tab forward flange of replacement hinge, and mark dimension on hinge as shown in Figure 5-97.

2. Locate replacement hinge to scribe marks and drill depressions identifying 1-3/4" dimension (Fig. 5-98). Tack in place with arc weld at upper and lower hinge tabs.

3. Rehang door and install hinge pins to insure proper alignment of door to opening.

4. Remove door and complete arc welding of hinge. Arc weld completely around upper and lower hinge tab as shown in Figure 5- 99.

5. Wire brush and clean welds as required. Seal around perimeter of hinge with a paintable sealer.

6. Refinish hinge pillar and replacement hinge as required.

7. Install door assembly as previously described.

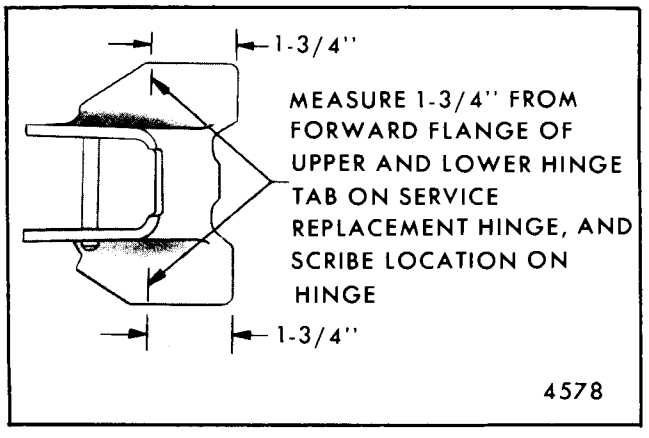


Fig. 5-97-Body Side Hinge Strap Installation - "X" Styles

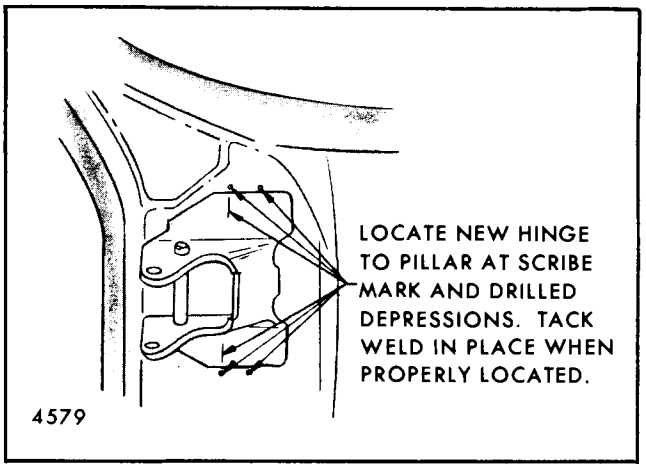


Fig. 5-98-Body Side Hinge Strap Installation - "X" Styles

DOOR REMOVAL AND INSTALLATION - "H" Styles

1. Using tool J-23568 or equivalent and the aid of a helper to support the door in an open position, drive wedge between the head of the hinge pin and the upper hinge as shown in Figure 5-100. Driving wedge at this location will partially remove the hinge pin from the hinge assembly. To completely remove the hinge pin, tap on the hinge pin removing tool as shown in Figure 5-101. Repeat operation outlined above on lower hinge.

2. To install the door assembly, place the door into position and install new hinge pins by tapping on head of hinge pin until the pin is fully seated. Old hinge pin may be reused by first replacing integral retaining clip (part no. 3064314 or equivalent). Install retaining clip by sliding over end of hinge pin to retaining notch.

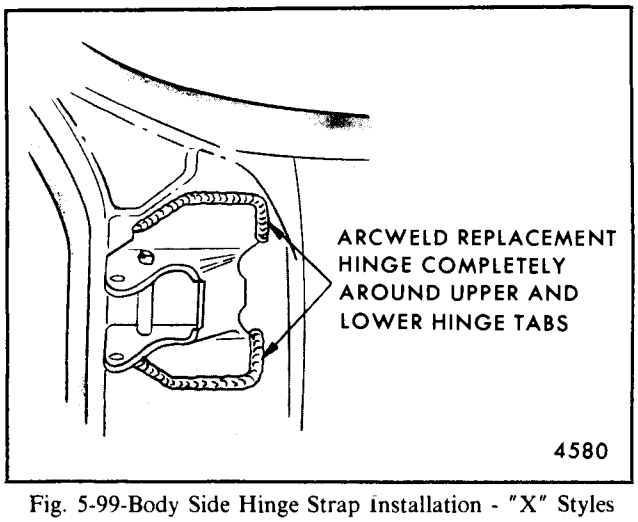


Fig. 5-99-Body Side Hinge Strap Installation - "X" Styles Shown, "H" Styles Similar

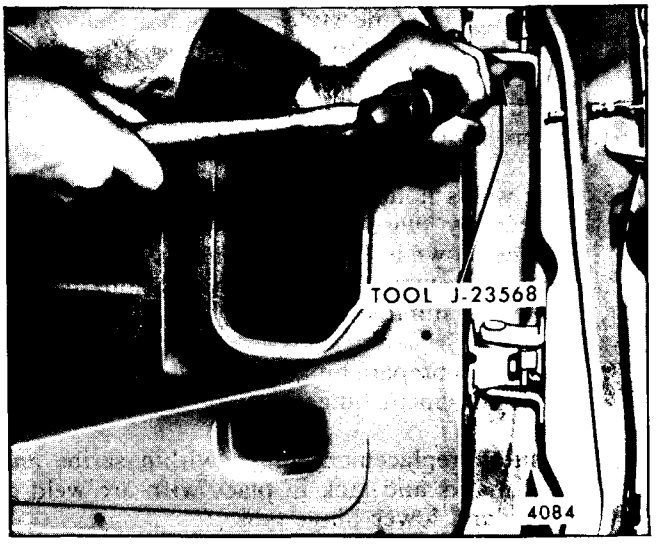


Fig. 5-100-Door Hinge Pin Removal - "H" Styles

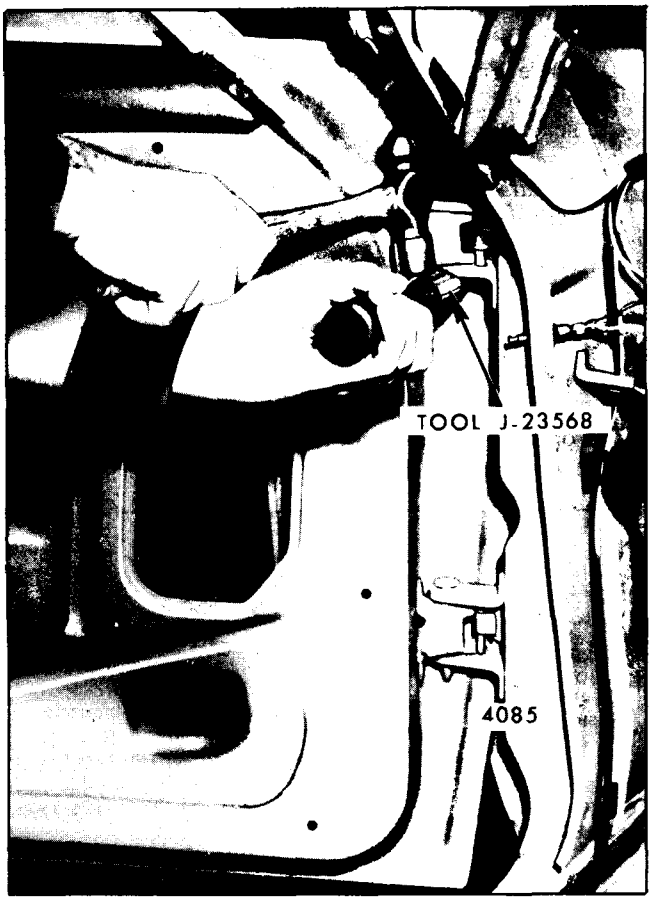


Fig. 5-101-Door Hinge Pin Removal - "H" Styles

DOOR SIDE HINGE STRAPS - "H" Styles

Removal and Installation

1. Remove door trim assembly, inner panel water deflector and door assembly from body as previously described.

2. Scribe location of hinge on hinge pillar and center punch visible weld marks on hinge base. Drill a 1/8" pilot hole completely through the welds at center punch marks.

3. Using 1/8" hole as a guide, drill out welds with at least a 3/8" drill bit, but not larger than a 1/2" drill bit.

   CAUTION: *When drilling out welds, drill only deep enough to penetrate hinge base to release hinge from panel as shown in Figure 5-93.*

   A slight amount of weld may still retain hinge base to panel. Drive a chisel between panel and hinge base to separate hinge from panel. Exercising care not to remove scribe marks from hinge pillar, grind or file remaining weld marks off pillar until flush with adjacent surface.

   • **NOTE:** Weld-on hinges cannot be reinstalled. A new service replacement door side hinge strap with bolt-on provisions must be installed (Fig. 5-102).

   To restore acceptable structural integrity when installing replacement hinges, it is necessary to use tapped anchor plates instead of nuts and washers. Anchor plates, bolts, bushings, hinge pins, hinge pin retainers and door side and body side hinge straps are available separately (Fig. 5-102).

4. To install new hinge, position the replacement bolt-on hinge within the scribe marks on the hinge pillar facing. Using hinge attaching holes as a guide, center punch bolt hole locations on door hinge pillar.

5. Using a 1/2" drill bit, drill hinge attaching holes. The 1/2" holes in the hinge pillar will provide for some inboard or outboard adjustment when reinstalling the door assembly.

6. Coat hinge surface that mates with the hinge pillar with medium-bodied sealer. Install hinge strap using two countersunk bolts, (part no. 7667647 or equivalent), one hex-head bolt, (part no. 8746511 or equivalent), and one anchor

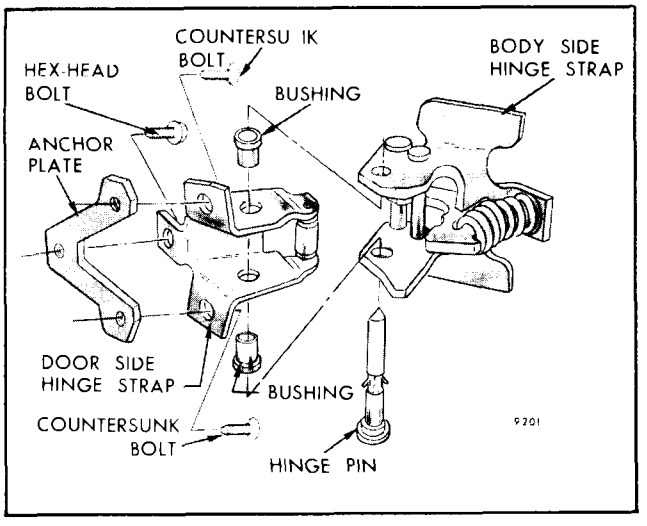


Fig. 5-102-Door Hinge Components - "H" Styles

plate, (part no. 9840410 or equivalent) as shown in Fig. 5-102. Torque hinge bolts to 17 to 22 ft-lb.

7. Install door to body and adjust for proper alignment. Install all previously removed parts.

BODY SIDE HINGE STRAPS - "H" Styles

Removal and Installation

1. Remove door assembly from body hinge pillar as previously described.

2. Scribe hinge location at upper and lower hinge tab and drill indentation into (not through) hinge pillar facing with a 1/8" drill bit at the corners of the upper and lower hinge tabs as shown in Figure 5-103. Drilled depressions provide location for the replacement hinge and should not be lost during torching operation.

   NOTE: If door is not in proper alignment, compensate for misalignment as required when performing step 7.

3. Protect the carpet and door sill plate area adjacent to the front body hinge pillar with wet cloths.

4. Using a cutting torch, separate main portion of hinge, including hold-open link and spring, from upper and lower tabs. After main portion has been removed, vertically cut upper and lower hinge tabs with cutting torch as shown in Figure 5-95.

   NOTE: On some styles additional welds may have been placed on the tab edges. Use impact cutter or cutting torch (depending on type of weld, tack or continuous) to break these welds before proceeding.

5. Mig welds holding separated hinge tabs can be broken by twisting or rotating the individual tabs as shown in Figure 5-96, using vise grip type pliers, pipe wrench or hammer and caulking iron (or other suitable tools).

6. Dress and prepare hinge pillar facing as required for replacement hinge.

7. Position replacement hinge within scribe and drill marks and tack in place with arc weld at upper and lower hinge tabs.

   NOTE: If door was not in proper alignment, compensate for misalignment by adjusting replacement hinge location.

8. Rehang door and install hinge pins to insure proper alignment of door to opening.

9. Remove door and complete arc welding of hinge. Arc weld completely around upper and lower hinge tabs as shown in Figure 5- 99.

10. Wire brush and clean welds as required. Seal around perimeter of hinge with a paintable sealer.

11. Refinish replacement hinge and hinge pillar as required.

12. Rehang front door as previously described.

OUTSIDE REMOTE CONTROL MIRROR

The optional remote control mirror can be adjusted from the interior of the car by moving the remote

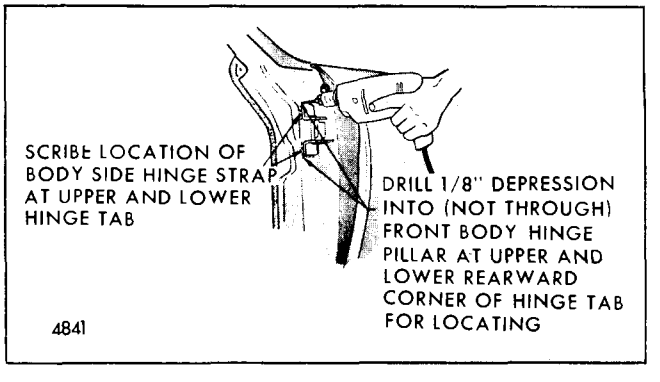


Fig. 5-103-Body Side Door Hinge Strap Removal - "H" Styles

control lever in the direction desired. On all styles the mirror and cable are removed from the car as an assembly.

Remote Mirror Face Replacement - All Styles

1. To remove a scratched, broken, stained, etc., mirror face from the mirror frame, tape, then break the mirror glass and remove the broken glass and fiber pad from the mirror frame.

   CAUTION: *Protect painted surface on door assembly when breaking mirror face to remove from mirror frame.*

2. Wipe inside of mirror frame clean.

3. To install replacement mirror faces, remove paper backing from mirror face and center mirror in mirror frame. Then press firmly to ensure adhesion of the mirror face to the mirror frame.

Removal and Installation - All Styles - Left Side

1. Remove door trim (upper portion on "A and E" styles) and peel back water deflector sufficiently to gain access to mirror cable.

2. Detach cable from any retaining tabs in door (Fig. 5-104).

3. On "F, H (less 07,27) and X" styles, remove attaching screw in mirror base and screws in mounting bracket (Fig. 5-104) and remove mirror and cable from door. On all other styles, remove attaching nuts (Fig. 5-105) and remove mirror and cable assembly from door.

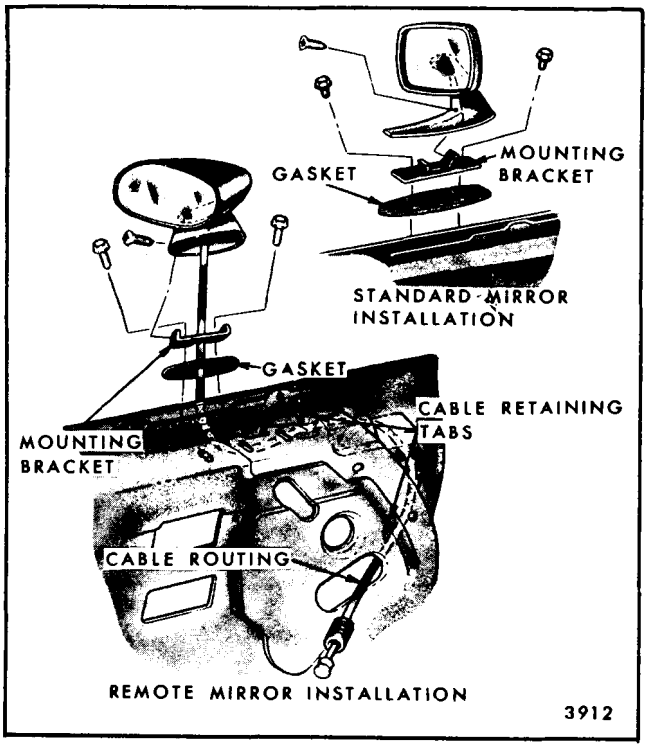


Fig. 5-104-Door Outside Remote Mirror Removal - "F, H (less 07,27) and X" Styles - Left Side Only

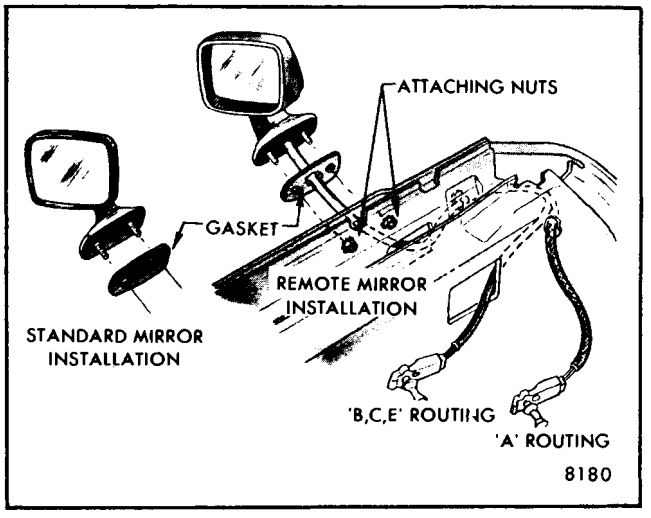


Fig. 5-105-Door Outside Mirror - Typical All "A, B, C, E, K and H-07-27" Styles - Left Side

4. To install, reverse removal procedure.

Removal and Installation - All Styles - Right Side

1. Remove door trim (upper portion on "A and E" styles) and peel back water deflector sufficiently to gain access to mirror and cable.

2. On styles with instrument panel mounted control, refer to chassis service manual for cable removal from instrument panel. Also remove shroud side finishing panel (refer to Section 4 - Front End).

3. Feed remote cable through shroud and rubber conduit between door and pillar and detach cable from any retaining tabs in door.

4. Remove stud nuts (Fig. 5-106) and remove mirror and cable assembly from door.

5. To install, reverse removal procedure. Make sure mirror operates satisfactorily from remote control before installing trim.

OUTSIDE STANDARD MIRROR

Removal and Installation - "F, H (Less "07, 27") and X" Styles

1. Remove attaching screw in base of mirror and remove mirror (Fig. 5-104).

2. To install, reverse removal procedure.

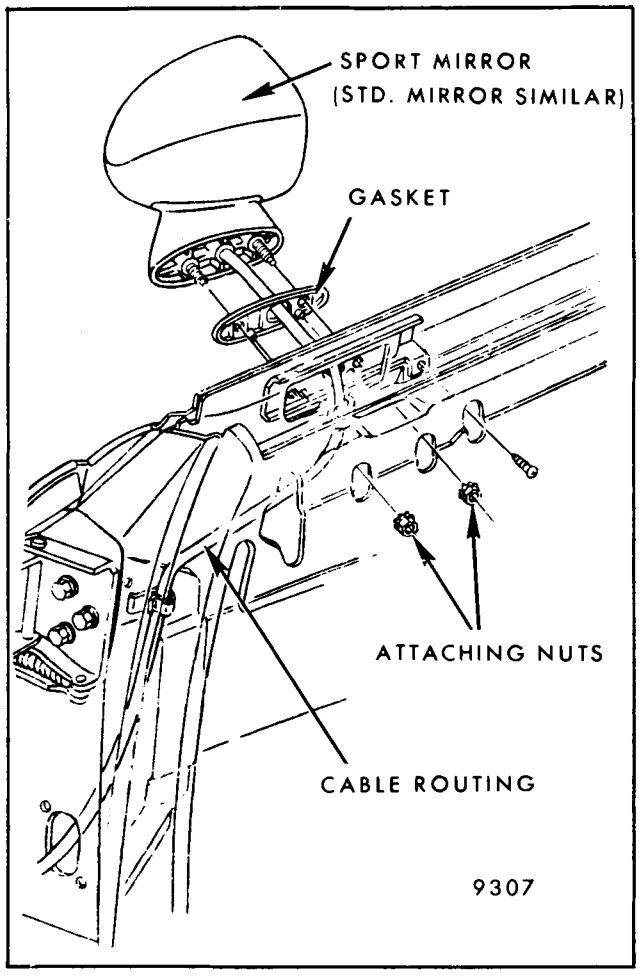


Fig. 5-106 - Door Outside Remote Mirror - Typical, All Styles - Right Side

Removal and Installation - "A, B, C, E and H-07, 27" Styles

1. Remove upper portion of door trim assembly as described in Door Trim portion of this section.
2. Remove mirror base to door outer panel stud nuts (Fig. 5-105) and remove mirror from door.
3. To install, reverse removal procedure.

FRONT DOOR WINDOW ASSEMBLY - All "A" Styles

The front door window assembly consists of a solid tempered safety plate glass with bolt-on components as shown in Figure 5- 107 and 5-108. The lower sash channel cam, which is bolted to the glass, is removed during the window removal process. Figures 5-107 and 5-108 identify the window components and their assembly sequence. Specified installation torque is 72 in-lb. When the glass is replaced, also replace glass spacers and washers ("6" and "7", Fig. 5-107 or 5-108).

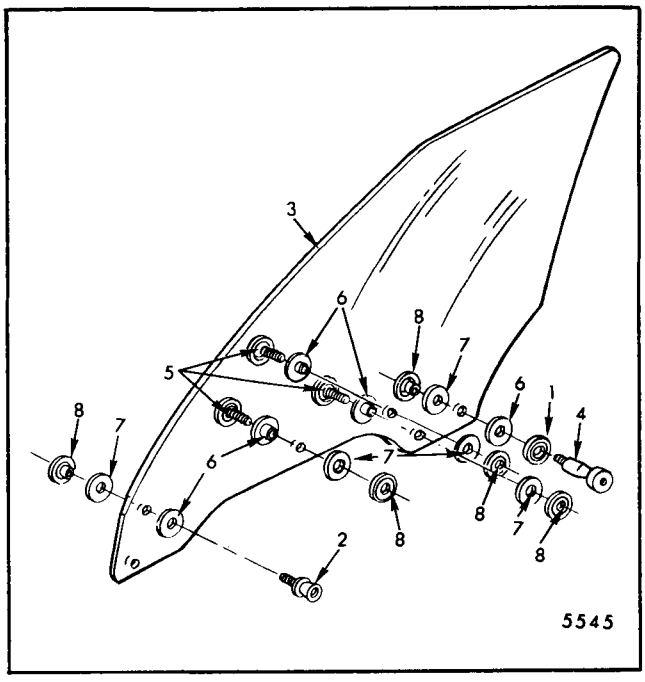


Fig. 5-107-Front Door Window Assembly - "A-29,35" Styles

1. Washer (Metal)
2. Up-Travel Stop
3. Window Glass
4. Window Roller
5. Bolt
6. Spacer
7. Washer (Plastic)
8. Nut

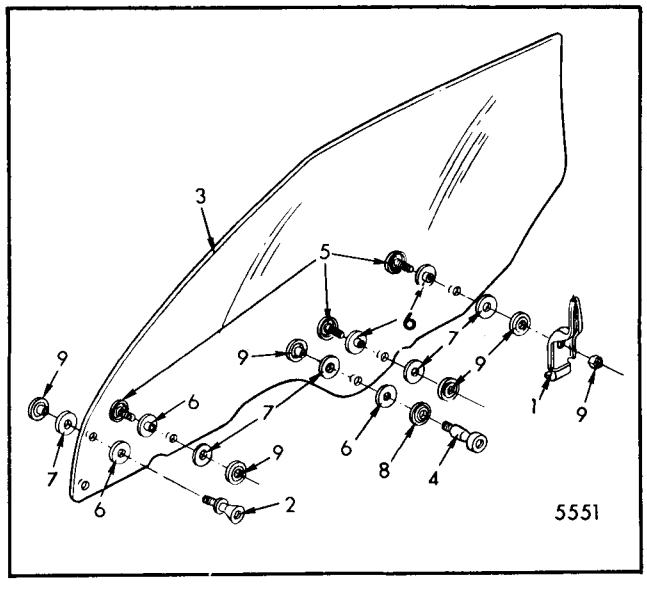


Fig. 5-108-Front Door Window Assembly "A-37, 57 and 80" Styles

1. Glass Stabilizer (on Glass)
2. Up-Travel Stop
3. Window Glass
4. Window Roller
5. Bolt
6. Spacer
7. Washer (Plastic)
8. Washer (Metal)
9. Nut

Adjustments

In the following steps, the numbers in quotes refer to items in Figure 5-109 for "A-29,35" styles or Figure 5-110 for "A- 37,57,80" styles. After making any adjustments, torque all loosened attachments to 72 in-lb.

1. WINDOW ROTATED - Loosen up-stops ("2" and "3"). Adjust inner panel cam ("8") as required and tighten attaching screws. Adjust up-stops as required and tighten attaching screws.

2. WINDOW UPPER EDGE INBOARD OR OUTBOARD - Loosen up-stops ("2" and "3"), trim retainers ("1"), stabilizer guide ("7"), and rear guide upper bracket ("4"). Adjust rear guide upper bracket in or out as required and tighten attaching screws. Adjust and tighten other loosened components. Make sure glass does not contact blow- out clip when cycled.

3. WINDOW TOO FAR FORWARD OR REARWARD - Adjust upper end of rear guide ("5") as required.

4. WINDOW TOO HIGH OR LOW IN UP POSITION - Adjust up-stops ("2" and "3") as required.

5. WINDOW TOO HIGH OR LOW IN DOWN POSITION - Adjust down-stop as required.

6. WINDOW BINDS - Ease of window operation and stability depend to a great extent on belt trim retainers ("1"). Contact should be sufficient to stabilize glass but not restrict window operation.

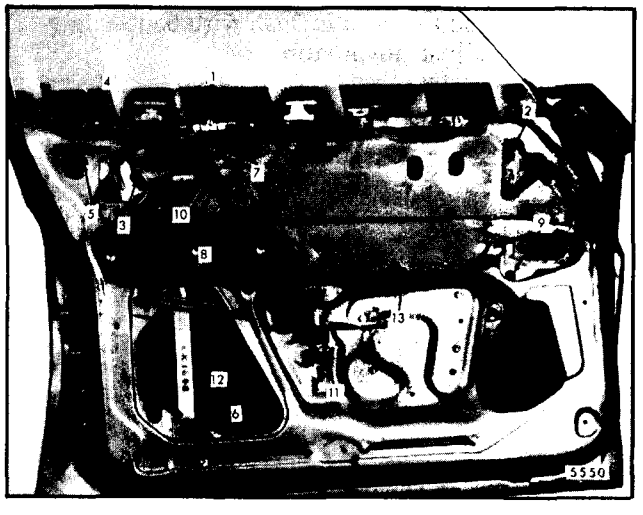


Fig. 5-109-Front Door Window Hardware Attachments - "A-29,35" Styles

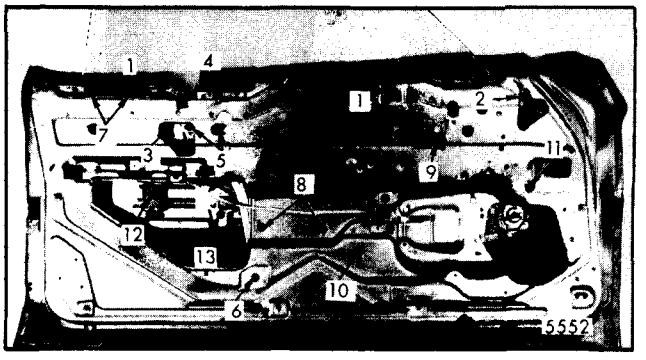


Fig. 5-110-Door Window Hardware Attachments - "A-37, 57 and 80" Styles

1. Belt Trim Support Retainer Screws
2. Front Up-Travel Stop Screw
3. Rear Up-Travel Stop Screw
4. Rear Guide Upper Bracket Screws
5. Rear Guide Upper Screws
6. Rear Guide Lower Screw
7. Stabilizer Guide (on Inner Panel) Screws
8. Inner Panel Cam Screws
9. Lower Sash Channel Cam to Glass Front Attaching Nut Access
10. Down-Travel Stop Screw
11. Glass Stabilizer Plate (on Reinforcement) Screw
12. Lower Sash Channel Cam and Stabilizer Guide to Glass Rear Attaching Nut
13. Lower Sash Channel Cam to Glass Center Attaching Nut

Glass Alignment Using Gauge Blocks - All "A" Styles

The following procedure outlines the use of gauge blocks J- 24792-1 (2 required) and J-24350-1 or equivalent (Fig. 5-111) to consistently align the door glass. In the following steps the numbers in quotes refer to items in Figure 5-109 for "A-29,35" styles or Figure 5-110 for "A-37,57,80" styles unless otherwise specified.

1. Belt Trim Support Retainer Screws
2. Front Up-Travel Stop Screw
3. Rear Up-Travel Stop Screw
4. Rear Guide Upper Bracket Screws
5. Rear Guide Upper Screws
6. Rear Guide Lower Screw
7. Stabilizer Guide (on Inner Panel) Screws
8. Inner Panel Cam Screws
9. Glass Stabilizer Plate Screws
10. Lower Sash Channel Cam to Glass Center Attaching Nut Access
11. Down-Travel Stop Screw
12. Lower Sash Channel Cam to Glass Rear Attaching Nut Access
13. Lower Sash Channel Cam to Glass Front Attaching Nut Access

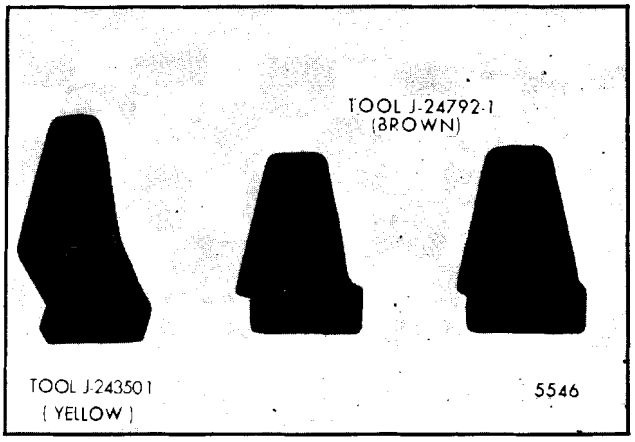


Fig. 5-111-Glass Alignment Gauge Blocks - Tools J-24350-1 and J-24792-1 or Equivalent (Set of Three Blocks)

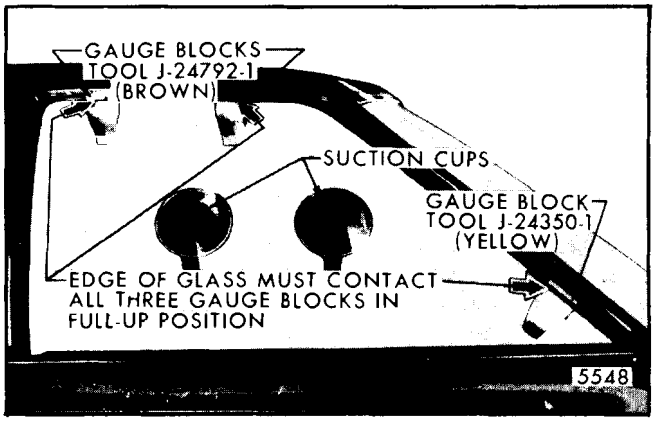


Fig. 5-113-Front Door Window - Fore and Aft Alignment - "A" Styles

1. Remove upper and lower door trim, inner panel water deflector, and side roof rail weatherstrip as described previously.

2. Lower window and install gauge blocks, tool J-24792-1 (brown) or equivalent, into weatherstrip retainer as shown in Figure 5-112 with handles inboard. Make sure gauge blocks are fully engaged in retainer. Install suction cups on interior glass surface to aid glass adjustment.

3. Loosen up-stops ("2" and "3"), trim retainers ("1"), and stabilizer guide ("7").

4. Parallel Alignment: With door closed, raise window to within 1" of full-up position (Fig. 5-112). If edge of glass spacing to gauge blocks is not equal, adjust inner panel cam ("8").

5. Fore-Aft Alignment: Loosen window and install gauge block, tool J-24350-1 (yellow) or equivalent, into retainer as shown in Figure 5-113 with handle inboard. Make sure gauge block is fully engaged in retainer. Raise window until edge of glass contacts one or more gauge blocks. If glass edge does not contact all three gauge blocks simultaneously, adjust guide fore or aft ("5") as required.

6. In-Out Alignment: Loosen guide upper screws ("4"). Apply firm outboard pressure against guide to remove slack from system and hold upper edge of glass against tab on gauge blocks (Fig. 5-114). Tighten guide screws.

7. High-Low Alignment and Stability: With glass in full-up position against gauge blocks, (Fig. 5-114) adjust the following components in order.

   a. Trim retainers ("1"), adjust for light glass contact

   b. Up-stops ("2" and "3")

   c. Stabilizer guide ("7")

   Lower glass so top edge is flush with belt sealing strips and adjust down stop.

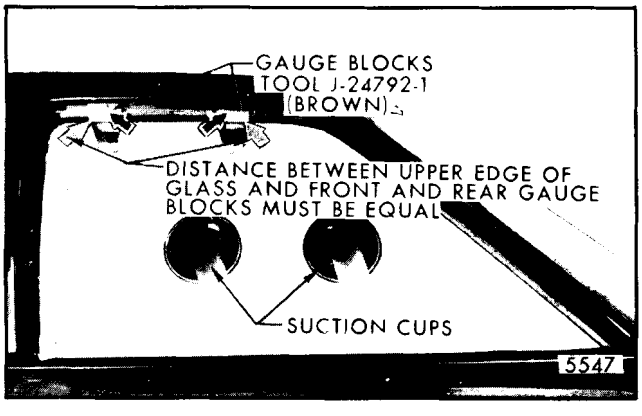


Fig. 5-112-Front Door Window - Rotated Glass Alignment - "A" Styles

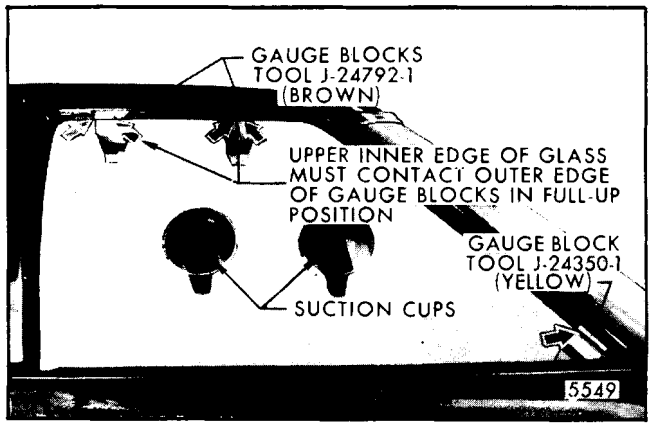


Fig. 5-114-Front Door Window - In and Out and Up-Travel Alignment - "A" Styles

8. When all adjustments are complete, torque all hardware attachments to 72 in-lb.

9. Remove gauge blocks and reinstall and seal weatherstrip with a pumpable sealer. Make sure that glass does not contact blow-out clip when cycled.

Removal and Installation - "A-29, 35" Styles

1. Remove upper and lower portion of door trim assembly and inner panel water deflector as previously described.

2. Mark location of attaching screws, and remove the following components:

   a. Front and rear belt trim support retainers ("1", Figure 5- 109).

   b. Front and rear up-travel stops ("2" and "3", Figure 5-109).

   c. Stabilizer guide assembly on inner panel ("7", Figure 5-109).

3. Operate window to a one-half up position and remove front and rear lower sash channel cam attaching nuts ("12" and "13", Fig. 5-109). Then raise glass to full-up position and remove lower sash channel cam center attaching nut ("10", Fig. 5-109).

4. Mark location and remove upper and lower rear guide to door inner panel attaching screws ("4" and "6", Fig. 5-109). Disengage guide from roller and lay guide in bottom of door.

5. Tip top of glass inboard until rear roller is clear of inner panel belt reinforcement, lift glass straight up and out of door.

6. To install, reverse removal procedure. Install previously removed attachments to the marked locations for proper glass alignment. Make sure that when the glass is cycled, it does not contact the blow-out clip.

7. Torque all previously removed hardware attachments to 72 in- lb.

Removal and Installation - "A-37, 57, 80" Styles

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

2. With glass in a half-raised position, remove front and rear up- travel stops ("2" and "3", Fig. 5-110), front and rear belt trim support retainers ("1", Fig. 5-110) and stabilizer guide assembly on inner panel and door glass ("7" and "12", Fig. 5-110).

3. Remove lower sash channel cam to glass center attaching nut ("13", Fig. 5-110).

4. Remove rear guide upper bracket ("4", Fig. 5-110) and lower guide ("6", Fig. 5-110) attaching screws, disengage guide from roller, and lay guide in bottom of door.

5. Remove lower sash channel cam to glass front attaching nut ("9", Fig. 5-110).

6. Separate glass from lower sash channel cam. While holding glass securely, lower sash channel cam to clear up-stop and stabilizer (on glass).

7. Tip top of glass inboard until rear roller is clear of inner belt reinforcement, then lift glass straight out of door.

8. To install, reverse removal procedure. Adjust window for proper alignment and operation as previously described. Make sure that when the glass is cycled, it does not contact the blow-out clip.

9. Torque all hardware attachments to 72 in-lb.

FRONT DOOR WINDOW ASSEMBLY - "B, C" Styles

The front door window assembly consists of a solid tempered safety plate glass window and an adhesive attached sash channel cam.

Adjustments

1. WINDOW ROTATED - Remove armrest, trim panel and water deflector. Adjust inner panel cam ("1" Fig. 5-115) as required, then torque attaching screws to 8 N·m (72 in-lb). On "B" 4-door styles, it is possible to gain access to cam adjusting screw by removing armrest only; then tearing perforated portion out of insulator (if so equipped) and water deflector from clearance slot in trim panel above remote handle to expose cam adjusting screw.

2. WINDOW TOO HIGH OR LOW IN DOWN POSITION - Remove armrest, door trim panel and water deflector. Adjust down stop ("4", Fig. 5-115) and tighten attaching screw to 8 N·m (72 in-lb).

Removal and Installation

1. Remove door armrest, trim panel and water deflector.

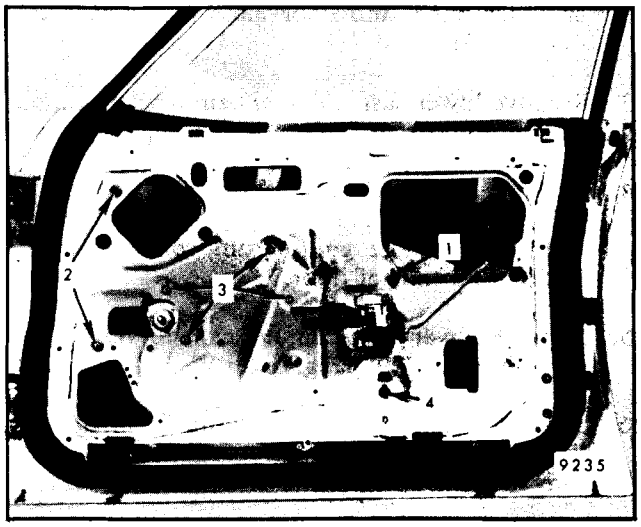


Fig. 5-115-Window Hardware - "B, C" Styles (Sedan Door Shown, Coupe Door Similar)

1. Inner Panel Cam Screws
2. Front Run Channel Retainer Screws
3. Window Regulator Rivets (Manual Regulator Shown)
4. Down Stop Screw

2. With window raised, remove front run channel retainer ("2", Fig. 5-115) and inner panel cam ("1", Fig. 5-115).

3. Lower window approximately 1/3 down. Tilt front of glass down and slide forward to disengage lift arm roller, then slide glass up and rearward, outboard of frame to complete removal.

   NOTE: Adjust regulator position as required during glass removal.

4. To install, reverse removal procedure. Torque attachments to 8 N·m (72 in-lb).

DOOR WINDOW ASSEMBLY - "E" Styles

The front door window assembly consists of a solid tempered safety plate glass window with a bolted-on lower sash guide plate assembly which operates on a single vertical guide tube located in the center of the door.

Figure 5-116 is an exploded view of the window assembly and identifies the various components and their assembly sequence.

NOTE: When installing glass attachments, torque nuts to 72 in-lb. Also, when replacing door glass, replace glass spacers and washer.

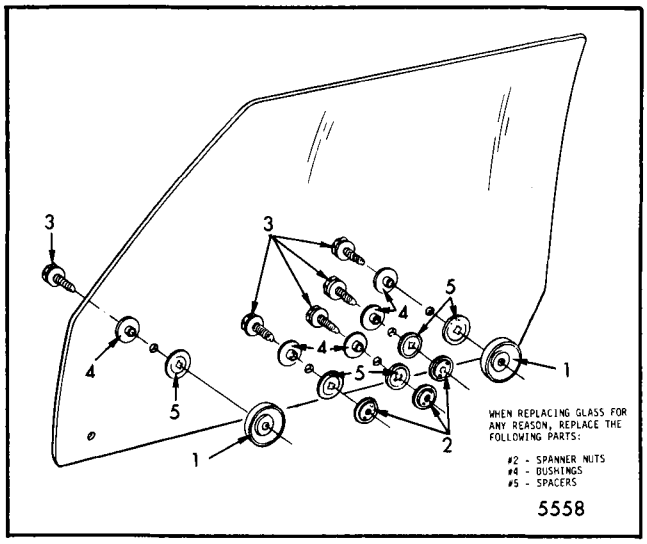


Fig. 5-116-Door Window Assembly - "E" Styles

1. Stop, Up-Travel (on Glass)
2. Nut
3. Bolt
4. Spacer
5. Washer

Adjustments

1. WINDOW ROTATED - Loosen front and rear up-travel stops ("3" and "4", Fig. 5-117) and lower sash upper guide attaching nuts ("7", Fig. 5-117). Adjust glass as required ("9", Fig. 5-117 for access holes) and tighten upper guide attaching nuts. Raise glass to desired height and adjust up-travel stops.

2. WINDOW INBOARD OR OUTBOARD ALONG UPPER EDGE - Remove guide pin stabilizer ("11", Fig. 5-117). Loosen lower sash lower guide screws ("8", Fig. 5-117) and front and rear belt trim support retainer screws ("5", Fig. 5-117) and position guide inboard or outboard as required and tighten screws. With glass in a full-up position, position trim support retainers. Reinstall guide pin stabilizer and adjust inboard to gain firm contact with guide support, then reinstall and tighten attaching screws. Make sure that the glass, when cycled, does not come in contact with the blow-out clip.

3. WINDOW TOO HIGH OR LOW IN UP POSITION - Adjust front and rear up-travel stops ("3" and "4", Fig. 5-117) as required.

4. WINDOW TOO HIGH OR LOW IN DOWN POSITION - Adjust front and rear down-travel stops ("1" and "2", Fig. 5-117) as required.

5. WINDOW TOO FAR FORWARD OR REARWARD - Loosen lower sash guide plate nuts ("6", Fig. 5-117) and reposition glass as necessary ("10", Fig. 5-117 for access hole).

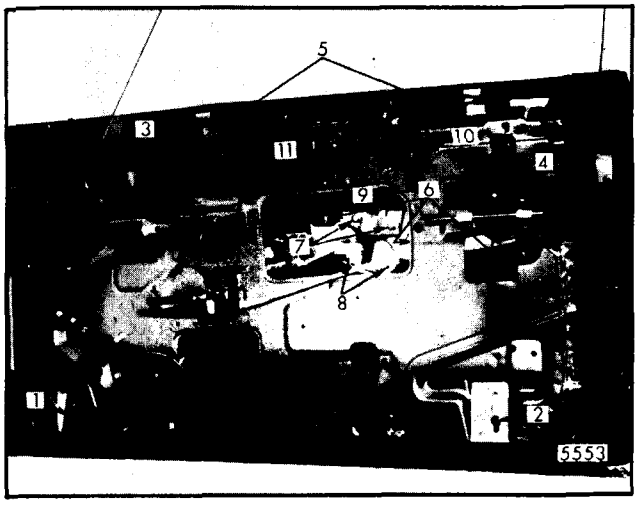


Fig. 5-117-Door Window Hardware Attachments - "E" Styles

1. Front Down-Travel Stop
2. Rear Down-Travel Stop
3. Front Up-Travel Stop
4. Rear Up-Travel Stop
5. Belt Trim Support Retainers
6. Lower Sash Guide Plate Nuts
7. Lower Sash Upper Guide Nuts
8. Lower Sash Lower Guide Screws
9. Lower Sash Upper Guide Adjustment Access Hole
10. Lower Sash Guide Plate Adjustment Access Hole
11. Guide Pin Stabilizer Screws

6. WINDOW BINDS - Ease of window operation and window stability depend to a great extent on the adjustment of the belt trim support retainers ("5", Fig. 5-117) and the guide pin stabilizer ("11", Fig. 5-117). Contact should be sufficient to stabilize glass but not restrict window operation. Adjust guide pin stabilizer after adjusting trim retainers.

   NOTE: After completing any adjustment, torque all previously loosened hardware attachments to 72 in-lb.

Glass Alignment Using Gauge Blocks - "E" Styles

The "E" style window hardware system has a single vertical guide tube in the center of the door. Most window adjustments are made from a guide plate attached to the lower edge of the glass (Fig. 5-118) which operates on the guide tube. Fine adjustment of this glass is more sensitive than conventional styles utilizing front and rear guides, as relatively small movements at adjusting locations will result in large movements at the upper edge of glass.

To facilitate adjustment of this glass, use glass alignment gauge blocks tool J-23711 or equivalent (Fig. 5-119). For proper use of gauge blocks, refer to the following procedure:

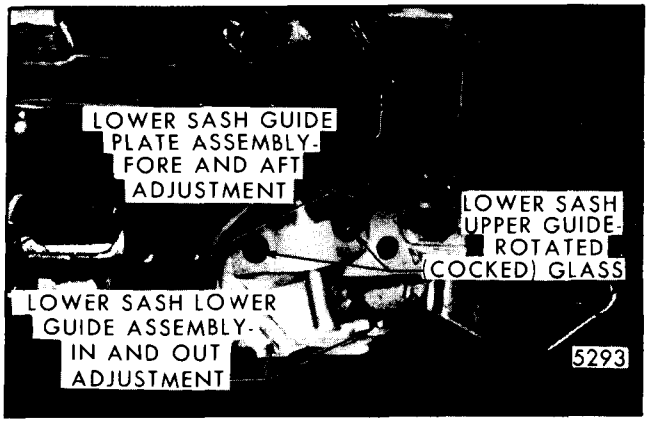


Fig. 5-118-Door Window Adjustment - "E" Styles

1. Remove upper portion of door trim assembly.

2. Detach side roof rail weatherstrip at lower front corner and carefully remove from retainer over the door window.

3. Lower front door and rear quarter windows and install gauge blocks, tool J-23711-2 (black) or equivalent into side roof rail weatherstrip retainer as shown in Figure 5-121. Then install gauge block, tool J-23711-1 (grey), or equivalent into windshield pillar retainer slightly above beltline.

   NOTE: The grooves on sides of the gauge blocks must be fully engaged with side roof rail weatherstrip retainer.

4. Working from inside body, with door in the closed position remove front door guide pin stabilizer ("11", Fig. 5-117). Loosen front and rear up-travel stops ("3" and "4", Fig. 5-117) and belt trim support retainers ("5" Fig. 5-117). Install suction cups on interior glass surface to aid glass adjustment.

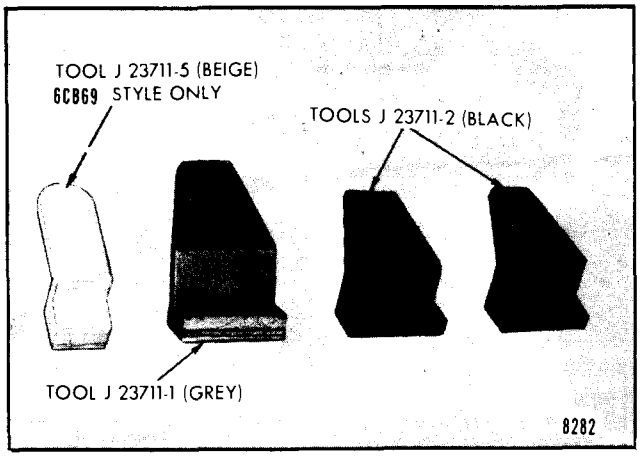


Fig. 5-119-Glass Alignment Gauge Blocks - Tool J-23711 or Equivalent (Set of Four Blocks) - "E" Styles

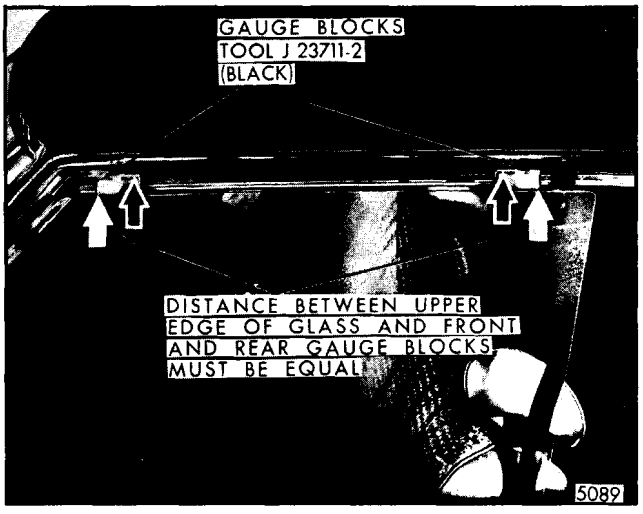


Fig. 5-120 Door Window-Rotated ("Cocked") Glass Alignment - "E" Styles

5. With glass in partially-down position loosen rear stationary up-travel stop on glass ("1", Fig. 5-116). Then raise door window assembly to approximately 1" from the full-up position. If distance (space) between the upper edge of glass and the front and rear gauge blocks is equal (as shown in Fig. 5-120), proceed with step 6; otherwise, loosen lower sash upper guide attaching nuts ("7", Fig. 5-117) through access holes ("9", Fig. 5-117) and adjust glass as necessary.

6. Raise door window until it contacts one or more of the three gauge blocks.

   If edge of glass contacts all three gauge blocks simultaneously (as shown in Fig. 5-121), proceed with step 7; otherwise, loosen fore and aft adjustment on lower sash guide plate ("6", Fig. 5-117) through access holes ("10", Fig. 5-117) and move glass forward or rearward until the edge of glass contacts all three gauge blocks in the full-up position.

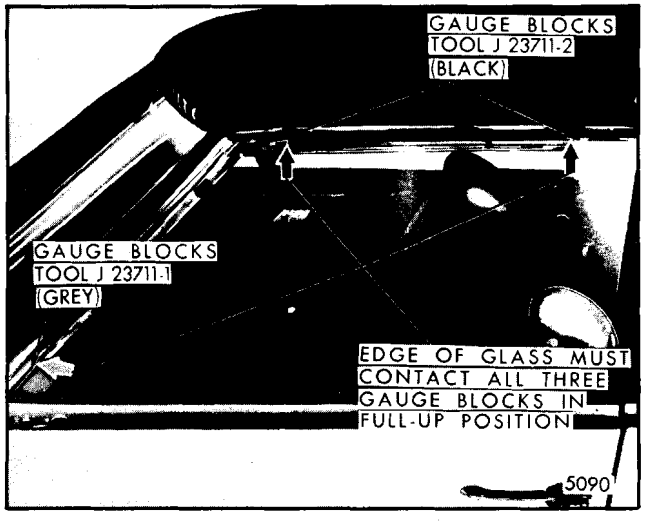


Fig. 5-121-Door Window - Fore and Aft Alignment - "E" Styles

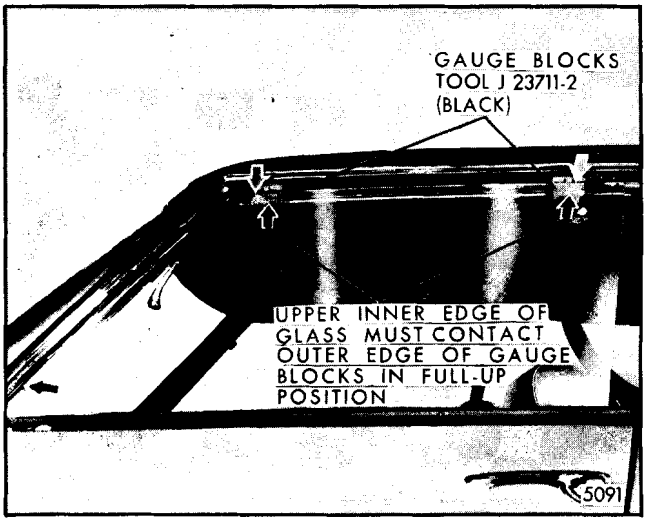


Fig. 5-122-Door Window - In and Out and Up-Travel Alignment - "E" Styles

7. Completely loosen lower sash lower guide ("8", Fig. 5-117). Apply firm outboard pressure against upper end of front guide to remove slack in system and to hold upper inner edge of glass inboard against the outer edge of the gauge blocks as shown in Figure 5-122. Then tighten lower sash lower guide attaching screws.

   NOTE: Inner surface of glass must contact outer surface of two upper blocks during this adjustment.

8. With glass in full-up position against upper gauge blocks, tighten up-travel stops ("3" and "4", Fig. 5-117) and adjust belt trim support retainers ("5", Fig. 5-117). Reinstall front door guide pin stabilizer. Adjust pin inboard to gain firm contact with guide support and tighten attaching screws.

9. Lower window and remove gauge blocks. Tighten rear stationary up-travel stop on glass ("1", Fig. 5-116) and reinstall and seal weatherstrip as previously described. Make sure that when the glass is cycled, it does not contact the blow-out clip.

10. After all adjustments have been performed, torque all previously loosened hardware attachments to 72 in-lb.

11. Install previously removed trim and water deflector.

Removal and Installation - "E" Styles

1. Remove upper portion of door trim assembly.
2. Remove front and rear up-travel stops ("3" and "4", Fig. 5- 117), belt trim support retainers ("5", Fig. 5-117) and window guide pin stabilizer ("11", Fig. 5-117).
3. Remove lower sash guide plate assembly to glass attaching nuts ("6", Fig. 5-117). Tilt upper edge of glass inboard to disengage glass from guide plate, then remove the window from the door by lifting straight up.
4. To install, reverse removal procedure. Adjust window for proper alignment and operation as described previously. Torque hardware attachments to 72 in-lb. Make sure that when the glass is cycled, it does not contact the blow-out clip.

DOOR WINDOW ASSEMBLY - "F" Styles

The door window assembly consists of a solid tempered safety plate glass with bolt-on components as shown in Figure 5-123. The lower sash channel cam, which is bolted to the glass, is removed during the window removal process. Figure 5-123 identifies the window components and their assembly sequence. Specified installation torque is 72 in-lbs. When the glass is replaced, also replace spacers and washers ("3" and "8", Fig. 5-123).

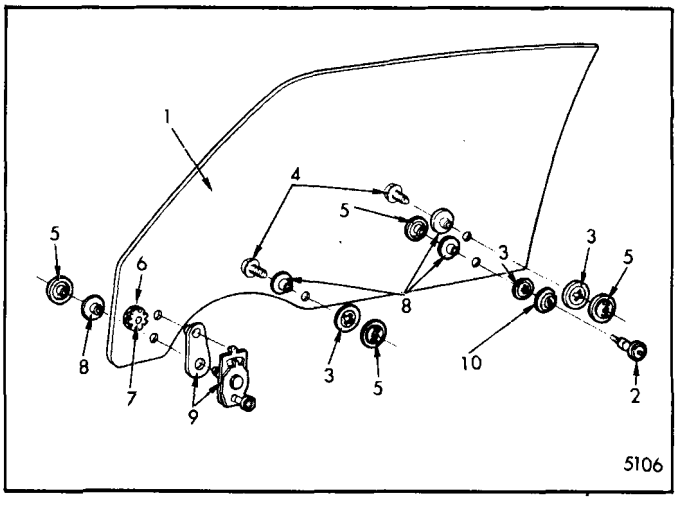


Fig. 5-123-Door Window Assembly - "F" Styles

1. Window Assembly
2. Roller
3. Washer (Plastic)
4. Bolt Inner Panel Cam
5. Nut
6. Glass Bearing Fastener
7. Glass Bearing Fastener Cap
8. Spacers
9. Roller Assembly (Bell Crank)
10. Washer (Metal)

Adjustments

In the following steps, the numbers in quotes refer to items in Figure 5-124. After making any adjustments, torque all loosened attachments to 72 in-lb.

1. WINDOW ROTATED - Loosen up-stops ("1" and "2"). Adjust inner panel cam ("8") as required and tighten attaching screws. Adjust up-stops as required and tighten attaching screws.
2. WINDOW UPPER EDGE INBOARD OR OUTBOARD - Loosen up-stops ("1" and "2"), trim retainers ("3"), front guide ("6"), and rear guide bracket ("5"). Adjust front and rear guides in or out as required and tighten attaching screws. Adjust and tighten other loosened components. Make sure glass does not contact blow-out clip when cycled.
3. WINDOW TOO FAR FORWARD OR REARWARD - Adjust upper end of rear guide ("7") as required.
4. WINDOW TOO HIGH OR LOW IN UP POSITION - Adjust up-stops ("1" and "2") as required.
5. WINDOW TOO HIGH OR LOW IN DOWN POSITION - Adjust down-stop ("9") as required.
6. WINDOW BINDS - Ease of window operation and stability depend to a great extent on belt trim retainers ("3"). Contact should be sufficient to stabilize glass but not restrict window operation.

Glass Alignment Using Gauge Blocks - "F" Styles

The following procedure outlines the use of gauge blocks J- 23394-1 and J-23394-2 (2 required) or equivalent (Fig. 5-125) to consistently align the door glass. In the following steps, numbers in quotes refer to items in Figure 5-124 unless otherwise specified.

1. Remove door trim, inner panel water deflector, and side roof rail weatherstrip as previously described.
2. Lower window and install gauge blocks, tool J-23394-2 (blue) or equivalent, into side roof rail weatherstrip retainer as shown in Figure 5-126 with handles outboard. Make sure gauge blocks are fully engaged in retainer. Install suction cups on interior glass surface to aid glass adjustment.

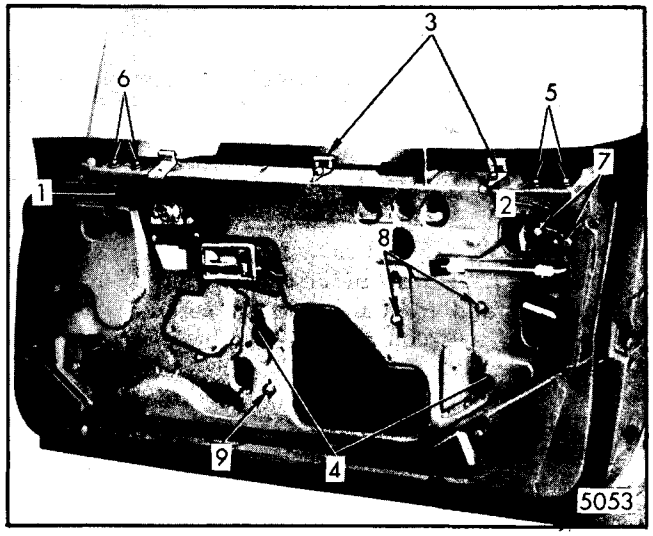


Fig. 5-124-Window Hardware Attachments - "F" Styles

1. Front Up-Travel Stop Screw
2. Rear Up-Travel Stop Screw
3. Belt Trim Support Retainers
4. Lower Sash Channel Cam Access Holes
5. Rear Guide Upper Bracket Screws
6. Front Guide Upper Screws
7. Rear Guide to Guide Upper Bracket Screws
8. Inner Panel Cam Screws
9. Down Travel Stop

3. Loosen up-stops ("1" and "2") and trim retainers ("3").

4. Parallel Alignment: With door closed, raise window to within 1" of full up position (Fig. 5-126). If edge of glass spacing to gauge blocks is not equal, adjust inner panel cam ("8").

5. Fore-Aft Alignment: Lower glass and install gauge block, tool J-23394-1 (red) or equivalent, into retainer as shown in Figure 5- 127 with handle inboard. Make sure gauge block is fully engaged in retainer. Raise window until edge of glass contacts one or more gauge blocks. If glass does not contact all three gauge blocks simultaneously, adjust rear guide ("7") fore or aft as required.

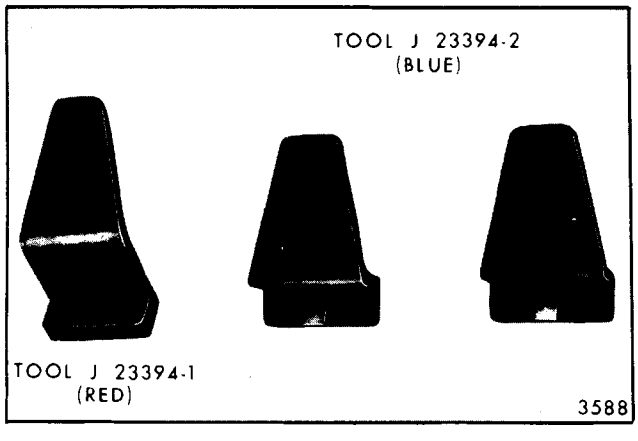


Fig. 5-125-Glass Alignment Gauge Blocks - Tool J-23394 or Equivalent (Set of Three Blocks) - "F" Styles

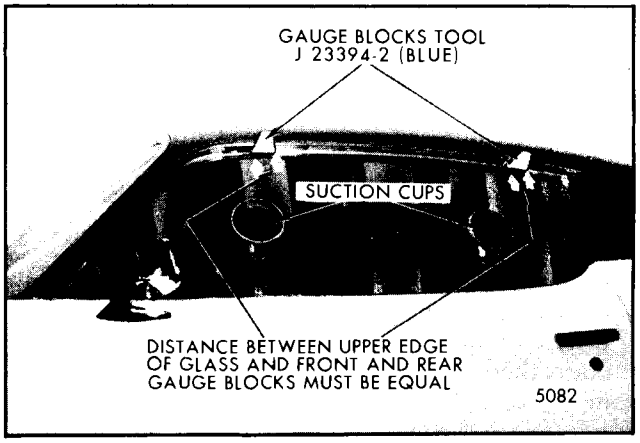


Fig. 5-126-Door Window - Rotated Glass Alignment - "F" Styles

6. In-Out Alignment: Loosen front and rear guides ("5" and "6"). Apply firm outboard pressure against upper end of front guide to remove slack from system and hold glass edge against tab on gauge blocks, then tighten guide screws. Repeat operation with rear guide.

7. High-Low Alignment and Stability: With glass in full up position against gauge blocks, adjust and tighten up-stops ("1" and "2"), then adjust trim retainers ("3") for light glass contact. Lower glass and adjust down-stop ("9").

8. When adjustments are complete torque all hardware attachments to 72 in-lb.

9. Remove gauge blocks and reinstall and seal weatherstrip with a pumpable sealer. Make sure glass does not contact blow-out clip when cycled.

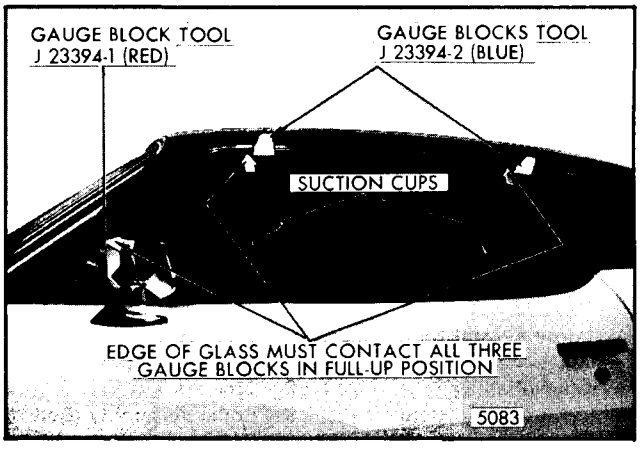


Fig. 5-127-Door Window - Fore and Aft Alignment - "F" Styles

Removal and Installation - "F" Styles

1. Remove door trim assembly and inner panel water deflector.
2. Remove front and rear up-travel stops ("1" and "2", Fig. 5- 124).
3. Loosen front and rear belt trim support retainers ("3", Fig. 5- 124).
4. With window in three-quarter-down position, remove lower sash channel cam to glass attaching nuts ("4", Fig. 5-124). Remove window by lifting straight up and aligning rollers with notches provided in the door inner panel.
5. To install, reverse removal procedure. Adjust window for proper alignment and operation as described previously. Torque all hardware attachments to 72 in-lb. Make sure that when the glass is cycled, it does not come in contact with the blow-out clip.

FRONT DOOR WINDOW ASSEMBLY - "K" Styles

The door window assembly consists of a frameless solid tempered safety plate glass bonded to a lower sash channel cam.

Adjustments

1. WINDOW ROTATED - Loosen door window inner panel cam attaching screws ("1", Fig. 5-128) and adjust glass as required. Torque attaching screws to 72 in-lb.
2. WINDOW TOO HIGH OR TOO LOW IN DOWN POSITION - Loosen window down stop ("4", Fig. 5-128) and raise or lower window to desired full-down glass height. Then position down stop against lower edge of glass and tighten attaching screw to 72 in-lb.

Removal and Installation

1. Remove door trim and panel assembly, inner panel water deflector, and door insulator.
2. Mark location and remove inner panel cam attaching screws ("1", Fig. 5-128), then remove inner panel cam.
3. Lower glass to half-down position and tip front of glass down 45 degrees to remove from front run channel. Slide glass forward to disengage rear lift arm roller.

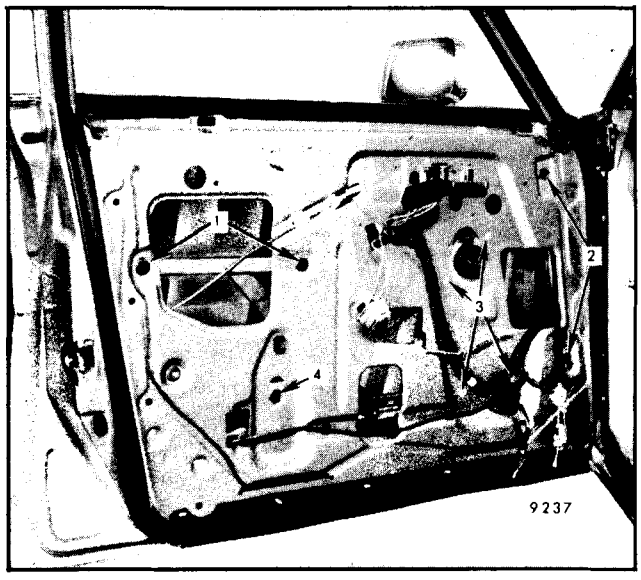


Fig. 5-128 - Window Hardware Attachments - "K" Styles

1. Inner Panel Cam Screws
2. Glass Run Channel Retainer Screws
3. Window Regulator Rivets
4. Down Stop Screw

4. Lift glass up and back at 45 degree angle until front roller is disengaged, then straighten glass in opening and lift out of door inboard of upper frame.
5. To install, reverse removal procedure. Adjust window for proper alignment. Torque inner panel cam attaching screws to 72 in-lb.

DOOR WINDOW ASSEMBLY - "H and X" Styles

The door window assembly consists of a frameless piece of solid tempered safety plate glass bonded to a lower sash channel which incorporates a lower sash channel cam. With this design, the door glass, lower sash channel and cam are removed from the door as a unit and replacement glass is installed as a bench operation.

Adjustments

The inner panel cam (Fig. 5-129) is adjustable and can correct a rotated (cocked) window assembly.

"H-07, 27" styles do not have an adjustable down stop. To adjust down-travel on other styles, loosen stop (Fig. 5-129 - "H-11, 15, 77" styles; Fig. 5-85 - "X" styles) and adjust glass to desired height at

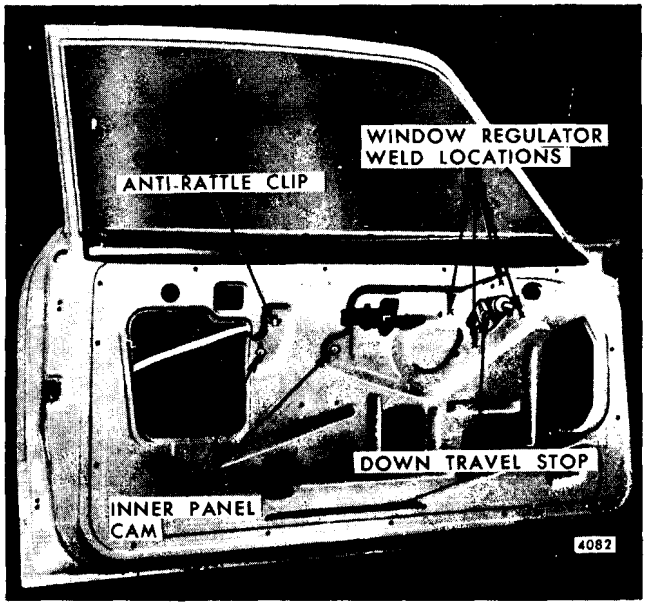


Fig. 5-129-Window Removal and Adjustment - Typical Door for "H" and "X" Styles

beltline. Position stop to contact glass ("X" styles) or regulator ("H" styles) and torque attaching screw to 72 in-lb.

Removal and Installation

1. Remove door trim assembly, inner panel water deflector and door window inner belt sealing strip as previously described.
2. Lower window to half-down position and remove inner panel cam (Fig. 5-129).
3. Remove front glass run channel ("11", Figure 5-78 for "H-07" styles, "2", Fig. 5-84 for "X" styles). Removal is not necessary for "H-27" style.
4. Lower front edge of glass and slide window lower sash channel cam off window regulator lift arm rollers. Remove window inboard of door upper frame. For "H-27" style, remove window outboard of door upper frame.
5. To install, reverse removal procedure. Adjust window for proper alignment. Torque attaching screws to 72 in-lb.

FRONT DOOR WINDOW REGULATOR - "X" Styles

Removal and Installation

1. Remove front door trim assembly and inner panel water deflector.
2. Secure window in full-up position with pieces of cloth-backed body tape applied over door frame.
3. Mark location and remove inner panel cam attaching screws ("1", Fig. 5-85) and inner panel cam as previously described. On electric regulators, disconnect wire harness connector at window regulator motor.
4. Drive out rivet center pin with punch and drill out four regulator attaching rivets with a 1/4" drill bit; then remove regulator.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

5. If replacement regulator does not have attaching nuts, place "U" nut (part no. 3916700 or 3982098 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.
6. To install regulator, attach to inner panel with 1/4 - 20 x 1/2" attaching screw, part no. 9419723 or equivalent. Torque attaching screws to 72 in-lb.
7. Reconnect wire harness connector to window regulator motor on electrically operated regulators. Reinstall previously removed parts.

FRONT DOOR WINDOW REGULATOR - "A-29, 35" Styles

Removal and Installation (Refer to Fig. 5-67)

1. Remove upper and lower door trim assembly and detach inner panel water deflector.
2. Prop window in full-up position by inserting a rubber door stop between the door inner panel and door glass at front and rear of window (Fig. 5-130).
3. Mark location and remove inner panel cam attaching screws ("8", Fig. 5-67) and remove down stop ("12", Fig. 5-67). On electrically operated regulators, disconnect wire harness connector at window regulator motor.

4. Drive out regulator attaching rivet center pins with punch and drill out rivets with 1/4" drill bit.

5. Slide front regulator upper balance arm off sash cam, then slide rear lift arm forward off sash cam.

6. Slide regulator rearward and remove through lower rear access hole.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

7. If replacement regulator does not have attaching nuts, place "U" nuts (part no. 3916700 or 3982098 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.

8. To install regulator, reverse removal procedure, attach regulator to inner panel with 1/4 - 20 x 1/2" screws (part no. 9419723 or equivalent). Torque attaching screws to 72 in-lb.

DOOR WINDOW REGULATOR - "A-37, 57, 80" Styles

Removal and Installation (Refer to Fig. 5-69)

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

2. Prop window in full-up position by inserting rubber wedge door stops between window and inner panel (at belt) at front and rear of window (Fig. 5-130).

3. Mark location and remove inner panel cam attaching screws ("8", Fig. 5-69).

4. Mark location and remove rear guide upper and lower attaching screws ("5" and "7", Fig. 5-69), then remove rear guide.

5. On electric regulators mark location and remove down-travel stop ("12", Fig. 5-69). Disconnect wire harness connector at window regulator motor.

6. Drive out regulator attaching rivet center pins with punch and drill out rivets with 1/4" drill bit.

7. Remove front lower sash channel cam to glass attaching nut ("10", Fig. 5-69).

8. Slide regulator forward until front upper balance arm roller is out of sash channel cam.

9. Lift regulator to clear rear roller on glass and slide rear regulator lift arm rearward until it disengages from rear of sash channel cam.

10. Remove regulator through rear access hole.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

11. If replacement regulator does not have attaching nuts, place "U" nuts (part no. 3916700 or 3982098 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.

12. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4 - 20 x 1/2" attaching screws (part no. 9419723 or equivalent). Torque attaching screws and nuts to 72 in-lb.

FRONT DOOR WINDOW REGULATOR - "B,C" Styles

Removal and Installation

1. Remove door armrest, trim panel and water deflector.

2. Prop window in raised position with rubber door stops (Fig. 5- 130) or with cloth body tape applied over door frame.

3. Remove inner panel cam ("1", Fig. 5-115).

4. Punch out window regulator rivet center pins, then drill out rivets with 1/4" drill bit.

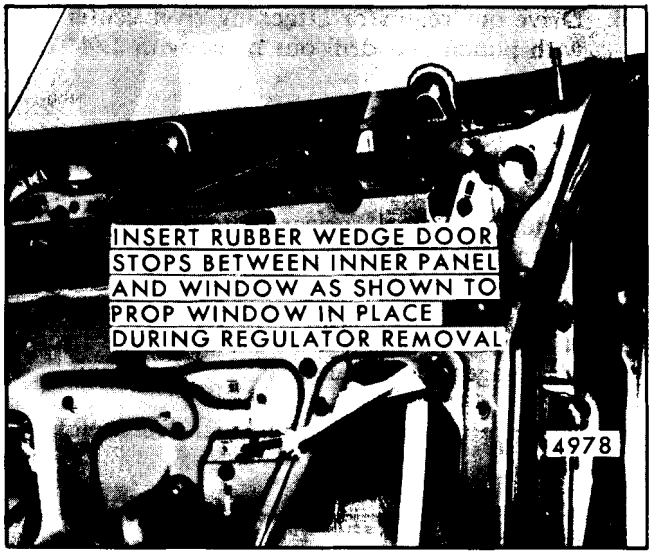


Fig. 5-130-Door Window Propped in Place for Regulator Removal

5. Disengage regulator rollers from sash channel cam and remove regulator from door. On electric regulators, disengage wire harness at motor connector.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

6. To install, reverse removal procedure. Place "U" nuts (part no. 3916700 or 3982098 or equivalent) over attaching holes in regulator backplate. Attach regulator to inner panel with 1/4 -20 x 1/2" screws (part no. 9419723 or equivalent). Torque all attaching screws to 8 N·m (72 in-lb).

DOOR WINDOW REGULATOR - "E" Styles

Removal and Installation (Refer to Fig. 5-73)

1. Remove upper and lower portion of door trim assembly and detach inner panel water deflector.

2. Remove inside locking rod as previously described.

3. Lower window to half-down position. Punch out rivet center pins, then drill out rivets ("4", Fig. 5-73) with 1/4" drill bit. Disengage regulator lift arm roller from lower sash channel cam and prop window in full-up position with rubber door stops as shown in Figure 5-130. Remove by rotating regulator so that motor portion of regulator comes out access hole first.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

4. If replacement regulator does not have attaching nuts, place "U" nuts (part no. 3916700 or 3982098 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.

5. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4 - 20 x 1/2" attaching screws (part no. 9419723 or equivalent). Torque attaching screws to 72 in-lb.

DOOR WINDOW REGULATOR - "F" Styles

Removal and Installation (Refer to Fig. 5-75)

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

2. Mark location and remove door window and inner panel cam as previously described.

3. On electric styles, disconnect wire harness connector at regulator motor.

4. Drive out regulator attaching rivet center pins with punch, then drill out rivets with 1/4" drill bit. Remove regulator through large access hole.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

5. If replacement regulator does not have attaching nuts, place "U" nuts (part no. 3916700 or 3982098 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.

6. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4 - 20 x 1/2" attaching screws (part no. 9419723 or equivalent). Torque attaching screws to 72 in-lb.

DOOR WINDOW REGULATOR - All "H" Styles

Window regulator assemblies on all "H" styles are welded to the door inner panel. Due to the positive attachment of the regulator assembly to the door inner panel, inner panels and service replacement regulators have pierced holes ("5", Fig. 5- 77) and are attached with "U" nuts and 1/4-20 x 1/2" attaching screws.

Removal and Installation

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

2. Tape window in a full-up position and remove inner panel cam as previously described.

3. Center punch visible window regulator weld marks on door inner panel (refer to Fig. 5-129 for location). Using a spot weld cutter, tool J-8943-01 or equivalent, drill out each weld (Fig. 5- 131).

   NOTE: A slight amount of weld may still retain the regulator assembly to the inner panel. Drive a chisel between the regulator assembly and inner panel to separate the regulator from the panel.

4. Slide regulator assembly balance and lift arm rollers out of lower sash channel cam, then remove regulator through large access hole.

5. Place "U" nuts (part no. 3916700 or 3982098 or equivalent) over each attaching hole on replacement regulator. Be sure integral nut is on outboard side of regulator back plate.

6. To install regulator assembly, slide balance and lift arm rollers into lower sash channel cam and align regulator attaching holes with pierced holes in the door inner panel. Attach regulator assembly to door inner panel with 1/4 - 20 x 1/2" attaching screws (part no. 9419723 or equivalent). Install all previously removed parts. Torque attaching screws to 72 in-lb.

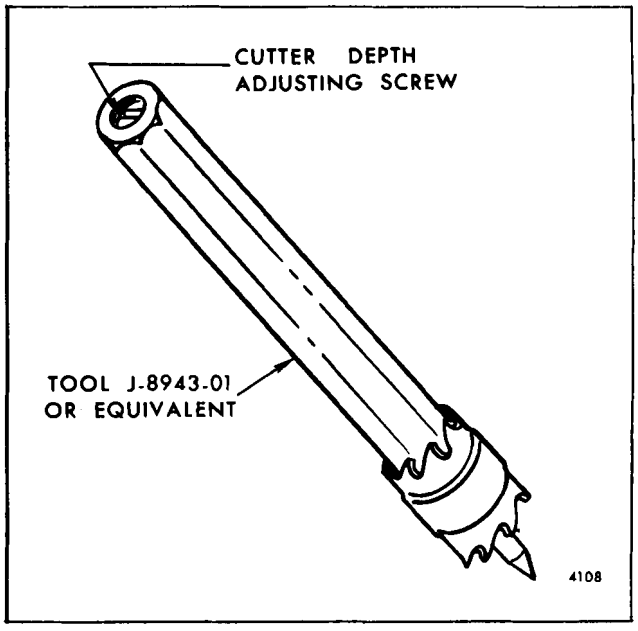


Fig. 5-131-Spot Weld Cutter

FRONT DOOR WINDOW REGULATOR - "K" STYLES

Removal and Installation

1. Remove front door trim panel assembly, inner panel water deflector and door insulator.

2. Mark location and remove inner panel cam attaching screws ("1", Fig. 5-128), then remove inner panel cam.

3. Disengage spring clip from remote handle to door lock and remove remote handle and rod assembly.

4. Lower window to half-down position, then remove window as previously described.

WARNING: THE REGULATOR AND MOTOR MUST BE REMOVED AS AS ASSEMBLY WHEN THE WINDOW IS REMOVED OR DISENGAGED FROM THE REGULATOR LIFT ARMS. THE REGULATOR LIFT ARMS, WHICH ARE UNDER TENSION FROM THE COUNTERBALANCE SPRING, CAN CAUSE SERIOUS INJURY IF THE MOTOR IS REMOVED FROM THE REGULATOR WITHOUT LOCKING THE SECTOR GEARS IN POSITION.

5. Punch out rivet center pins and drill out regulator attaching rivets with a 1/4" drill bit; slide assembly rearward to allow disconnecting of regulator motor wire harness connector. Feed arms of regulator through large access hole first; then complete removal of regulator.

6. Place "U" nuts (part no. 3916700 or 3982098 or equivalent) over each attaching hole on replacement regulator.

7. To install regulator, reverse removal procedure. Attach to inner panel with 1/4 - 20 x 1/2" attaching screws (part no. 9419723 or equivalent). Torque attaching screws to 72 in-lb.

FRONT DOOR WINDOW REAR GUIDE - All "A" Styles

Removal and Installation (Refer to Fig. 5-67)

1. Remove front door upper and lower trim assembly and inner panel water deflector.

2. With window in full-up position, mark location of rear guide upper attaching screws ("5" and "7", Fig. 5-67) and rear up-travel stop (on rear guide) attaching screw ("3", Fig. 5-67). Remove stop from rear guide.

3. Remove rear guide upper attaching bracket to door inner panel attaching screws ("5", Fig. 5-67).

4. Remove rear guide lower attaching screw ("7", Fig. 5-67).

5. Slide lower end of guide forward and disengage from roller. Remove guide, upper end first, through access hole.

6. To install, reverse removal procedure. Align components to previously marked positions. Torque attaching screws to 60 to 90 in-lb. If additional adjustment is required, refer to Door Window Adjustments.

DOOR WINDOW GUIDE TUBE, UPPER AND LOWER SASH GUIDES - "E" Styles

Removal and Installation (Refer to Fig. 5-73)

1. Remove door trim assembly (upper and lower portion) and inner panel water deflector as previously described.

2. Prop window in half-raised position with rubber door stop wedges as shown in Figure 5-130.

3. Mark location of lower sash upper and lower guide attachments ("2" and "5", Fig. 5-73) and remove attachments.

4. Remove guide tube upper and lower attachments ("1", Fig. 5-73) lower guide tube into door and remove through access hole, upper end first, along with upper and lower sash guides.

5. To install, reverse removal procedure. Install upper and lower sash guides to premarked position to insure proper glass alignment. Torque previously removed attaching nuts and screws to 72 in-lb. If additional adjustment is required, refer to Door Window Adjustment.

DOOR WINDOW FRONT GUIDE AND/OR REAR GUIDE - "F" Styles

Removal and Installation (Refer to Fig. 5-75)

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

2. With window in full-up position, remove front up-stop ("1", Fig. 5-75) from guide (front guide removal only).

3. Remove guide upper and lower attaching screws, ("5" and "8", Fig. 5-75 for front guide; "6" and "9", Fig. 5-75 for rear guide).

4. Pull guide down to disengage from window roller. Remove guide through large access hole.

5. To install, reverse removal procedure. Torque attaching screws to 72 in-lb. If adjustment is required, refer to Door Window Adjustment.

FRONT GLASS RUN CHANNEL RETAINER - "B,C and K" Styles

Removal and Installation

1. Remove door trim and inner panel water deflector.

2. On "K" styles, remove door window as previously described. On "B,C" styles, raise window to full-up position.

3. Remove front retainer upper and lower attaching screws ("2", Fig. 5-115 typical).

4. Disengage from run channel and remove from door.

5. To install, reverse removal procedure. Torque attaching screws to 8 N·m (72 in-lb).

GLASS RUN CHANNEL - "B,C,K and X" Styles

Removal and Installation

1. On "K and X" styles, remove front door window as previously described. On "B and C" styles, remove front run channel retainer, then lower glass.

2. With finger pressure, squeeze run channel together and pull channel from frame.

3. To install, reverse removal procedure. If sealer was used on original installation, apply sealer at original locations prior to installing run channel.

REAR DOORS

INTRODUCTION

Information in this section concerns operations applicable to rear doors only. Procedures for removal of water deflectors, weatherstrips, door handles, door lock system components, sash channel cam, inner panel cam, window regulator motor, and door trim are outlined in the Front and Rear Doors and Door Trim portions of this section.

Figures 5-132 through 5-139 illustrate rear doors for the various body styles with the trim and inner panel water deflector removed. These figures identify the component parts of the rear door assembly and hardware attaching points.

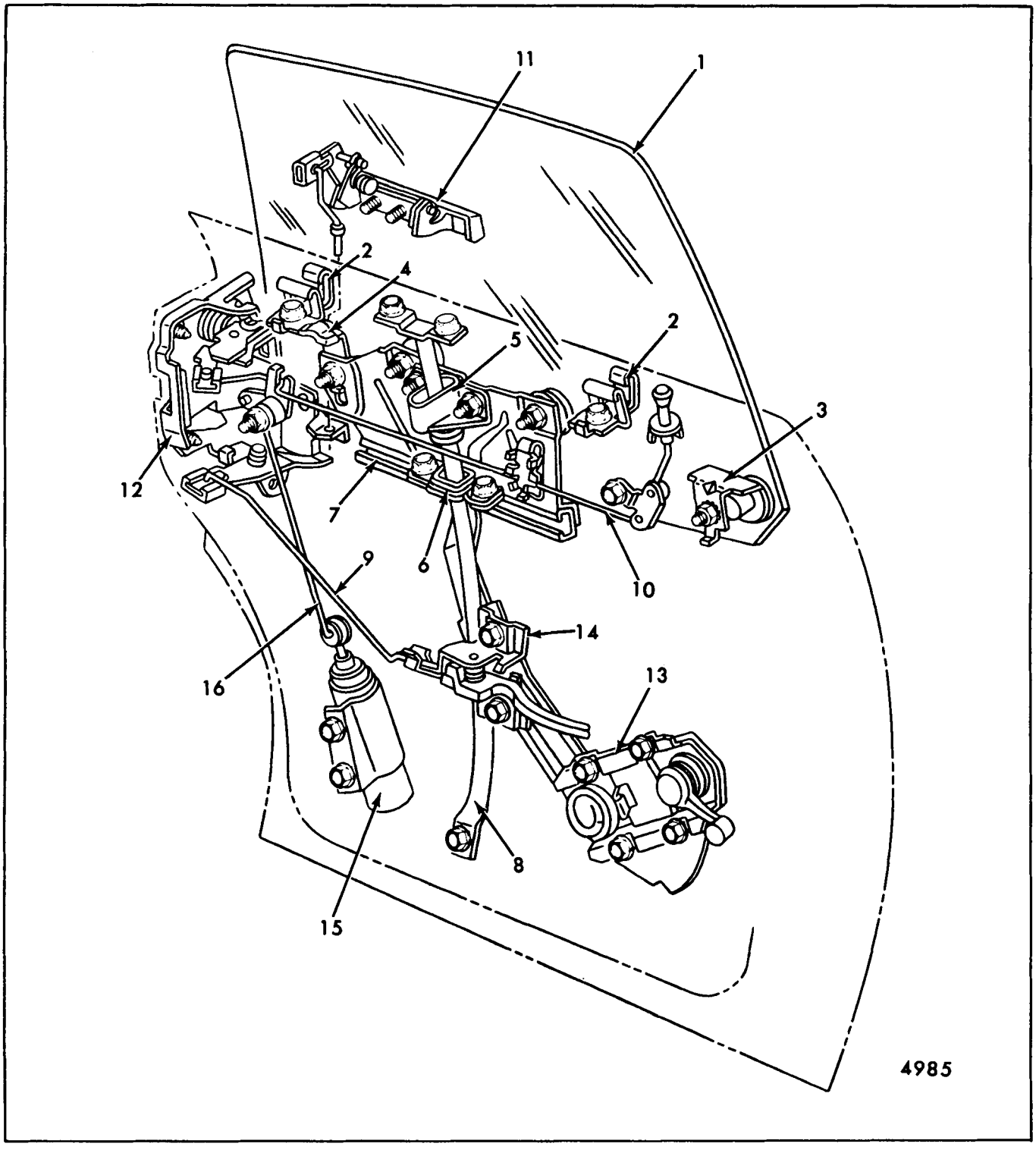


Fig. 5-132-Rear Door Hardware - "A-29,35" Styles

1. Window Assembly
2. Belt Trim Support Retainers
3. Front Up-Travel Stop
4. Rear Up-Travel Stop
5. Lower Sash Upper Guide
6. Lower Sash Lower Guide
7. Lower Sash Guide Plate
8. Guide Tube
9. Inside Handle to Lock Connecting Rod
10. Inside Locking Rod
11. Outside Handle
12. Door Lock
13. Window Regulator (Electric)
14. Inside Remote Handle
15. Door Lock Actuator (Opt.)
16. Solenoid Connecting Rod

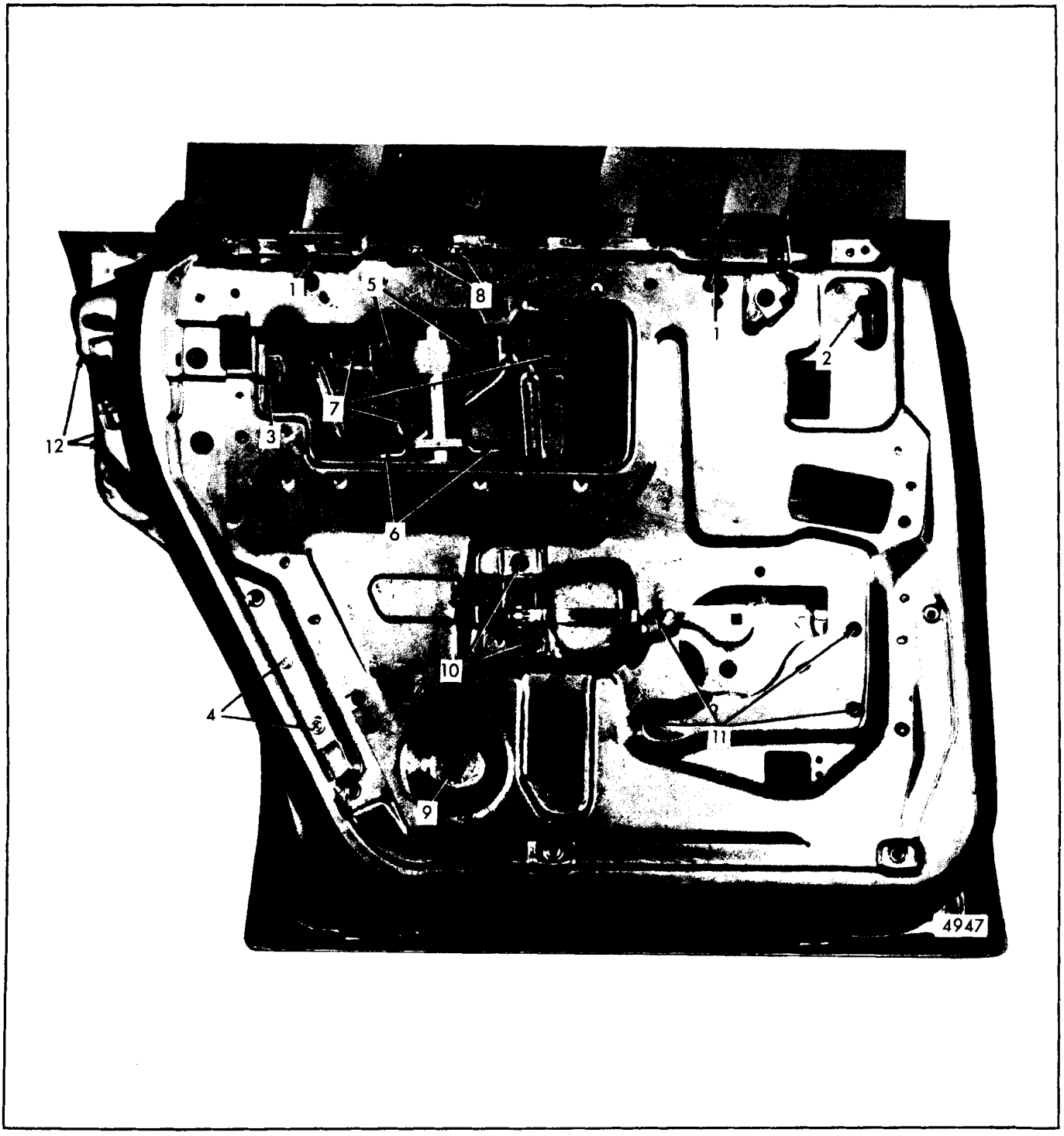


Fig. 5-133-Rear Door Hardware Attachments - "A-29,35" Styles

1. Belt Trim Support Retainer Screws
2. Front Up-Travel Stop Screw
3. Rear Up-Travel Stop Screw
4. Power Door Lock Actuator Rivets
5. Lower Sash Upper Guide Attaching Nut
6. Lower Sash Lower Guide Attaching Screw
7. Lower Sash Guide Plate Attaching Nuts
8. Guide Tube Upper Screws
9. Guide Tube Lower Screw
10. Inside Remote Handle Screws
11. Window Regulator Rivets
12. Door Lock Screws

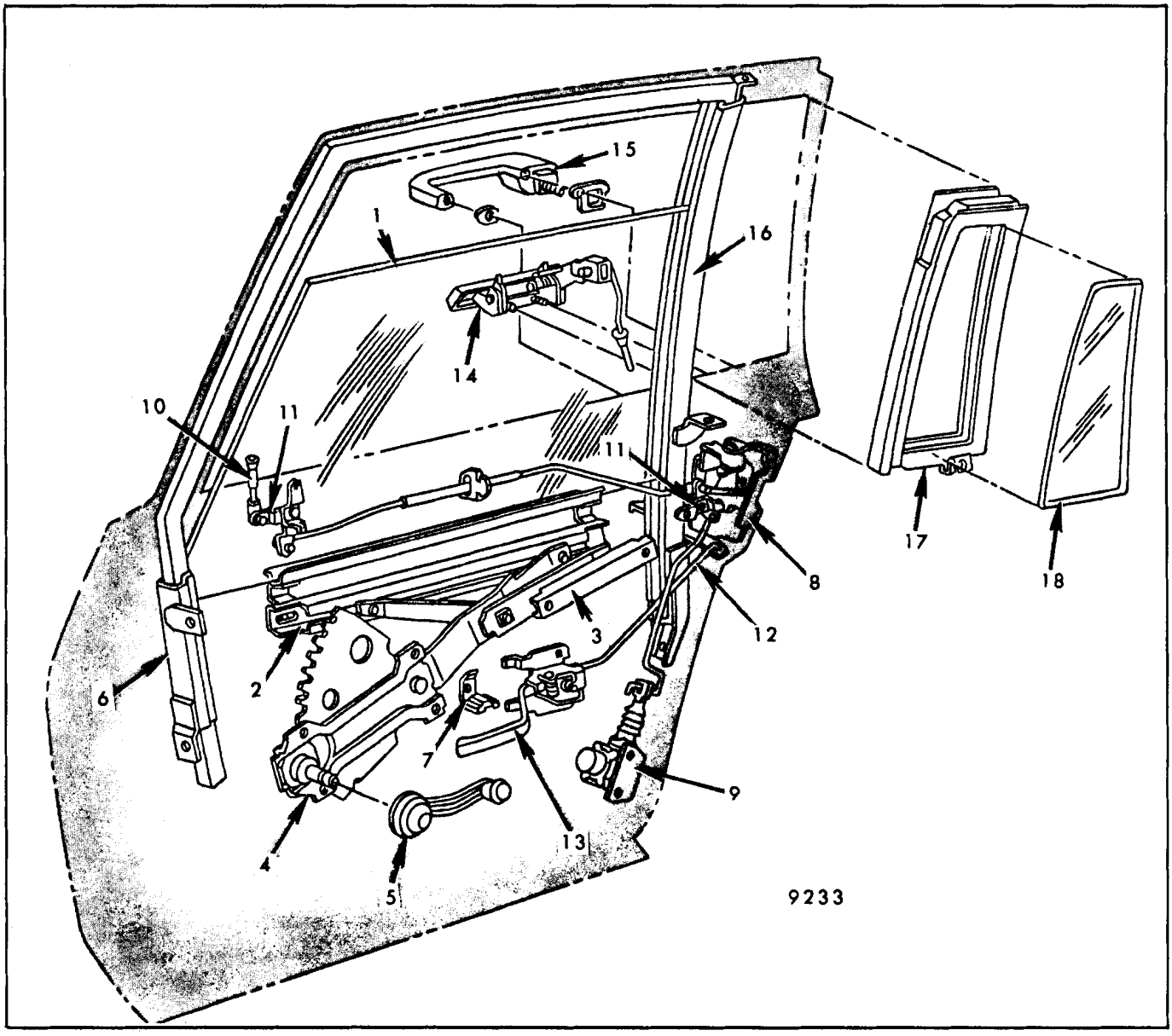


Fig. 5-134 - Rear Door Hardware - "B,C" Styles

1. Window Assembly
2. Lower Sash Channel Cam
3. Inner Panel Cam
4. Window Regulator
5. Window Regulator Handle
6. Glass Run Channel Retainer
7. Down Stop (on Impact Bar)
8. Door Lock
9. Power Lock Actuator
10. Inside Locking Rod
11. Locking Rod Bell Crank
12. Inside Handle Connecting Rod
13. Inside Remote Handle
14. Outside Handle (Lift Bar Type)
15. Outside Handle (Push Button Type)
16. Division Channel
17. Vent Glass Rubber Channel
18. Stationary Vent Glass

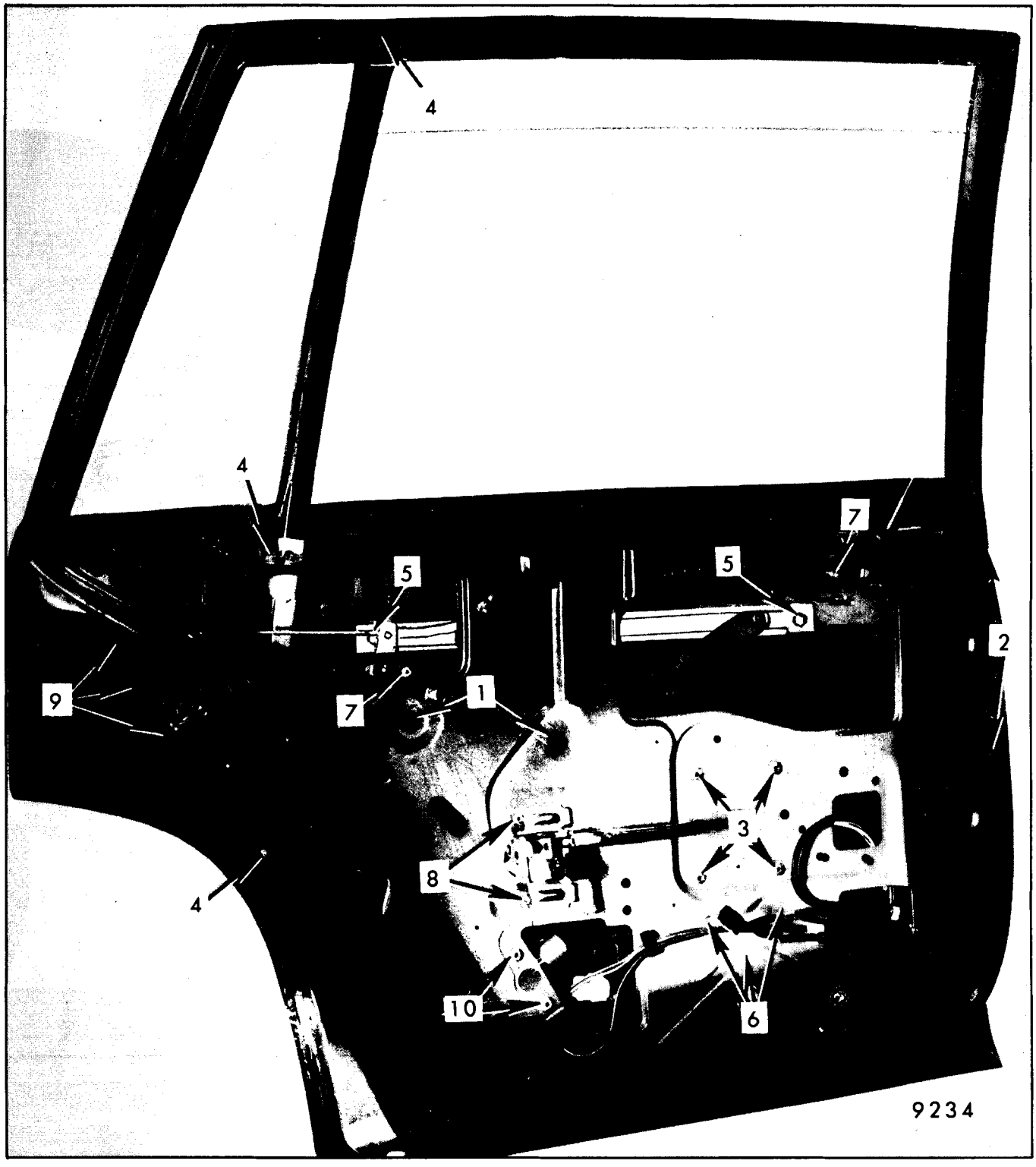


Fig. 5-135 - Rear Door Hardware Attachments - "B,C" Styles

1. Inner Panel Cam Screws
2. Run Channel Retainer Screws (on Hinge Pillar)
3. Window Regulator Rivets
4. Division Channel Screws (3)
5. Sash Channel Cam Screws
6. Window Regulator Motor Bolt Locating Dimples
7. Bell Crank Rivets
8. Inside Remote Handle Rivets
9. Door Lock Screws
10. Power Door Lock Actuator Rivets

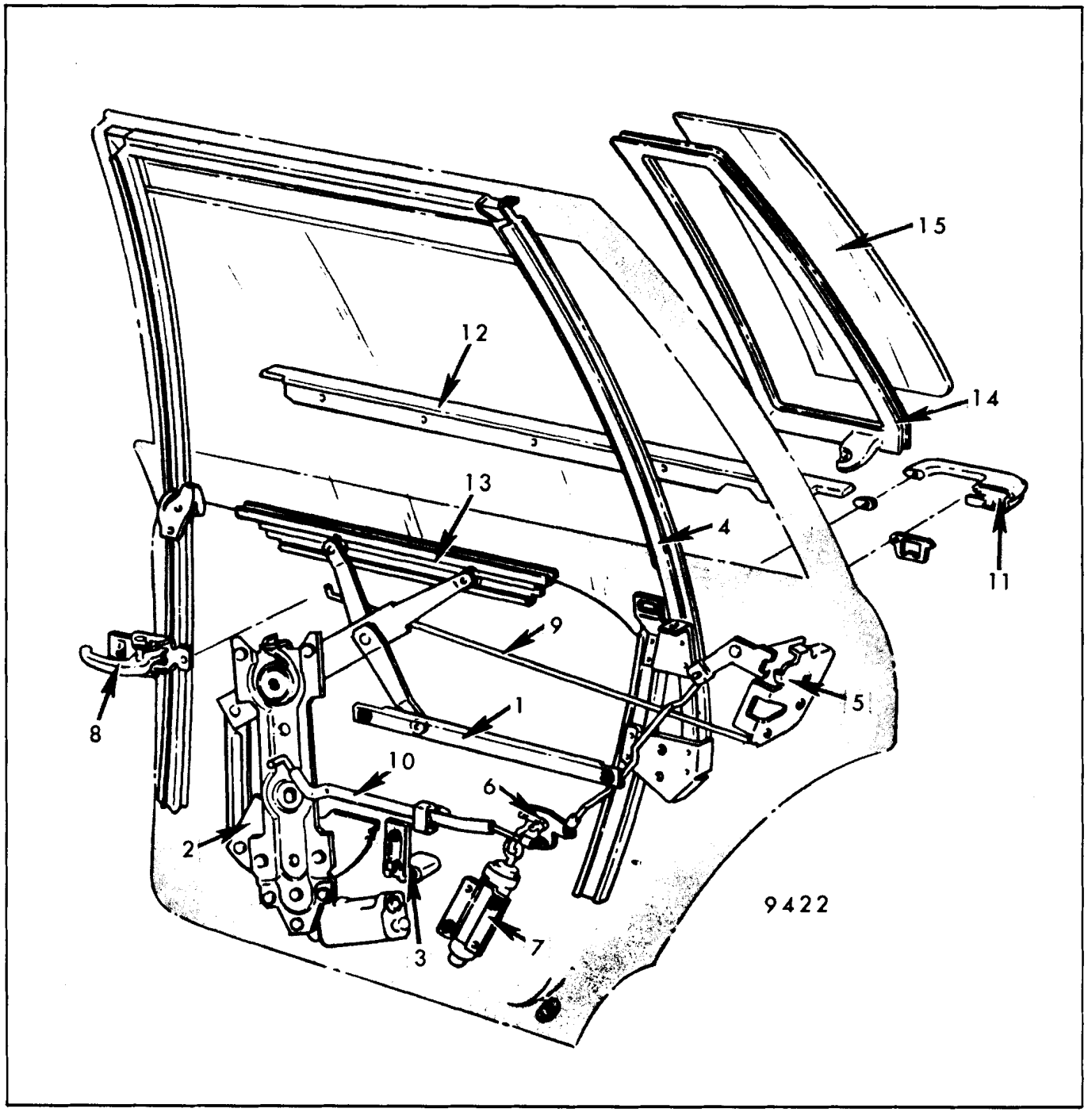


Fig. 5-136-Rear Door Hardware - "K" Styles

1. Inner Panel Cam
2. Window Regulator
3. Down Stop
4. Vent Division Channel
5. Door Lock
6. Locking Rod Bell Crank
7. Power Lock Actuator
8. Inside Remote Handle
9. Handle to Lock Connecting Rod
10. Inside Locking Rod
11. Outside Handle
12. Outer Belt Sealing Strip
13. Lower Sash Channel Cam
14. Vent Glass Rubber Channel
15. Stationary Vent Glass

Fig. 5-137 - Rear Door Hardware Attachments - "K" Styles

1. Inner Panel Cam Screws
2. Window Regulator Rivets
3. Down Stop Screw
4. Vent Division Channel Screws (3)
5. Door Lock Screws
6. Locking Rod Bell Crank Nut
7. Power Lock Actuator Rivets
8. Inside Remote Handle Rivet

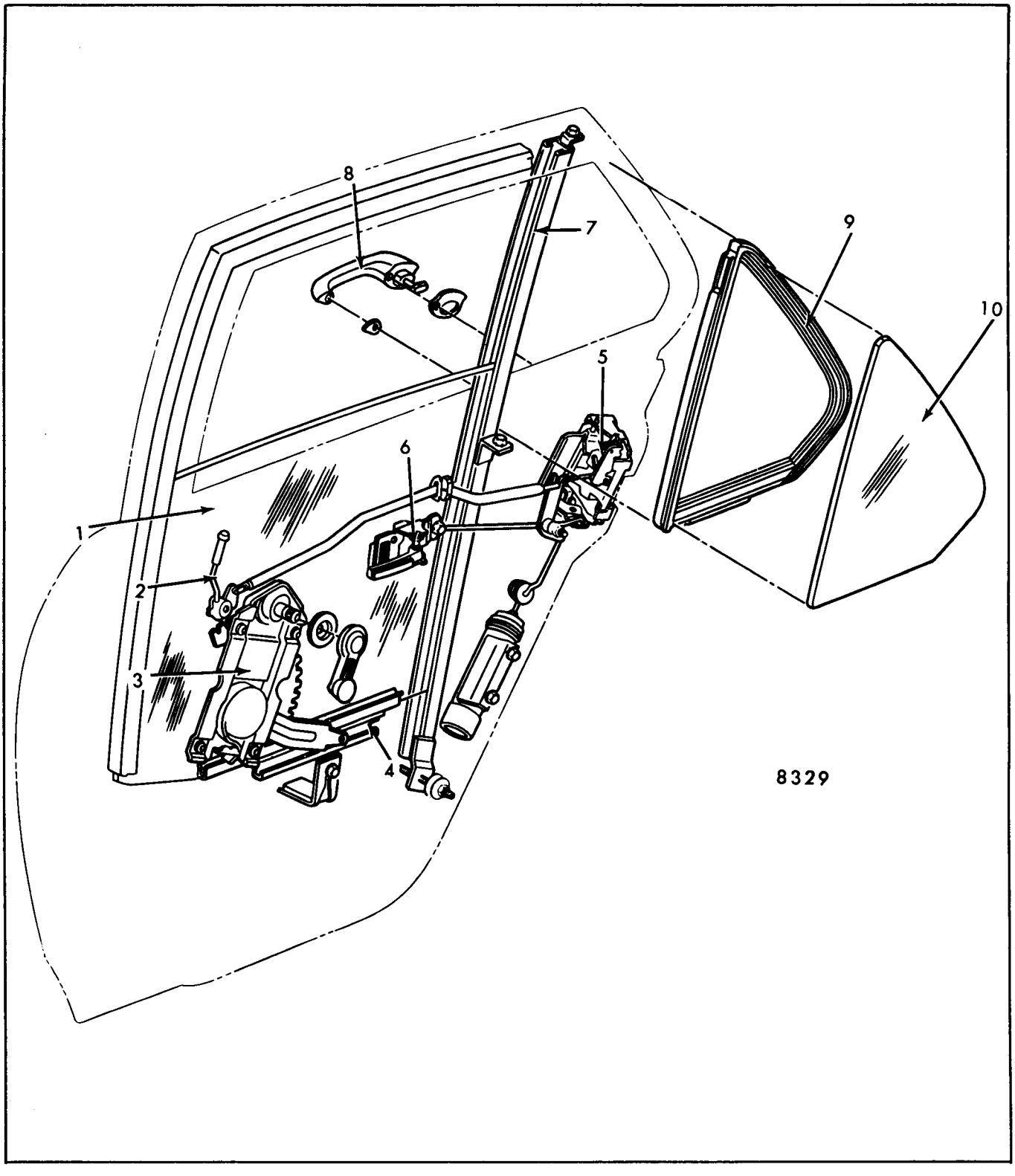


Fig. 5-138-Rear Door Hardware - "X-69" Styles

1. Window Assembly
2. Inside Locking Rod
3. Window Regulator
4. Lower Sash Channel Cam
5. Door Lock
6. Inside Remote Handle
7. Vent Division Channel
8. Outside Handle
9. Stationary Vent Glass Rubber Channel
10. Stationary Vent Glass

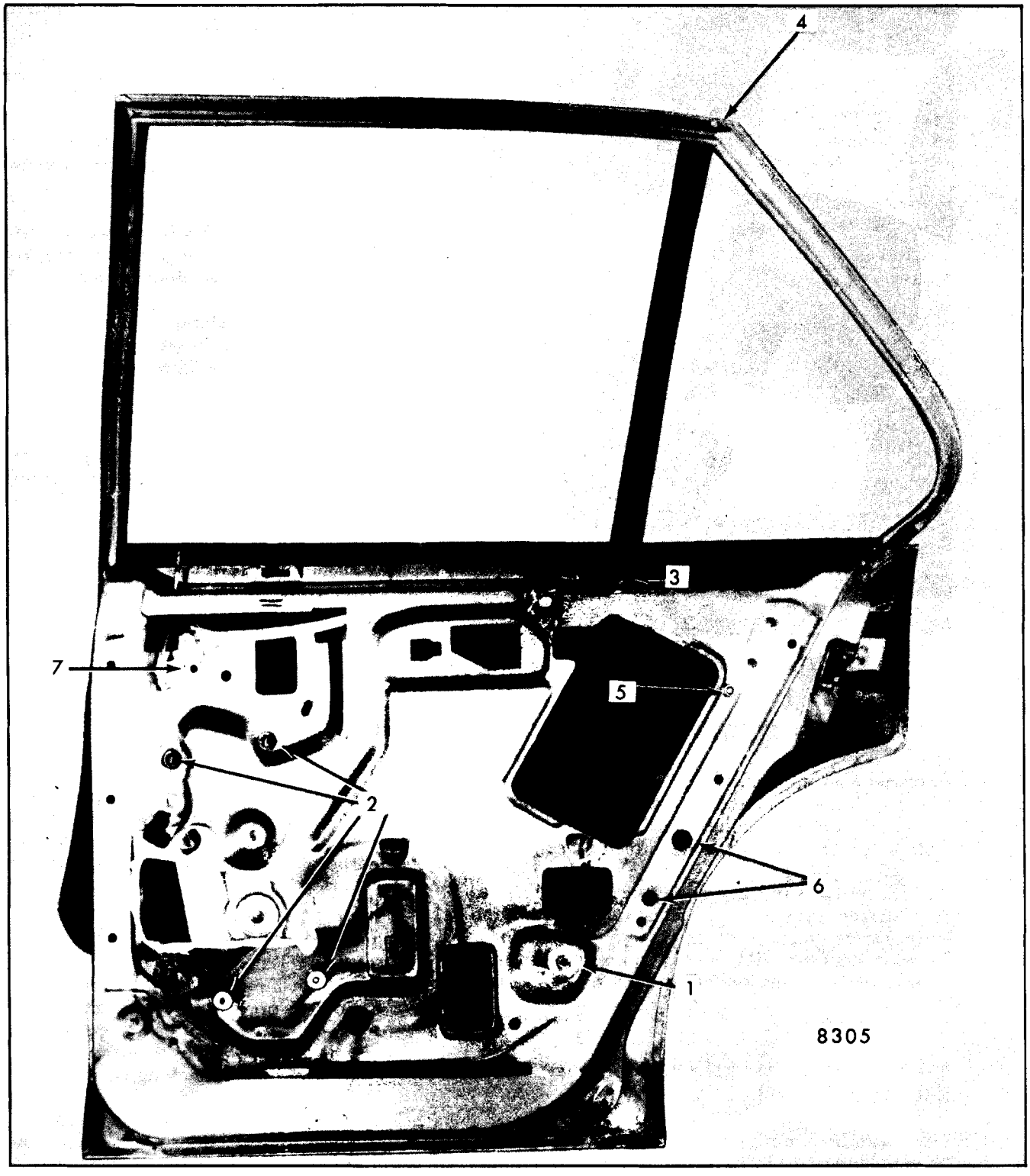


Fig. 5-139-Rear Door Hardware Attachments - "X-69" Style

1. Vent Division Channel Lower Adjusting Stud
2. Window Regulator Rivets
3. Vent Division Channel Attaching Screw
4. Vent Division Channel Upper Attaching Screw
5. Actuator Locking Rod Bell Crank Attaching Nut
6. Power Door Lock Actuator Screws
7. Locking Rod Bell Crank Assembly

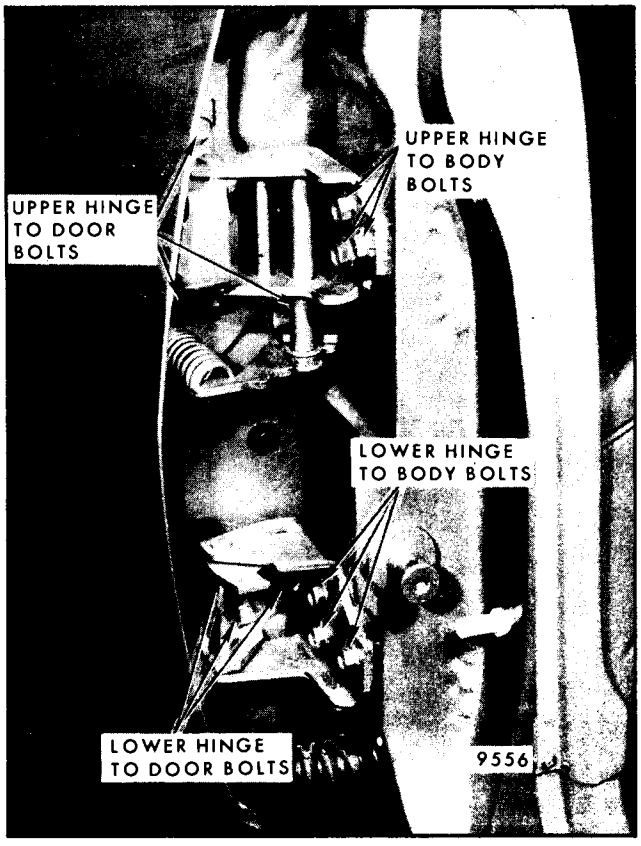


Fig. 5-140-Typical Rear Door Hinge Installation

REAR DOOR ADJUSTMENT

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.

NOTE: When adjusting door fore or aft, refer to door striker adjustment specifications in Front and Rear Doors portion of this section. If door is adjusted REARWARD and is equipped with jamb switch, replace jamb switch as described in Section 10 (Electrical).

REAR DOOR REMOVAL AND INSTALLATION

Doors 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.

1. Prior to loosening any hinge bolts, mark location of hinges on door or center pillar, depending on removal method being used.

2. On doors equipped with power operated components, proceed as follows:

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

   b. Disconnect wire harness from all components in door.

   c. Remove rubber conduit from door, then remove wire harness from door through conduit access hole.

3. With door properly supported, loosen upper and lower hinge attaching bolts from door or center pillar and remove door from body (Fig. 5-140).

4. Prior to reinstalling the door to the body, clean off old sealer at hinge attaching areas and apply a coat of heavy-bodied sealer to surface of hinge that mates with center pillar or door hinge pillar to prevent corrosion.

5. With aid of a helper, lift door into position and loosely install hinge bolts. Align hinges within pencil marks previously made and tighten hinge attachments.

6. Install all previously removed parts and check door for proper alignment.

7. Torque bolts to 20 to 29 N·m (14 to 22 ft-lb).

REAR DOOR HINGES

All rear door hinges are constructed of steel. A two stage hold-open feature is incorporated in all lower hinges except on some "X" styles which do not have a hold-open feature and "A-29,35" styles which incorporate the hold-open in the upper hinge.

Hinge Removal and Installation

1. If both hinges are to be removed, remove rear door as previously described. Mark position of hinge on door or center pillar depending on which door removal method was used and remove hinge attaching bolts.

2. With door properly supported, remove upper or lower hinge to door and center pillar attaching bolts and remove hinge from door.

3. To install, reverse removal procedure. Apply a coat of heavy- bodied sealer to surface of hinge that mates with the center pillar and door hinge pillar to prevent corrosion. Adjust door as required.

4. Torque bolts to 20 to 29 N·m (14 to 22 ft-lb).

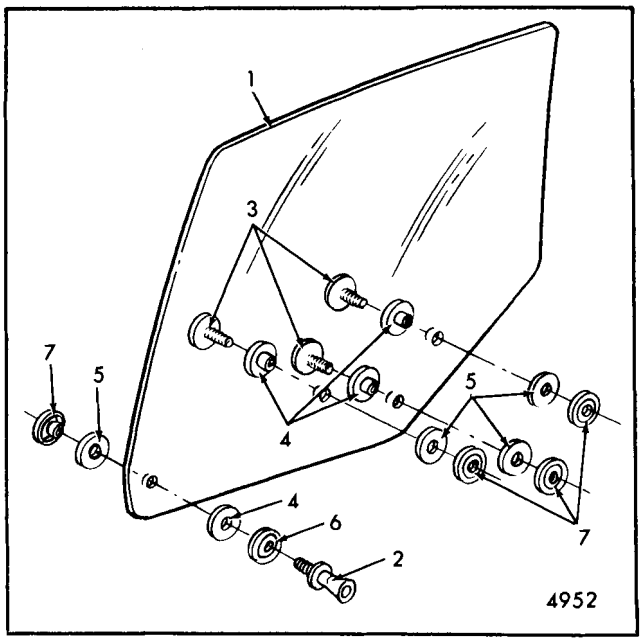


Fig. 5-141-Rear Door Window Assembly - "A-29, 35" Styles

1. Window Glass
2. Up-Travel Stop
3. Bolt
4. Spacer
5. Washer (Plastic)
6. Washer (Metal)
7. Nut

REAR DOOR WINDOW ASSEMBLY - "A-29, 35" Styles

The rear door window assembly consists of a frameless solid tempered safety plate glass window with a bolted-on lower sash guide plate assembly which operates on a single vertical guide tube located in the center of the door.

Figure 5-141 is an exploded view of the window assembly and identifies the various components and their sequence of assembly.

NOTE: When replacing a window assembly, install new glass spacers and washers ("4" and "5", Fig. 5-141) and torque glass component attaching nuts to 72 in-lb.

Adjustments

1. WINDOW ROTATED - Loosen front and rear up-travel stops ("2" and "3", Fig. 5-142) and lower sash upper guide ("4", Fig. 5-142). Position glass with upper edge parallel with side roof rail weatherstrip and tighten lower sash upper guide attaching nuts. Raise glass to desired position and adjust up-travel stops.
2. WINDOW INBOARD OR OUTBOARD ALONG UPPER EDGE - Loosen belt trim support retainers ("1", Fig. 5-142) and lower sash lower guide ("5", Fig. 5-142) and position glass inboard or outboard as required and tighten lower guide. With glass in a full-up position, adjust belt trim support retainers.
3. WINDOW TOO HIGH OR LOW IN UP POSITION - Adjust front and rear up-travel stops ("2" and "3", Fig. 5-142) as required.
4. WINDOW TOO FAR FORWARD OR REARWARD - Adjust lower sash channel guide plate ("6", Fig. 5-142) as necessary.
5. WINDOW BINDS - Ease of window operation and window stability depend to a great extent on belt trim support retainers ("1", Fig. 5-142). Contact should be sufficient to stabilize glass, but not restrict window operation.

NOTE: After completing any adjustment, torque all previously loosened hardware attachments to 72 in-lb.

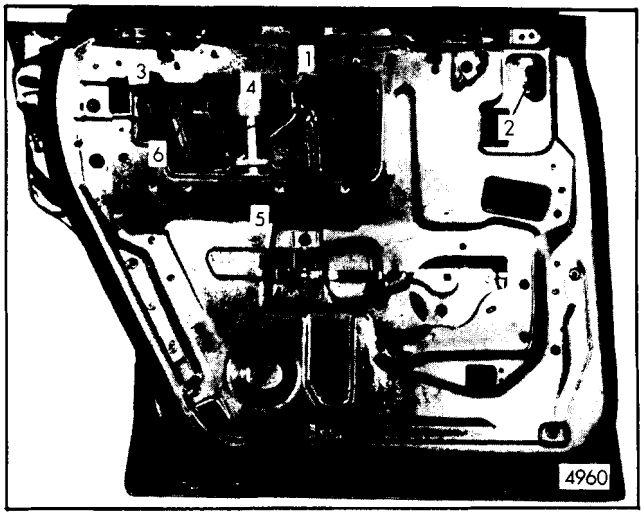


Fig. 5-142-Rear Door Window Removal and Adjustments - "A-29, 35" Styles

1. Belt Trim Support Retainer Screws
2. Window Front-Up Travel Stop Screw
3. Window Rear-Up Travel Stop Screw
4. Lower Sash Upper Guide Nuts
5. Lower Sash Lower Guide Screws
6. Lower Sash Guide Plate Nuts

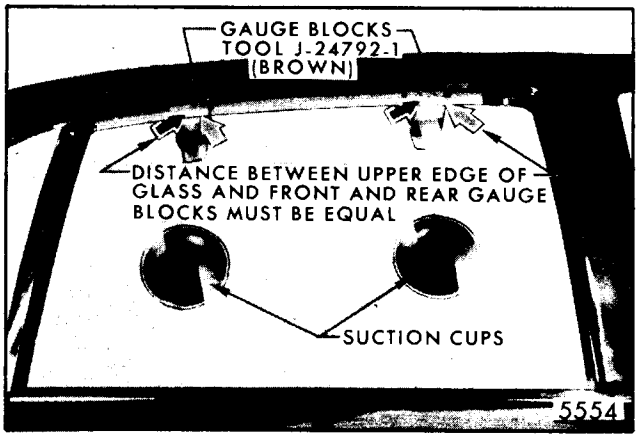


Fig. 5-143-Rear Door Window - Rotated Glass Alignment - "A- 29", 35" Styles

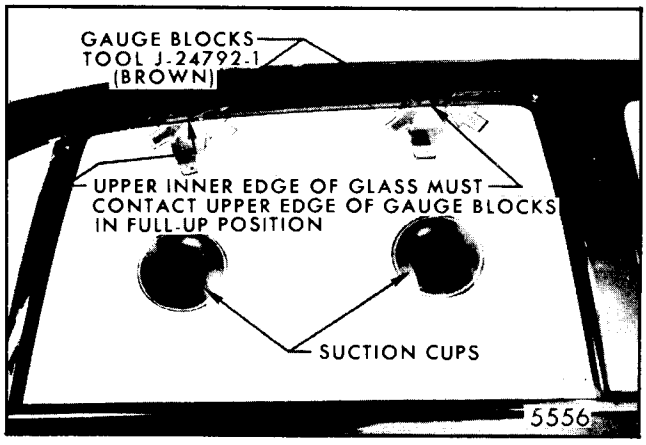


Fig. 5-145-Rear Door Window - In and Out and Up-Travel Alignment - "A-29, 35" Styles

Glass Alignment Using Gauge Blocks - "A-29, 35" Styles

To consistently locate the window glass to its specified parallel, in-out, and high-low relationships, glass alignment gauge blocks (tools J-24792-1 or equivalent) have been designed and released. The following procedure outlines proper use of gauge blocks (Fig. 5-111) to obtain the required adjustments.

1. Remove upper portion of door trim assembly as previously described.

2. Detach the side roof rail weatherstrip at the lower front and rear corners and carefully remove from the retainer.

3. Lower rear door window and install gauge blocks, tool J-24792-1 (brown) or equivalent into the side roof rail weatherstrip retainer (handles protruding inboard), as shown in Figure 5-143. Partially raise glass and install suction cups on interior surface of glass to enable adjuster to shift glass with door closed.

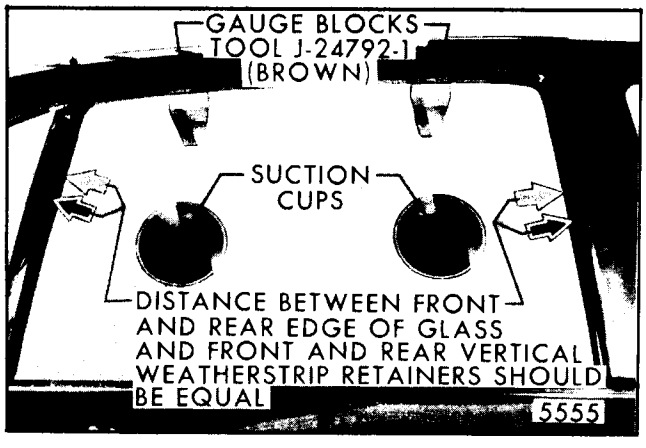


Fig. 5-144-Rear Door Window - Fore and Aft Alignment - "A-29, 35" Styles

NOTE: The grooves on the sides of the gauge blocks must be fully engaged with the side roof rail weatherstrip retainer.

4. Working from inside the body, with door closed, loosen front and rear up-travel stops ("2" and "3", Fig. 5-142) and belt trim support retainers ("1", Fig. 5-142).

5. Raise the rear door window assembly to approximately 1" from the full-up position. If the space between the upper edge of the glass and the front and rear gauge blocks is equal (as shown in Fig. 5-143), proceed with step 6; otherwise, loosen lower sash upper guide attaching nuts ("4", Fig. 5-142) and adjust glass as necessary.

6. Raise rear door window assembly until contact is established between upper edge of glass and both upper gauge blocks. Determine if the rear door window is centered fore and aft in the window opening as shown in Figure 5-144. If glass is properly positioned, proceed with step 7; otherwise, loosen sash guide plate assembly attaching nuts ("6", Fig. 5-142) and move glass forward or rearward as necessary.

7. Loosen lower sash lower guide assembly ("5", Fig. 5-142). Apply firm outboard pressure against the bottom of the lower sash guide plate assembly to remove slack in the system and to hold the upper inner edge of the glass inboard against the outer edge of the gauge blocks as shown in Figure 5-145. Then tighten lower guide attaching screws.

NOTE: Inner surface of glass must contact outer surface of the upper blocks during this adjustment. Excessive outboard pressure can tilt the glass too far inboard at the top resulting in excessive glass to side roof rail weatherstrip contact.

8. With the glass in the full-up position against the upper gauge blocks as shown in Figure 5-145, tighten up-travel stops and adjust belt trim support retainers.
9. Torque all hardware attachments to 72 in-lb.
10. Lower window and remove gauge blocks from weatherstrip retainer. Reinstall and seal weatherstrip as previously described.
11. Reinstall upper portion of door trim assembly.

Removal and Installation - "A-29, 35" Styles

1. Remove upper portion of door trim pad.
2. Remove front and rear up-travel stops ("2" and "3", Fig. 5-142) and belt trim support retainers ("1", Fig. 5-142).
3. Raise window to within 2" of a full-up position and remove lower sash guide plate assembly to glass attaching nuts ("6", Fig. 5-142).
4. Tilt upper edge of glass inboard to disengage glass from sash plate, then remove the window by lifting straight up.
5. To install, reverse removal procedure. Adjust window for proper alignment and operation as previously described. Torque previously removed hardware attachments to 72 in-lb.

REAR DOOR WINDOW ASSEMBLY - "B,C" Styles

The rear door window assembly consists of a frameless solid tempered safety plate glass window and an adhesive attached lower sash channel.

Adjustments

The inner panel cam ("1", Fig. 5-146) can be adjusted to correct a rotated window. No other adjustments are provided.

Removal and Installation

1. Remove armrest, door trim and inner panel water deflector.
2. With glass raised and supported, remove front run channel retainer ("2", Fig. 5-146) and inner panel cam ("1", Fig. 5-146).
3. Partially lower rear door window, remove sash channel cam to glass channel attaching screws ("5", Fig. 5-146).
4. Slide glass rearward and lift straight out, inboard of upper frame.
5. To install, reverse removal procedure. Adjust glass as described previously. Torque attaching screws to 8 N·m (72 in- lb).

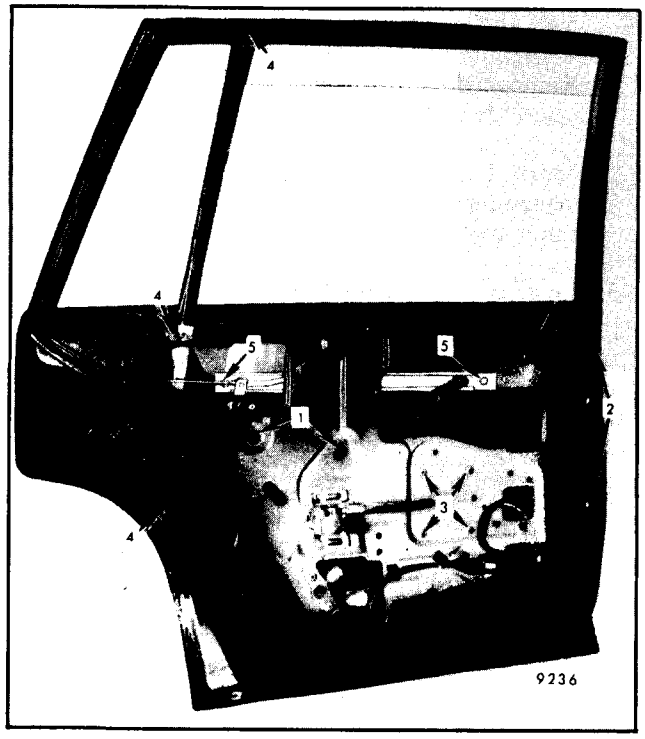


Fig. 5-146-Rear Door Window Hardware - "B,C" Styles

1. Inner Panel Cam Screws
2. Front Run Channel Retainer Screws (on Hinge Pillar)
3. Window Regulator Rivets
4. Vent Division Channel Screws (3)
5. Sash Channel Cam Screws

REAR DOOR WINDOW ASSEMBLY - "K" STYLES

The rear door window assembly consists of a frameless solid tempered safety plate glass window and a bonded lower sash channel assembly.

Adjustments

Adjustment has been provided to relieve a binding door glass due to misalignment of the ventilator division channel ("4", Fig. 5-147).

Removal and Installation

1. Remove door trim panel assembly, inner panel water deflector and door insulator.
2. Mark location and remove inner panel cam attaching screws ("1", Fig. 5-147); then remove inner panel cam.
3. Disengage remote rod from spring clip on door lock and remove inside handle and rod assembly.
4. Remove vent glass and division channel as described in this section.
5. Lower glass halfway to disengage front roller, then rotate front corner up 45 degrees to disengage rear roller. Once free of rollers, lift glass straight up inboard of upper frame.
6. To install, reverse removal procedure. Torque previously removed hardware attachments to 72 in-lb.

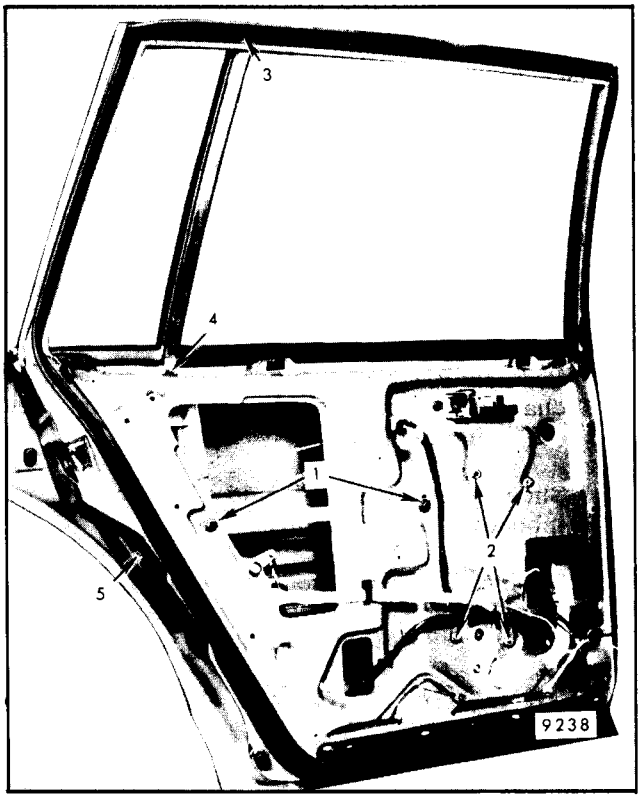


Fig. 5-147 - Rear Door Window Hardware - "K" Style

1. Inner Panel Cam Screws
2. Window Regulator Rivets
3. Division Channel Upper Screw
4. Division Channel Screw (at Beltline)
5. Division Channel Lower Screw

REAR DOOR WINDOW ASSEMBLY - "X-69" Style

The rear door window assembly consists of a frameless solid tempered safety plate glass window and a bonded lower sash channel assembly.

NOTE: If lower sash channel removal and/or installation is required, refer to the Lower Sash Channel Cam service procedure in the Front and Rear Doors portion of this section.

Adjustments

Adjustment has been provided to relieve a binding door glass due to misalignment of the ventilator division channel ("1", Fig. 5-139).

Removal and Installation

1. Remove door trim assembly and inner panel water deflector.
2. Remove rear door window stationary vent assembly as described in next operation.
3. Slide window regulator lift arm roller out of window lower sash channel cam and remove glass inboard of door upper frame.
4. To install, reverse removal procedure. Adjust window for proper operation as previously described. Torque all attachments to 72 in-lb.

REAR DOOR STATIONARY VENT DIVISION CHANNEL AND WINDOW - "X-69" Style

The stationary vent division channel is held in 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 vent window in proper position. The vent glass is set within a rubber channel.

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 ("1", Fig. 5-139).
2. Remove door window lower stop (rubber bumper) from down stop support bracket on door inner panel. If equipped with power door locks, remove bell crank and door lock solenoid assembly.
3. Remove ventilator division channel lower adjusting stud and nut ("1", Fig. 5-139).

4. Carefully lower door window and remove division channel to door upper frame attaching screw ("4", Fig. 5-139). Remove vent division channel to door inner panel (at belt) attaching screw ("3", Fig. 5-139).

5. Rotate upper section of division channel forward and outboard to clear upper frame.

6. Pull stationary vent glass and rubber channel assembly forward and remove.

7. Complete removal of division channel by lifting outboard of door upper frame.

8. To install, reverse removal procedure. Lubricate vent glass rubber channel with silicone type material to aid in installation. In-or-out and fore-or-aft adjustment of division channel is available at the lower adjusting stud and nut only. Torque attaching screws ("1" and "3", Fig. 5-139) to 72 in-lb. Tighten upper attaching screw ("4", Fig. 5-139) with hand screwdriver.

REAR DOOR STATIONARY VENT DIVISION CHANNEL AND WINDOW - "B,C" Styles

The stationary vent division channel is held in place by three attaching screws ("4", Fig. 5-146). This assembly acts as a rear door window rear glass run channel and also holds the stationary vent window in proper position. The vent glass is mounted in a rubber channel.

Removal and Installation

1. Remove armrest, door trim assembly and water deflector.

2. Remove door glass as previously described.

3. Pull run channel out of door upper frame along top of frame.

4. Remove division channel attaching screws ("4", Fig. 5-146) and pull forward off rubber channel. Rotate divison channel outboard and lift up until attaching bracket clears cutout at beltline; then lift channel inboard of frame to complete removal.

5. If vent glass is to be removed, disengage plastic fastener at rear beltline of rubber channel; slide glass and rubber channel forward and lift out.

6. To install, reverse removal procedure. Torque attaching screws to 8 N·m (72 in-lb) except cross recess screw at top of division channel (tighten with hand screwdriver).

REAR DOOR STATIONARY VENT DIVISION CHANNEL AND WINDOW - "K" STYLES

The stationary vent division channel is held in place by three attaching screws (Fig. 5-147). This assembly acts as a rear door window rear glass run channel and also holds the stationary vent window in proper position.

Removal and Installation

1. Remove door trim panel, inner panel water deflector and door insulator.

2. Remove three stationary vent division channel attaching screws ("3", "4", "5", Fig. 5-147).

3. Lower glass to full-down position. Pull channel forward at top to disengage and remove vent glass. If division channel is not to be removed, proceed to step 5.

4. Raise glass to full-up position. Disengage channel from door upper frame and lift top of channel outboard of frame at rear until bottom of channel can be removed through large access hole.

5. To install, reverse removal procedure. Tighten channel attaching screws ("4" and "5", Fig. 5-147) to 72 in-lb. Tighten upper attaching screw ("3", Fig. 5-147) with hand screwdriver.

REAR DOOR WINDOW REGULATOR - Manual - "A-29, 35" Styles

Removal and Installation (Refer to Fig. 5-133)

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

2. Raise window to a full-up position and secure in place by positioning rubber door stop wedges between the door glass and inner panel at front and rear of door (Fig. 5-148).

3. Punch out regulator attaching rivet center pins, then drill out rivets with 1/4" drill bit.

4. Disengage regulator lift arm from lower sash guide plate cam and remove window regulator through large access hole, lift arm first.

5. To install, reverse removal procedure. If replacement regulator does not have attaching nuts, place "U" nuts (part no. 3916700 or 3982098 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate. Attach regulator to inner panel with 1/4-20 x 1/2" screws (part no. 9419723 or equivalent). Torque screws to 72 in-lb.

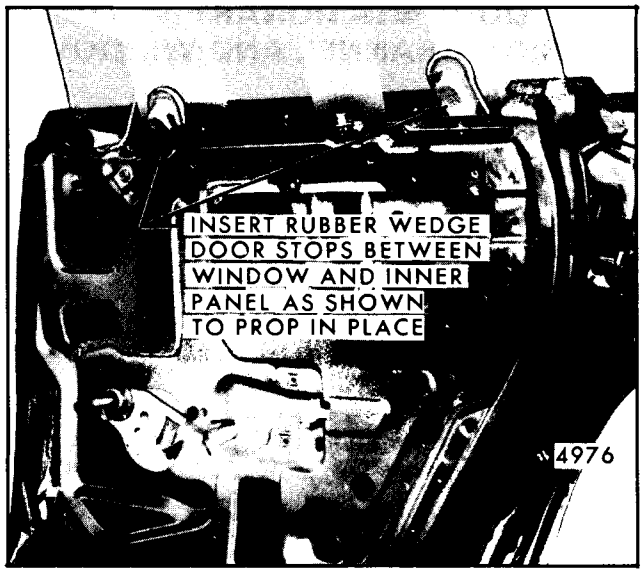


Fig. 5-148-Door Window Propped in Place

REAR DOOR WINDOW REGULATOR - Electric - "A-29, 35" Styles

Removal and Installation (Refer to Fig. 5-133)

1. Remove upper and lower door trim assembly and inner panel water deflector.
2. Remove door window as previously described.
3. Remove regulator attaching rivets ("11", Fig. 5-133) as described for manual regulator, then disengage regulator lift arm from sash plate guide cam assembly.
4. Remove upper and lower guide tube assembly attaching screws ("8 and 9", Fig. 5-133), then remove the guide tube and lower sash guide plate assembly from door.
5. Disconnect body wire harness from window regulator at regulator motor, and remove regulator from door, lift arm first.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

6. To install, reverse removal procedure. Install replacement regulator with attaching screws and "U" nuts (if necessary) as described for manual regulator. Torque all attachments to 72 in- lb.

REAR DOOR WINDOW REGULATOR - "B,C" Styles

Removal and Installation

1. Remove armrest, door trim and inner panel water deflector.
2. Lower window only enough to provide access to lower sash channel cam attaching screws. Support window in this position with rubber door stops (Fig. 5-148) or cloth body tape applied over door frame.
3. Remove inner panel cam ("1", Fig. 5-146) and lower sash channel cam.
4. Punch out regulator attaching rivet center pins, then drill out rivets with 1/4" drill bit. Remove regulator through access hole. For electric regulator, disconnect wire harness at regulator motor and remove regulator through access hole, motor first.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

5. To install, reverse removal procedure. Place "U" nuts (part no. 3916700 or 3982098 or equivalent) over each attaching hole with integral nut on outboard side of back plate. Attach regulator to inner panel with 1/4-20 x 1/2" screws (part no. 9419723 or equivalent). Torque all attachments to 8 N·m (72 in- lb).

REAR DOOR WINDOW REGULATOR - "K" Styles

Removal and Installation

1. Remove door trim panel, inner panel water deflector and door insulator.
2. Mark location and remove inner panel cam attaching screws ("1", Fig. 5-147) and inner panel cam.

3. Disengage the inside remote rod spring clip from the door lock assembly, then remove the remote handle and rod.

4. Raise window glass to full-up position and secure in place with pieces of cloth body tape applied over door upper frame.

5. Drive out rivet center pins with punch and drill out four regulator attaching rivets with a 1/4" drill bit. Disconnect motor harness connector at regulator motor.

6. Slide regulator forward to disengage front lift arm roller from run channel; then pull rearward to disengage rear roller. Remove regulator through large access hole.

WARNING: IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE DOOR WINDOW REGULATOR ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE IN THE FRONT AND REAR DOOR PORTION OF THIS SECTION. THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION.

7. To install, reverse removal procedure. Place "U" nut (part no. 3916700 or 3982098 or equivalent) over each attaching hole in regulator back plate. Attach regulator to inner panel with 1/4 - 20 x 1/2" screws (part no. 9419723 or equivalent). Torque attaching screws to 72 in-lb.

REAR DOOR WINDOW REGULATOR - "X-69" Style

Removal and Installation (Refer to Fig. 5-139)

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

2. Remove inside locking rod to lock connecting link screw ("7", Fig. 5-139) and disconnect locking rod at lock.

3. Operate window to full-up position and secure in place with pieces of cloth-backed body tape applied over door frame.

4. Punch out rivet center pins, then drill out attaching rivets with a 1/4" drill bit. Slide regulator lift arm roller out of lower sash channel cam and remove regulator through large access hole.

5. To install, reverse removal procedure. Place "U" nut (part no. 3916700 or 3982098 or equivalent) over each attaching hole with integral nut on outboard side of back plate. Attach regulator to inner panel with 1/4-20 x 1/2" screws (part no. 9419723 or equivalent). Torque all attachments to 72 in-lb.

REAR DOOR WINDOW GUIDE TUBE - "A-29, 35" Styles

Removal and Installation

1. Remove upper and lower portion of door trim assembly and inner panel water deflector.

2. Support window in full up position using rubber door wedge stops between glass and inner panel (Fig. 5-148).

3. Mark location, and remove lower sash upper and lower guide attachments ("5 and 6", Fig. 5-133).

4. Remove upper and lower guide tube attaching screws ("8 and 9", Fig. 5-133). Lower guide tube into door and remove through access hole, upper end first.

5. To install, reverse removal procedure. Align all removed components to their previously marked positions. Torque attaching screws and nuts to 72 in-lb.

REAR DOOR WINDOW LOWER SASH UPPER AND/OR LOWER GUIDE - "A-29, 35" Styles

Removal and Installation

1. Remove upper portion of door trim assembly.

2. For removal of lower sash upper and/or lower guide assembly, mark location of attachments, and remove attachments ("5" and/or "6", Fig. 5-133). Then remove guide tube assembly as previously described to completely remove lower sash assembly.

3. To install, reverse removal procedure. Align components to premarked locations to insure proper glass alignment. Torque attaching screws and nuts to 72 in-lb.

REAR DOOR WINDOW GLASS RUN CHANNEL RETAINER - "B,C" Styles

Removal and Installation

1. Remove door trim and water deflector and raise door window.

2. Remove retainer attaching screws ("2", Fig. 5-146) on hinge pillar.

3. Disengage retainer from run channel and remove from door.

4. To install, reverse removal procedure. Torque attaching screws to 8 N·m (72 in-lb).

REAR DOOR WINDOW GLASS RUN CHANNEL - "B, C, K and X" Styles

Removal and Installation

1. For "X" styles, remove door window as previously described. For "B and C" styles, remove front run channel retainer, then lower glass. For "K" styles, lower glass.

2. With finger pressure, squeeze run channel together and gently pull run channel out of rear door upper frame.

3. To install, reverse removal procedure. If sealer was used on original installation, apply sealer at original locations prior to installing run channel.

SECTION 6

REAR QUARTERS

TABLE OF CONTENTS

SUBJECT	PAGE
Rear Quarter Trim	
Armrest	6-1
Lower Trim	6-3
Body Lock Pillar Finishing Molding or Windlace	6-7
Upper Trim	6-7
Wheelhouse Panels, Spare Tire Covers, Stowage Pocket and Back Body Pillar Upper Trim	6-14
Rear Speakers	6-21
Back Window Defogger	6-22
Exterior Moldings	6-23
Swing-out Quarter Windows	6-26
Stationary Quarter Windows	6-29

QUARTER TRIM

REAR QUARTER ARMREST - Oldsmobile and Cadillac "E" Styles

The Oldsmobile and Cadillac "E" styles are equipped with floor-mounted type armrests. The armrests extend from arm position to floor and from body lock pillar to rear seat back panel (Fig. 6-1).

Removal and Installation

1. Remove rear seat cushion and back assemblies.
2. Remove armrest front and lower attaching screws.
3. Remove attaching screw (one on Cadillac "E", three on Oldsmobile "E") at upper rear of armrest (Fig. 6-1).
4. Remove one screw securing armrest/cigar lighter cover plate, lift cover plate and detach electrical wiring, then remove trim assembly (View "A", Fig. 6-1).
5. To install, connect electrical wiring and reverse removal operations.

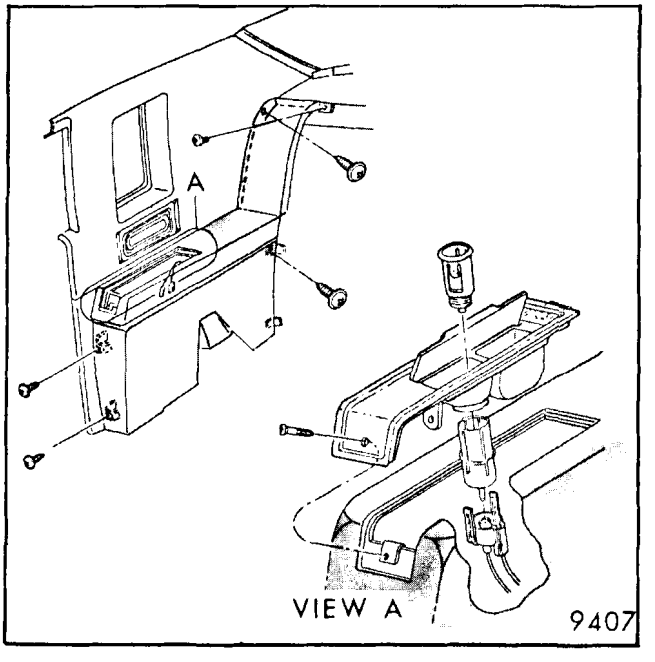


Fig. 6-1-Quarter Lower Trim Assembly Attachment - Oldsmobile "E" Style Shown, Cadillac "E" Similar

REAR QUARTER ARMREST ASSEMBLY - "B and C" Two-Door Styles

The rear quarter trim on "B and C" two-door styles consists of a one-piece trim panel with a separate applied armrest. The armrest is installed after trim installation.

Removal and Installation

1. On "B" styles (less 4BZ37), remove screw under armrest ash tray securing pad to armrest to gain access to two upper attaching screws (Fig. 6-2).

   CAUTION: *The following steps (2, 2a, 2b and 2c) must be followed to avoid damage to ash tray assembly and/or armrest assembly.*

2. On "C" styles and 4BZ37 style, remove ash tray/cigar lighter assembly as follows to gain access to two upper attaching screws.

   a. Remove ash tray receptacle and insert a hook end wire tool (fabricated from coat hanger, welding rod, etc.) into ash tray assembly.

   b. With hook of tool, grasp top of rear spring clip as shown in View A of Figure 6-3 and pull forward until ash tray assembly is disengaged from armrest.

   c. Disconnect cigar lighter electrical connector (Fig. 6-3).

3. Remove four armrest to quarter trim panel attaching screws and remove armrest.

4. To install, reverse removal procedure.

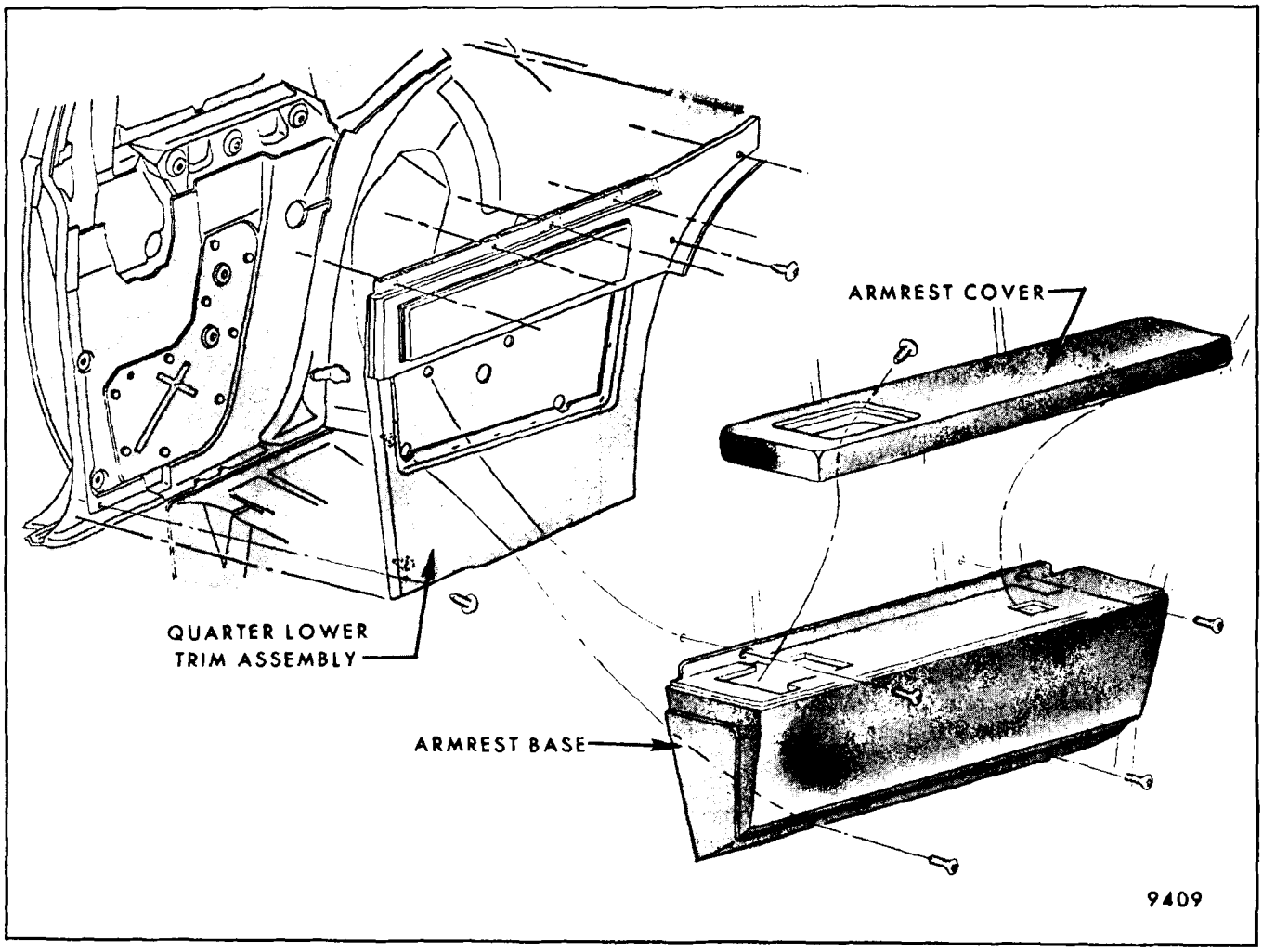


Fig. 6-2 - Quarter Armrest Attachment - "B" Styles (less 4BZ37)

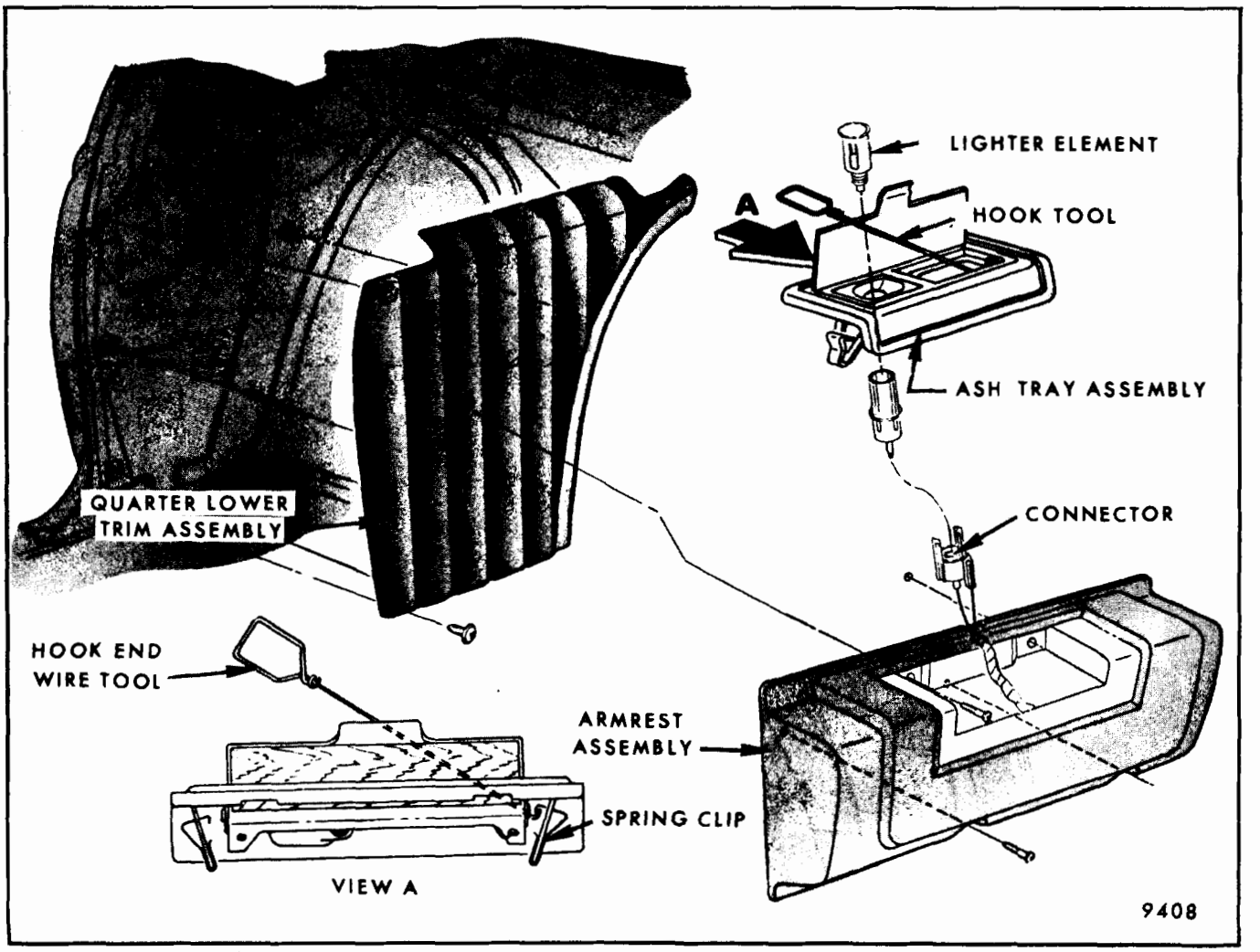


Fig. 6-3 - Quarter Armrest Attachment - "C" and 4BZ37 Styles

REAR QUARTER TRIM ASSEMBLY - All "B,C and Cadillac E" Two-Door Styles

Removal and Installation

1. Remove quarter armrest as previously described.
2. Remove rear seat cushion and back assemblies.
3. On "B,C" styles, remove quarter upper trim panel to gain access to concealed beltline quarter trim attaching screws (Fig. 6-2), then remove rear quarter finishing lace (Fig. 6-9).
4. On the Cadillac "E" style, remove attaching screws at top outboard side of lock pillar and at rear and bottom edges.
5. On "B,C" styles, carefully disengage trim retainers from quarter inner panel using tool BT-7323 or equivalent. Detach quarter trim by lifting assembly off beltline (Figs. 6-2 and 6-3) then remove.
6. To install, reverse removal operations.

REAR QUARTER TRIM PANEL - "A, F, H-27 and X" Styles

The rear quarter trim panel consists of a one-piece plastic panel. On "A, F and H-27" styles, the armrest is an integral component of the trim panel; on "X" styles, the armrest is applied to the trim panel prior to trim installation. The "X" style armrest has a removable cover.

Removal and Installation

1. Remove rear seat back and applicable rear seat cushion.
2. Remove adjacent trim where applicable.

3. Remove quarter upper trim on "F" styles by disengaging plastic clips (Section "B", Fig. 6-11) and removing attaching screws from rear of trim panel (Section "C", Fig. 6-11).
4. Complete rear quarter trim removal by:
   a. On "A" styles, remove three attaching screws securing panel assembly to brackets (Fig. 6-4).
   b. On "X" styles with deluxe trim, remove attaching screw under ash tray securing pad to armrest to gain access to two attaching screws. To remove trim on "X" styles with standard trim, remove single attaching screw at lower rear portion of trim (Fig. 6-5).
   c. On "H-27" styles, remove single attaching screw at rear of trim panel (Fig. 6-4).
5. Remove door opening sill plate. Then slide trim panel forward and remove quarter trim panel.
6. To install, reverse removal operations.

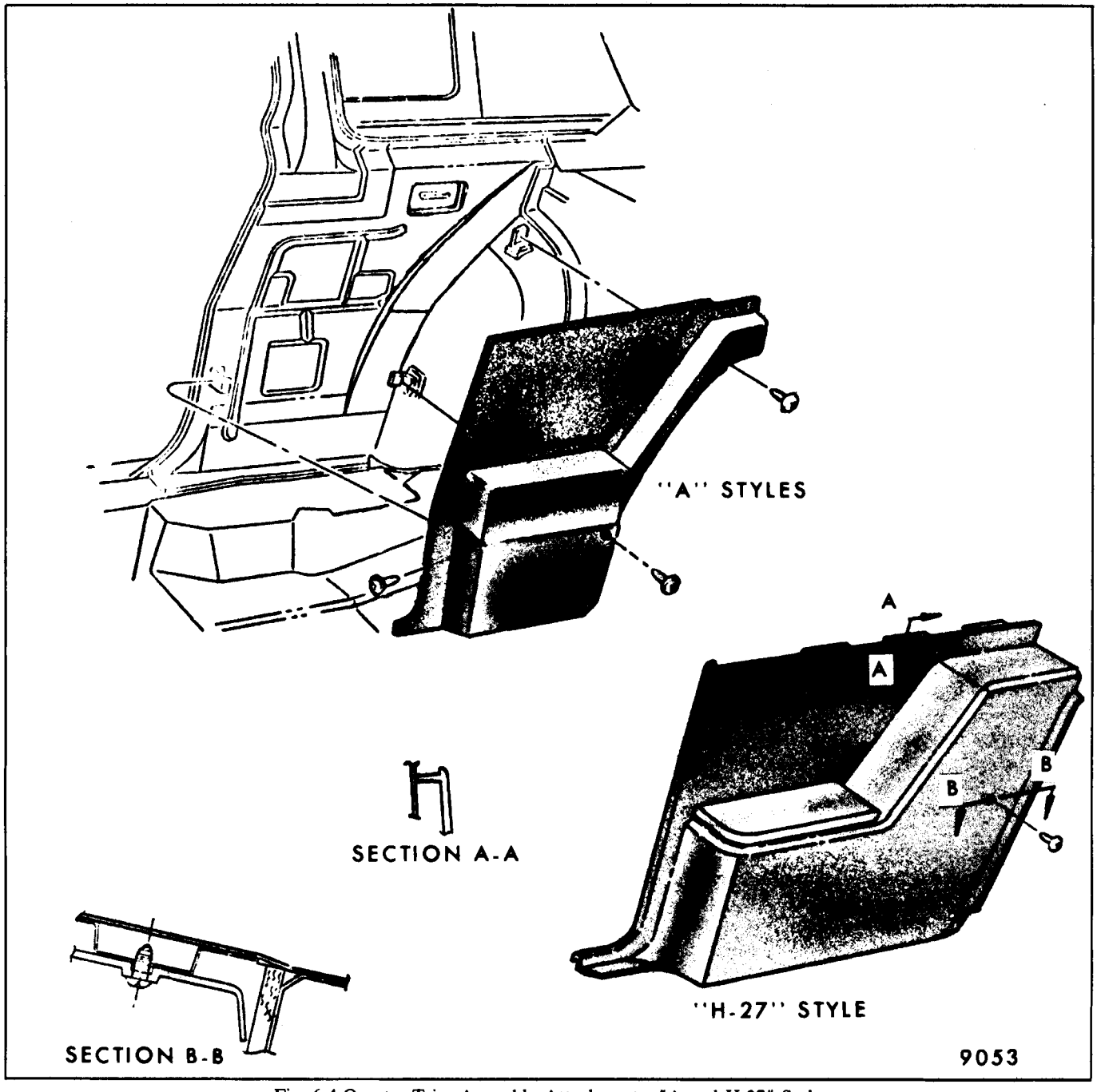


Fig. 6-4-Quarter Trim Assembly Attachment - "A and H-27" Styles

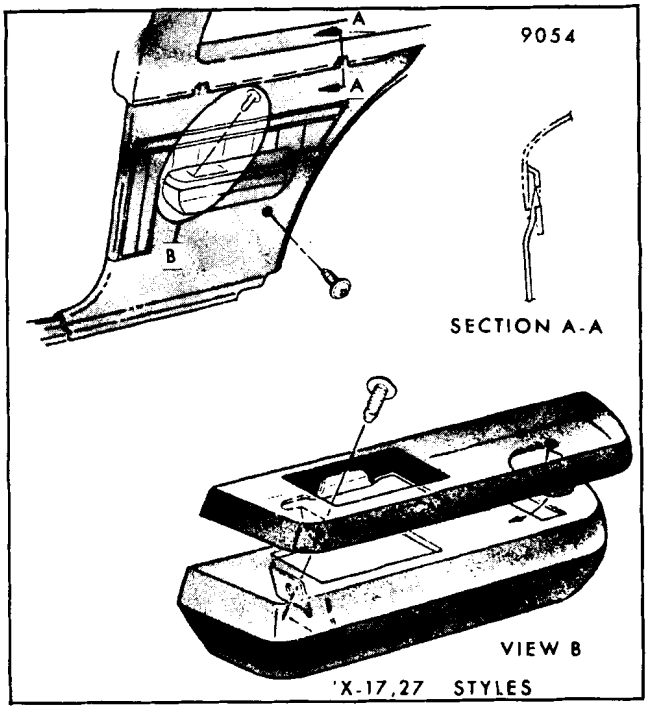


Fig. 6-5-Quarter Trim and Armrest Attachment - "X-17,27" Styles

REAR QUARTER FRONT AND/OR REAR TRIM ASSEMBLY - "H-07,11,15,77" Styles

Removal

1. On "11" styles with standard rear seat, remove rear seat cushion and back assemblies.

   On "07,15 and 77" styles with folding rear seat back, remove rear seat cushion.

2. If removing front trim assembly, remove lower attaching screw. If removing rear trim assembly on "77" style, remove rear attaching screw (see Fig. 6-6).

3. At top of trim assembly, carefully insert trim removal tool BT-7323 or equivalent between flanges of trim assembly retainer (see Section "A-A", Fig. 6-6) and carefully pry retainer out of hole in rear quarter inner panel. Perform this operation at all retainer locations (see Fig. 6-6). Retainers on "07" style are located at rearmost portion of quarter trim.

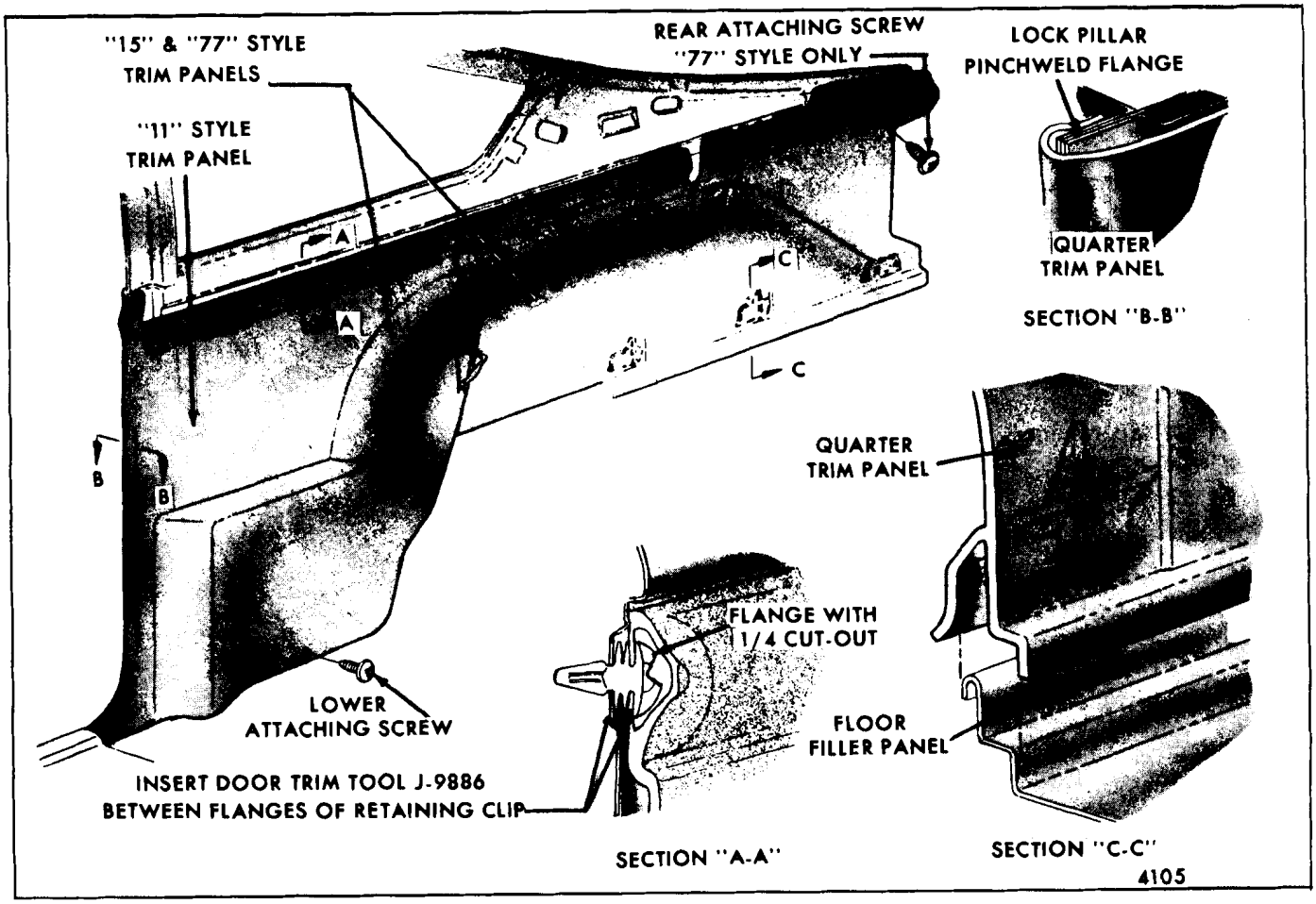


Fig. 6-6-"H-11,15 and 77" Rear Quarter Trim Assembly ("H-07" Similar)

4. If removing front trim panel, remove door sill plate, then pull panel forward to disengage front of panel from body lock pillar pinchweld flange and remove trim assembly.

   If removing rear trim panel, pull panel rearward to disengage front of panel from under rear of front trim panel; then lift panel upward to disengage lower retainers from floor filler panel (see Section "C-C", Fig. 6-6) and remove trim assembly.

Installation

1. Before installing rear quarter trim assembly, check that all trim retainers are securely installed to trim assembly and are not damaged; where required, replace damaged trim retainer(s) as follows:

   To replace trim assembly retainer, start retainer flange with 1/4 cutout (see Section "A-A", Fig. 6-6) into attachment hole in trim assembly; then rotate retainer until flange with 1/4 cutout is inside of attachment hole.

2. To install quarter trim assembly, position trim assembly as follows:

   a. Front trim assembly - engage front of trim around body lock pillar pinchweld flange; then align retainers with attaching holes in quarter inner panel.

   b. Rear trim assembly - engage tabs along bottom of trim assembly over flange of floor filler panel; then align retainers with attaching holes in quarter inner panel.

3. Carefully tap retainers into attaching holes in quarter inner panel with a clean rubber mallet.

REAR QUARTER TRIM FINISHING PANEL - All Four-Door (less "35" Styles) and "A-80" Styles

Removal and Installation

1. Remove rear door sill plate, rear seat cushion and back assemblies (four-door styles only).

2. Remove attaching screws from trim panel (Fig. 6-7) and remove trim panel. On "B,C" styles, slide top of trim finishing panel from engagement with side roof rail garnish molding

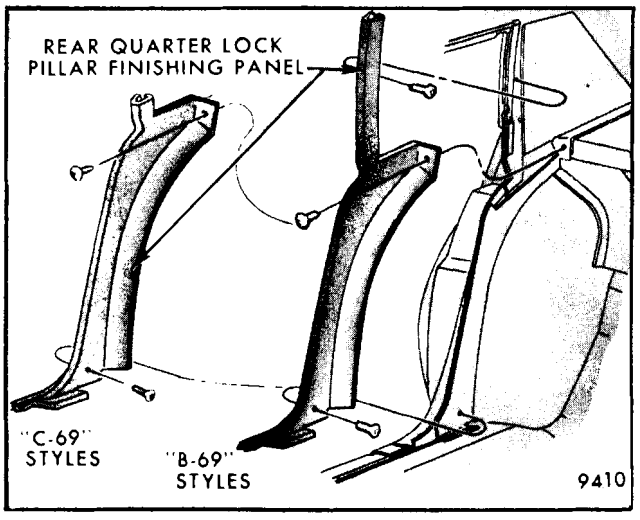


Fig. 6-7-Quarter Trim Assembly Attachment - "B and C-69" Styles

   ("B" styles) or body lock pillar finishing molding ("C" styles).

3. On "K-69" styles, using tool J-24596, BT-7323 or equivalent, disengage quarter lower trim to inner panel trim fasteners (Fig. 6-8).

4. To install, reverse removal operations.

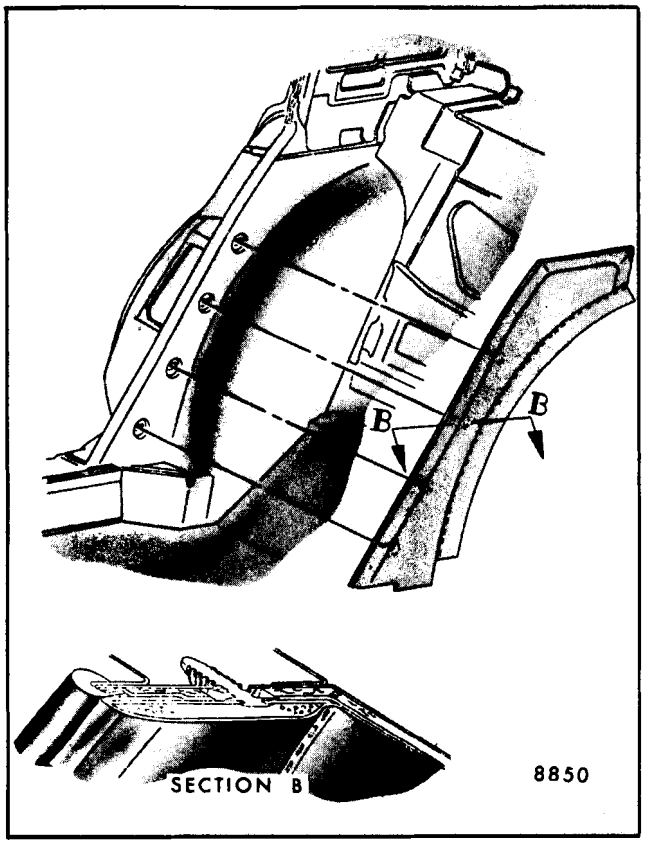


Fig. 6-8-Quarter Lower Trim Attachment - "K-69" Styles

REAR QUARTER LOCK PILLAR FINISHING LACE-"A,B and C" Two-Door Styles

Removal and Installation

1. Remove front door sill plate.
2. On "B,C" styles, remove rear quarter upper trim.
3. Remove finishing lace attaching screws (Fig. 6-9), pull lace forward and remove.
4. To install, reverse removal procedure.

REAR QUARTER UPPER TRIM AND/OR QUARTER SAIL TRIM (Above Belt) - All Styles

Removal and Installation

1. On Pontiac "B-37" and Chevrolet "B-47" styles, detach garnish molding from side of back window opening adjacent to quarter upper trim assembly. On "A" styles, remove quarter trim finishing panels along rear quarter lock pillar as previously described.

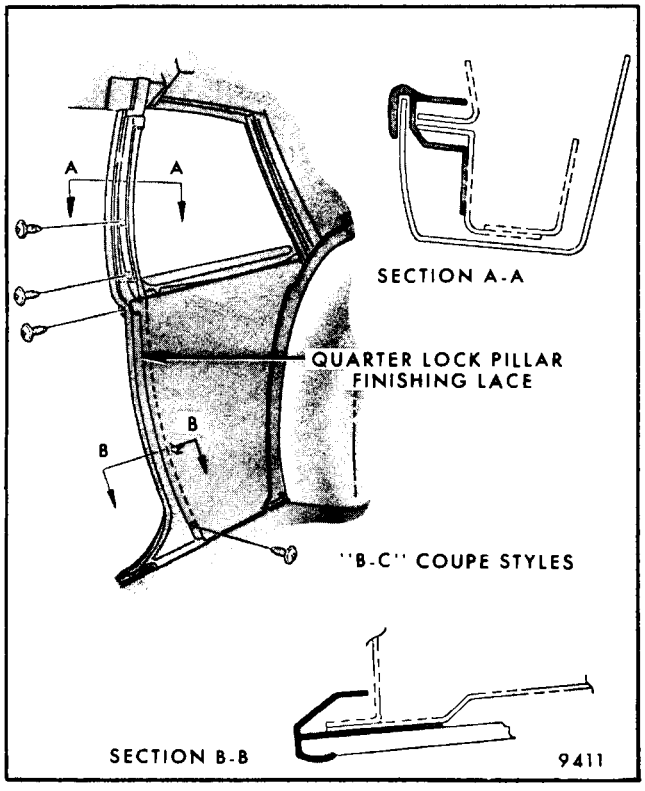


Fig. 6-9 - Body Lock Pillar Finishing Lace - "B,C" Styles Shown, "A" Styles Similar

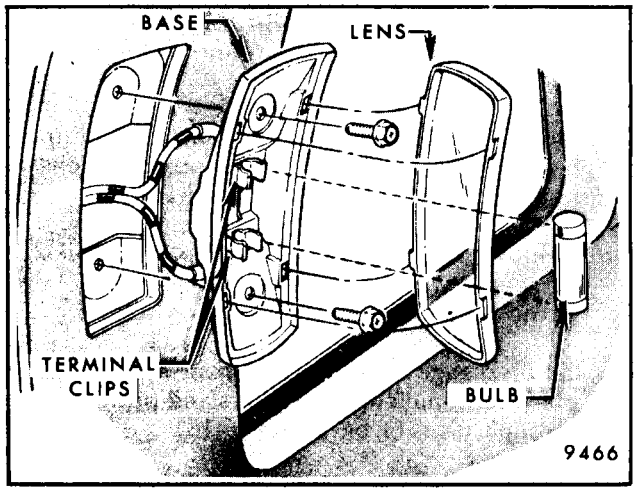


Fig. 6-10 - Rear Quarter Upper Trim Courtesy Lamp - "A" Body Styles

NOTE: Refer to Section 8 - Roof of this manual for interior garnish molding removal procedures.

2. On "A-29 and 37" styles insert tool J-24416 or equivalent, between upper edge of trim and inner panel. Pry clip and molding inboard to remove (Fig. 6-13).

   To remove clips at base of quarter window, lift quarter trim panel up at body lock pillar until first retaining clip is visible. Using a flat-bladed screwdriver, pry panel upward to separate from plastic retaining clip metal bracket (Fig. 6-13). To remove clip from quarter inner panel piercing, depress tab and pull upward with pliers.

3. On styles with one-piece plastic quarter upper trim, the panel is attached to the inner panel with screws and/or plastic fasteners.

   The fasteners are attached to the quarter upper trim panel by inserting fastener into an extrusion of the trim panel and turning to secure.

4. To remove, loosen adjacent moldings where required and remove visible attaching screws (Figs. 6-12, 6-13, 6-14, 6-17 and 6-19).

   NOTE: On Oldsmobile "E-57" style (View "A", Fig. 6-19), remove assist strap escutcheon to remove assist strap attaching screws.

5. Insert tool BT-7323 or equivalent under lower front and/or rear edges of trim panel until tool engages around fastener. Then pry inboard to remove fastener and trim panel (Figs. 6-17 and 6-14).

On "A" body styles equipped with courtesy lamps in quarter upper trim, remove as follows:

a. Insert a flat-bladed screwdriver or similar tool between courtesy lamp lens and lamp base. Press outboard to disengage lens retaining tabs from base (Fig. 6-10).

b. Remove bulb from terminal clip.

c. Remove two lamp base attaching screws.

d. To disengage wire harness from lamp base, grasp terminal clip with pliers and push clips through back of base (Fig. 6-10).

On "B,C" coupe styles (less Cadillac "C-47"), detach shoulder harness to floor attaching bolt, then feed harness through opening in quarter upper trim panel to complete trim removal. On Cadillac "C-47" style, carefully pry escutcheon from slit in shoulder harness opening, then slip harness through slit to remove (Fig. 6-14).

To remove "B,C and K" sedan quarter upper trim, or coupe style sail panel trim, firmly grasp front and rear of trim and pull inboard until two-piece interlocking fasteners separate, then remove quarter upper or sail trim (Figs. 6-16 and 6-15).

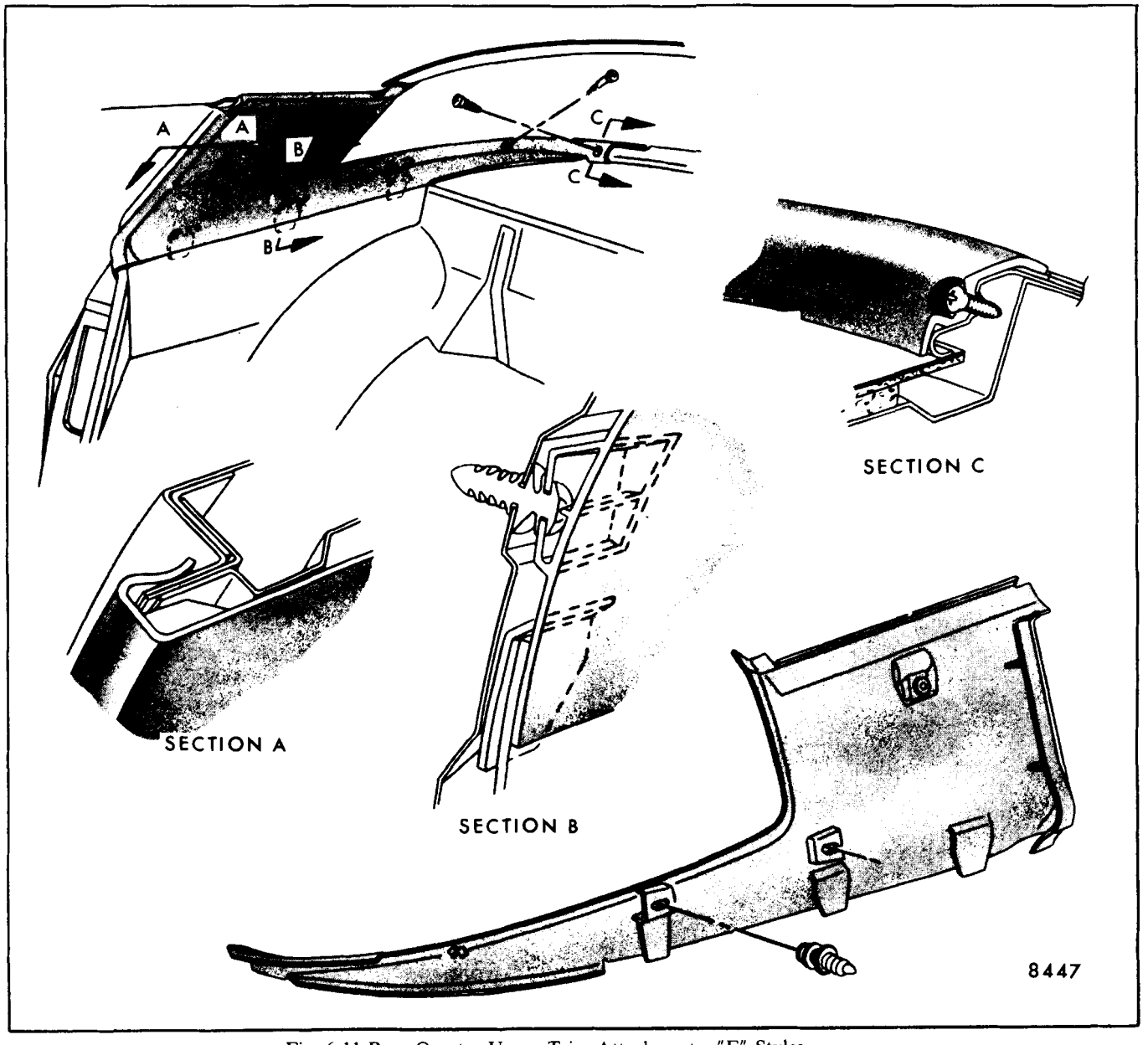


Fig. 6-11-Rear Quarter Upper Trim Attachment - "F" Styles

NOTE: On styles (except "A" coupe) with courtesy lamps in the quarter upper trim, disconnect lamp feed wire connectors. If lamp removal is required, the lamp is detachable by removing the attaching nuts on the back side of the quarter upper trim (Fig. 6-15).

6. To remove quarter upper trim panels on "X-69" style, grasp rear of trim panel directly below plastic fasteners (Fig. 6-18) and pull inboard until clip disengages from quarter inner panel.

7. To install, connect courtesy lamp connector, align fasteners to piercings in quarter inner panel and press firmly in place. Reinstall previously removed attaching screws and assist strap escutcheons (if so equipped).

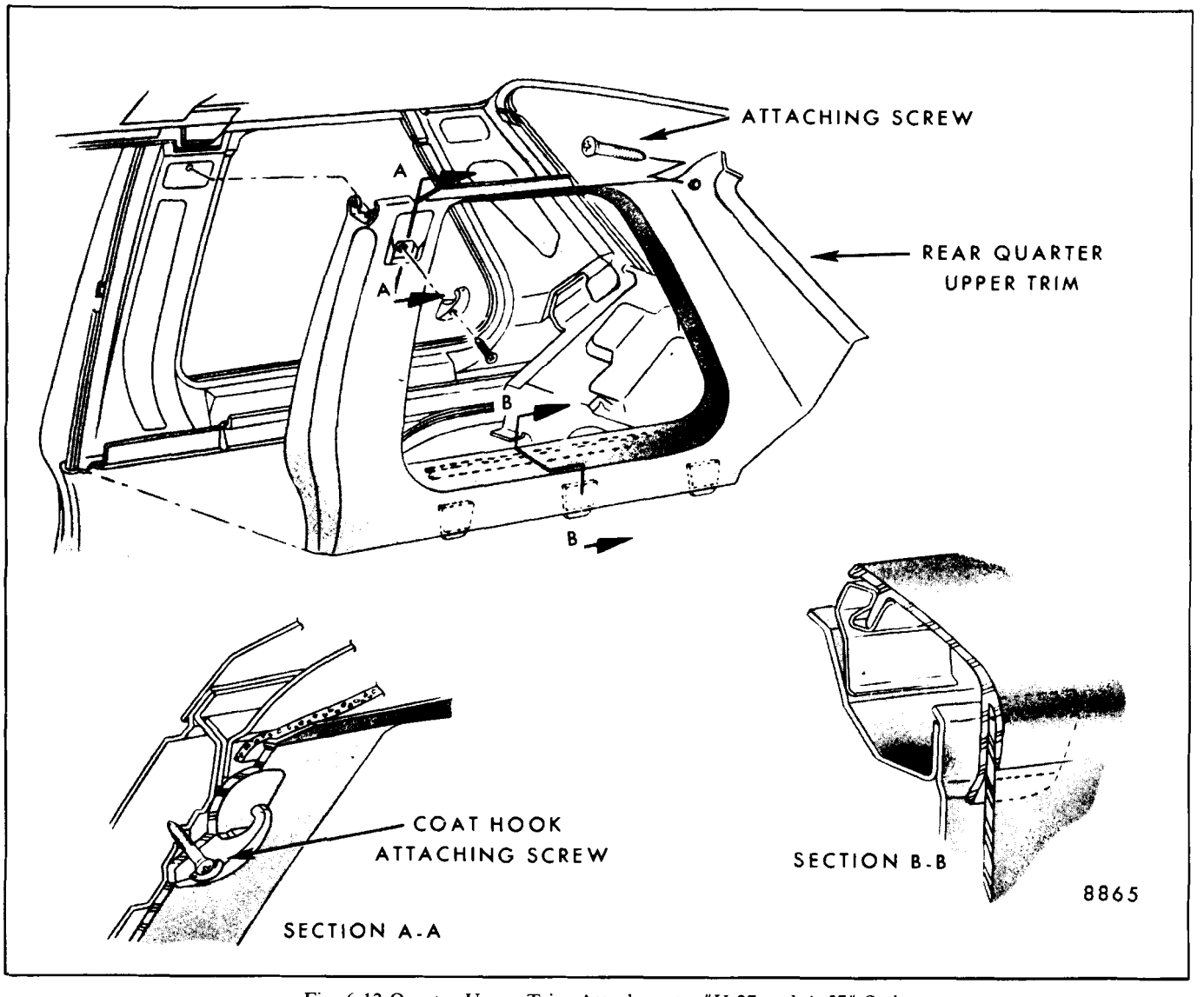


Fig. 6-12-Quarter Upper Trim Attachment - "H-27 and A-57" Styles

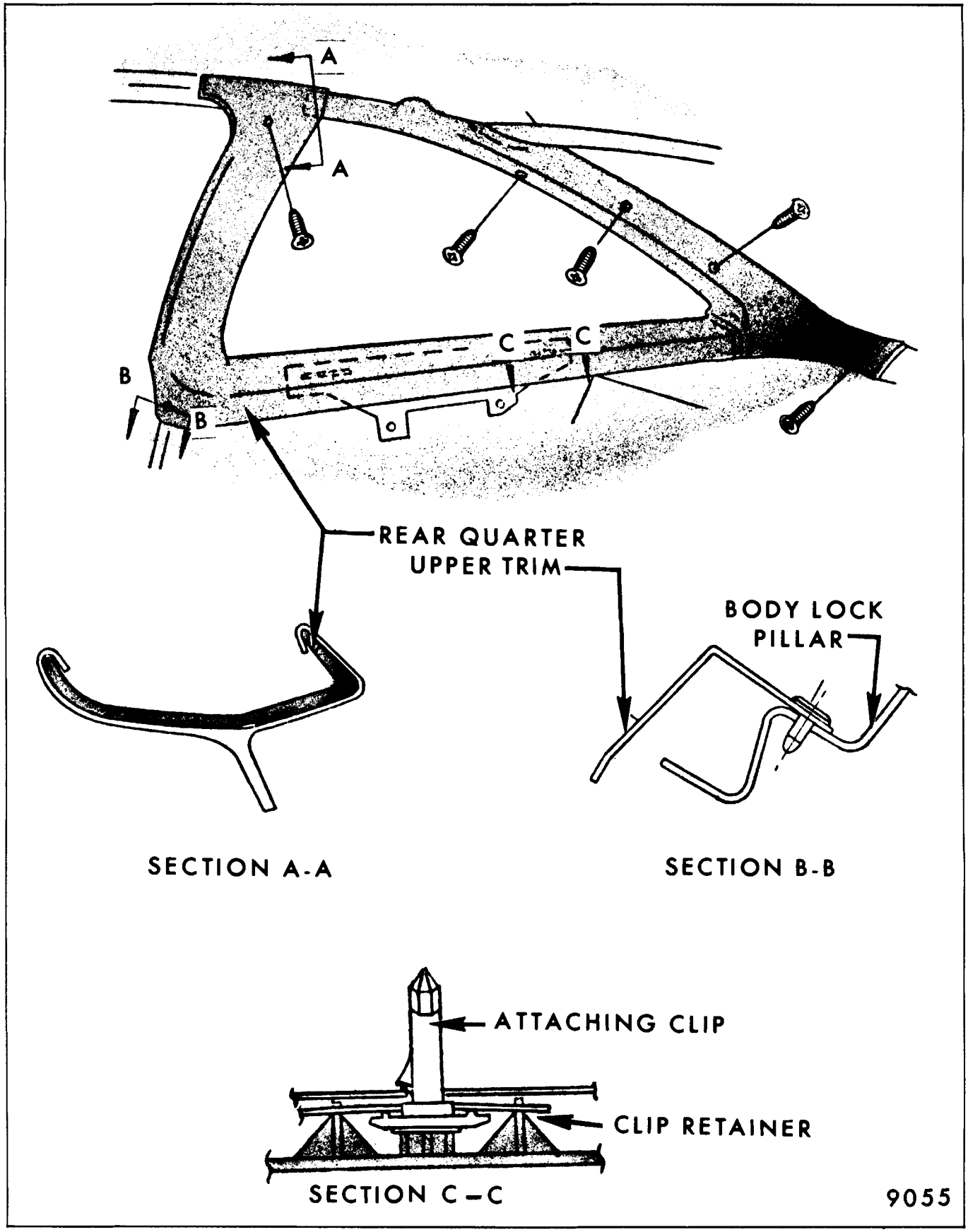


Fig. 6-13-Quarter Upper Trim Attachment "A-37" Styles

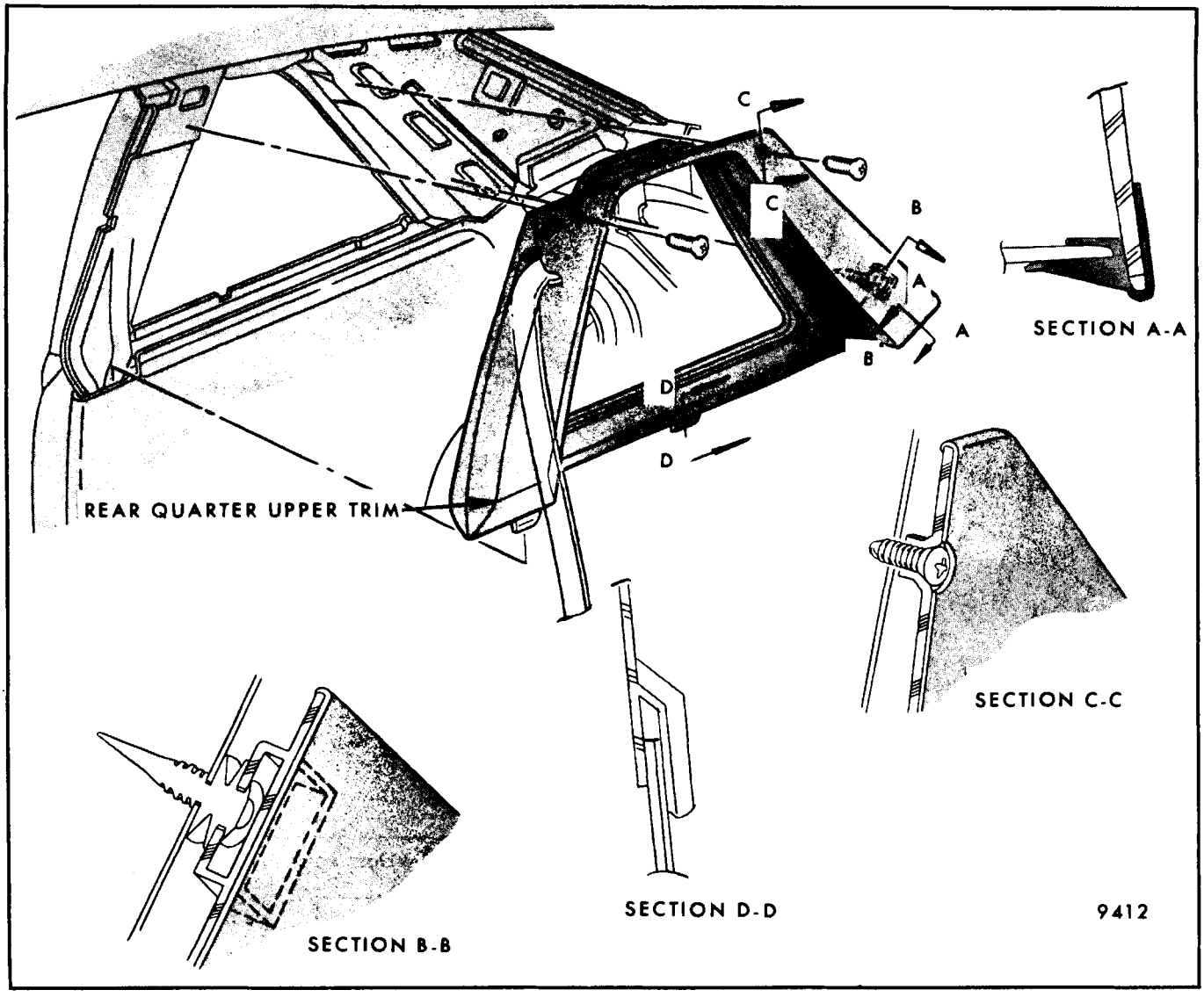


Fig. 6-14-Quarter Upper Trim Attachment - "C" Style Shown

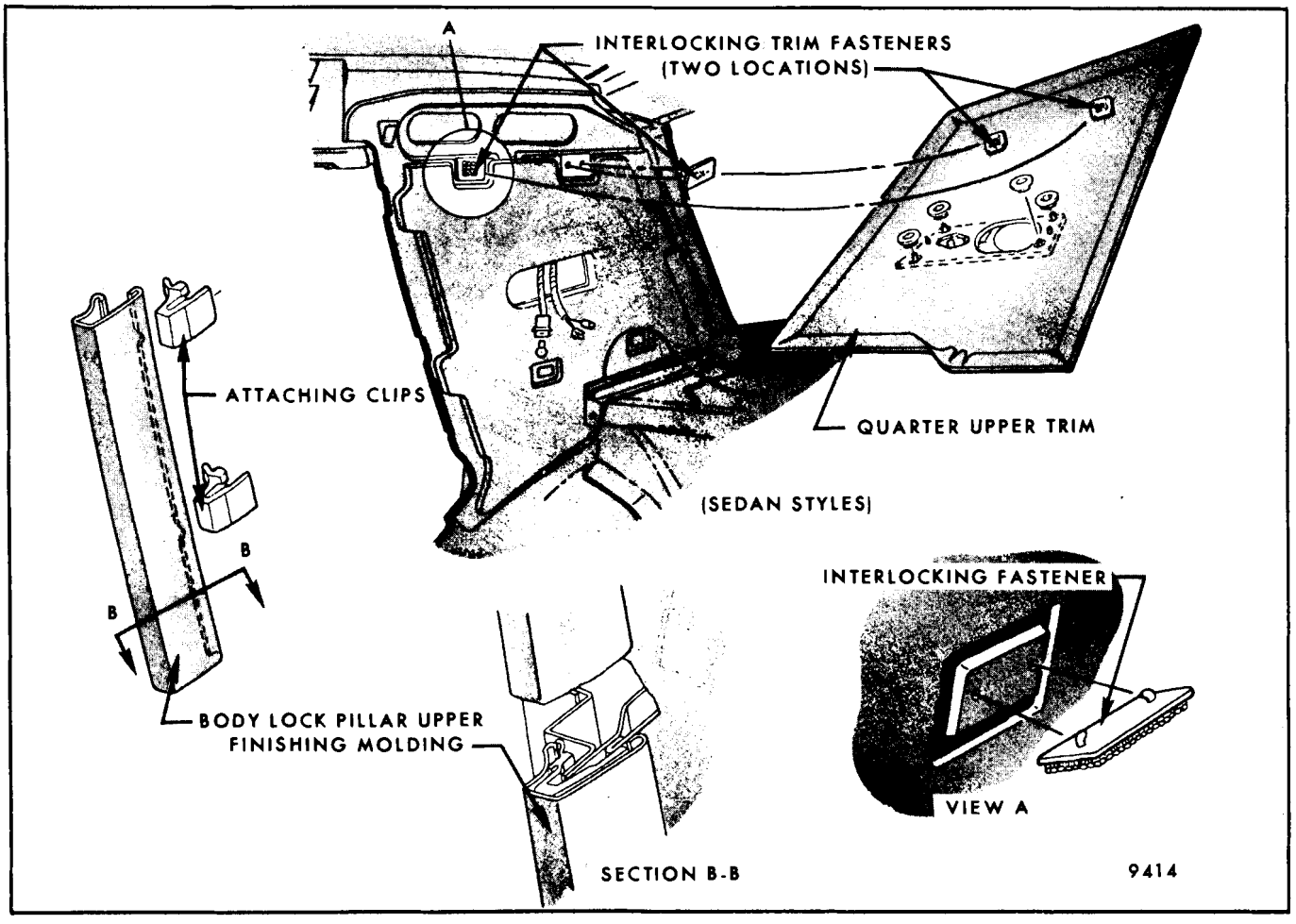


Fig. 6-15-Quarter Upper Trim Attachment - "B,C,K" 4-Door Styles

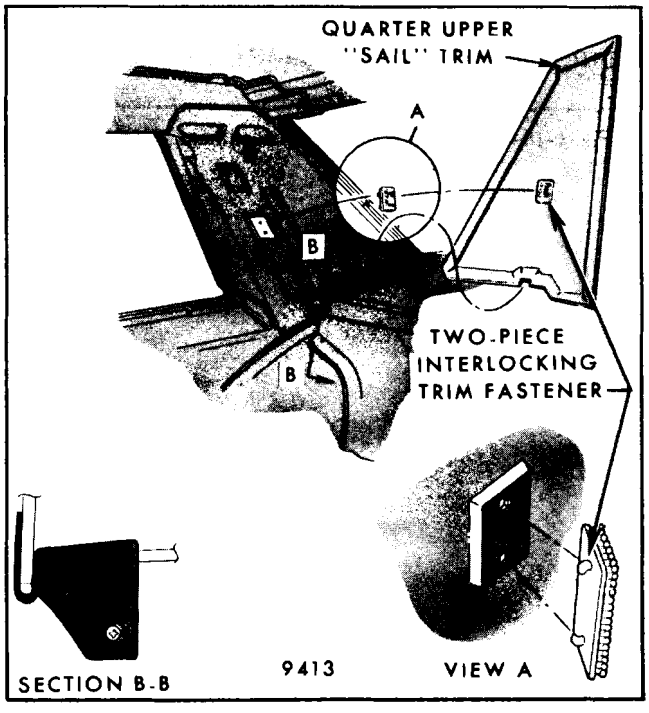


Fig. 6-16-Quarter Sail Trim Attachment - "B,C" Coupe Styles

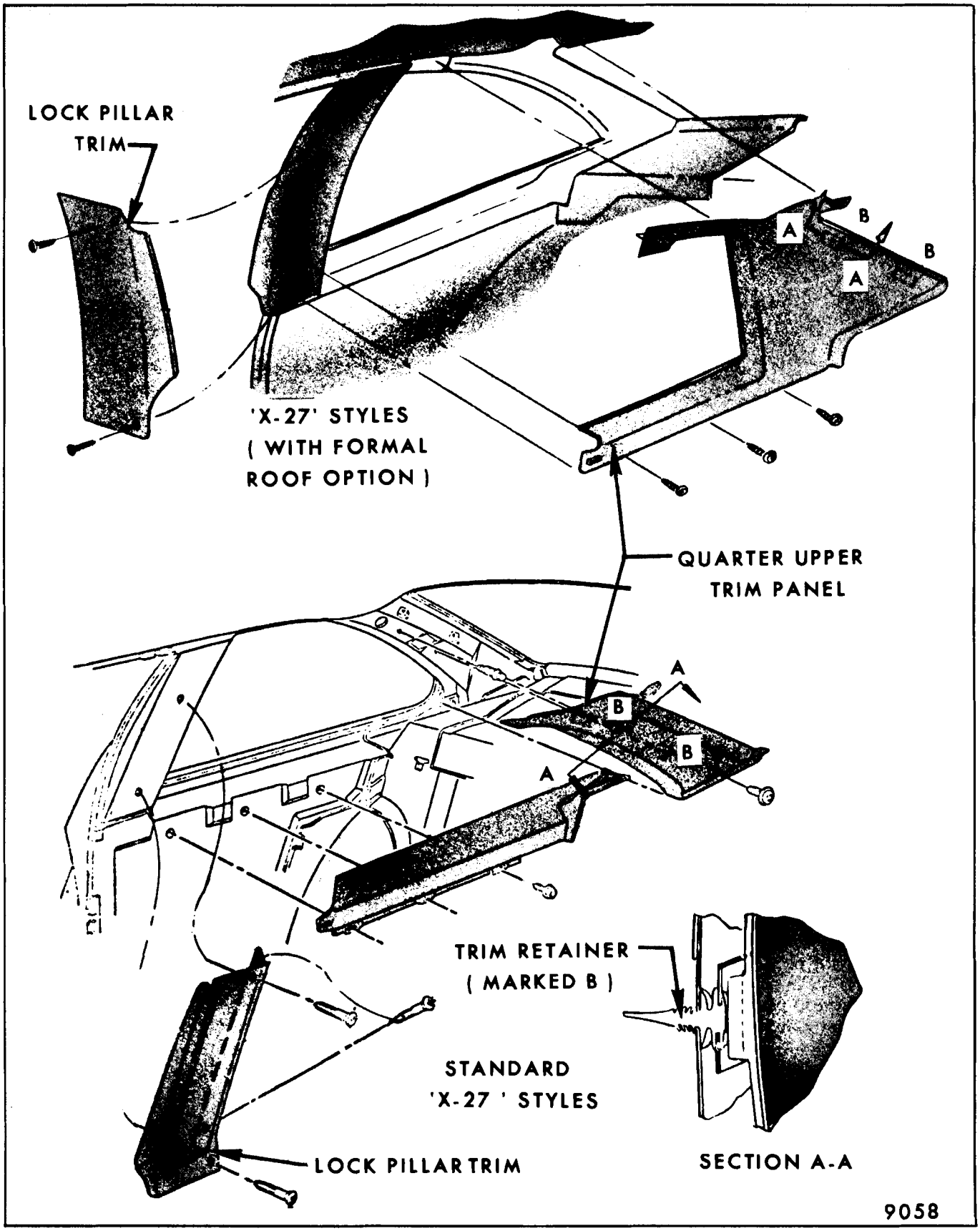


Fig. 6-17-Quarter Upper Trim Attachment - "X-27" Styles

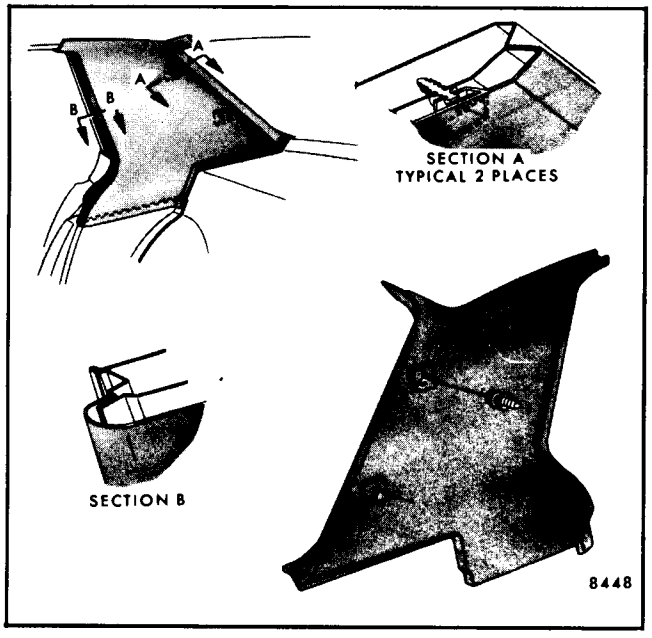


Fig. 6-18-Quarter Upper Trim Attachment - "X-69" Styles

REAR QUARTER WHEELHOUSE TRIM COVER PANEL - "X-17" Stylos

Removal and Installation

1. Loosen side roof rail garnish molding.
2. Remove back body opening garnish molding.
3. Remove rear seat cushion and seat back lock striker.
4. Detach rear end finishing panel.
5. Disengage top of trim panel from weld-on clips at underside of gutter, then lift upward to release panel from clips at bottom.
6. Disconnect electrical wiring from trim panel components if present.
7. Carefully spread panel apart and slide over rear compartment counterbalance support.

   NOTE: If replacing trim panel and new panel is not separated at counterbalance support hole, cut new panel as required.
8. To install, reverse removal operations.

REAR QUARTER WHEELHOUSE AND BODY LOCK PILLAR COVERS - UPPER AND LOWER - "B-35" Styles

Removal and Installation (Refer to Fig. 6-20)

1. Remove rear door opening sill plate.
2. Remove attaching screws at bottom, top and in door opening of trim panel.
3. On right side only, disengage rear wheelhouse/spare tire cover panel and move rearward to gain access to hidden attaching screw at beltline of body lock pillar cover.
4. Slide top of cover panel forward, then pull inboard to detach cover from retaining stud on upper body lock pillar.
5. Slide trim forward and lift away to remove. Detach lower trim from upper trim to complete removal.
6. To install, reverse removal procedure.

REAR QUARTER WHEELHOUSE TRIM COVER PANEL - (RIGHT SIDE) - "A" Station Wagon Styles

Removal and Installation (Refer to Fig. 6-21)

1. Remove quarter window lower and front garnish moldings.
2. Remove spare tire cover panel.
3. Remove second folding seat back lock striker and bumper assembly from wheelhouse.
4. Remove attaching screws from perimeter of trim cover panel and remove panel.
5. Disengage edge of trim cover panel from supports and move forward to release from lock pillar flange (Fig. 6-21).
6. To install, reverse removal operations.

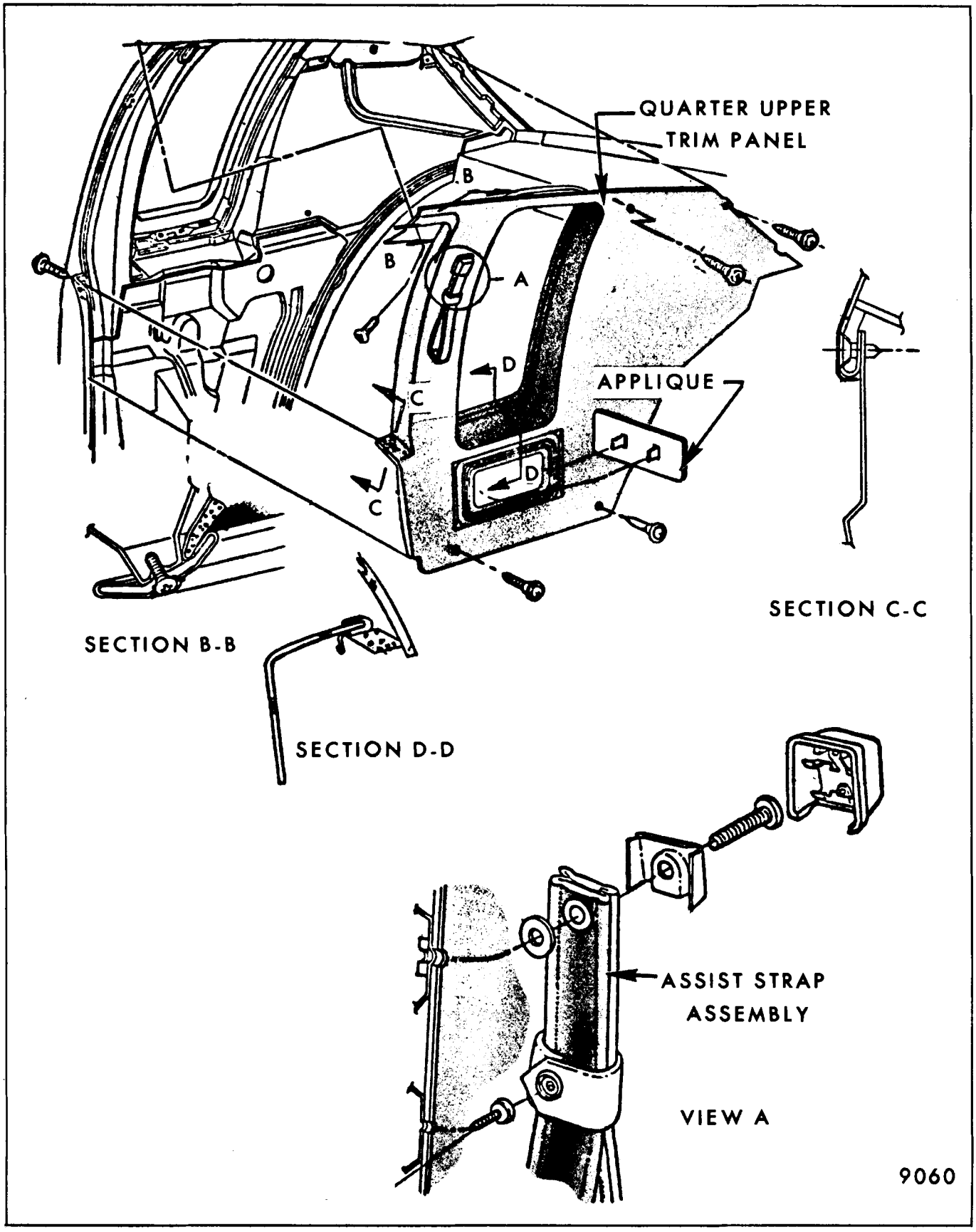


Fig. 6-19-Quarter Upper Trim Attachment - Oldsmobile "E-57" Style

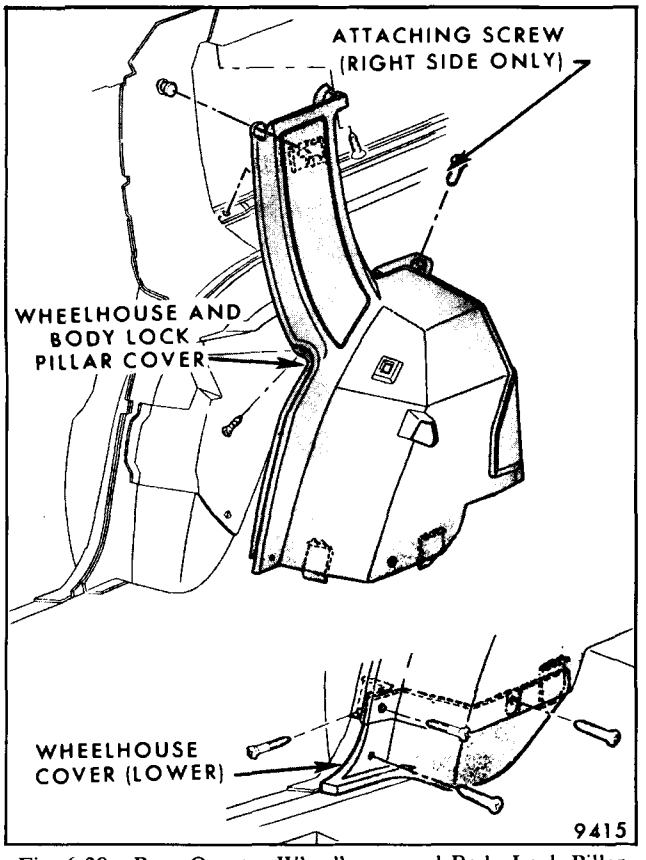


Fig. 6-20 - Rear Quarter Wheelhouse and Body Lock Pillar Covers (Upper and Lower) - "B-35" Styles

SPARE TIRE COVER PANEL - "A and B" Station Wagon Styles

Removal and Installation

On "B" styles, the spare tire cover panel is retained at the beltline by sliding into a channel in the quarter window lower finishing molding. The cover panel is secured at the floor by nesting in a channel in the load floor. The spare tire cover is secured at the front by two integral tabs that engage the rear quarter wheelhouse and body lock pillar upper cover, and at the rear by overlapping the back body opening pinchweld flange and an engaging tab which slides under the back body pillar upper trim (Fig. 6-22). To remove cover, grasp trim at back body opening and pull inboard to disengage from rear tabs and upper and lower retaining channels; then pull rearward to complete removal. To install, engage two front tabs over body lock pillar upper trim cover, then reverse removal procedure.

On "A" styles the spare tire cover is retained by three tabs that engage the front flange of the wheelhouse panel when placed in position. The cover panel is also secured at the top by snap supports and along the back when inserted between the back body pillar molding and clip (Fig. 6-21). To remove cover, open catch and disengage panel by pulling inboard at rear and top. Then move panel rearward to separate from wheelhouse cover tabs.

NOTE: On styles with tailgate window defogger, disconnect hose from defogger outlet grille to complete removal.

To install, reverse removal procedure.

REAR QUARTER WHEELHOUSE TRIM COVER PANEL AND STOWAGE POCKET ASSEMBLY (LEFT SIDE) - "B-35" Styles

The rear quarter wheelhouse trim cover (left side) is a one-piece trim panel which extends from body lock pillar to back body pillar and features an integral stowage pocket (Fig. 6-23).

The left wheelhouse trim cover is retained in a manner similar to the right side as follows:

A. At the front by three integral tabs which engage under the rear quarter wheelhouse and body lock pillar upper cover.

B. At the beltline by sliding into a channel in the quarter window lower finishing molding.

C. At the floor by sliding into a channel in the load floor.

D. At the rear by overlapping the back body opening pinchweld flange and an integral tab which slides under the back body pillar upper trim.

E. Two attaching screws in outboard (back) wall of stowage pocket assembly.

Removal and Installation (Refer to Fig. 6-23)

1. Remove two attaching screws from back wall of stowage pocket assembly.
2. Grasp trim at back body opening and top center and pull inboard and down to disengage from rear tab and upper and lower retaining channels.
3. When free from retaining channels, lift trim up to disengage stowage pocket from pocket well in left quarter.
4. To install, load stowage pocket into pocket well, then engage three retaining tabs under body lock pillar upper cover.
5. Guide top of trim into upper channel and bottom of trim into load floor channel, then engage rear retaining tab into back body pillar upper trim cover and engage rear of trim over back body opening pinchweld flange.

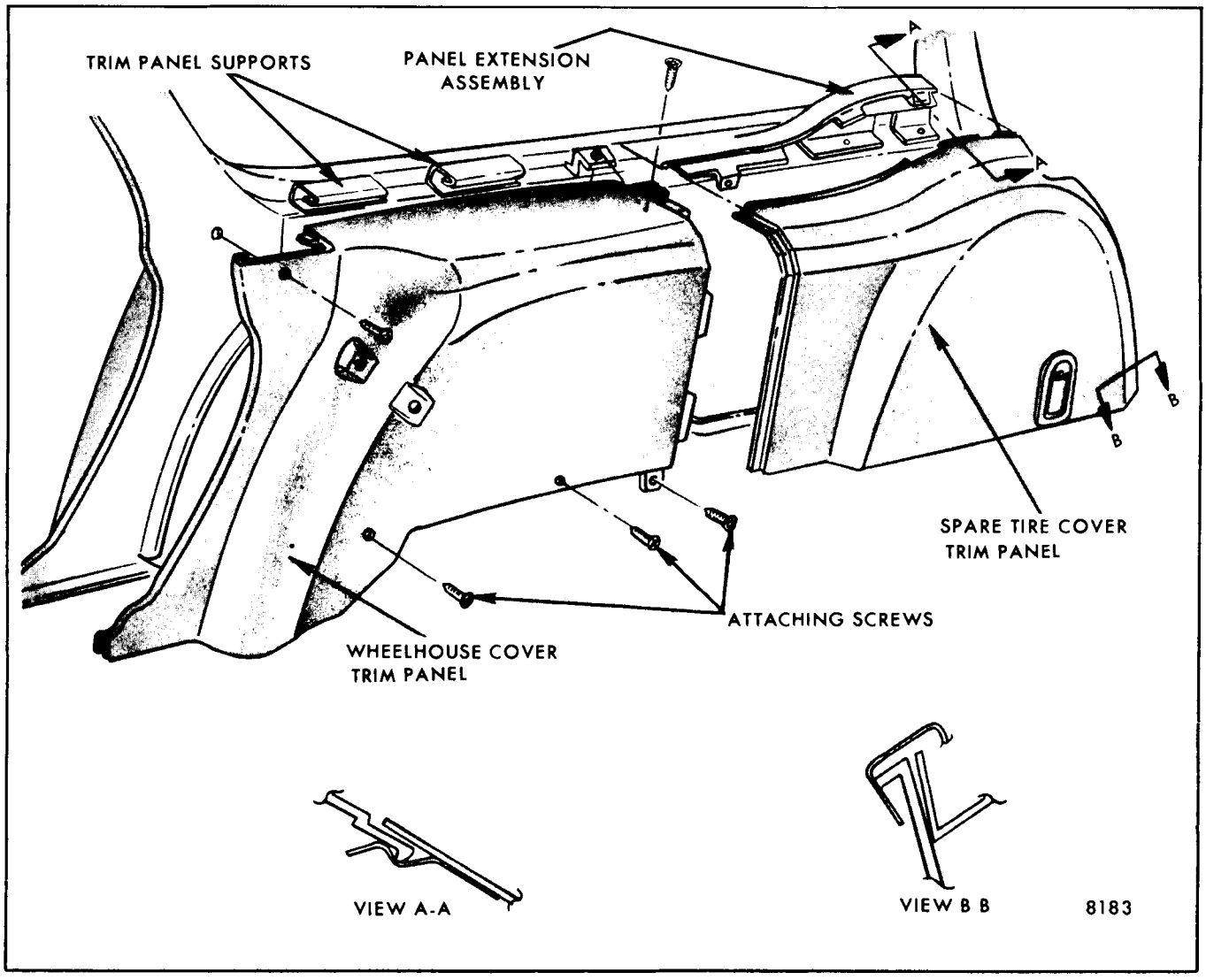


Fig. 6-21-Wheelhouse and Spare Tire Trim Cover Panel - "A" Station Wagon Styles

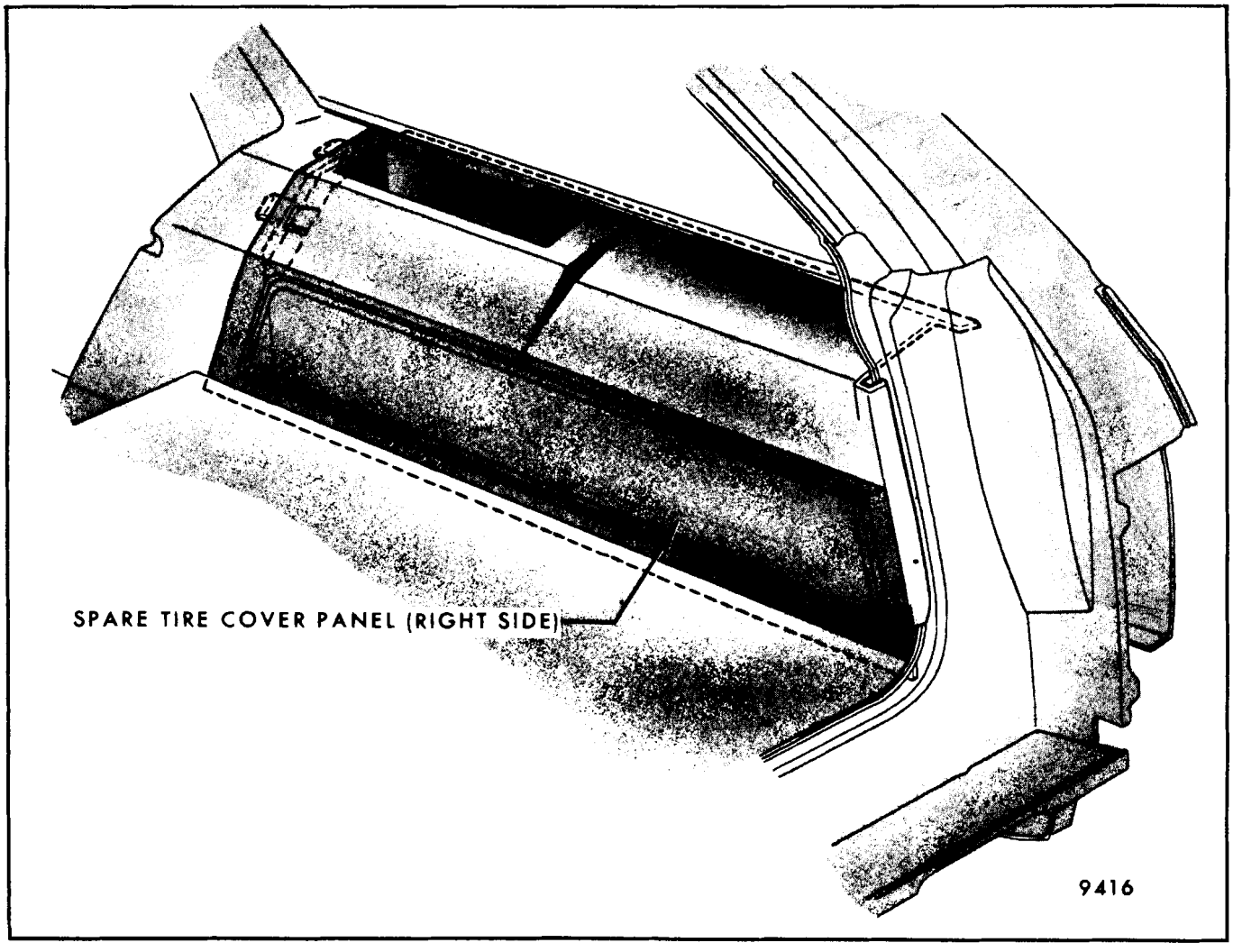


Fig. 6-22 - Wheelhouse and Spare Tire Trim Cover Panel "B-35" Styles

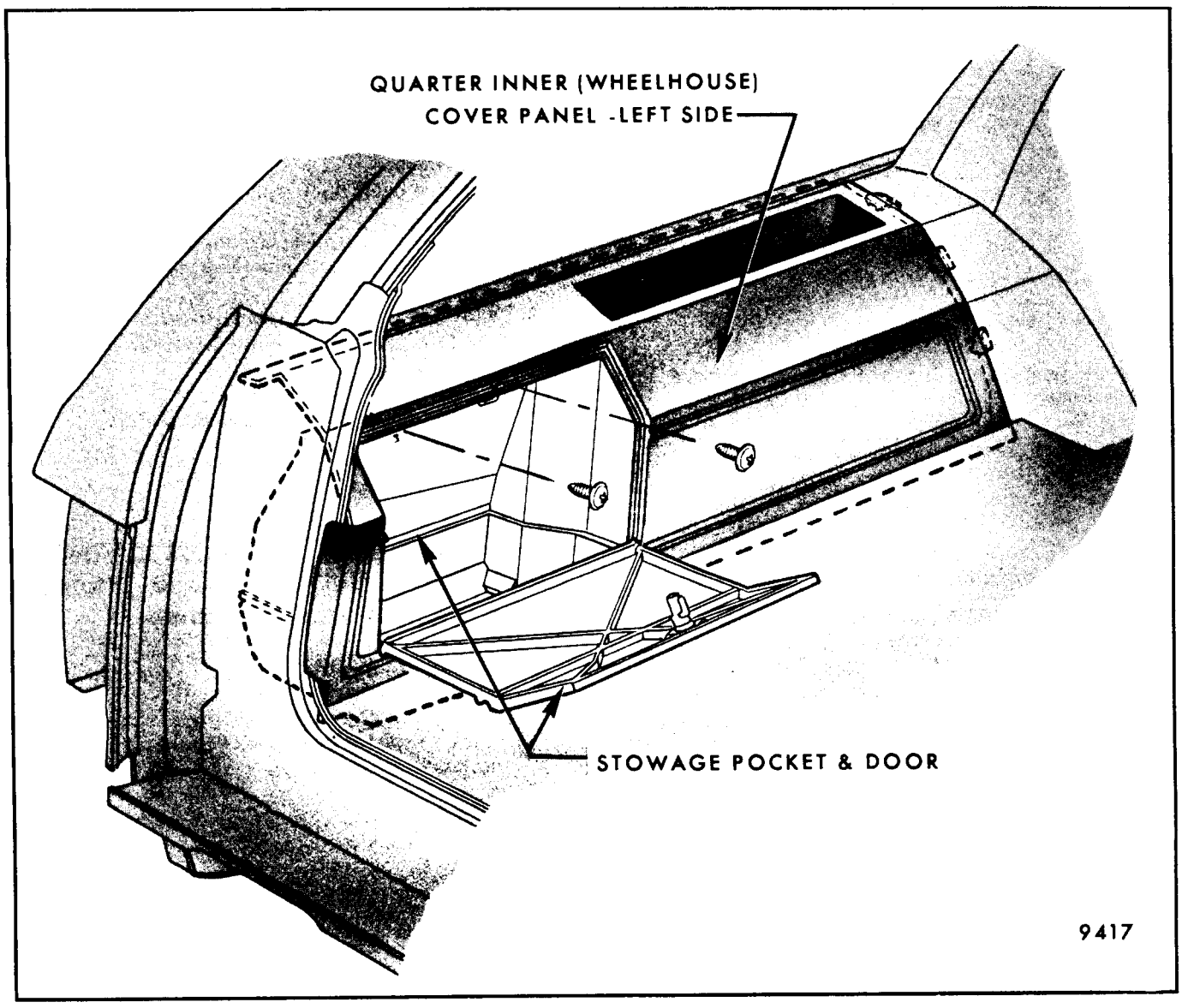


Fig. 6-23 - Rear Quarter Wheelhouse Trim Cover and Stowage Pocket Assembly - "B-35" Styles

REAR QUARTER REAR WHEELHOUSE TRIM COVER (LEFT SIDE) - "A" Station Wagon Styles

Removal and Installation

1. Remove two attaching screws and remove back body pillar lower trim panel.
2. Remove four attaching screws to loosen and disengage back body pillar upper trim panel from contact with rear wheelhouse trim.
3. Remove attaching screw at top center of rear wheelhouse trim.
4. Pull rear wheelhouse trim inboard, then rearward to disengage trim from front wheelhouse trim, then remove panel.
5. To install, reverse removal procedure.

REAR QUARTER FRONT WHEELHOUSE TRIM COVER (LEFT SIDE) - "A" Station Wagon Styles

Removal and Installation

1. Remove rear wheelhouse trim cover as previously described, and remove front

wheelhouse trim cover attaching screw hidden by rear cover.

2. With second seat folded down, remove folding seat back lock striker.
3. Remove two attaching screws and remove body lock pillar upper trim.
4. Remove front wheelhouse trim cover at center rear and lower front of panel.
5. Remove left rear door sill plate.
6. Slide trim panel forward and lift inboard to disengage at body lock pillar, then remove.
7. To install, reverse removal procedure.

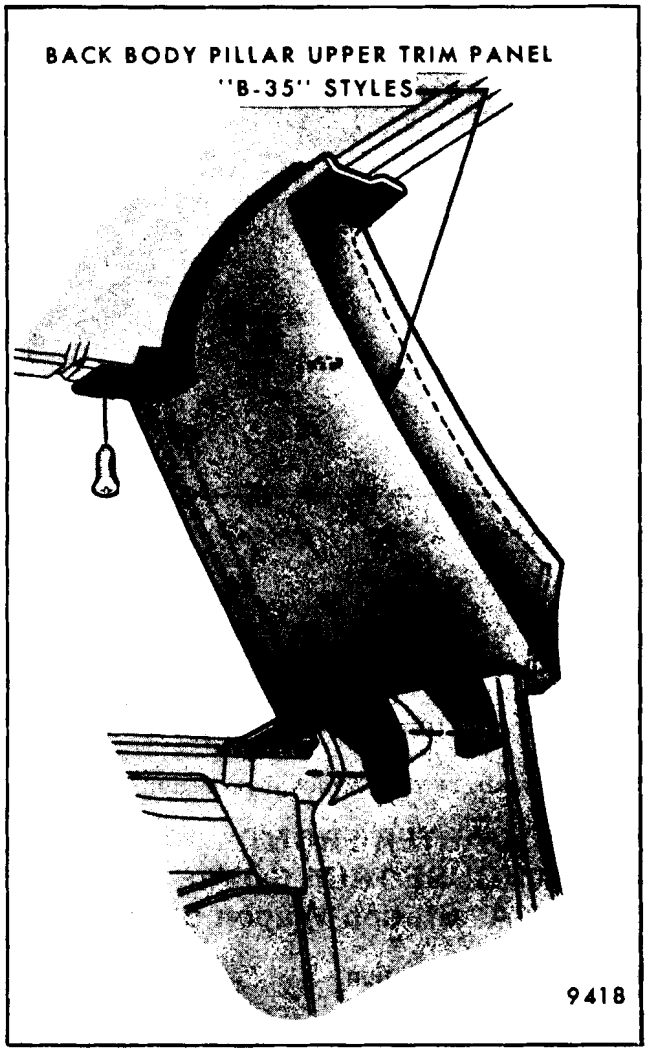


Fig. 6-24 - Back Body Pillar Upper Trim Panel - "B-35" Styles

BACK BODY PILLAR UPPER TRIM PANEL - "B-35" Styles

1. Remove wheelhouse trim cover panel as previously described.
2. Remove back body opening garnish molding.
3. Remove one upper attaching screw and two lower attaching screws (Fig. 6-24).
4. Slide trim panel rearward from under quarter window garnish molding then lift trim panel away.
5. To install, reverse removal procedure.

QUARTER VENT DIVISION CHANNEL GARNISH MOLDING - "A-35" Styles with Quarter Vent Windows

Removal and Installation

1. Remove molding by inserting a screwdriver or similar tool at lower end of molding and prying outboard (Fig. 6-25).
2. To install, align groove in molding to side of plastic clips and force molding in place with heel of hand.

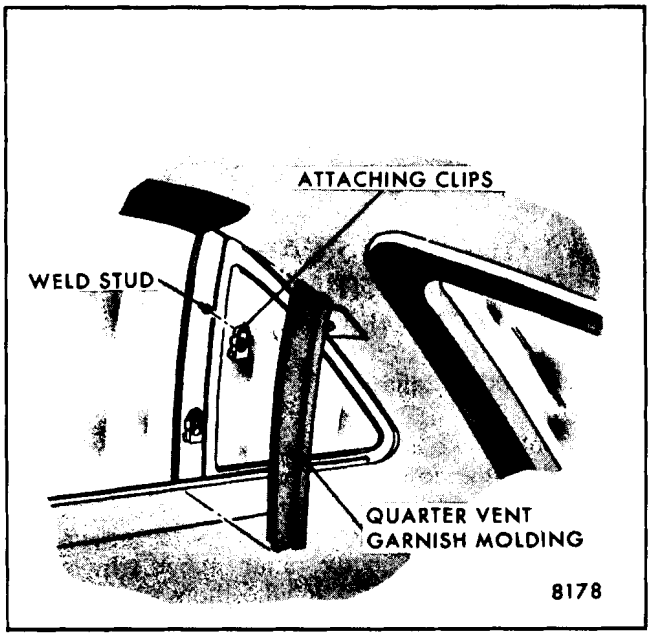


Fig. 6-25-Quarter Vent Division Channel Garnish Molding "A-35" Styles

REAR SPEAKERS

REAR SPEAKERS - "A-35, B-35, X-17, H-07,15 and 77" Styles

Description

Rear speakers on "A-35, X-17, H-07,15 and 77" styles are installed to the inside surface of the rear quarter trim assembly (Figs. 6-26 and 6-27). The rear speaker(s) on "B-35" styles are mounted to the back body pillar.

Removal and Installation

1. Remove rear quarter trim assembly as previously described for "A-35", X-17 and H-07,15 and 77" styles; remove the back body pillar upper trim panel for "B-35" styles.
2. Disconnect speaker wire from body harness.
3. Remove four speaker assembly to grille attaching nuts on "A-35, X-17 and H-07-15 and 77" styles. On "B-35" styles, remove four speaker to back body pillar attaching screws then remove speaker.
4. Remove grille from rear quarter trim assembly by lifting upward or outward on "A-35", X-17 and H-07,15 and 77" styles.
5. To install, reverse removal procedure.

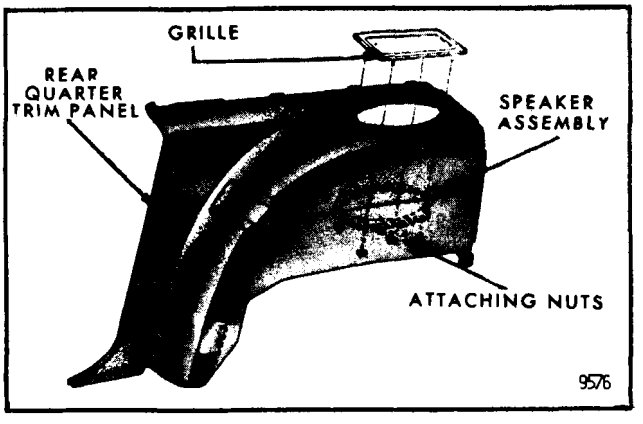


Fig. 6-26-Rear Speaker Installation - "A-35" Styles

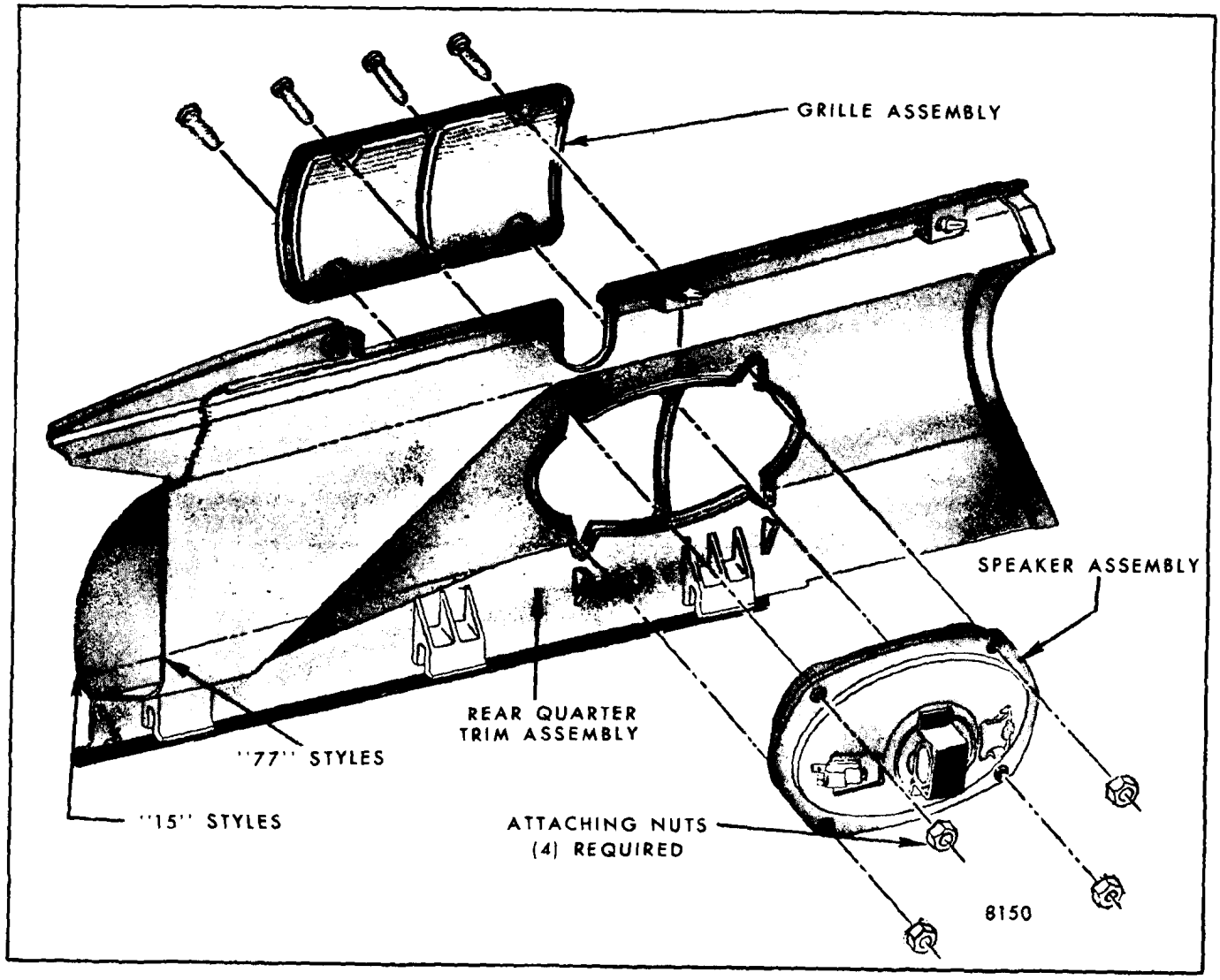


Fig. 6-27-Rear Speaker Installation - "H-15,77" Styles ("H-07 and X-17" Similar)

BACK WINDOW DEFOGGER (BLOWER TYPE)

The back window defogger on "H-07 and X-17" styles is installed to the quarter trim assembly (left side only).

Air is drawn into the motor assembly adaptor or duct at the intake grille and forced out through the outlet grille against the back window at the top or side of the quarter trim assembly (see Fig. 6-28).

Removal and Installation

1. Remove quarter trim assembly as previously described.
2. Disconnect motor wire from body harness.
3. On "X-17" styles, remove three attaching nuts from blower adaptor studs to separate blower assembly from adaptor. Then remove two attaching nuts from both intake and outlet grilles to complete disassembly (refer to Fig. 6-28).
4. To install, reverse removal procedure.

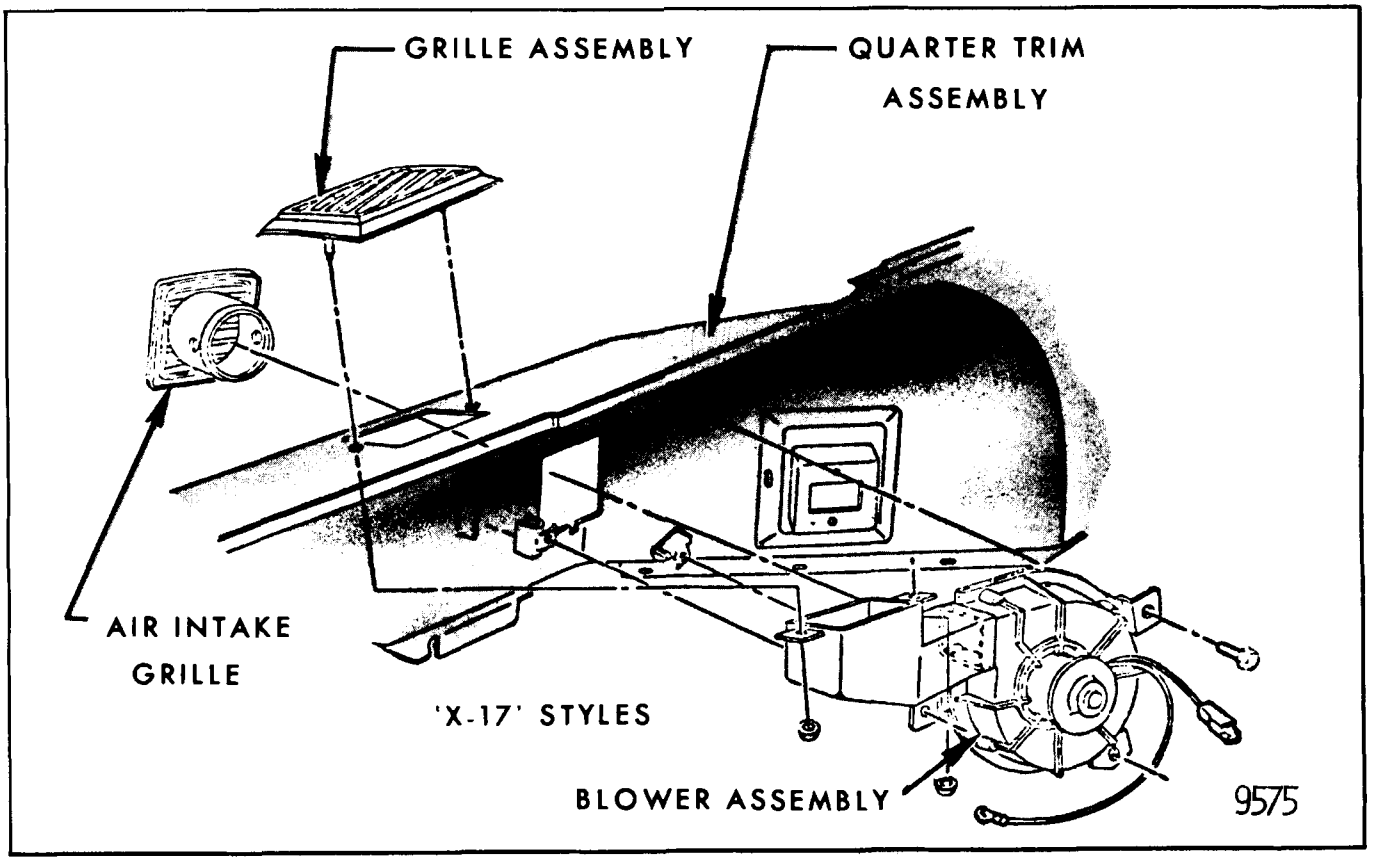


Fig. 6-28-Back Window Defogger - "X-17" Styles

EXTERIOR MOLDINGS

DESCRIPTION

The quarter lower exterior moldings are secured to the body by any one or a combination of the following attachments. Figures 6-30 and 6-31 illustrate the various quarter molding attachments.

A. Attaching screw(s)

B. Pinchweld molding clip

C. "T" bolt clip and nut

D. Hanger type weld stud clip

E. Adhesive backed (tape or sealant)

F. "W" base type snap-in clip

G. Weld stud or screw retained plastic clip

H. Integral stud with attaching nut

I. "T"-nut clip with screw

J. Joint clip

K. Adhesive backed emblem or name plate

Figure 6-29 identifies all typical lower quarter exterior moldings by number. Molding installation chart (Fig. 6-32) identifies molding description and specific attachment.

To use molding installation chart, use the following procedure.

1. Using typical exterior molding illustration (Fig. 6-29), locate number of specific molding(s).

2. Locate molding number on installation chart (Fig. 6-32). Chart will then identify molding name, attachment(s) reference to Figures 6-30 and 6-31 and specific style (if difference in attachment exists).

NOTE: For removal and installation of fabric roof cover or quarter window reveal moldings, refer to the Roof (Section 8) or Stationary Glass (Section 11) exterior molding portions of this manual.

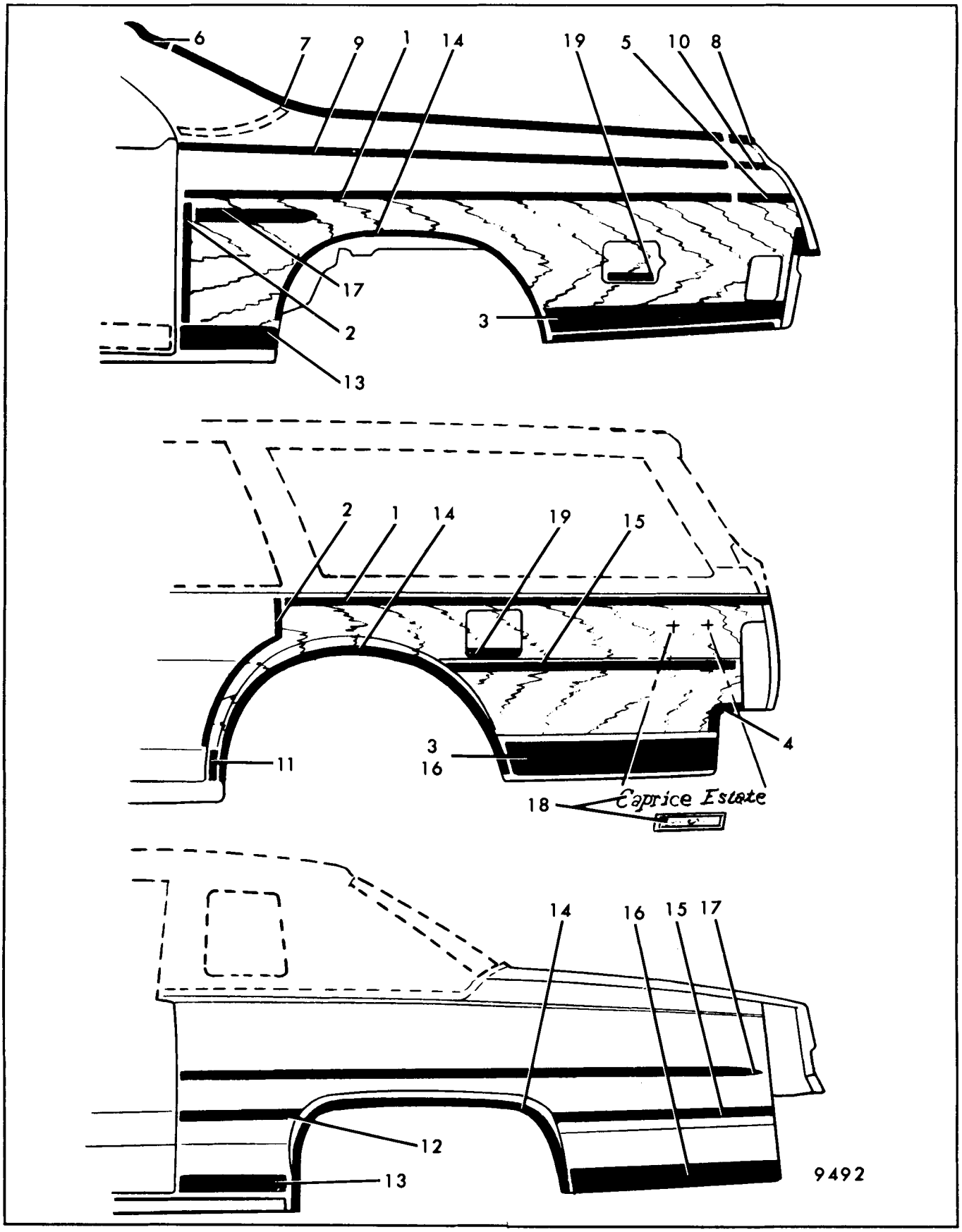


Fig. 6-29 - Typical Lower Quarter Exterior Moldings

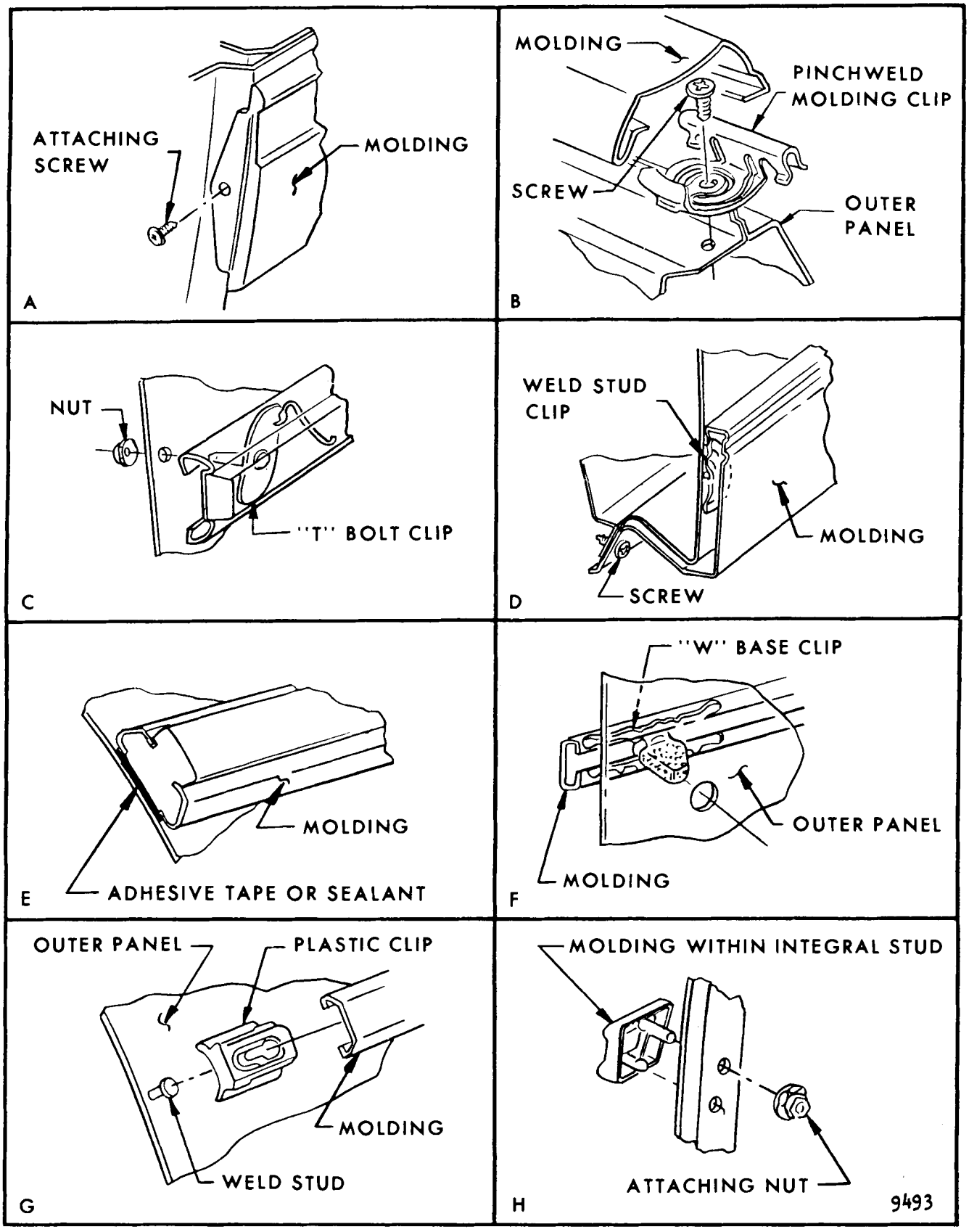


Fig.6-30 - Quarter Molding Attachments

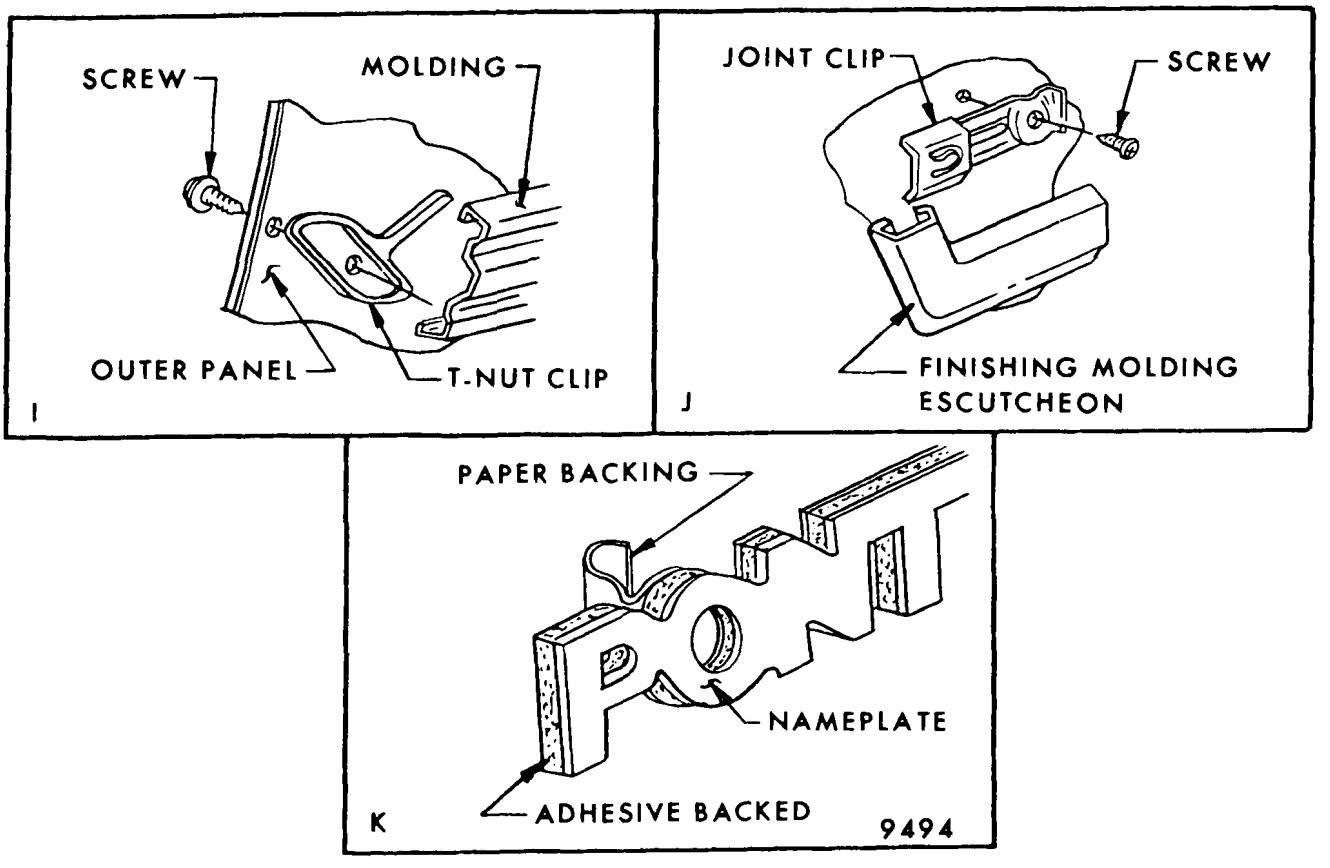


Fig. 6-31 - Quarter Molding Attachments

GENERAL PRECAUTIONS

When removing or installing any lower quarter exterior molding, certain precautions should be exercised.

1. Adjacent finishes should be protected with masking tape to prevent damage to finish.
2. Proper tools and care should be employed to guard against molding damage.
3. Holes in body panels for screws, bolts, or clips that would permit water entry into the body interior must be sealed with body caulking compound or presealed screws, nuts, or clips.

MOLDING CLIP REPLACEMENT

If a weld stud on an outer panel becomes damaged or broken off, use the following procedure.

1. Drill a small hole in the panel adjacent to original weld stud location.
2. Insert a self-sealing screw through original clip and into outer panel, or replace damaged weld stud with self-sealing screwtype weld stud.

ADHESIVE BODY SIDE MOLDINGS

A complete procedure for attaching loose or removed adhesive attached moldings can be found in the General Information (Section 1) of this manual.

SWING-OUT QUARTER VENT WINDOW - "A-35" Styles

A swing-out quarter window is available on "A" station wagon styles. The hinge straps are welded to the front vertical channel and the channel is then pressed onto the glass. The lock support is attached to an integral hole in the glass and is secured to the latch assembly by a removable roll pin. The component parts of the latch, support assembly and front vertical channel are serviceable.

MOLDING REFERENCE NUMBER (FIG. 6-29)	MOLDING DESCRIPTION (USAGE)	ATTACHMENT REFERENCE (FIG'S. 6-30 & 6-31)
1.	TRANSFER FINISHING UPPER - FRONT AND REAR (PRE-ASSEMBLED)	
	BUICK, OLDSMOBILE "A-35"; CHEVROLET, PONTIAC, BUICK "B-35"; CHEVROLET, PONTIAC "H-15"	G
	PONTIAC "A-35"	C
	OLDSMOBILE "B-35"	A,G
2.	TRANSFER FINISHING - FRONT	A
3.	TRANSFER FINISHING - REAR OF REAR WHEEL OPENING	
	"A-80"; PONTIAC, OLDSMOBILE "A-35"	A
	BUICK "A-35"	D
	PONTIAC, BUICK "B-35"	G
	CHEVROLET, PONTIAC "H-15"	G,J
4.	TRANSFER FINISHING - REAR OF REAR WHEEL OPENING-PONTIAC "B-35"	G,J
5.	TRANSFER FINISHING UPPER - REAR	
	"A-80"	A,F,J
	PONTIAC "A-35"; PONTIAC, CHEVROLET "H-15"	F,G
6.	ROOF CORNER FINISHING (AT BACK WINDOW) "A-80"	A,G
7.	QUARTER PINCHWELD - FRONT - "A-80"	A,B
8.	QUARTER PINCHWELD - REAR - "A-80"	A
9.	QUARTER BELT REVEAL - FRONT - "A-80"	A,G
10.	QUARTER BELT REVEAL - REAR - "A-80"	A,J
11.	FRONT OF REAR WHEEL OPENING (FOUR DOOR STYLES) CHEVROLET "A-35"; BUICK "A"; CHEVROLET "B-69"; PONTIAC "B-35"; BUICK "X"	A
	OLDSMOBILE; CHEVROLET "B"	D
	PONTIAC "A-35"; BUICK "B-35"; CADILLAC "K"	A,G
	CHEVROLET "A" (LESS 35)	A,C
	PONTIAC "A"	G
12.	FRONT OF REAR WHEEL OPENING "A-80"; CHEVROLET "A"; PONTIAC "B" PONTIAC 2GK57; OLDSMOBILE "A,B,E"; CHEVROLET "B,F"	A,G E
13.	FRONT OF REAR WHEEL OPENING - LOWER	
	BUICK "A", 4BZ37 AND "X-17,27"; "A-80"; CADILLAC "E"; CHEVROLET, PONTIAC "H"	A,G
	PONTIAC "A"	G
	BUICK "A-35"	C
	CHEVROLET "B"	A,C
	CHEVROLET "F"	C,G
	CHEVROLET, PONTIAC "H-15"	G,J
14.	REAR WHEEL OPENING	A
15.	REAR OF REAR WHEEL OPENING	E
16.	REAR OF REAR WHEEL OPENING - LOWER	
	ALL STYLES EXCEPT AS LISTED BELOW	D
	BUICK "X"	C
	BUICK "B-C"	G
17.	QUARTER OUTER PANEL (BODY SIDE)	
	ALL STYLES EXCEPT AS LISTED BELOW	E
	CHEVROLET "A"	A,G
	CADILLAC "C"	G
	CADILLAC "E"	C,G
18.	QUARTER OUTER PANEL - EMBLEMS AND NAME-PLATES	
	BUICK "A, X"	H
	CHEVROLET "B, H"; BUICK "B, C"	K
19.	TRANSFER FINISHING - GAS TANK FILLER DOOR	I

9495

Fig. 6-32 - Quarter Molding Installation Chart

Glass Assembly Removal (Refer to Fig. 6-33)

1. Loosen and remove trim as required to remove three screws securing latch assembly to body.
2. Swing glass outboard far enough to permit disengagement of hinge straps.

Glass Assembly Installation

1. Position forward edge of glass assembly to window opening and engage hinge straps.
2. Swing glass closed and drive latch to body attaching screws.

Latch and Support - Removal and Installation - "A-35" Styles

1. Remove glass assembly from body as previously described.
2. Using a flat end punch, remove latch to support attaching roll pin.
3. Remove support attaching screw.
4. Disengage support button and bushings from support to glass attaching hole.
5. To install, reverse removal procedure.

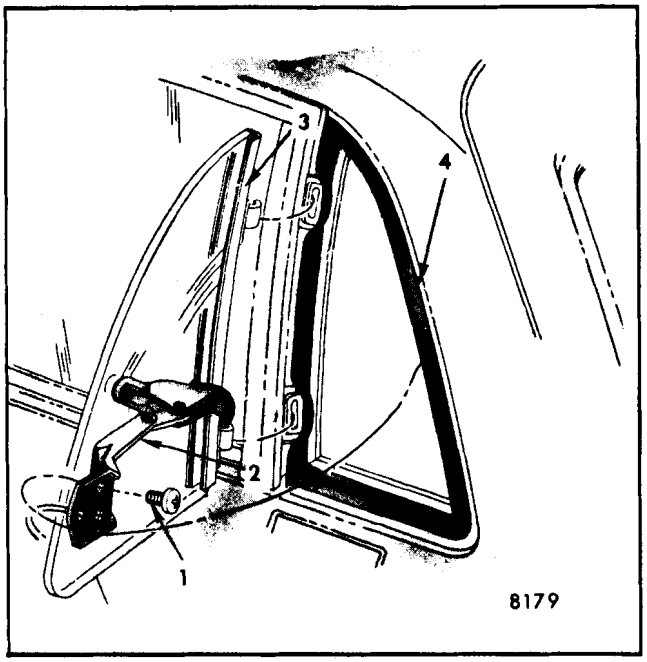


Fig. 6-33-Quarter Vent Window - "A" Station Wagons

1. Latch Assembly to Body Attaching Screws
2. Latch Assembly
3. Vertical Channel
4. Weatherstrip

Weatherstrip Removal - "A-35" Styles

1. Remove glass as previously described.
2. Using a flat-bladed tool, carefully disengage weatherstrip, starting at body pillar and working around entire window opening.

Weatherstrip Installation - "A-35" Styles

1. Clean pinchweld flange of any foreign material around entire window opening.
2. Starting at body pillar, install weatherstrip into pinchweld flange around entire window opening.

SWING-OUT QUARTER WINDOW - "H-11, 77 and X-17, 27" Styles

The swing-out quarter window assembly, available on the "H-11, 77 and X-17,27" styles, is serviced complete with the molding attaching clips and attaching hinge straps. The molding attaching clips and hinge straps are bonded to the glass and removal should not be attempted. The hinge straps, which are located on the front vertical edge of the glass, engage two hinge pins which are attached to the body pillar. The moldings snap over the bonded-on molding attaching clips and can be removed by disengaging the moldings from the clips.

The latch support is attached to an integral hole in the glass and is secured to the latch assembly by a removable roll pin. The component parts of the latch and support assembly are serviceable.

Glass Assembly Removal

1. Remove back window side garnish molding to obtain access to the latch to body attaching screws.
2. Remove three screws which secure latch assembly to the body (Fig. 6-34). On "X" styles, spacers may have been installed and should be removed.
3. Swing glass outboard from rear to permit disengagement of hinge straps from hinge pins to body pillar (Fig. 6-35).

Glass Assembly Installation

1. Position forward edge of glass assembly to the window opening and engage hinge straps to hinge pins (Fig. 6-35).
2. Swing glass to closed position and drive three latch to body attaching screws.

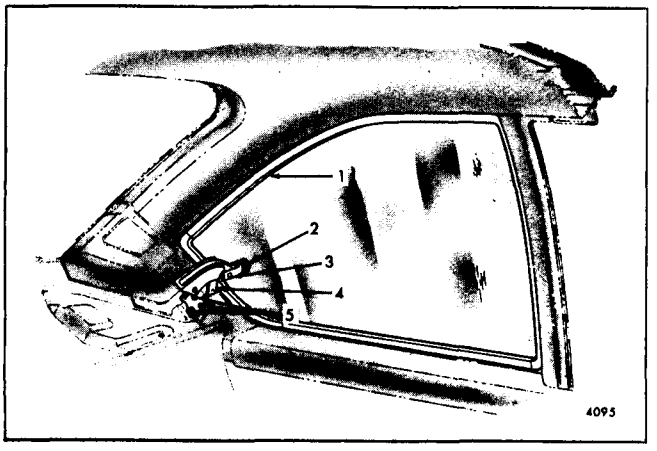


Fig. 6-34-Optional Swing-Out Quarter Window - "H-11 and 77" Styles Shown ("X-17,27" Styles Similar)

1. Quarter Window Weatherstrip
2. Support Button Assembly
3. Support to Latch Roll Pin
4. Latch Assembly
5. Latch Assembly Attaching Screws

Latch and Support - Removal and Installation - "H and X" Styles

1. Remove complete glass assembly from body as previously described.
2. Using a flat end punch, remove the latch to support attaching roll pin (Fig. 6-34).

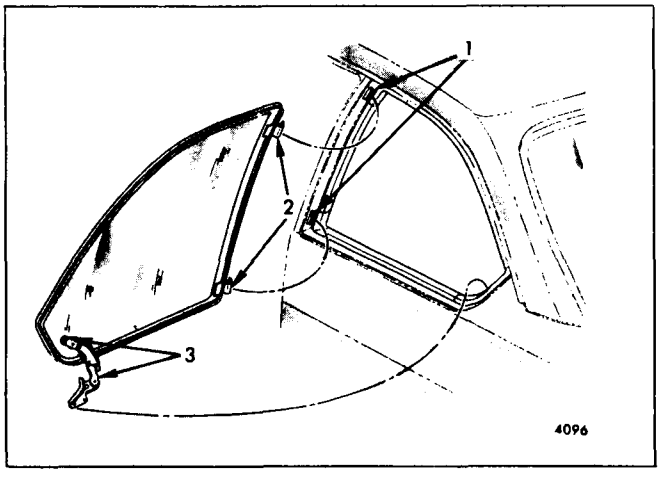


Fig. 6-35-Optional Swing-Out Quarter Window Removal - "H-11 and 77" Styles Shown ("X-17,27" Styles Similar)

1. Hinge Pins
2. Hinge Straps
3. Support and Latch Assembly

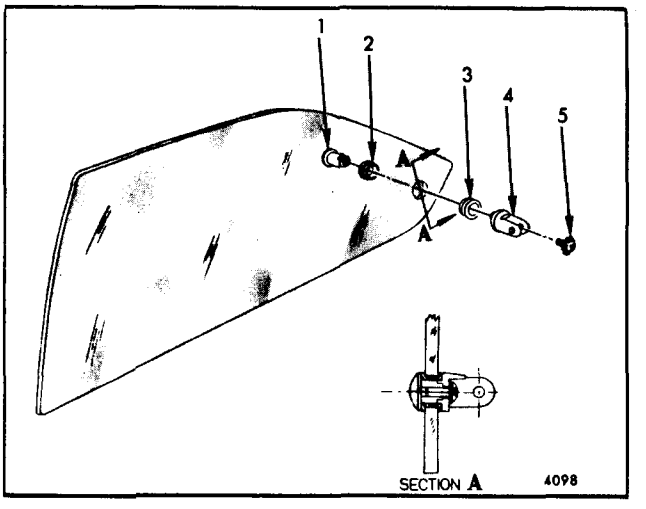


Fig. 6-36-Optional Swing-Out Quarter Window Latch Assembly Support

1. Support Button
2. Outboard Bushing
3. Inboard Bushing
4. Support to Latch Button
5. Support Button Attaching Screw

3. Remove support button attaching screw (Fig. 6-36).
4. Disengage support button and bushings from support to glass attaching hole.
5. To install, reverse removal procedure.

Weatherstrip Removal - "H and X" Styles

1. Remove glass assembly as previously described.
2. Using a flat-bladed tool, carefully disengage weatherstrip, starting at body pillar and working around entire window opening.

Weatherstrip Installation - "H and X" Styles

1. Clean out pinchweld flange around entire window opening.
2. For "H" styles, start at the body pillar, locate the two slots on weatherstrips to the two hinge pins and install to pinchweld flange.
3. For "X" styles, start at rear corner and install to pinchweld flange.

STATIONARY REAR QUARTER WINDOW - All Styles

For removal and installation procedures covering the stationary rear quarter window, refer to the Stationary Glass (Section 11) of this manual.

SECTION 7

REAR END

TABLE OF CONTENTS

SUBJECT	PAGE
Rear Compartment	7-1
Moldings, Emblems and Name Plates	7-1
Rear Compartment Lid	7-3
Rear Compartment Lock Cylinder Emblem.	7-10
Rear Compartment Lid Lock Cylinder	7-14
Rear Compartment Lid Lock	7-15
Rear Compartment Lid Lock Striker	7-17
Rear Compartment Lid Electric Closing and Release Unit - Cadillac "C, K"	7-18
Rear Compartment Lid Electric Closing and Release Unit - Cadillac "E-47"	7-25
Rear Compartment Torque Rods	7-34
Rear Compartment Weatherstrip	7-37
Rear Compartment Front Panel	7-39
Back Window Defogger (Blower Type)	7-41
Fiber Optic Monitor System	7-44
Exterior Lamps	7-47
Station Wagon Back Door - "H-15"	7-62
Station Wagon Tailgate - "A-35" Style	7-66
Single Acting Tailgate - "A-80" Style	7-83
Three-Way Tailgate "B-35" Style	7-88

REAR COMPARTMENT

INTRODUCTION

The service operations necessary for the removal, installation, adjustment and sealing of the rear compartment lid assembly, individual compartment lid hardware components, moldings, emblems and name plates attached to the rear compartment lid or rear end panel are contained in this section.

MOLDINGS, EMBLEMS AND NAME PLATES

Description

The moldings, emblems and name plates used on the rear compartment lids and rear end panels are attached by several different means. Figure 7-1 illustrates the different types of attachment.

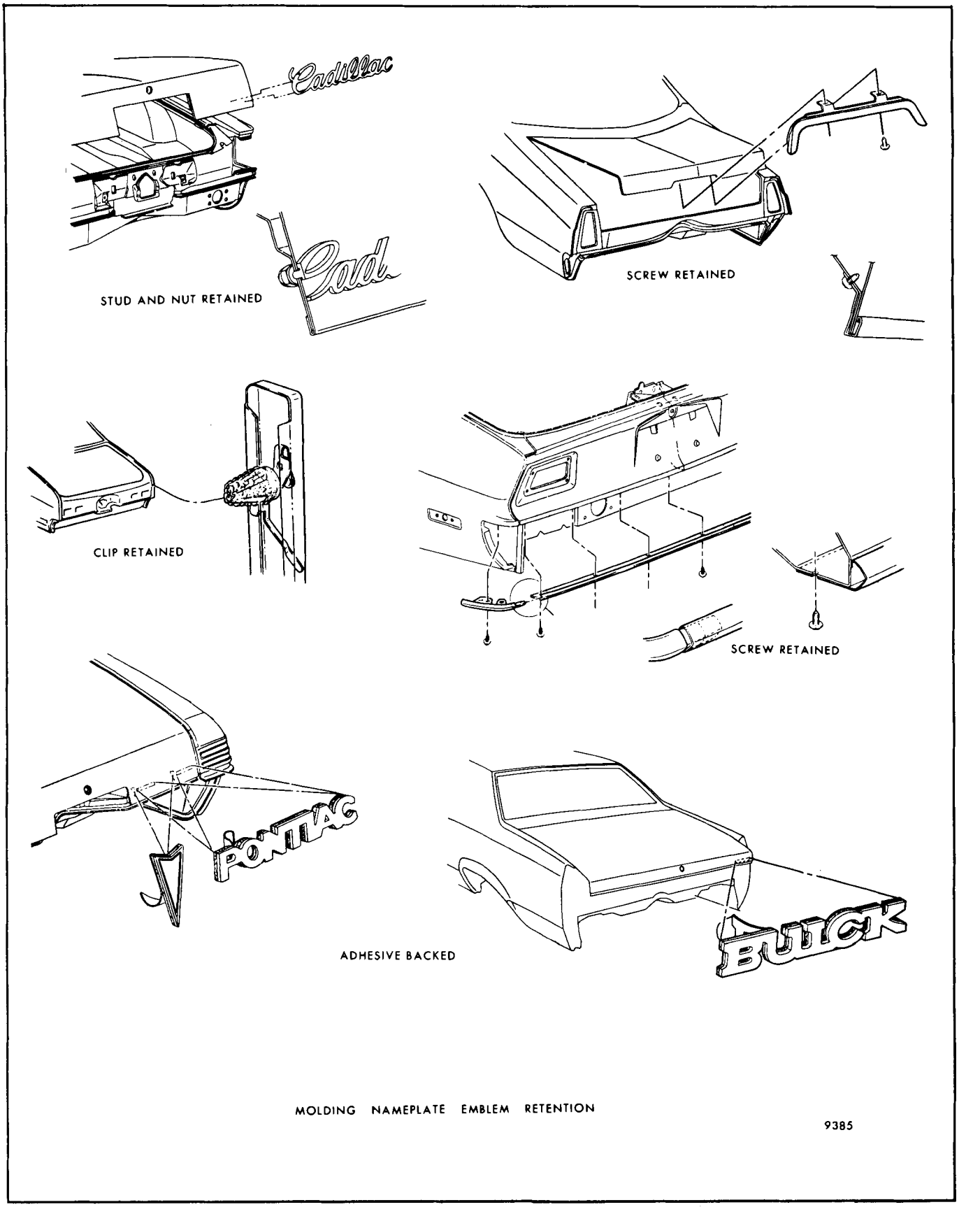


Fig. 7-1 - Molding - Name Plate-Emblem Retention

General Precautions

When removing or installing any body exterior molding, emblem or name plate, certain precautions should be exercised.

1. Adjacent finishes should be protected to prevent damage to finish.
2. Proper tools and care should be employed to guard against molding damage.
3. When a molding is overlapped, the overlapping molding must be partially disengaged or removed first.

Sealing Operation

Although detailed sealing operations for each individual molding, emblem or name plate are not described, the following information is given to permit a satisfactory sealing operation.

Medium-bodied sealer or body caulking compound are the sealers most frequently used to provide either a watertight seal or for antirattle measures.

Holes in deck lids or rear end panels for screws, bolts, or clips that would permit water to enter the interior of the body must be sealed with body caulking compound or presealed screws, nuts or clips.

Adhesive-Backed Moldings, Emblems and Name Plates

Adhesive-backed emblems and name plates can be removed from the body with the use of a hot air gun.

Removal and Installation

1. Hold hot air gun twelve inches from the surface of the part to be removed.
2. Apply heat using a circular motion for approximately 30 seconds, then carefully peel part from body surface.

To install, body surface must be warm (70 degrees plus), clean and wax free.

1. Check for proper alignment with adjacent moldings, emblems and/or name plates if applicable.
2. Remove backing from part to be installed and firmly press in place.
3. If reinstalling previously removed part, apply a thin even film of 3M Super Weatherstrip Adhesive or equivalent to adhesive portion of emblem, align and press firmly in place.

If an adhesive-backed molding, emblem or name plate is partially loose or missing, it should be replaced as follows.

NOTE: To insure quality adhesion, panel surface must be warm (70 degrees plus), clean and wax free during installation of molding.

1. Clean affected panel by washing with soap and water and wipe dry.
2. Mark proper alignment position using adjacent moldings as a guide if applicable.
3. Wipe attachment area of panel and adhesive side of item to be replaced with naphtha.

   NOTE: If separation occurs between adhesive-backed tape and name plate or emblem (tape remains on body panel), do not remove tape from body. Naphtha wipe back of name plate or emblem and adhesive tape and proceed with step 4.

4. Apply a thin even film of 3M Super Weatherstrip Adhesive or equivalent to the adhesive portion of the emblem or name plate.
5. Immediately align name plate or emblem and firmly press in place. Hold in place with tape strips.
6. Allow to set 15 minutes. If cleanup of cement squeeze-out is required, use a cloth dampened slightly with naphtha; then remove tape strips.

REAR COMPARTMENT LID

DESCRIPTION

The rear compartment lid consists of an inner and outer panel that is hemmed around the perimeter and bonded together with structural adhesive. The compartment lid hinge is welded to the body and bolted to the lid. The lid is hinged at the forward edge and balanced by use of torque rods to provide ease of operation and lid hold-open feature.

The "H-11" style compartment lid hinge halves are welded to the body and rear compartment lid. The ends of the torque rod form the hinge pins.

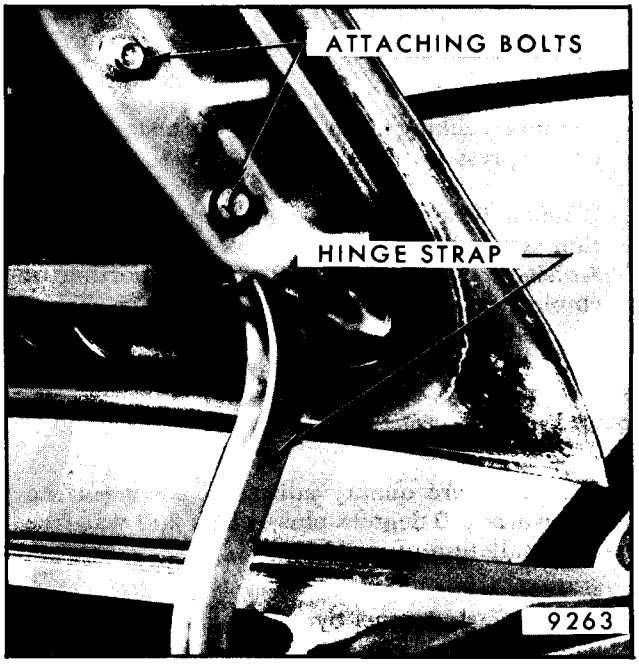


Fig. 7-2 - "B, C" Hinge to Lid Attachment

Adjustments

1. Fore, aft and lateral adjustment of the lid assembly is controlled by the hinge strap to lid attaching bolts. To adjust lid, loosen hinge strap to lid attaching bolts (Fig. 7-4) and shift lid to desired position; then tighten bolts. All adjustments for the "B, C" styles are made at lid to hinge attachment locations (Fig. 7-2).

2. Up and down adjustment of the lid assembly on styles other than "B, C" is accomplished by placing shims between the hinge strap and the lid assembly and by raising or lowering the rear compartment lid lock striker. (For adjustment of striker, refer to Rear Compartment Lid Lock - Adjustments.)

   To raise the right and/or left sides of the lid assembly, mark location of hinge on lid and install suitable shim between hinge strap and lid at forward bolt location. To lower lid, install shims at rear bolt locations.

Removal and Installation

1. Open lid and place protective covering along edges of rear compartment opening to prevent damage to painted surfaces. On "K- 69" style remove hinge strap cover (Fig. 7-3).

2. Where necessary, disconnect wire harness from rear compartment lid.

3. Mark location of hinge straps on lid inner panel. On "B, C" styles mark location of hinge strap attaching bolts to lid.

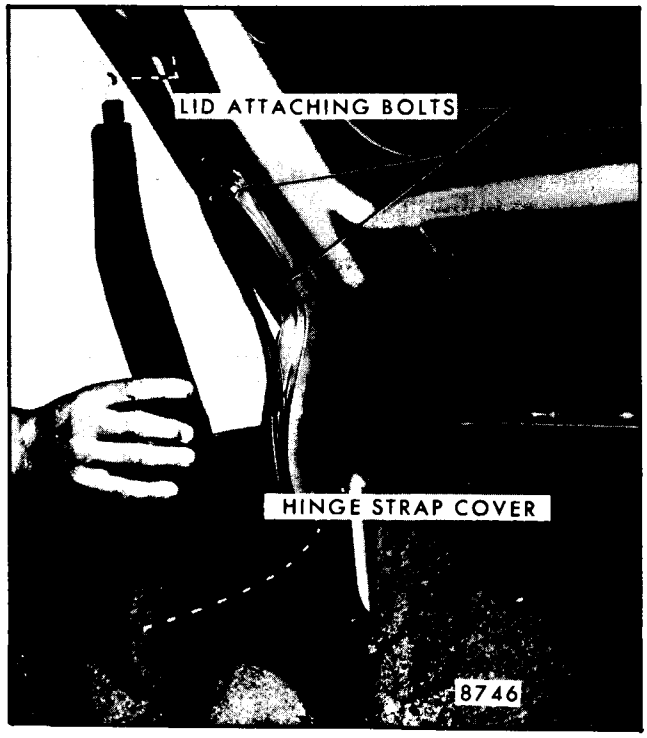


Fig. 7-3 - Rear Compartment Lid Hinge Strap Cover "K-69" Style

4. With aid of helper, remove attaching bolts securing hinges to lid and remove lid (Fig. 7-4 depicts typical "A" body hinge. Fig. 7-2 depicts typical "B, C" hinge).

5. To install, reverse removal operations.

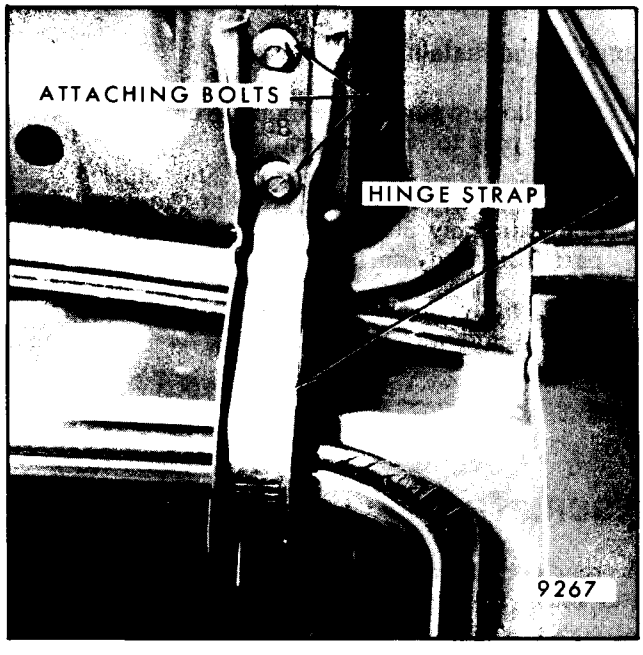


Fig. 7-4-"A" Style Rear Compartment Hinge to Lid Attachment

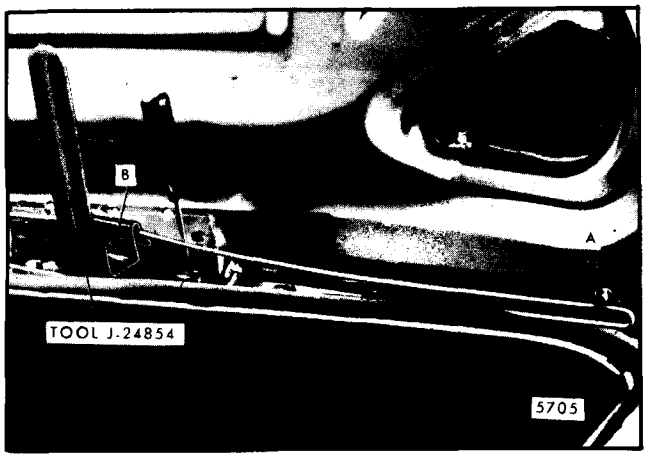


Fig. 7-5-Rear Compartment Lid Removal - "11" Styles

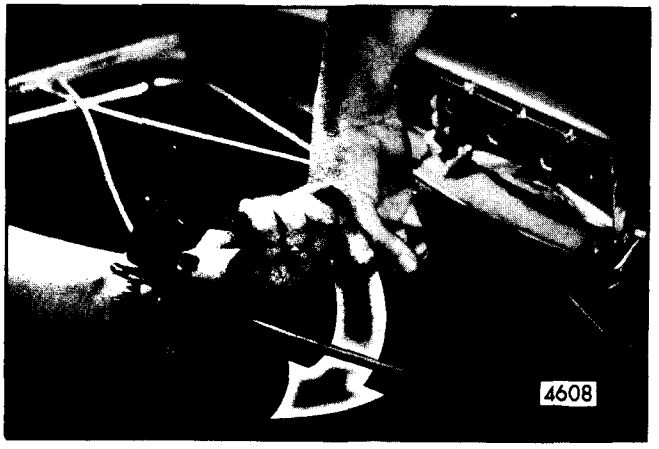


Fig. 7-7-Rear Compartment Lid Removal - "11" Styles

Removal and Installation - "H-11" Style

1. Open rear compartment lid and place protective coverings between outer corners of lid and rear compartment gutter.

2. With helper holding lid, disengage outer ends of torque rod from retaining clips in compartment lid inner panel ("A", Fig. 7- 5).

3. Using large flat-bladed tool, pry torque rod rearward to enable grasping loop of torque rod with torque rod removing tool J-24854 or equivalent, as shown in Figure 7-5. Finger tighten torque rod removing tool retaining screws ("B", Fig. 7-5) to prevent tool from disengaging from rod during removal operation.

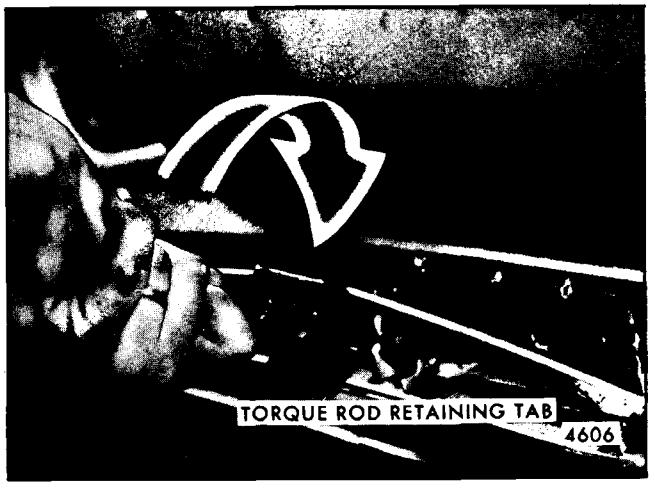


Fig. 7-6-Rear Compartment Lid Removal - "11" Styles

4. Firmly grasp tool J-24854 or equivalent with both hands and disengage torque rod loop from retaining tab on body side hinge half as shown in Figure 7-6. Carefully allow torque rod to unwind (180 degrees) as shown in Figures 7-6 and 7-7.

5. Using a large screwdriver, bend up torque rod retaining tabs on body side hinge.

6. Supporting both sides of lid, disengage ends of torque rod, which act as hinge pins, from both body side and lid side hinge halves and remove lid from body.

7. To install, reverse removal procedure.

   NOTE: Overlap of torque rod at points A, B and C, Figure 7-8, is critical in order to accomplish proper windup of torque rod.

HATCHBACK LIDS - "H-07, 77" and "X-17" Styles

Description

The hatchback lid incorporates a stationary back glass. The lid is hinged at the roof with weld-on body and lid side hinge halves which incorporate removable hinge pins (except "X-17" which has bolt-on body and lid hinge attachments). The lock is bolted in place and is adjustable. The striker is welded in place and has no adjustment.

Opening assist is performed by tubular gas-operated compartment lid support assemblies mounted at each side of the lid and attached to the body. The lid up-stop is incorporated within the support assembly (Fig. 7-9).

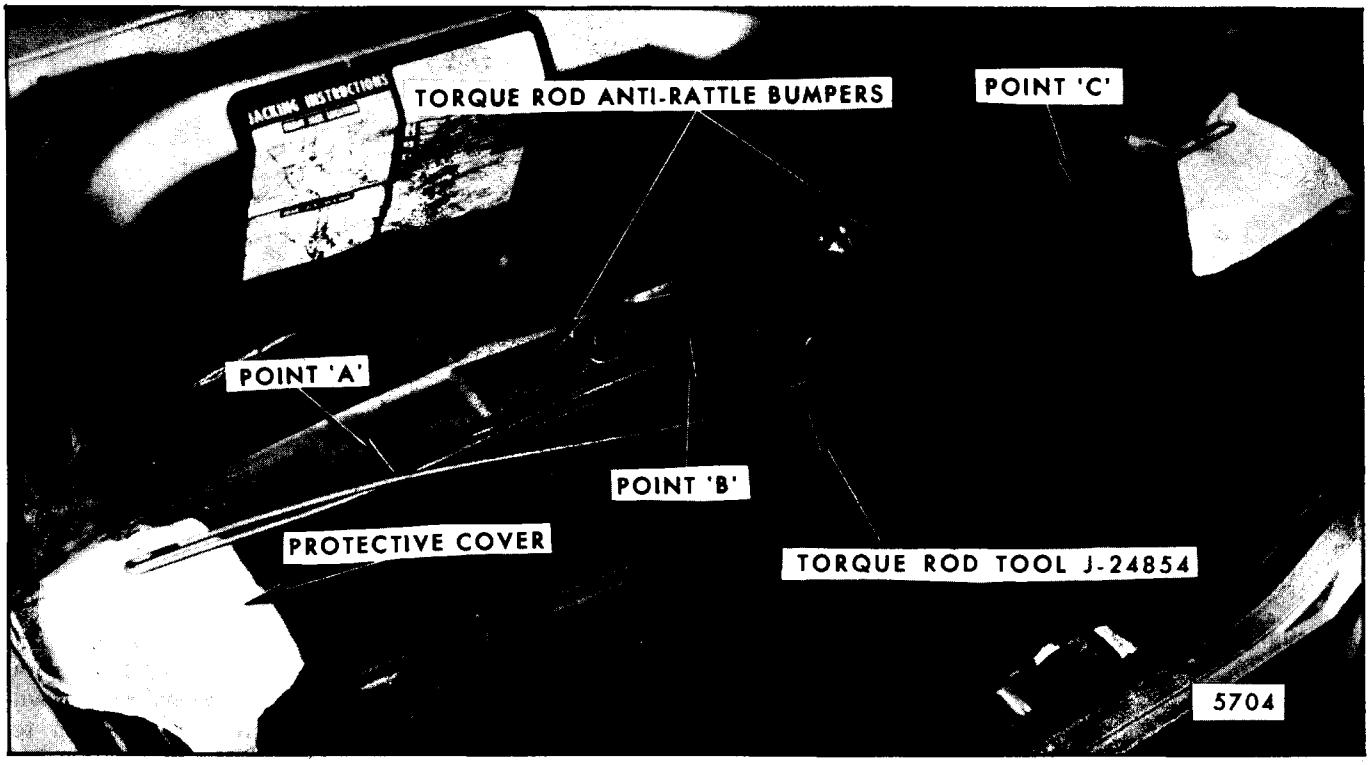


Fig. 7-8-Rear Compartment Lid Removal Shown with Torque Rod Relieved - "11" Styles

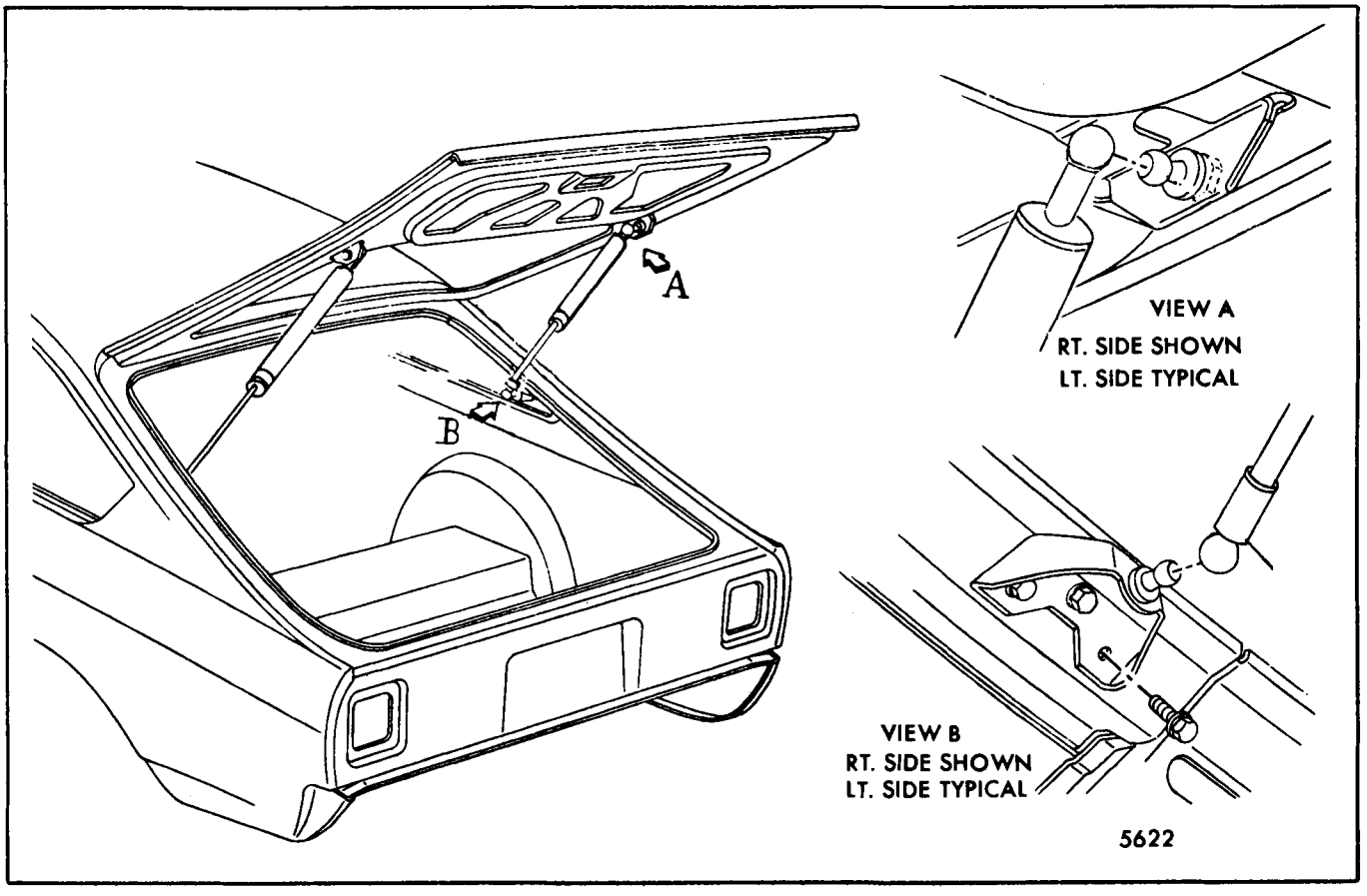


Fig. 7-9-Hatchback Lid Support Assembly Attachment - "H-77" Shown, "H-07" and "X-17" Similar

Adjustment - "X-17" Style

1. Fore, aft and lateral adjustment of the lid assembly is controlled by the hinge strap to body attachments. To adjust the lid, remove the back window upper garnish molding, loosen the hinge to body attaching screws (Figs. 7-11 and 7-12) and shift lid to desired location and tighten screws.

   NOTE: All adjustments must be made with lid in fully opened position and gas supports disconnected.

2. Flush adjustment of the lid assembly to roof is accomplished by adding or removing shims at the strap attachments.

   To raise the lid assembly, install suitable shims between strap and lid. To lower lid, install shims between hinge strap and body opening. Check lock to striker engagement, adjust as required.

Removal and Installation - "H-07, 77" and "X-17" Styles

1. Open hatchback lid. On styles with electrically heated back window, disconnect feed and ground wires from terminals. On "X-17" styles, remove back window upper garnish molding.

2. Place protective covering between outer ends of lid and roof panel.

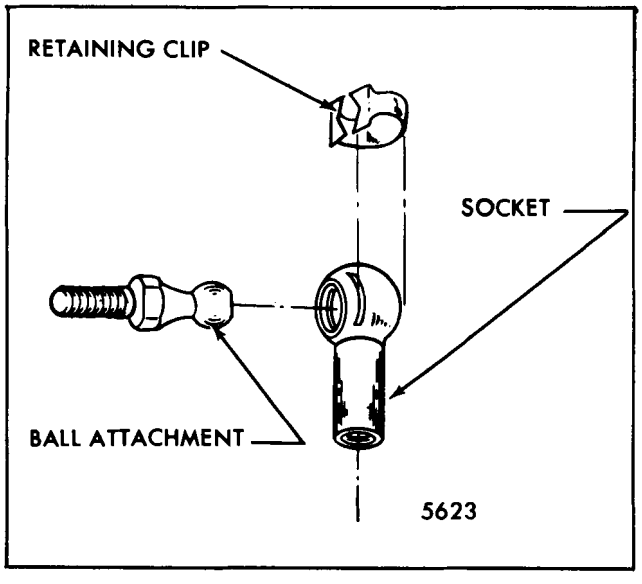


Fig. 7-10-Support Assembly Retaining Clip - "H-07, 77" and "X- 17" styles

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN GAS-OPERATED SUPPORT ASSEMBLY ATTACHMENTS WITH HATCHBACK LID IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

3. Perform the following steps while helper(s) support lid in fully open position.

4. Remove lid side retaining clips (using scratch awl or similar tool) from both gas-operated support assemblies and disengage supports from lid side attaching ball (Fig. 7-10). Allow support assemblies to rest on compartment side panel trim.

5. For "H-07 and 77" styles, with helpers supporting lid, use a 3/16" diameter rod 458 mm (18") long to remove hinge pins from hinges. As illustrated in Figure 7-13, place end of rod against pointed end of hinge pin; then strike rod firmly to shear retaining ring tabs and drive pin through hinge. Repeat operation on opposite side hinge and remove lid from body.

6. For "X-17" styles, mark location of hinge attachments on lid inner panel and remove lid side attaching screws from each hinge (Fig. 7-12) and remove lid.

7. To install "X-17" style lid, reverse removal operations.

8. To install "H-07 and 77" hatchback lid, reverse removal procedure and prior to installing hinge pins, install new retaining ring in notches provided in pins. Position retaining ring so that tabs point toward head of pin as illustrated in Figure 7-13.

HATCHBACK LID GAS-OPERATED SUPPORT ASSEMBLY - "H-07, 77" and "X-17" Styles

Description

The gas-operated support assemblies used to assist opening the hatchback lid on "H-07, 77" and "X-17" styles attach to the lid and the body by means of a ball and socket type attachment and are secured by retaining clips.

The gas-operated support assemblies are color coded (lettering on each support) for each body style because of different output levels and MUST NOT be intermixed. The "H-07" support has dark green

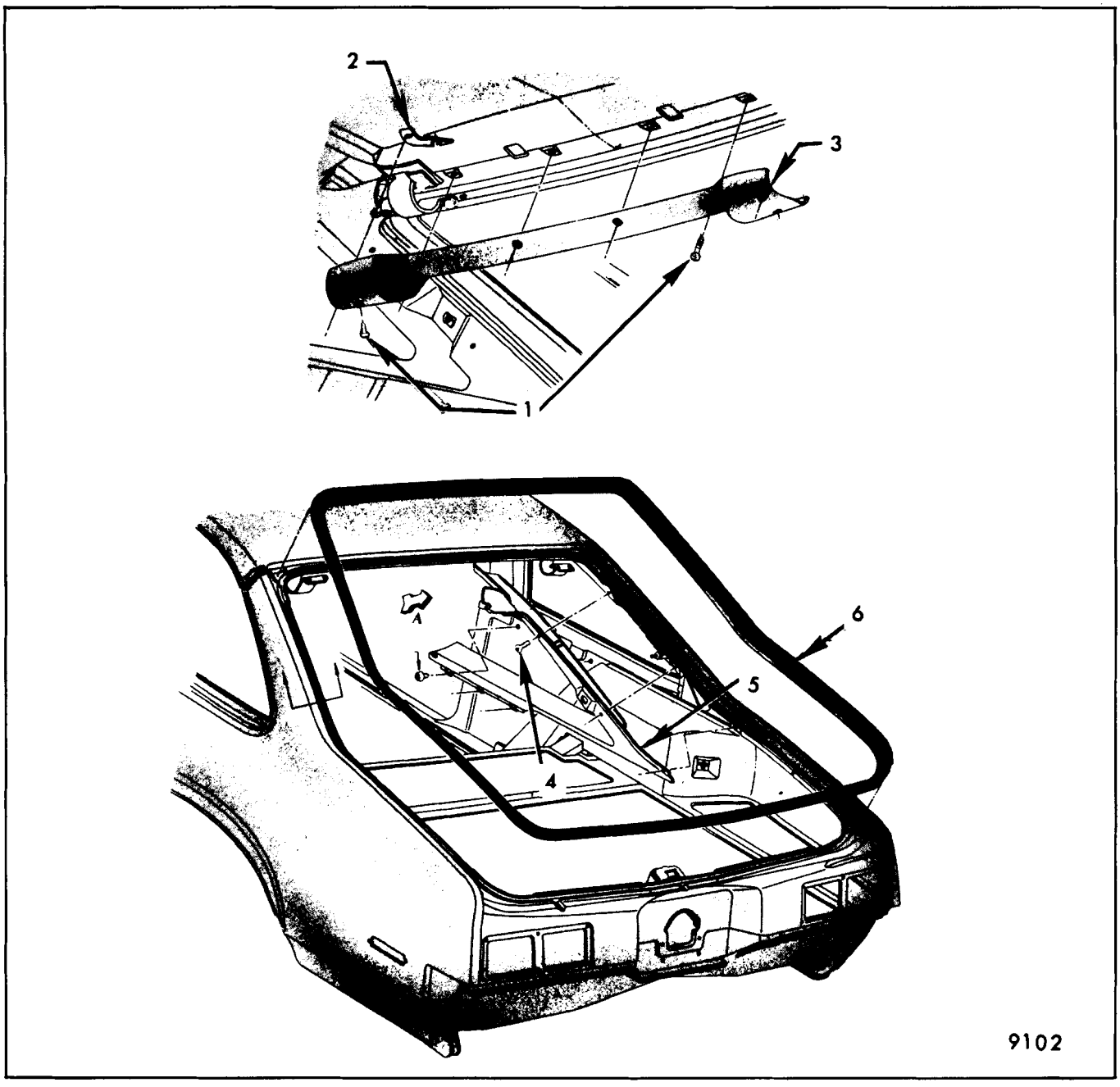


Fig. 7-11-Rear Compartment Trim and Weatherstrip Removal

1. Screw
2. Retainer
3. Garnish Molding
4. Trim Retaining Screws
5. Quarter Window Trim
6. Weatherstrip

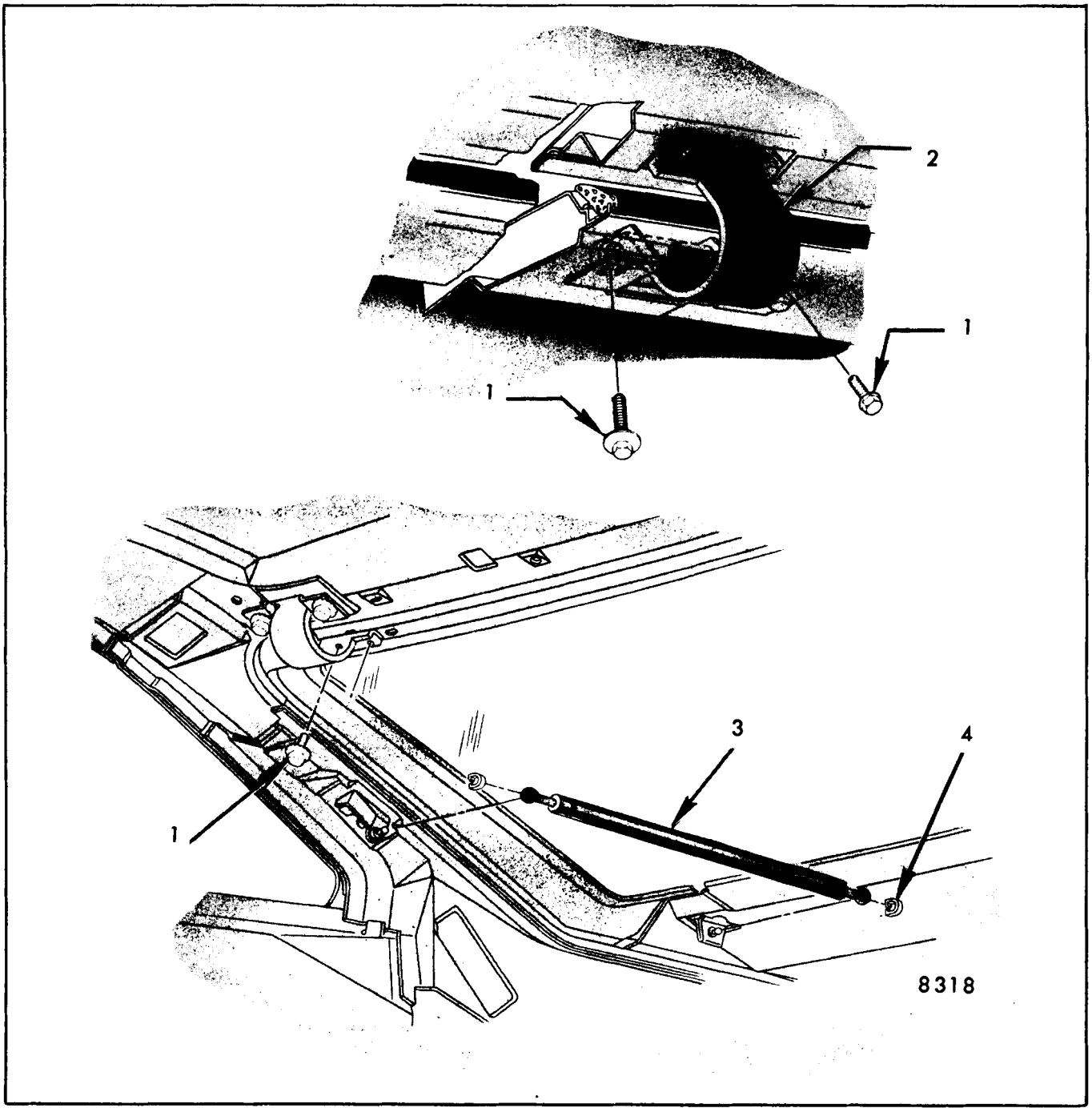


Fig. 7-12-Hatchback Lid and Gas-Operated Support Assembly Attachments

1. Hinge Attaching Bolts
2. Hinge Strap
3. Gas-Operated Support Assemblies
4. Retaining Clip

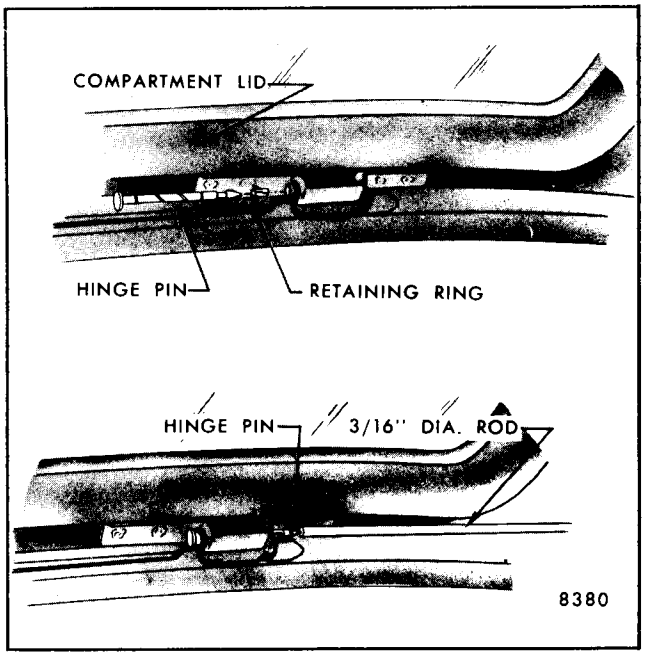


Fig. 7-13-Hatchback Lid Hinge - "H-07, 77" Style - Right Side Shown

lettering, the "H-77" support has dark blue lettering and the "X-17" support has dark red lettering. Chevrolet "H-07" uses a higher output support assembly when spoiler option is specified, color coded yellow.

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN GAS-OPERATED SUPPORT ASSEMBLY ATTACHMENTS WITH HATCHBACK LID IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

Removal and Installation

1. Prop lid in full-open position.
2. Remove lid and body side retaining clips (using scratch awl or similar tool) from ends of gas-operated support assemblies (Figs. 7-9 and 7-10).
3. Disengage ball from socket attachment at each end of support and remove from body.
4. To install, reverse removal procedure.

REAR COMPARTMENT LOCK CYLINDER EMBLEM

Description

Various rear compartment lock cylinder emblems are utilized on many different styles. They can be classified into four basic groups: swivel emblem - stud and nut retained (Fig. 7-18), swivel emblem - rivet retained (Fig. 7-19), fixed emblem - integral clip retained (Fig. 7-20), and fixed emblem - adhesive backed retained (Fig. 7-17). In all cases, these emblems are installed over the lock cylinder which necessitates emblem removal prior to lock cylinder replacement.

Removal and Installation

1. On styles equipped with swivel emblems retained by stud nuts, open rear compartment lid and remove attaching nuts and carefully remove emblem from lid assembly.

   NOTE: On Cadillac "E and K" styles, access to emblem attaching nuts requires removal of inner panel lock cylinder access hole cover (Fig. 7-15). To remove, drill out rivets with 5/32" diameter drill bit.

2. On styles equipped with swivel emblems retained by rivets, drill out rivets with 5/32" diameter drill bit and remove emblem.
3. On styles equipped with fixed emblems retained with integral clips, protect painted surface of outer panel and carefully pry emblem from rear compartment lid to remove.
4. On styles equipped with stick-on emblems, remove emblem by heating EMBLEM with heat gun as outlined under Adhesive-Backed Moldings, Emblems and Name Plates.
5. To install other than stick-on type, align emblem and gasket with attaching holes in lid assembly and press firmly to engage integral clips, install stud nuts or new 5/32" x 7/16" pop rivets or equivalent. Seal base of attaching studs or rivet holes with suitable sealer.
6. To install stick-on type emblem, remove old foam backing from lid and emblem. Apply a new piece of foam tape and press on lid or apply a thin film of 3M Weatherstrip Adhesive (or equivalent) to the emblem and press in place.

DISPOSAL PROCEDURE

GAS OPERATED COUNTERBALANCE SUPPORT ASSEMBLY

Refer to instructions in this Manual for removal and installation information. When removed, depressurize the support assembly as described below before discarding.

> WARNING: PROTECTIVE EYE COVERING MUST BE WORN WHILE PERFORMING THE FOLLOWING STEPS.

1. Place support assembly horizontally in bench vise and tighten vise.
2. Place several layers (4 layers minimum) of shop towels or rags over end of cylinder in vise (Fig. 1).
3. Measure 38.10 mm (1-1/2") in from fixed end of cylinder and, using a scratch awl or pointed center punch and hammer, drive awl or punch through the towel and into the cylinder until the gas begins to escape (Fig. 1).
4. Hold the towel and scratch awl in place until all gas has escaped (a few seconds). Then, slowly remove scratch awl. Escaping oil will be absorbed by the towel.
5. While still holding towel over hole, push bright shaft completely into black cylinder to purge remaining oil (Fig. 2).
6. Remove from vise and discard.

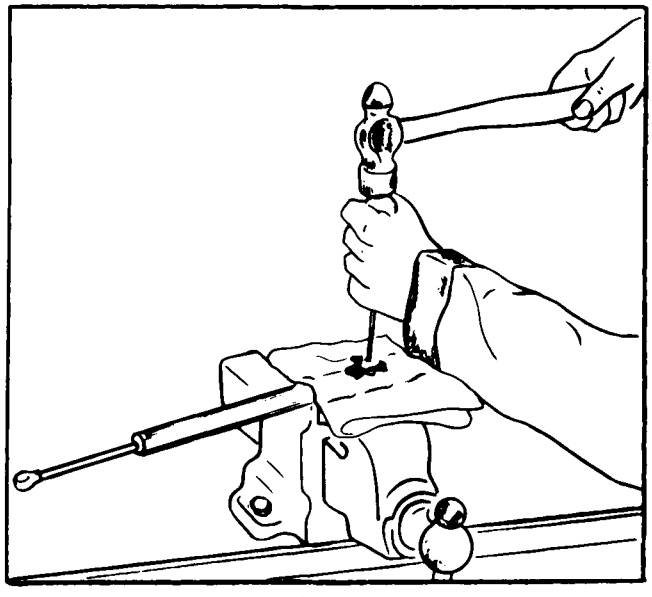


FIGURE 1

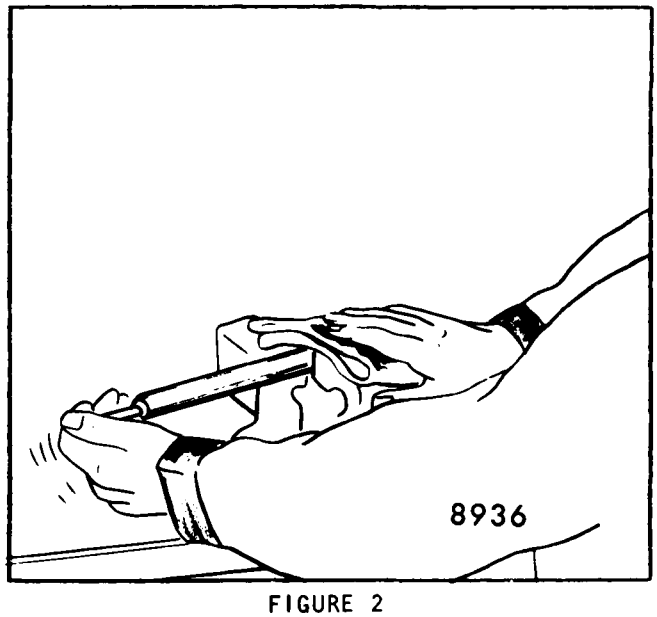


FIGURE 2

Fig. 7-14 - Disposal Procedure for Replaced Gas-Operated Support Assembly

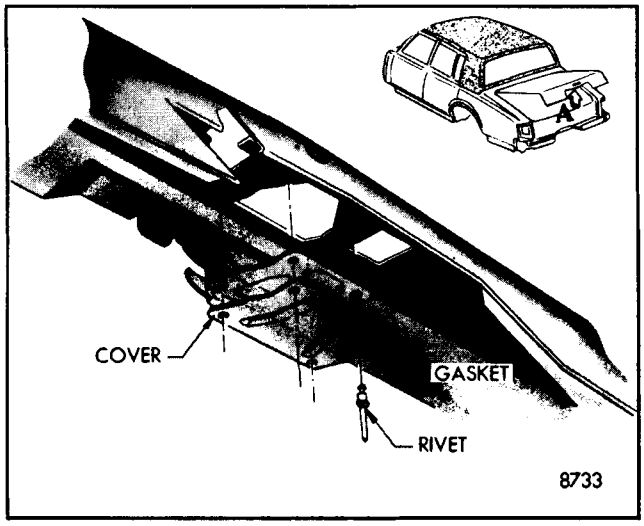


Fig. 7-15 - Lock Cylinder Access Hole Cover "K-69" Style

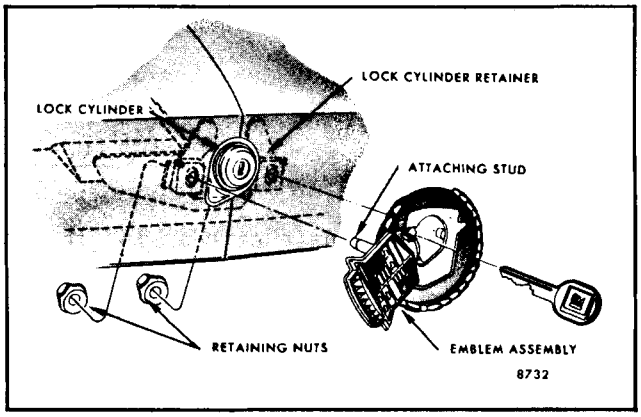


Fig. 7-16 - Rear Compartment Lock Cylinder Emblem "K-69"

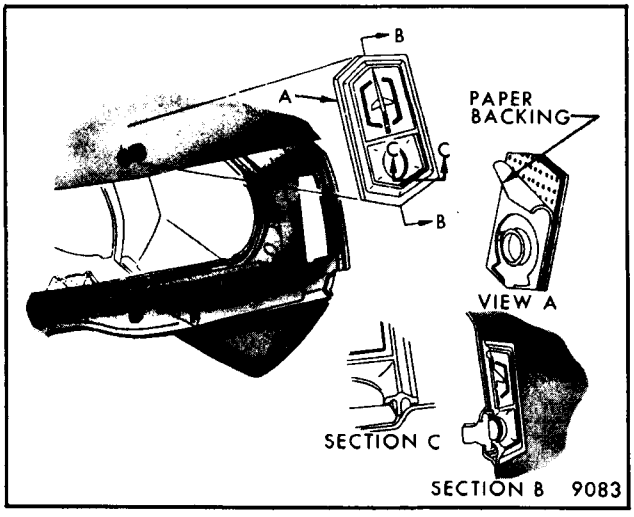


Fig. 7-17 - Oldsmobile Adhesive Backed Lock Cylinder Emblem

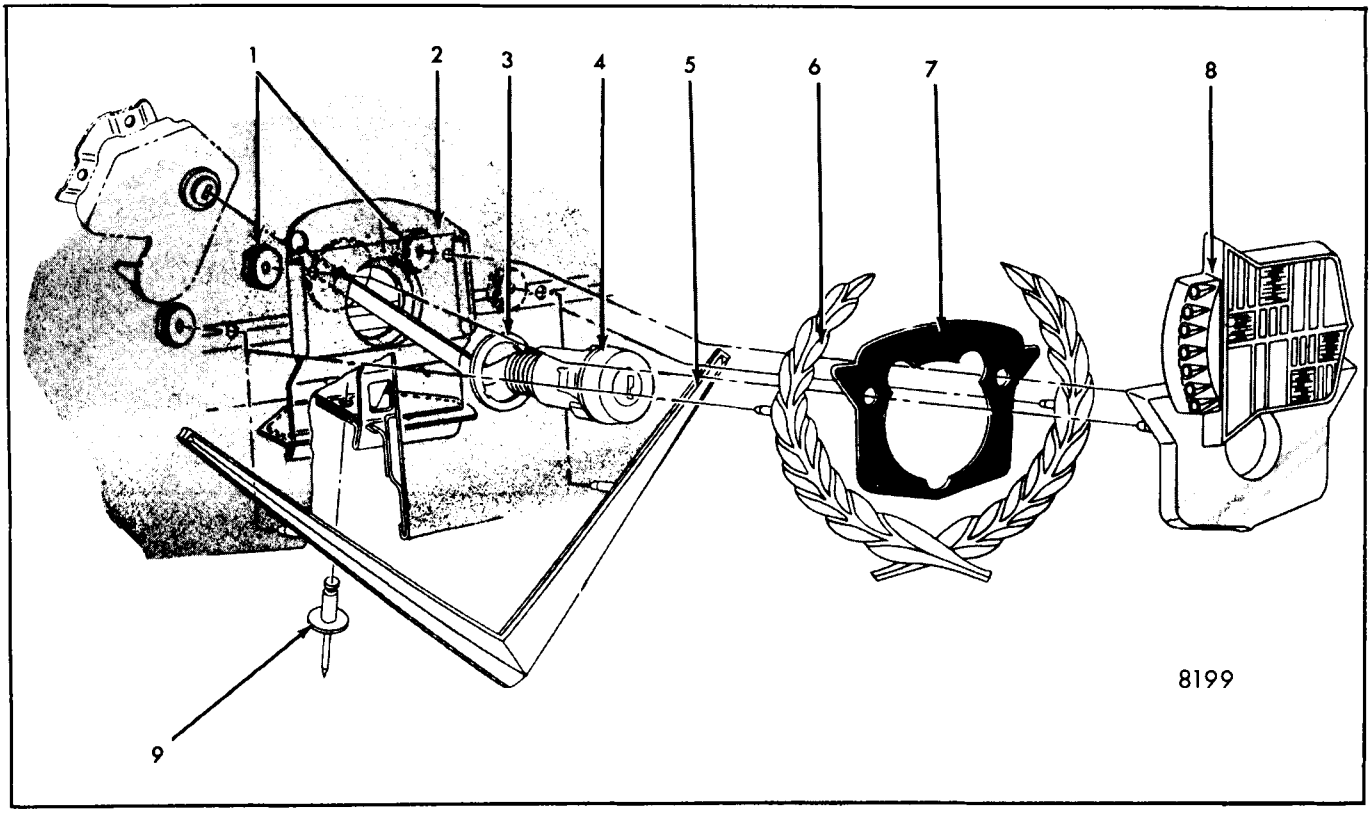


Fig. 7-18-Cadillac Rear Compartment Swivel Emblem and Lock Cylinder - All Styles less "K-69"

1. Emblem Attaching Nuts
2. Lock Cylinder Retainer
3. Lock Cylinder Gasket
4. Lock Cylinder Assembly
5. "V" Emblem - "47" Styles Only
6. Wreath Emblem - "23,33,69" Styles Only
7. Emblem Gasket
8. Emblem Escutcheon
9. Retainer Rivet

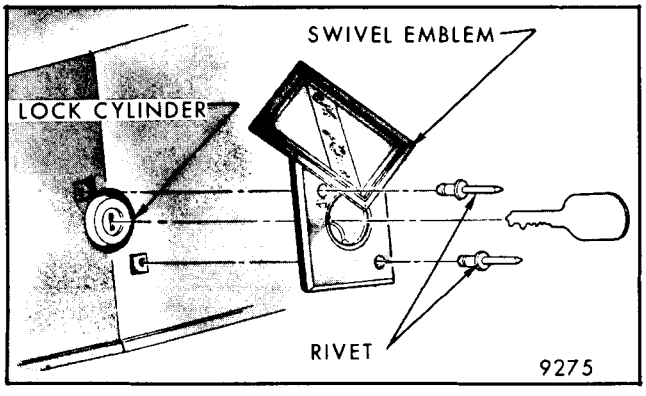


Fig. 7-19-Typical Swivel Emblem - Rivet Retained - Oldsmobile "C" Style Shown

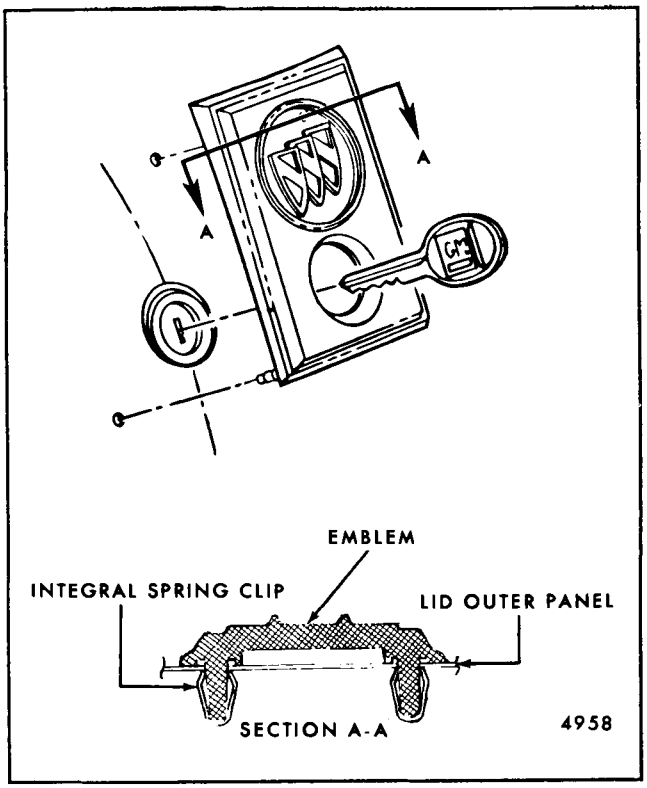


Fig. 7-20-Typical Fixed Emblem - Integral Clip Retained

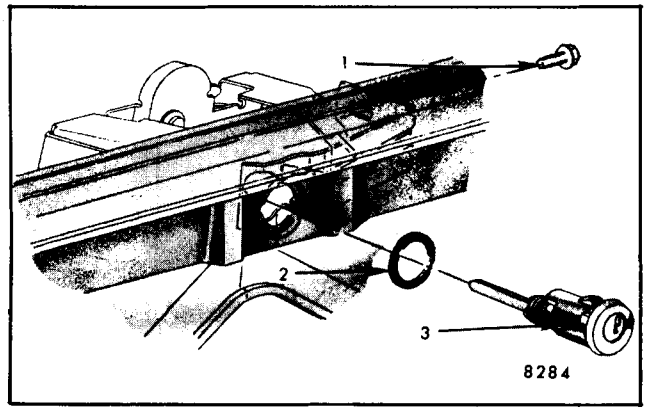


Fig. 7-21-Side Loading Lock Cylinder Retainer - Pontiac "F" Styles

1. Retainer
2. Gasket
3. Lock Cylinder

REAR COMPARTMENT LID LOCK CYLINDER - All Styles

Description

On most styles, the rear compartment lid lock cylinder is located in the lid assembly. On remaining styles, the cylinder is located in the rear end panel. The basic method of cylinder attachment is by means of a retainer which is secured by a screw or rivet. Chevrolet "F" style utilizes stud nut method of lock cylinder retention (Fig. 7-25). On styles equipped with lock cylinder emblems, it is necessary to remove the emblem, as previously described, prior to cylinder removal. Figures 7-21, 7- 22, 7-23, 7-24, 7-25 and 7-26 illustrate various lock cylinder retainer locations.

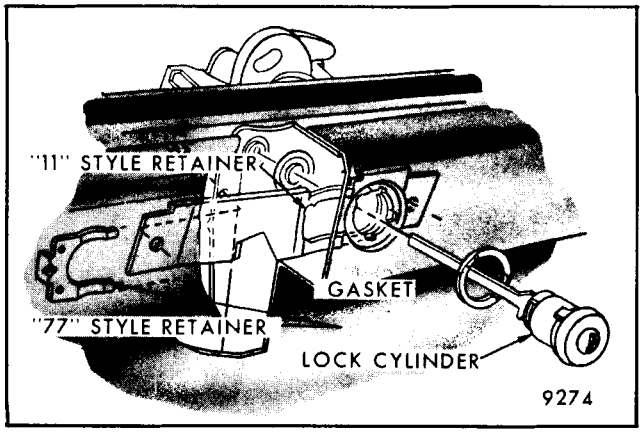


Fig. 7-22-Typical Side Loading Lock Cylinder Retainer - "H-11-77" Shown

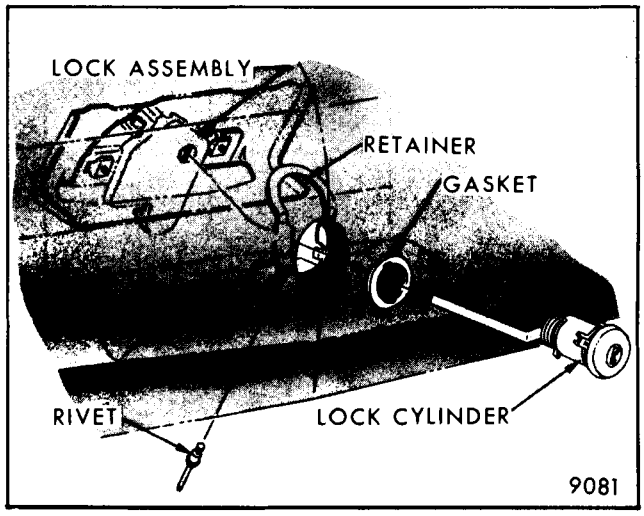


Fig. 7-23-Typical Bottom Loading Lock Cylinder Retainer

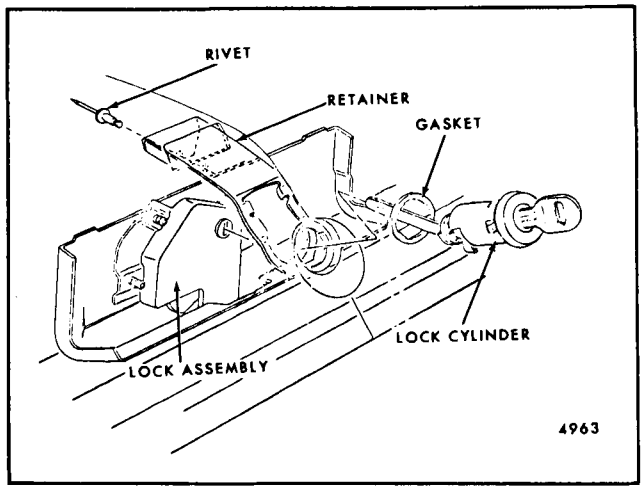


Fig. 7-24-Typical Top Loading Lock Cylinder Retainer - Chevrolet "A" Style Shown

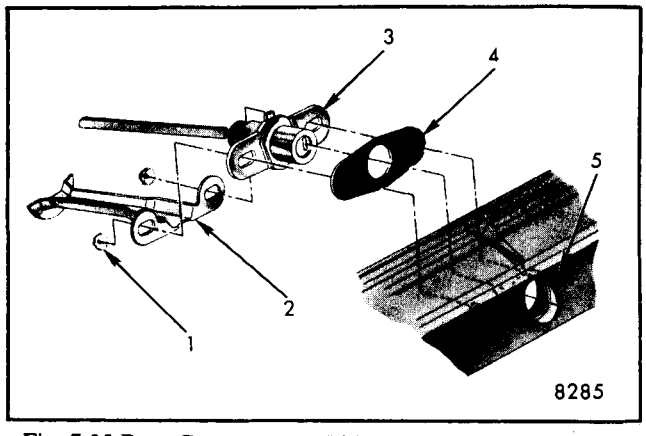


Fig. 7-25-Rear Compartment Lid Lock Cylinder - Chevrolet "F" Styles

1. Attaching Nuts
2. Lock Guard (Antitheft)
3. Lock Cylinder
4. Gasket
5. Mounting Studs

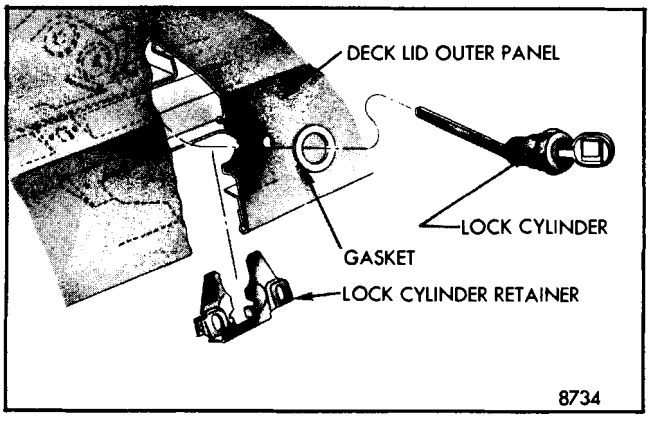


Fig. 7-26 - Lock Cylinder and Retainer Cadillac "K-69" Style

Removal and Installation

1. Open rear compartment lid.
2. On styles so equipped, remove lock cylinder emblem as previously described.
3. Remove lock cylinder retainer attaching screw, stud nuts or, using a 1/8" drill bit, carefully drill out rivet securing lock cylinder retainer to lid. Use care to avoid enlarging rivet hole.
4. Pull retainer away from lock cylinder to release; then remove cylinder from body.
5. To install, reverse removal procedure. Insure that lock cylinder shaft engages with lock and that gasket mates properly with outer panel to form a watertight seal. Check for proper operation of lock cylinder with key. Then install retainer attaching screw, stud nuts or new 1/8 x 5/16" pop rivet or equivalent where rivet is specified.

REAR COMPARTMENT LID LOCK - All Styles

Description

All rear compartment lids incorporate an open face lock. The term open face refers to the construction of lock frame which does not completely encase the lock mechanism. The lock mechanism becomes encased by the panel or reinforcement to which it is bolted.

When electric lid release option is specified, a solenoid assembly is bolted onto the existing lock using original lock bolts.

Most styles have the rear compartment lock mounted in the lid. A few styles, "H" and Chevrolet "F", have the lock mounted in the rear end panel (Fig. 7-29 and 7-31).

The lock is bolted to a lock reinforcement. On "H-11, 77" styles, the lock is adjustable vertically.

The electric lid release unit is designed to unlock a rear compartment lid from inside the car. The specific operating instructions are covered in detail in the Owner's Manual.

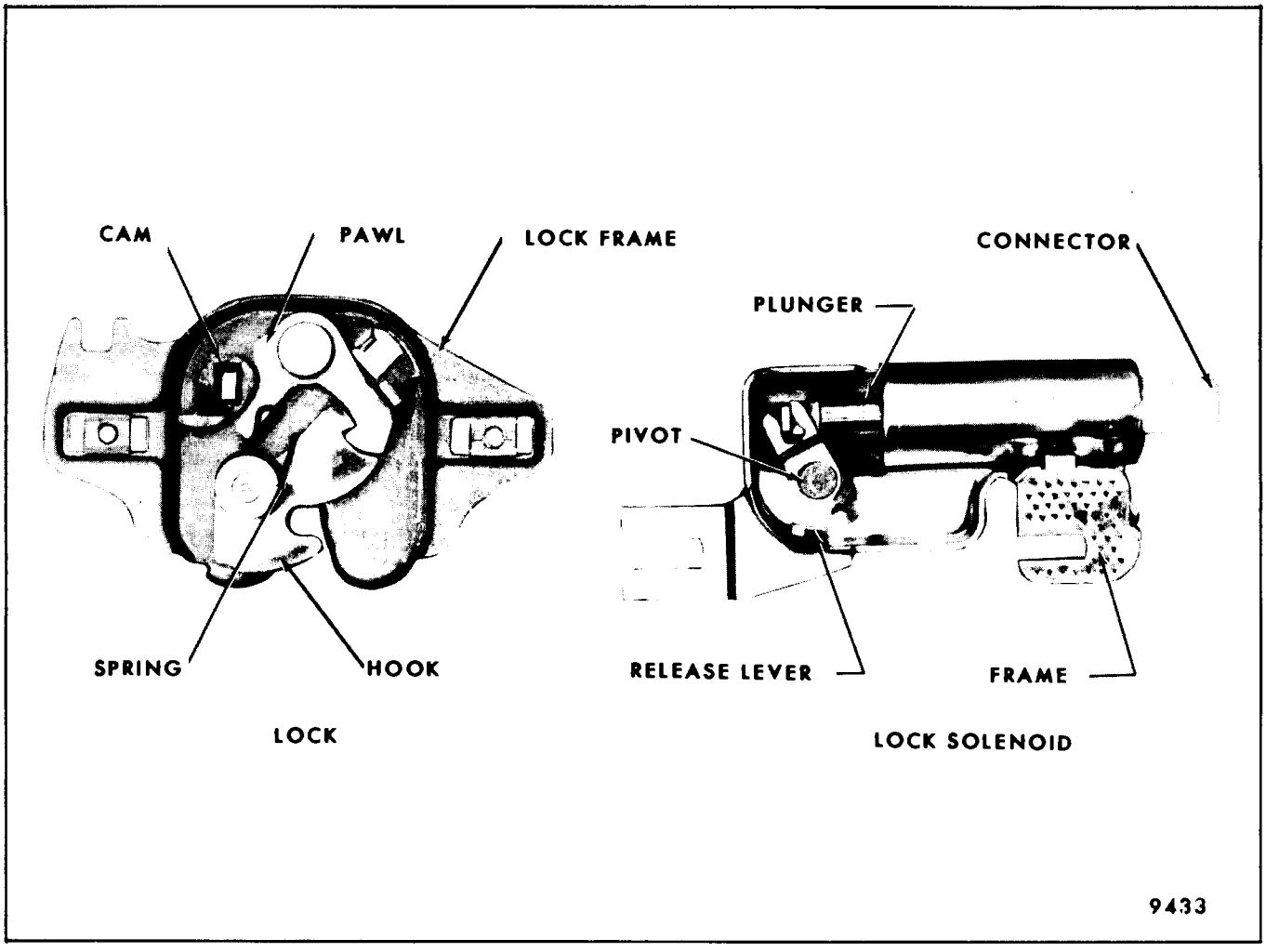


Fig. 7-27-Typical Rear Compartment Lid Lock and Solenoid - "B, C" Styles

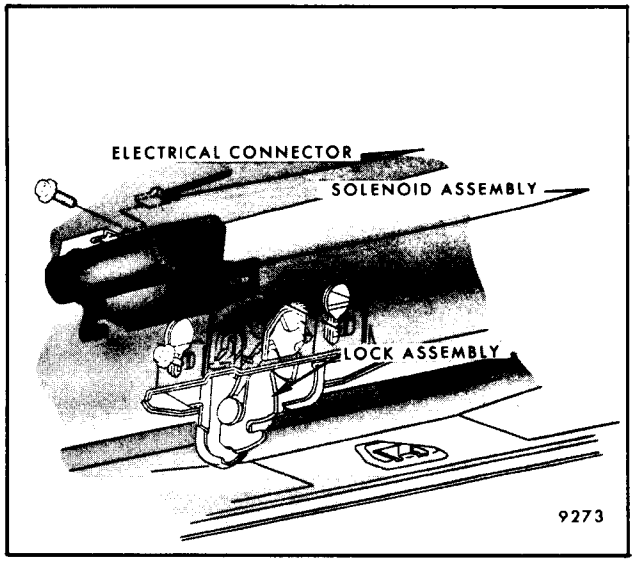


Fig. 7-28-Optional Electric Lid Release Solenoid Installation - Except "B, C" Styles

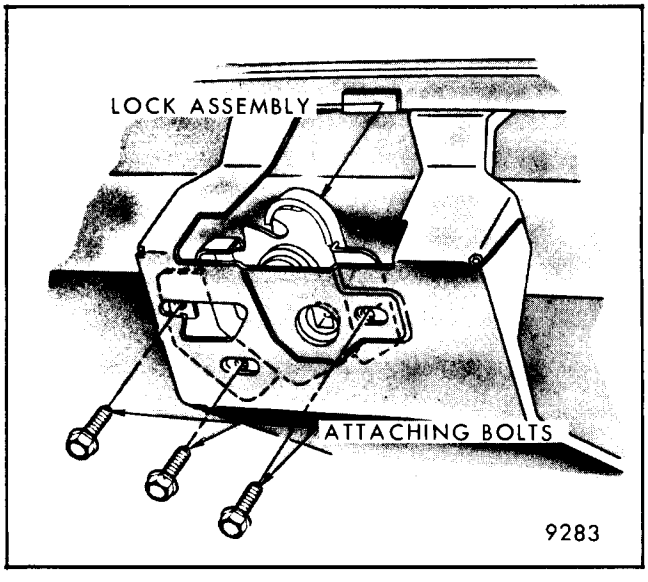


Fig. 7-29 - Chevrolet "F" Rear Compartment Lid Lock

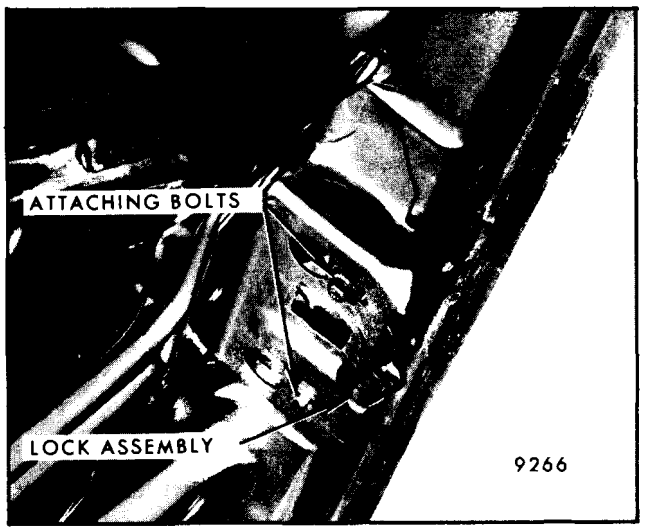


Fig. 7-30 - "B, C" Deck Lid Lock Attachment

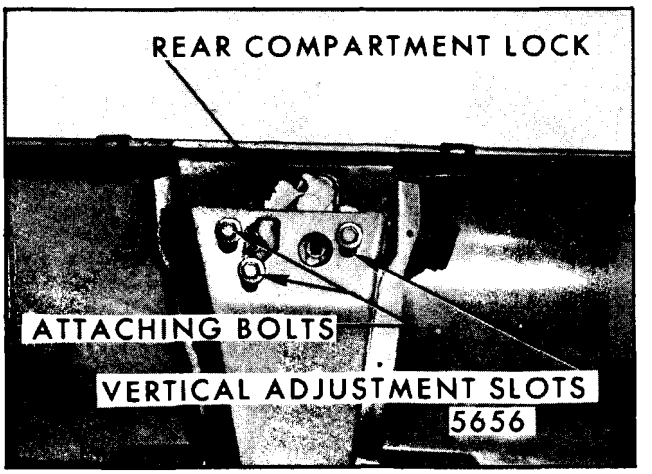


Fig. 7-31-Rear Compartment Lock - "H-11, 77" Styles

Adjustments

Rear compartment lid locks are adjustable laterally, regardless of location, to provide for proper lid lock operation and lock-to-striker engagement.

To determine if lock or striker adjustment is required, proceed as follows:

1. Make certain rear compartment lid is properly aligned.
2. With lid in an open position, apply a small quantity of modeling clay on lock frame at both sides of lock hook. Then close lid with moderate force.
3. Open lid and check amount of engagement of striker with lock frame as indicated by indentations in clay. Striker bar indentations in clay should be uniform on both sides of lock frame. Where required, loosen striker or lock attaching screws and adjust lock to obtain proper engagement. Close lid and check for proper lid and key operation.
4. Secure lock attaching bolts 7 to 9 N·m (57 to 87 in-lb) torque.

Removal and Installation

1. Open rear compartment lid and remove lock cylinder and shaft as previously described.
2. Remove attaching bolts securing lock (Fig. 7-31 to rear compartment lid or rear end panel.

NOTE: On all styles equipped with electric lid release units, disconnect electric feed wire connector, remove solenoid-to-lock attaching bolts and remove solenoid and lock.

3. To install, reverse removal operations. Close lid and check lock engagement with striker. Make necessary adjustments as outlined under adjustments.

REAR COMPARTMENT LID LOCK STRIKER - All Styles Not Equipped with Electric Closing Unit

Description

On some styles, rear compartment lid lock strikers are adjustable vertically regardless of location. On the remaining styles, the striker is welded to a reinforcement or to the rear end panel and is therefore not adjustable.

Adjustments

To determine if striker adjustment is required, refer to Rear Compartment Lid Lock - Adjustments.

Removal and Installation

1. Open rear compartment lid. Mark vertical position of striker by marking a line at top of striker support or at base of lid or rear end panel.
2. Remove striker attaching screws and remove striker.
3. To install, reverse removal procedure. Close lid and check lock-to-striker engagement. Make any necessary adjustments.

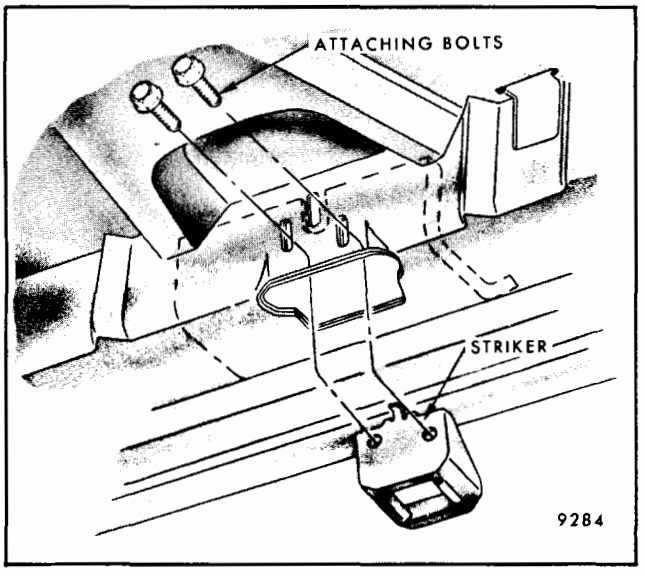


Fig. 7-32 - Typical Rear Compartment Lock Striker Mounted in Lid

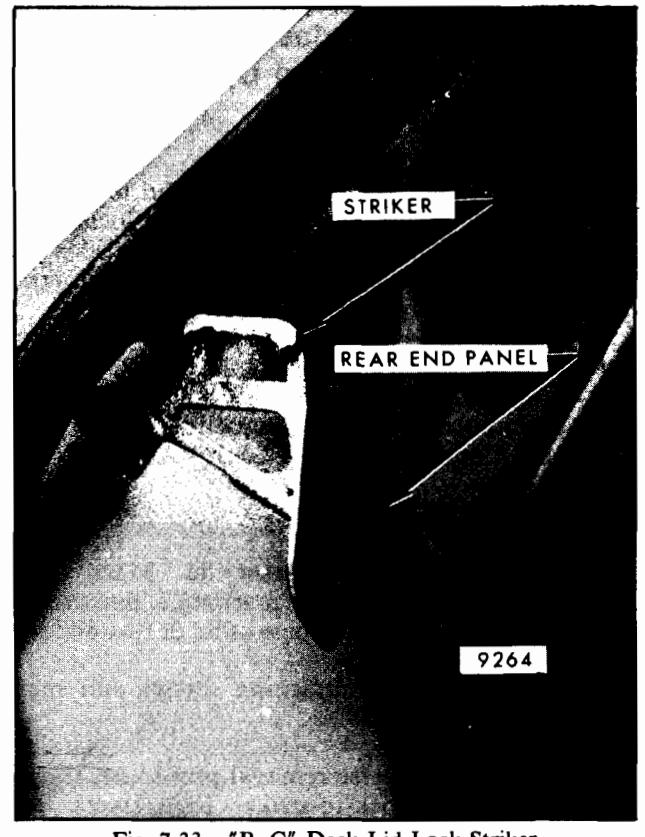


Fig. 7-33 - "B, C" Deck Lid Lock Striker

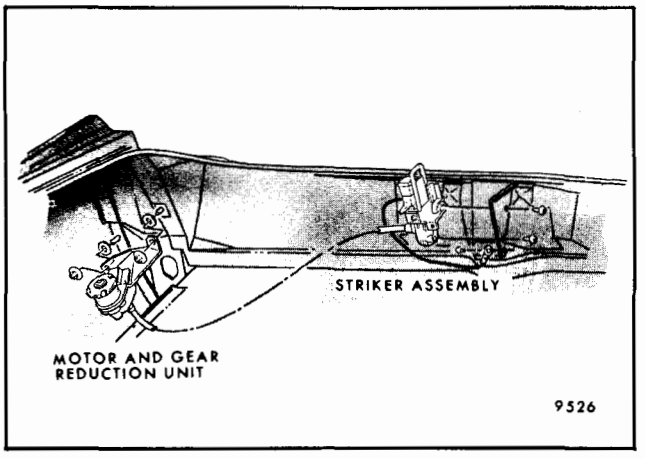


Fig. 7-34 - Typical Cadillac "C, K" Style Closing Unit

REAR COMPARTMENT LID ELECTRIC CLOSING UNIT - Cadillac "C, K" Styles (Fig. 7-34)

Description

The rear compartment lid closing and release system consists of a permanent magnet motor with a gear reduction and relay assembly, a flexible drive cable and a pull down striker assembly. These components are used in conjunction with a lid release switch, lock solenoid and the lock assembly which make up the lid release system.

DRIVE MOTOR GEAR REDUCTION AND RELAY ASSEMBLY - (Figs. 7-35 and 7-36)

The motor used to drive the closing unit is a permanent magnet, reversible-type motor which is attached to a mounting bracket. An internal circuit breaker protects the motor if a stall condition is encountered.

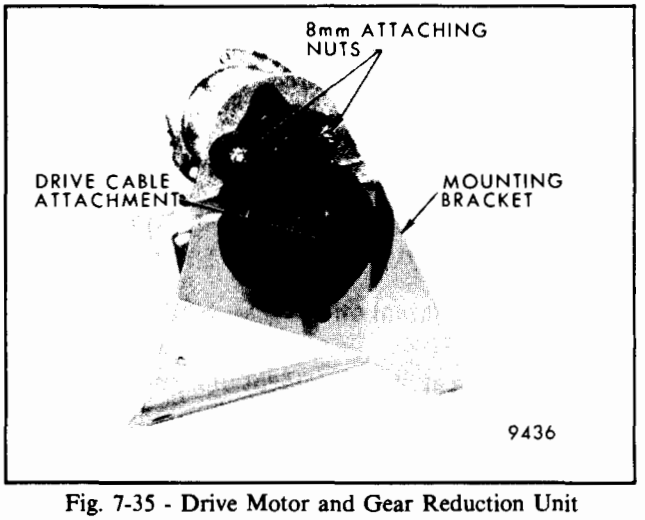


Fig. 7-35 - Drive Motor and Gear Reduction Unit

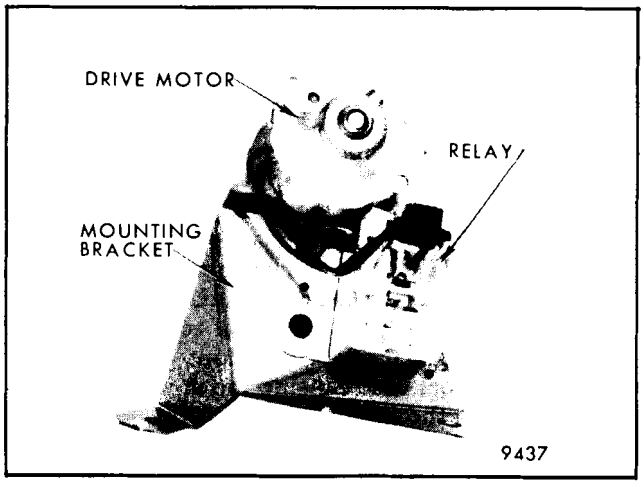


Fig. 7-36 - Drive Motor and Relay Unit

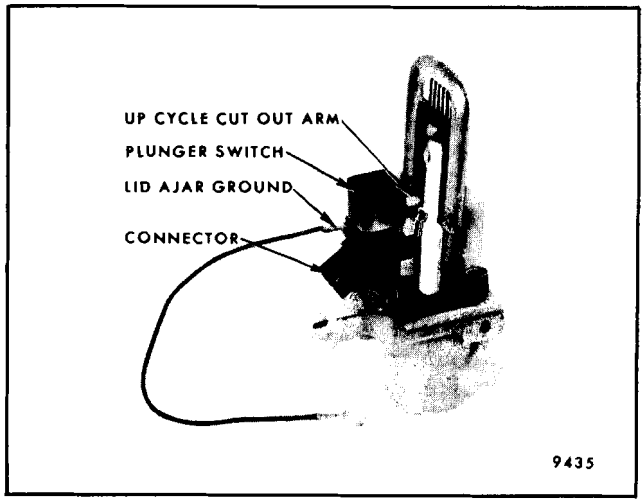


Fig. 7-37 - Striker Pull Down Unit

RELAY ASSEMBLY (Fig. 7-36)

The relay assembly is a double pole, double throw relay. When the relay coil is energized, the contacts are switched: one to an alternate 12V source and the other to an alternate path to ground. This allows reversing the polarity to the drive motor. The relay is attached to a mounting bracket which provides an external ground through the bracket to body metal.

The mounting bracket with the drive motor, reduction gear unit and relay attaches to the right rear tail lamp housing studs. A separate and different bracket is used for "C and K" styles.

A drive cable is used between the motor reduction unit and the striker pull down unit. Due to a difference in length, the cables are color coded: blue for "C, D" styles, 877 mm long (35"), and black for "K" styles, 775 mm long (31").

NOTE: Above dimensions include couplings on each end of cable assembly.

STRIKER PULL DOWN UNIT (Fig. 7- 37)

The striker pull down unit is attached by screws to a mounting bracket which is welded to the rear end panel. An actuator switch is attached to the pull down unit by a screw and is not adjustable.

ELECTRIC CLOSING UNIT ACTUATOR SWITCH ASSEMBLY (Fig. 7-37)

The actuator switch is a five bladed switch incorporating normally closed contacts. The switch is activated by the lock assembly housing when the rear compartment lid is opened and closed.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

LID RELEASE CYCLE

The rear compartment lid can be opened by using the key or by depressing the lid release button which is mounted in the glove compartment.

NOTE: A single switch assembly (plunger type) mounted to the unit controls the electrical operation of the closing unit. However, the switch functions have been illustrated and defined separately to simplify explanation of the circuits (Fig. 7-38).

Depressing the lid release switch completes the feed circuit to the lid lock solenoid and plunger assembly which is externally grounded to body metal through the case and attaching bolts. The solenoid is energized and the plunger retracts, pivoting the lock release lever away from the lock pawl and hook. This allows the lock hook (under spring tension) to disengage from the lock striker of the closing unit, releasing the lid (Fig. 7-27). The lid is then raised to the full-open position by the force of the torque rods.

OPENING CYCLE (Circuit No. 281, Fig. 7-38)

Just as the lid starts upward, contacts in the unit switch assembly close (held open by lock frame when the lid is fully closed) providing 12V feed to the permanent magnet motor through normally closed contacts in the relay. The circuit for the motor is completed to ground through a second set of normally closed relay contacts. The motor is energized and the gear reduction unit rotates the drive cable counterclockwise which raises the closing unit lock striker. As the striker reaches the end of the up cycle, a metal tab on the striker engages the arm of the up- cycle cutout switch which opens the circuit by deflecting the switch contacts apart. This completes the up cycle and the lock striker is in position to properly engage the lock hook when the lid is closed.

CLOSING CYCLE (Circuit No. 280, Fig. 7-38)

When the lid is closed and the lock hook engages the striker of the closing unit, a path to ground is provided for the relay coil (down cycle circuit) from the striker through the lock assembly to body metal. The relay coil is energized and the contacts close providing 12V feed to the permanent magnet motor (polarity is reversed). The circuit is completed to ground through the second set of relay contacts, the motor is energized and the output gear rotates the drive cable clockwise causing the unit to pull the lid downward to the fully closed position. When the lid reaches the closed position, the lock frame depresses the plunger switch opening the contacts and breaking the circuit to ground for the P.M. motor and the closing cycle is complete.

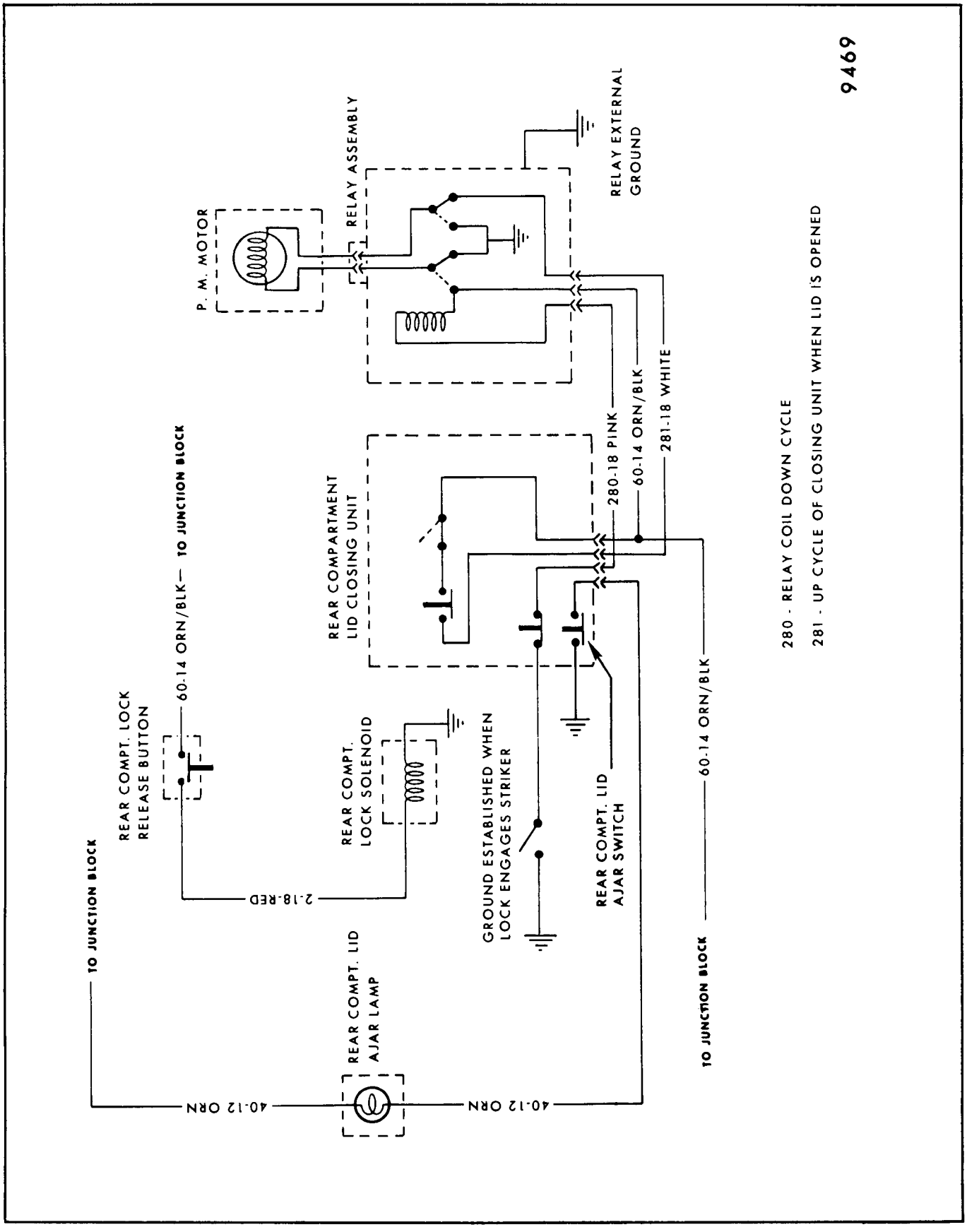


Fig. 7-38 - Cadillac "C, K" Closing Unit Circuit Diagram

DRIVE MOTOR AND RELAY ASSEMBLY

Removal and Installation

1. Open rear compartment lid, remove trim from right quarter and rear end panel as required.
2. Remove attaching nuts securing mounting bracket to tail lamp housing studs.
3. Disengage electrical connector and drive cable, remove assembly from rear compartment.

   NOTE: The drive motor is attached to the mounting bracket with 11 mm nuts. The relay is retained by a single 8 mm bolt.

4. To install, reverse removal procedure.

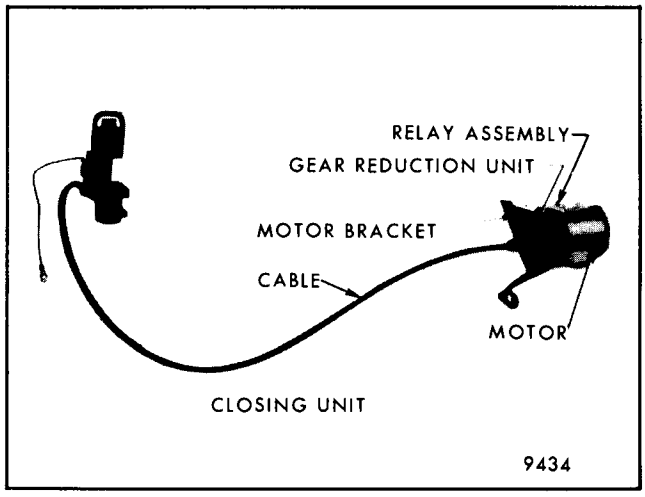


Fig. 7-39 - Closing Unit Hardware

STRIKER PULL DOWN UNIT

Removal and Installation

1. Remove striker pull down unit to mounting bracket attaching bolts.
2. Disengage electrical connector, ground wire and drive cable and remove from rear compartment.

   NOTE: The actuator switch is attached to the pull down unit by a single screw and is not adjustable.

Adjustments

The electric closing unit assembly is not adjustable from its originally installed position. However, vertical and horizontal adjustment is provided for the rear compartment lock assembly to striker, by means of elongated holes in the lid inner panel and sliding nuts on the lock assembly.

NOTE: The rear compartment lid must be properly aligned to the rear compartment opening through hinge adjustment prior to performing lock adjustment.

DIAGNOSTIC PROCEDURES

NOTE: Prior to using the diagnostic procedures, observe the manner in which the electric rear compartment closing and release unit is malfunctioning. Then match the condition to one of those listed in the diagnostic charts.

CONDITION	APPARENT CAUSE	CORRECTION
1. Rear compartment lid will not open from lid release switch; opens with key and closing unit cycles upward when lid is raised.	a. Open or short in orange/black wire between switch and source.	a. Reconnect or repair orange/black wire as required.
	b. Open in red wire between release switch and rear compartment lock solenoid.	b. Reconnect or repair red wire as required.
	c. Defective release switch.	c. Disconnect leads at switch; place jumper wire between leads. If lock solenoid is energized, replace switch.

DIAGNOSTIC PROCEDURES

CONDITION	APPARENT CAUSE	CORRECTION
	d. Defective lock solenoid.	d. Check that solenoid is securely grounded to body through attaching bolts. If okay, and items a,b,c check out, replace lock solenoid.
2. Electric closing unit inoperative, closing unit does not cycle upward when lid is opened with key and will not cycle downward when lid is closed.	a. Open in orange/black wire between source and closing unit connector or closing unit and relay.	a. Reconnect or repair orange/black wire as required.
	b. Relay not securely grounded to body metal.	b. Establish ground check operation of system.
	c. Open in one or both wires between P.M. motor and relay assembly.	c. Reconnect or repair as required.
	d. Defective relay assembly.	d. Replace relay.
	e. Defective P.M. motor.	e. Disconnect motor leads from relay. Connect 12V source feed to one terminal and 12V source ground to other terminal. If motor does not operate, replace motor.
3. Electric closing unit does not cycle upward after lid is released or unlocked (closing cycle operates).	a. Defective switch assembly. (Switch top plunger button binding or out of position).	a. Replace switch.
	b. Open in white wire between closing unit and relay assembly.	b. Reconnect or repair white wire as required.
	c. Defective relay, normally closed contact(s) failed open.	c. Replace relay assembly.
4. Electric closing unit does not cycle downward. System not energized when lock hook engages striker. Up cycle operates when lid is opened.	a. Switch contact blade not touching shaft of striker assembly (bent or broken). Figure 7-37.	a. Adjust blade or replace switch as required.
	b. Foreign matter between switch contact blade and striker shaft.	b. Clean as required.
	c. Open in pink wire between closing unit and relay.	c. Reconnect or repair as required.
	d. Foreign matter on surface of lock striker or lock hook surface.	d. Clean as required.

DIAGNOSTIC PROCEDURES

CONDITION	APPARENT CAUSE	CORRECTION
	e. Defective relay, contact(s) not closing when coil is energized.	e. Replace relay.
5. Electric closing unit cycles up and down continuously.	a. Defective switch assembly. Internal switch contacts bent or broken. Switch top button binding.	a. Replace switch assembly.
6. Electric closing unit does not fully close rear compartment lid.	a. Intermittent ground through striker and lock hook due to foreign matter on surface. b. Defective switch, internal contacts bent or broken.	a. Clean as required. b. Replace switch assembly.
7. Closing unit raises striker too high.	a. Arm of up cycle cutout switch mispositioned or broken or missing tab on striker shaft.	a. Adjust or replace switch assembly as required.
8. Lid ajar lamp stays on with lid closed. Closing unit operates properly.	a. Shorted orange wire between lamp and closing unit switch assembly. b. Defective switch assembly; failed closed.	a. Check for bare or pinched orange wire. Repair as required. b. Replace switch assembly.
9. Lid ajar lamp inoperative. Does not light when lid is opened.	a. Open in orange wire between lamp and source. b. Open or loose ground wire at closing unit. c. Defective bulb. d. Defective switch assembly; failed open.	a. Repair as required. b. Check ground wire at closing unit repair or tighten ground screw as required. c. Replace bulb. d. Replace switch assembly.

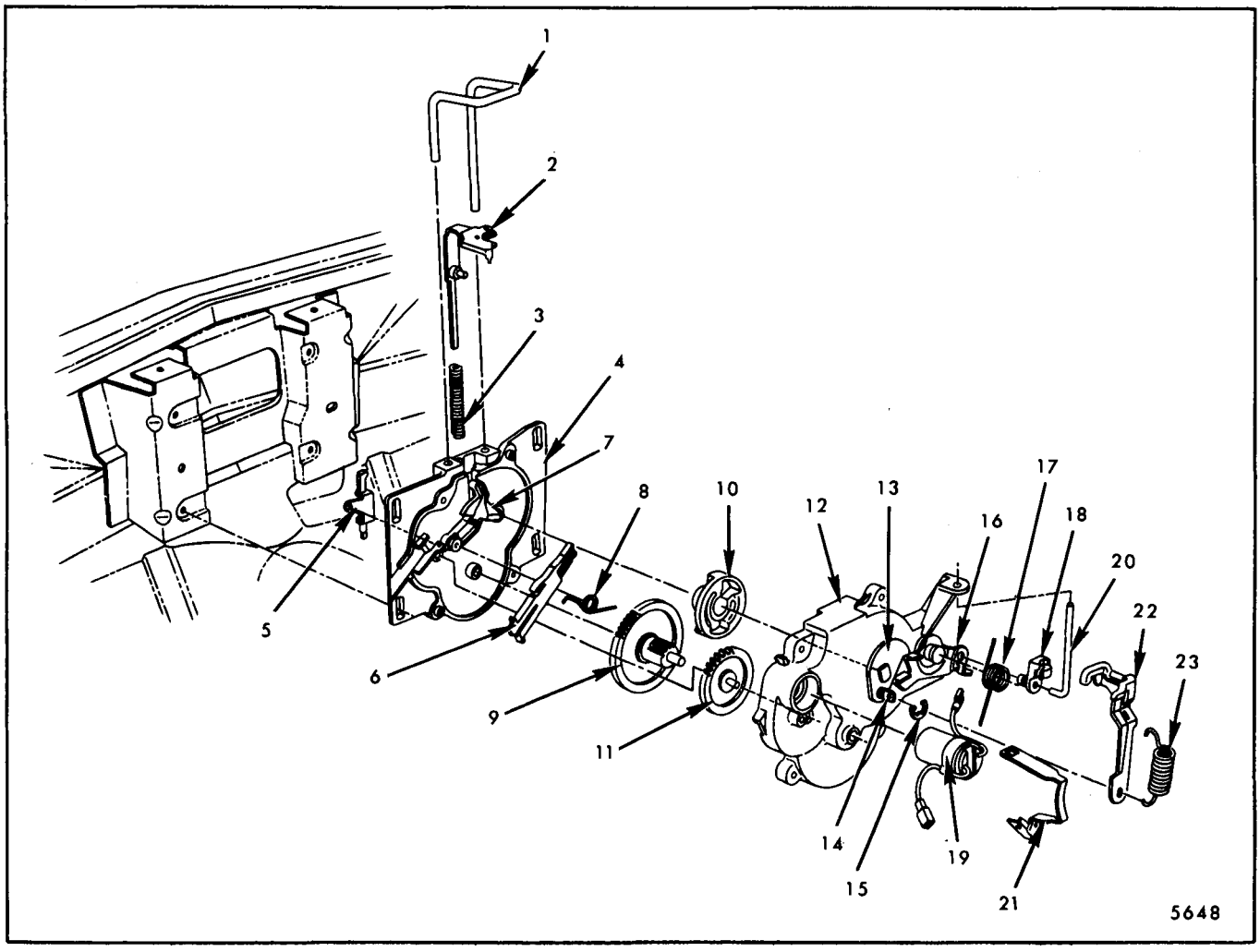


Fig. 7-40-Electric Closing Unit Components - Cadillac "E" Style

1. Striker
2. Plunger
3. Plunger Spring
4. Unit Cover
5. Lid Ajar Jamb Switch
6. Actuator Switch
7. Control Lever - Actuator Switch
8. Control Lever Spring
9. Secondary Gear (with Slotted Output Shaft)
10. Rotor - Output Gear
11. Primary Gear
12. Housing
13. Output Cam (Staked to Output Gear and Part of Housing Assembly)
14. Output Cam Pivot Pins
15. Retaining Ring
16. Lock Release Lever (Incorporates Antireversing Stop)
17. Return Spring
18. Clip-Lock Release Rod
19. Motor
20. Lock Release Rod
21. Motor Strap
22. Link and Cover Assembly
23. Heavy Link Spring

REAR COMPARTMENT LID ELECTRIC CLOSING AND RELEASE UNIT - Cadillac "E" Style Only

Description

The rear compartment lid electric closing and release unit is a self-contained assembly which is bolted to the rear end panel reinforcement. It is used in conjunction with a mechanical actuator bolted to the lid lock. The unit consists of a die-cast housing, electrical switches, levers, plungers, springs and gears working in combination to pull the lid downward and achieve a uniform closing action (Fig. 7-40). The distance that the lid travels during the closing cycle is from 1 to 1-1/2".

A small permanent magnet motor which is mounted to the unit, drives a three gear reduction system. The output gear is staked to a cam which operates a link to control the up and down motion of the striker as well as trigger the lock release rod when lid opening is required.

The unit incorporates an antireversing feature which prevents the striker from raising if forcible entry into the rear compartment is attempted.

OPENING CYCLE

The lid may be opened in the conventional manner by using the key or by depressing the lid release button mounted in the glove box.

When the lid release button is depressed, the motor is energized and the lid moves downward slightly and then upwards. Just as the lid starts upward, the output cam trips the lock release lever which causes the release rod to jut upward and trigger the lock release actuator. With the lid lock unlatched, the lid is raised to the open position by the force of the torque rods. Simultaneously, the plunger contacts the striker (completing the motor ground circuit) and also closes the actuator switch contacts (completing the motor feed circuit). The motor continues to be energized raising the striker to its full upward position at which time the plunger allows the actuator switch contacts to open (stopping feed current to motor) and breaks contact with the striker (opening motor ground circuit) to shut off unit.

If the lid is opened from the lock cylinder, the lid will raise in the normal fashion. As the lock hook clears the unit, the plunger will contact the striker to complete the motor ground while closing the actuator switch contacts which feeds current to the motor. Once energized, the motor will drive the unit striker to its full up position at which time the plunger allows the actuator contacts to open (stops feed current to motor) and breaks contact with the striker (opening motor ground circuit) to shut off the unit.

CLOSING CYCLE

The lid need only be lowered until the lock hook engages with the unit striker (about 1 to 1-1/2" from fully closed). This action energizes the unit by depressing the plunger which causes actuator switch contacts to close (feed current to motor) and completing motor ground circuit through the lock and lid assembly. The lid is then pulled to the fully closed position and the motor is de-energized as the plunger reaches its fullest downward travel (allowing actuator switch contacts to open). The ground circuit is maintained through lid lock to plunger contact until the opening cycle begins.

NOTE: Lower surface of lock frame must be clean and paint free to insure proper ground circuit.

Adjustments

Lateral adjustment is provided at the lid lock by means of horizontal slotted holes in the lid inner panel. Vertical adjustment can be accomplished through slotted holes in unit cover (Fig. 7-41). Lid must be properly aligned in opening through hinge adjustment prior to performing lock or unit adjustment.

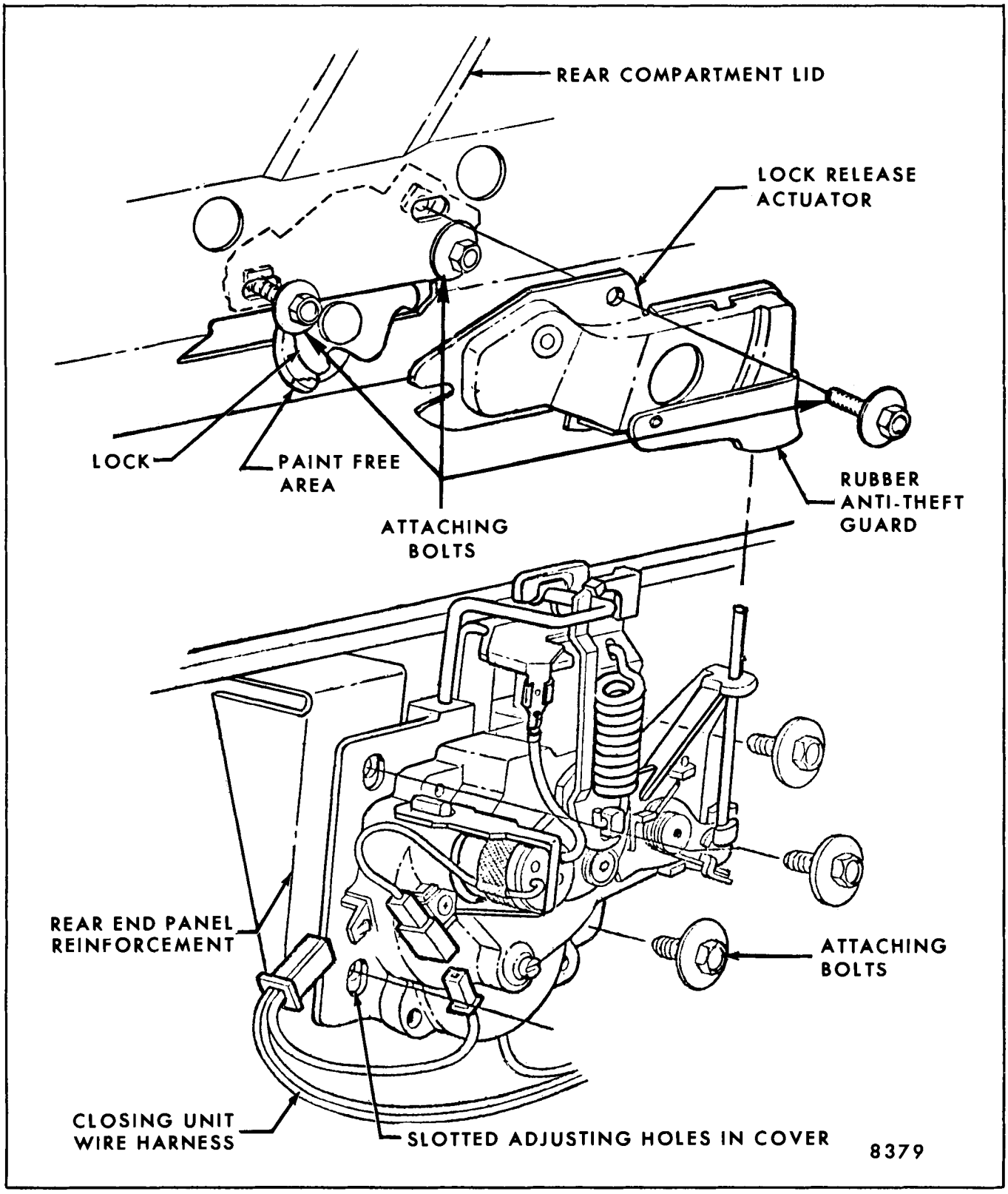


Fig. 7-41-Electric Closing and Release Unit Mounting - Cadillac "E" Style

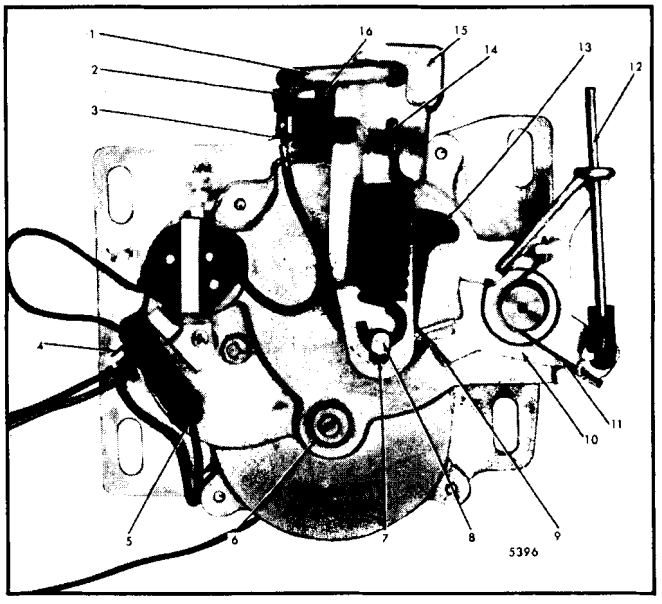


Fig. 7-42-Electric Closing Unit Front View

1. Striker
2. Grounding Plate (Part of Plunger)
3. Motor Ground Wire Terminal
4. Actuator Switch and Connector
5. Motor Feed Connector
6. Secondary Gear Output Shaft
7. Slotted Hole
8. Output Cam Pivot Pin
9. Antireversing Stop
10. Lock Release Lever
11. Lock Release Lever Return Spring
12. Lock Release Rod
13. Output Cam
14. Spring Slot
15. Link and Cover Assembly
16. Plunger

1. Disconnect motor feed wire connector.
2. Insert flat-bladed screwdriver into slotted secondary gear output shaft to manually cycle unit (counterclockwise - direction of arrow) to full down (closed) position. Set output cam against lock release lever (antireversing stop) as shown in Figure 7-42.
3. Loosen three bolts on unit cover and adjust striker (unit assembly) for proper weatherstrip compression and lid fit to adjacent panels.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

4. Connect motor feed wire.

NOTE: When feed wire connection is completed and plunger is in contact with striker, unit will cycle to full up position.

The unit is designed to compensate for slight over-adjustment (unit set too low). The link and cover assembly incorporates a slotted hole which will allow the output shaft to continue to rotate after lid has reached its maximum downward travel. This will permit the motor to shut off while maintaining sufficient lid to weatherstrip compression by use of the heavy link and cover assembly spring.

Removal and Installation - Complete Unit

1. Open lid and remove closing unit trim cover.
2. Disconnect motor feed connector.
3. Disconnect actuator switch connector.
4. Scribe locations of unit on rear end panel support and remove three attaching bolts.
5. From rearward side of unit, disconnect lid ajar jamb switch connector. Remove unit from body.
6. To install, reverse removal procedure.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

ELECTRIC CLOSING AND RELEASE UNIT DRIVE MOTOR

The motor used to drive the closing and release unit is a permanent magnet type. It has the advantage of compact size and low operating current (2-3 amps). An internal circuit breaker protects the motor if a stall condition is encountered. Operating current is supplied through either the glove box mounted release switch or the actuator switch contained in the unit. The motor ground circuit is completed through the unit plunger grounding plate and striker or grounding plate and lid lock assembly. The grounding plate is insulated from the plunger by a layer of mylar and secured to the plunger by nylon rivets.

Removal and Installation

1. Open lid and remove closing unit trim cover.
2. Disconnect motor feed connector.

3. Disconnect motor ground terminal from plunger grounding plate tab (Fig. 7-42).

   NOTE: Depress terminal locking barb with pointed instrument to remove.

4. Remove motor retaining strap screw and rotate strap upward and remove motor.

5. To install, reverse removal procedure.

   NOTE: Refer to Cover and Housing Assembly - Alignment Procedure - to insure proper motor operation.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

ELECTRIC CLOSING AND RELEASE UNIT ACTUATOR SWITCH

The actuator switch is a double-bladed switch incorporating one set of normally open contacts. It is triggered by the actuator switch control lever which senses movement of the plunger and/or output gear rotor (Fig. 7-43). The function of the switch is to maintain current flow to the motor while the contacts are closed. End treatment of the actuator switch matches the contour of the housing assembly insuring proper installation.

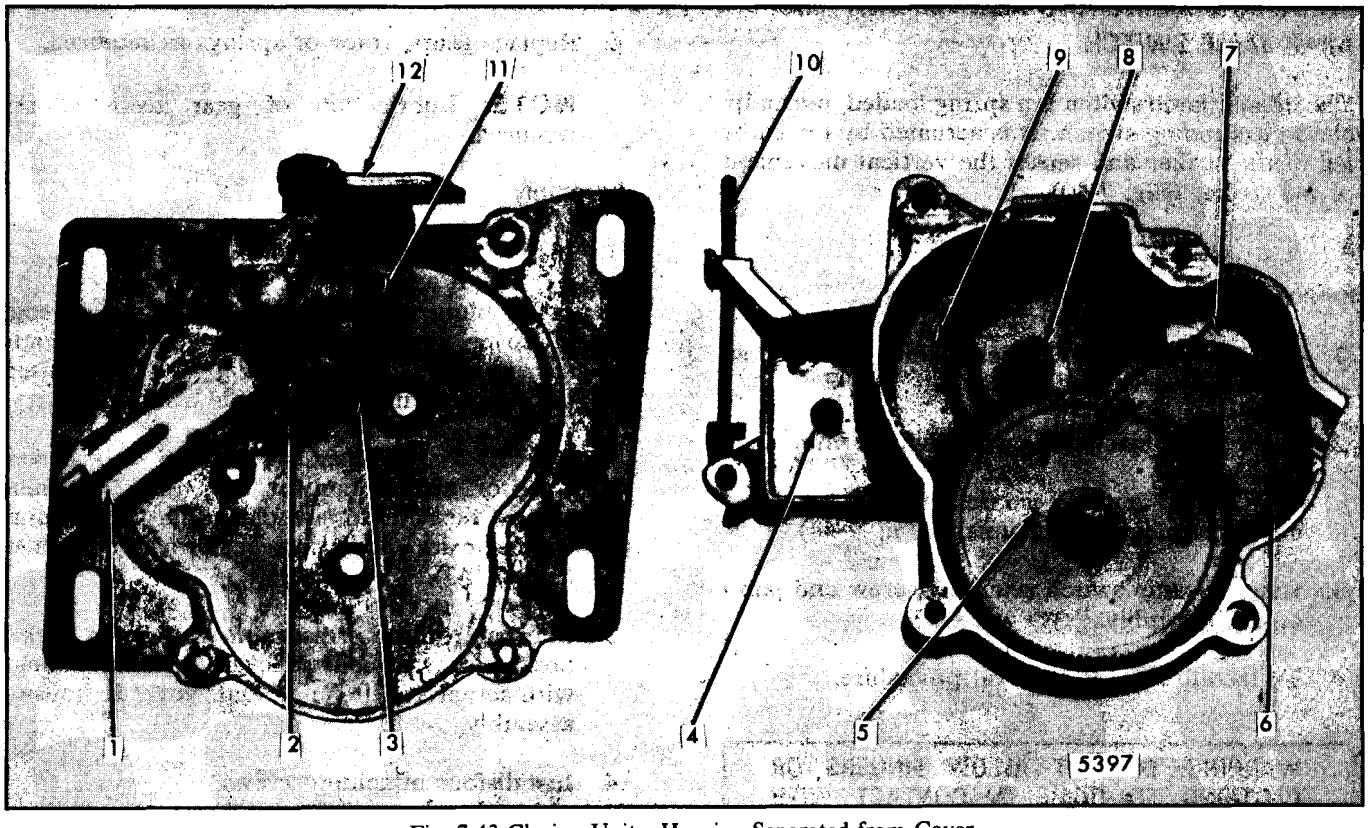


Fig. 7-43-Closing Unit - Housing Separated from Cover

1. Actuator Switch
2. Control Lever Spring
3. Plunger Stud
4. Solid Rivet
5. Secondary Gear
6. Primary Gear
7. Motor Mounting Hole
8. Output Gear Rotor
9. Output Gear (Staked to Output Cam Part of Housing Assembly)
10. Lock Release Rod
11. Actuator Switch Control Lever (Riveted to Cover Assembly)
12. Plunger

Removal and Installation

1. Remove closing and release unit assembly as previously described.
2. Remove actuator switch retaining screw from rearward side of unit cover (Fig. 7-44).
3. Slide switch from housing.
4. To install, reverse removal procedure.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

ELECTRIC CLOSING AND RELEASE UNIT - LID AJAR JAMB SWITCH

The lid ajar jamb switch is a spring loaded, normally closed grounding switch. It is actuated by the short leg of the striker and senses the vertical movement of the striker (Fig. 7-40).

Removal and Installation

1. Remove closing and release unit assembly as previously described.
2. Remove lid ajar jamb switch wire terminal.

   NOTE: To remove, depress terminal locking barb with pointed instrument (Fig. 7-44).
3. Remove jamb switch retaining screw and jamb switch assembly.
4. To install, reverse removal procedure.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

ELECTRIC CLOSING AND RELEASE UNIT - COVER AND HOUSING ASSEMBLY

Disassembly

1. Remove closing and release unit as previously described.
2. As a bench operation, disengage heavy spring from upper end of link and cover assembly.
3. While depressing striker slightly, rotate lower end of link and cover assembly from output cam pivot pin.
4. Remove link and cover assembly with striker from cover assembly.
5. Remove four cover attaching screws and separate cover from housing.

   NOTE: Spring loaded plunger is retained by upper portion of housing, therefore, allow plunger to release slowly when housing is separated from cover.
6. Replace gears, rotor or springs as required.

   NOTE: Lubrication of gear teeth is not required.

Assembly

1. Install gears and rotor into housing.
2. Insert plunger into plunger slot at upper edge of cover assembly. Slip plunger spring onto narrow neck of plunger (Fig. 7-44) and insert narrow neck into lower guide of cover.

   NOTE: As plunger is installed into cover, actuator switch control lever must be held against the actuator switch so that plunger stud will be positioned on correct side of control lever (Fig. 7- 43).
3. Maintain thumb pressure on plunger in such a position so that control lever is making contact with actuator switch and mate cover to housing assembly.
4. Install four attaching screws.
5. Rotate slotted secondary gear output shaft counterclockwise until output cam pivot pin is at its highest point and hole is aligned horizontally.
6. Thread link and cover assembly onto long leg side of striker (Figs. 7-44 and 7-45).

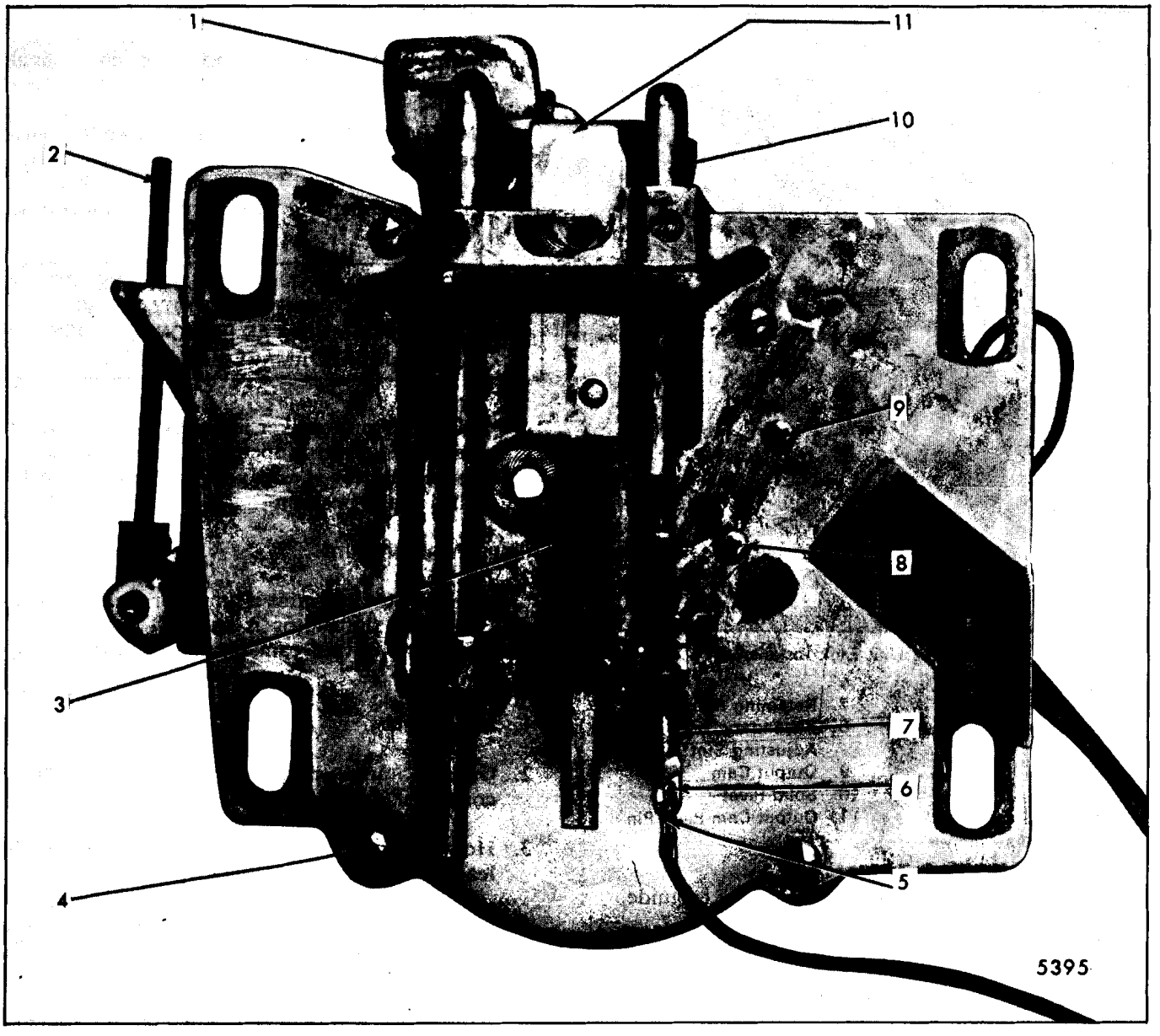


Fig. 7-44-Closing Unit Rear View

1. Link and Cover
2. Lock Release Rod
3. Plunger and Spring
4. Cover to Housing Screws (Four Locations)
5. Lid Ajar Jamb Switch Wire Terminal
6. Terminal Locking Tab
7. Lid Ajar Jamb Switch
8. Jamb Switch Retaining Screw
9. Actuator Switch Retaining Screw
10. Striker
11. Plunger

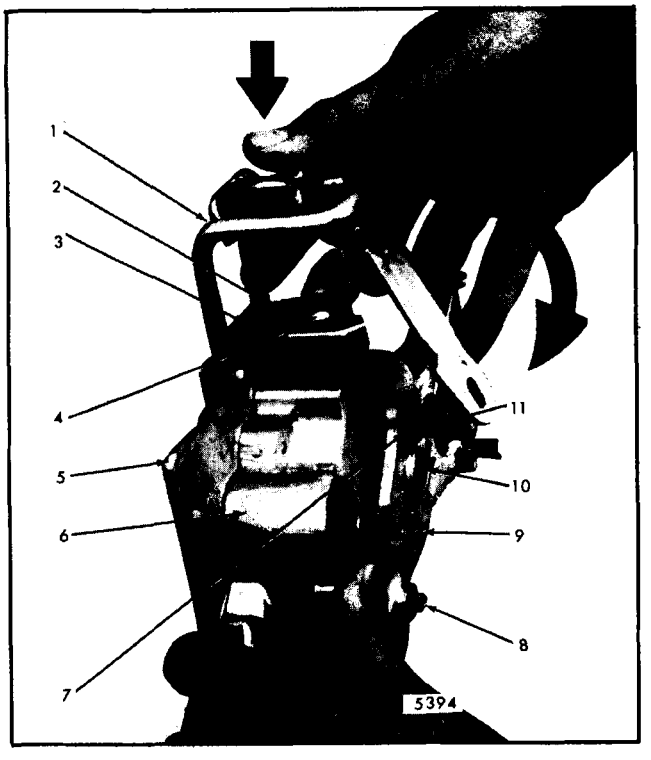


Fig. 7-45-Closing Unit Link Installation

1. Striker
2. Grounding Plate (Part of Plunger)
3. Plunger
4. Nylon Rivets
5. Cover Assembly
6. Housing Assembly
7. Retaining Ring
8. Secondary Gear Shaft Adjusting Slot
9. Output Cam
10. Solid Rivet
11. Output Cam Pivot Pin

7. Insert striker into cover assembly striker guide.

8. While lowering striker into striker guides, rotate link and cover assembly as shown in Figure 7-45 until slotted hole in lower end of link slips onto the output cam pivot pin.

9. Retain link on pivot pin with tight looped end of spring (Fig. 7-42).

10. Using a sturdy, pointed instrument (awl), engage loose end of heavy spring into upper spring slot of link.

11. Install motor.

12. Mount and align unit to rear end panel reinforcement.

    NOTE: Make certain jamb switch wire terminal is connected.

13. Complete remaining wire harness connections.

WARNING: DO NOT ALLOW FINGERS OR CLOTHING TO COME IN CONTACT WITH CYCLING MECHANISM AS PERSONAL INJURY OR MECHANICAL DAMAGE MAY RESULT.

NOTE: If unit striker is in any position other than fully upward (open position) when motor feed connector is engaged, unit may cycle to full upward position.

Alignment Procedure

It is necessary to determine if unit is properly aligned to insure that the motor is shut off (not in stall condition) and output cam is against antireversing stop.

1. Engine off.

2. Connect amp meter between motor feed connector and motor connector.

3. Hold amp meter outside rear compartment with leads draped over weatherstrip.

4. Close lid and allow unit to complete closing cycle. (Current reading during the closing cycle is approximately 2 to 3 amps.)

5. Amp meter will read zero when closing cycle is complete (approximately 3 to 4 seconds).

   NOTE: If amp meter does not read zero when lid reaches its full downward travel, the unit is adjusted too low and motor is in stall condition. To correct, align unit upward.

DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Closing unit will complete opening cycle only while glove box switch is depressed - lid opens normally.	a. Loose actuator wire harness connector.	a. Reconnect actuator wire harness connector.
	b. Broken or cut orange/ black wire.	b. Repair orange/black wire.
	c. Defective actuator switch.	c. Place jumper wire across actuator connector to test actuator switch. If unit completes cycle, replace actuator switch.
2. Unit will not cycle up (open) when lid is opened with key and will not open from glove box switch - or unit will not cycle down (close) when lid is latched onto striker.	a. Improper ground connection.	a. Check for loose or broken ground wire - repair or reconnect wire.
	b. No feed current.	b. Check orange/black wire with test light. If no light, trace and repair open feed circuit or blown fuse.
	c. Defective motor.	c. Using screwdriver,depress plunger fully (contacting grounding plate) while touching shank of tool to striker. If spark can not be induced, replace motor.
	d. Severe bind in unit gear train.	d. Rotate secondary gear output shaft counterclockwise. If bind exists, disassemble unit and repair bind.
	e. Stripped gear in gear train - motor whine is heard.	e. Rotate secondary gear output shaft counterclockwise. If output cam does not rotate, disassemble unit and replace stripped gear.
	f. Plunger grounding plate does not contact striker (opening cycle) or lock frame (closing cycle)	f. Foreign substance on surface of plunger grounding plate or lower surface of lock frame coated with paint or grease. Remove obstruction and/or clean as required.
3. Lid ajar lamp stays on with lid closed - unit operates properly.	a. Shorted jamb switch wire.	a. Check for pinched or bare white/dark green wire.
	b. Defective lid ajar jamb switch.	b. Inspect for broken or loose ajar jamb switch.

DIAGNOSIS CHART (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
4. When glove box switch is actuated, unit cycles up then down without releasing lid. Unit functions normally when key is used.	a. Defective lock release actuator.	a. Inspect and manually trip actuator - replace if defective.
	b. Defective lock release rod.	b. Inspect for bent, disconnected or missing lock release rod. Replace if required.
	c. Defective lock release lever.	c. Inspect for broken or bent lock release lever. Replace housing assembly if required.
	d. Defective output cam.	d. Inspect for broken or missing output cam. Replace housing assembly if required.
5. Lid will not latch when closed and unit cycles down then up.	a. Lock release rod stuck in up position.	a. Inspect for bent lock release rod or broken lock release lever return spring. Replace if required.
	b. Lock release actuator stuck in release position.	b. Inspect lock release actuator for binds or bent components. Replace if required.
6. Unit cycles with lid open when striker is depressed.	a. Shorted motor ground wire.	a. Inspect for pinched motor ground wire or loose ground connector touching housing. Repair or install as required.
	b. Defective plunger ground plate.	b. Inspect for damaged plunger ground plate. Replace plunger if required.
7. Lid will not open from glove box switch but operates normally when key is used.	a. Defective glove box switch or broken red wire from switch to motor.	a. Place jumper wire across actuator connector to test glove box switch. Replace switch if defective or repair broken red wire from switch.

REAR COMPARTMENT TORQUE RODS

Description

Torque rods are used to control the amount of effort needed to operate the rear compartment lid and can be adjusted to increase or decrease operating effort except on the "H-11" style.

Adjustments

1. To increase the amount of effort required to raise the rear compartment lid or to decrease the amount of effort required to close the lid, reposition the end of the rod to a lower torque rod adjusting notch.
2. To decrease the amount of effort required to raise the rear compartment lid or increase the amount of effort required to close the lid, reposition the end of the rod to a higher torque rod adjusting notch.

Removal and Installation

1. For removal and/or adjustment of rear compartment lid torque rods, use tools outlined below:

   a. On "X-27, 69" and "H-27" styles, use tool J-21412-01 or equivalent (Fig. 7-46).

   NOTE: Torque rod tool J-21412 (or equivalent) used for past model "X-27, 69" styles can be adapted for use on 1975 and later model "X-27, 69" and "H-27" styles if 1-1/2" are removed from the handle. Heat plastic (red) handle cover to remove before cutting. Additional rework of tool as outlined in Figure 7-47 is required before tool can be used on "H-27" styles.

   b. On Chevrolet "B-47" styles, use tool J-23408 or equivalent.

   c. On Cadillac "E" styles, use tool J-23722 or equivalent (Fig. 7- 48).

   d. On Oldsmobile "E" styles, use tool BT-7102 or equivalent (Fig. 7-49).

   e. On "F" styles, use a length of 1/4" inside diameter heavy wall pipe (Fig. 7-50).

   f. On Cadillac "K" Style, use tool J-25476.

   g. On all other "A,B,C" styles, except Cadillac, use 1/2" inside diameter heavy wall pipe (refer to Fig. 7-51).

2. To remove torque rods, prop lid in full open position and disengage end of torque rod from adjusting notches on hinge box, as shown in Figures 7-46, 7-52, 7-53 and 7-55. Then allow handle of removal tool to rotate forward to relieve tension on rod. In some cases, it may be necessary to install a pair of locking type pliers on rod, as shown in Figures 7-52, 7-53 and 7-56, and lift upward on pliers to disengage removal tool from end of rod.

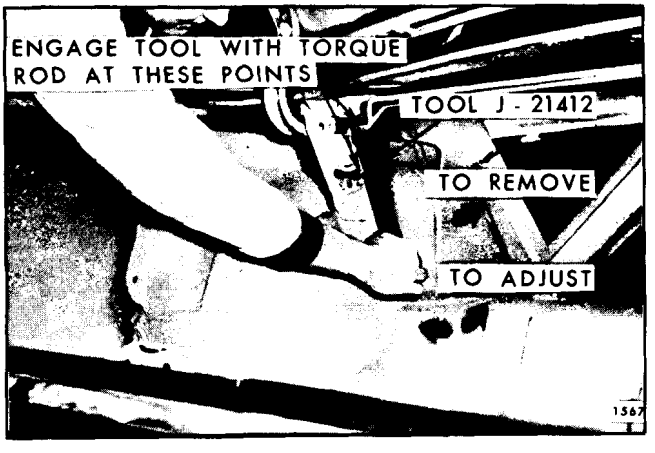


Fig. 7-46-Rear Compartment Torque Rod Adjustment - "X-27, 69" Styles

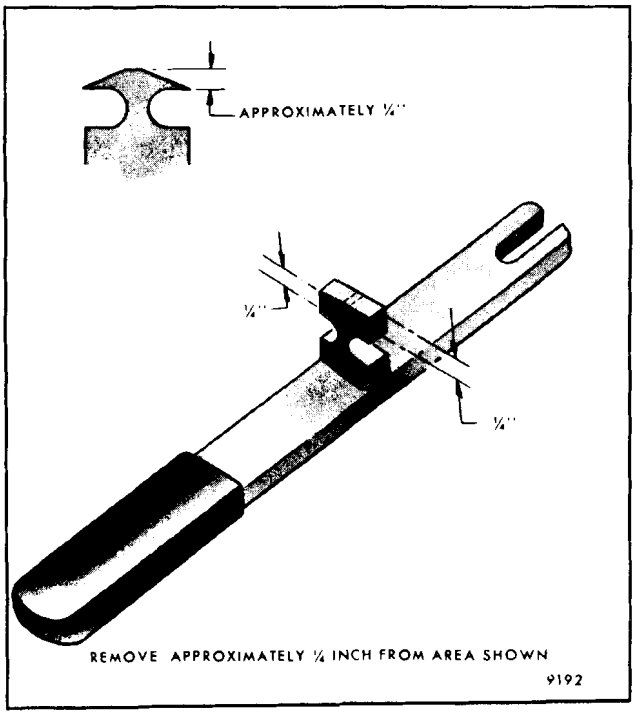


Fig. 7-47-Modified "X" and "H" Torque Rod Tool

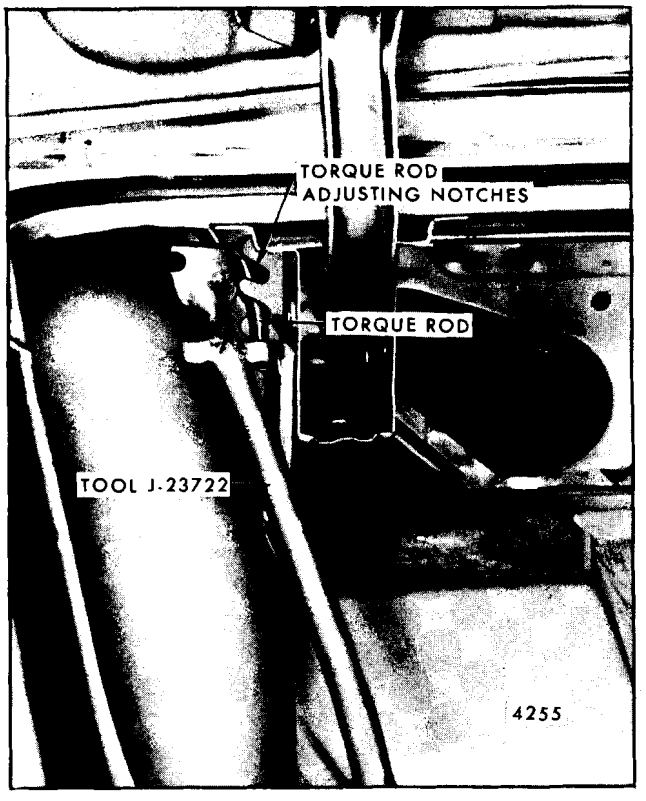


Fig. 7-48-Rear Compartment Torque Rod Adjustment - Cadillac "E"

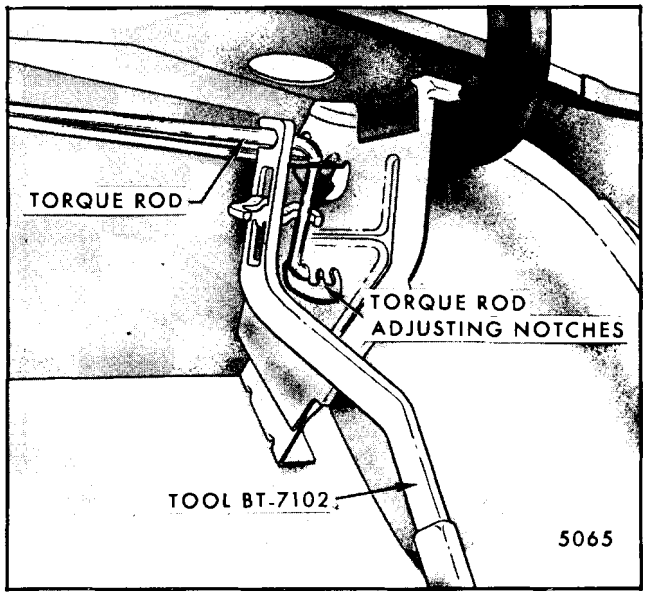


Fig. 7-49-Rear Compartment Torque Rod Adjustment - Oldsmobile "E" Styles

3. Disengage opposite end of torque rod from hinge strap and remove rod from body.

4. To install, reverse removal procedure.

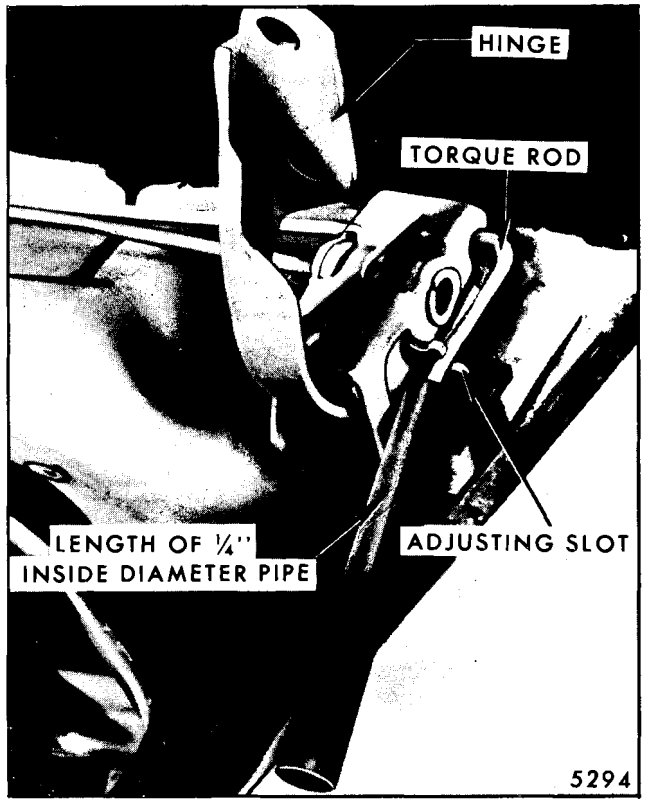


Fig. 7-50-Rear Compartment Torque Rod Adjustment - "F" Styles

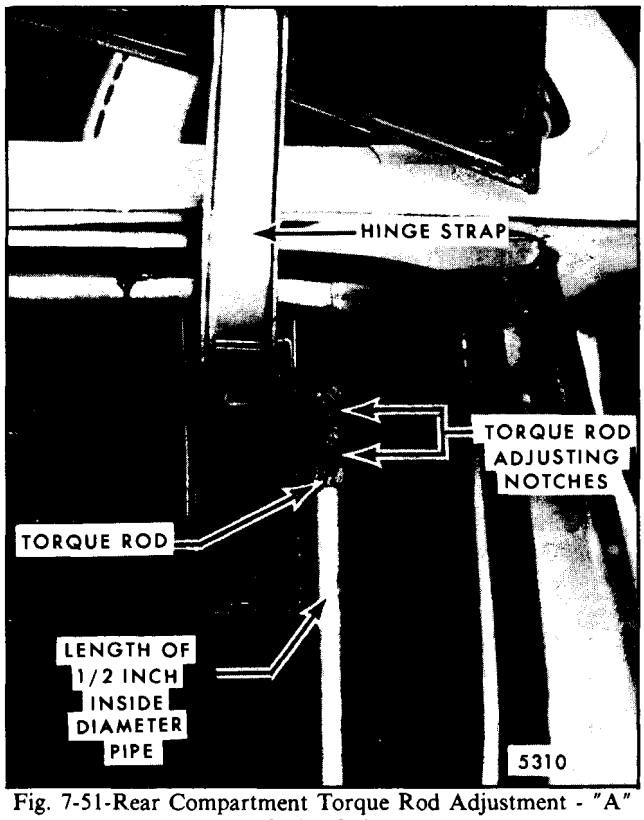


Fig. 7-51-Rear Compartment Torque Rod Adjustment - "A" Styles Only

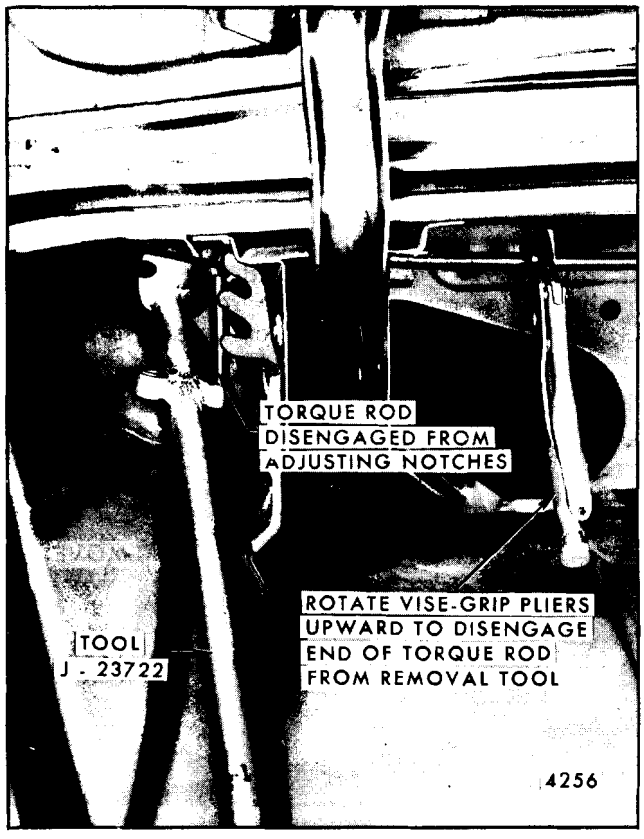


Fig. 7-52-Rear Compartment Torque Rod Removal - Cadillac "E" Styles

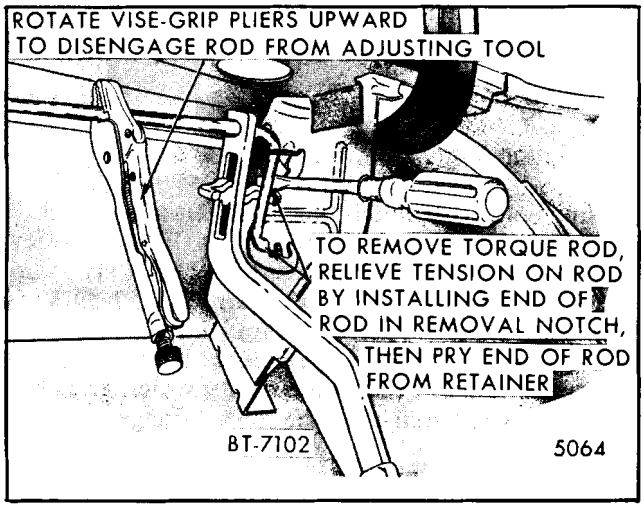


Fig. 7-53-Rear Compartment Torque Rod Removal - Oldsmobile "E" Styles

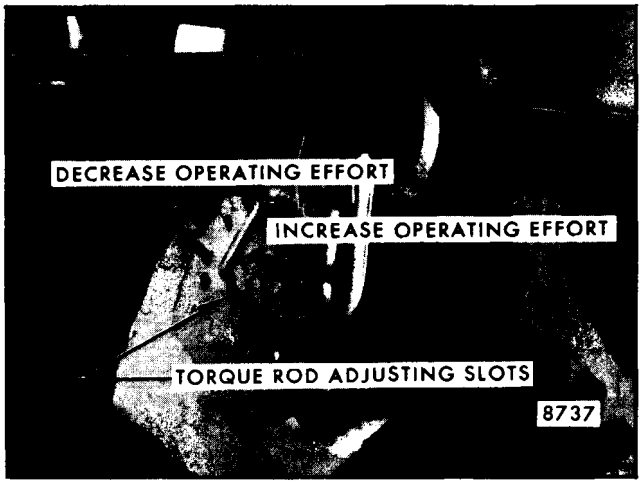


Fig. 7-54 - Right Side Torque Rod with Trim Removed - Cadillac "K" Style

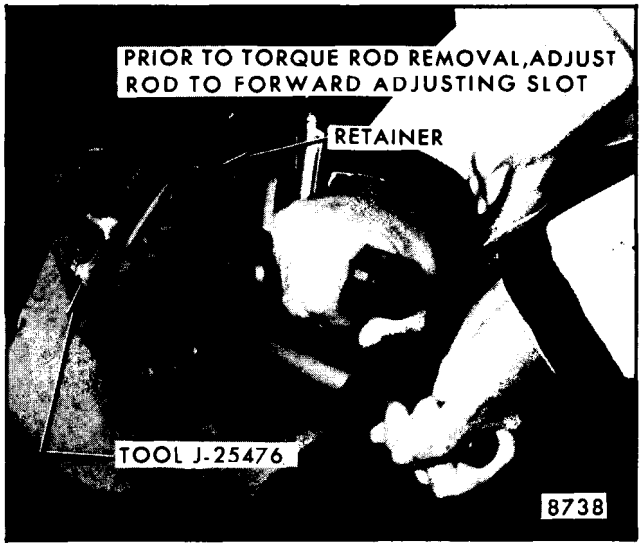


Fig. 7-55 - Torque Rod Tool Engagement - Cadillac "K" Style

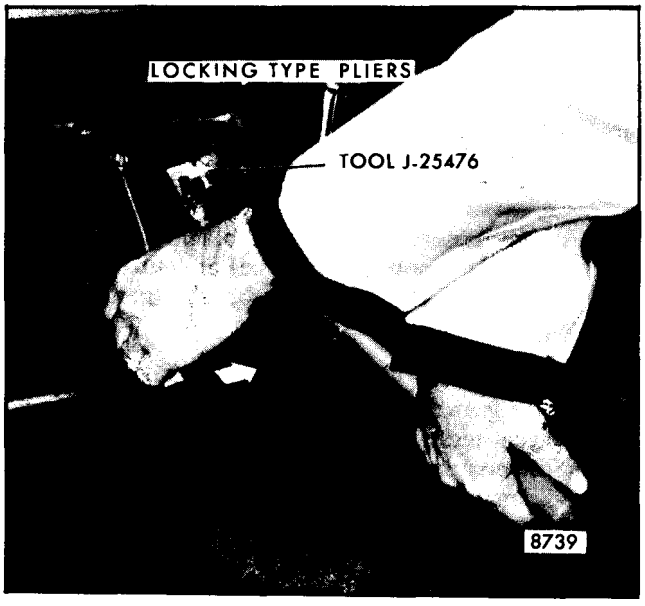


Fig. 7-56 - Torque Rod Tool Removal - Cadillac "K" Style

Fig. 7-57 - Torque Rod Engagement - Cadillac "K" Style

REAR COMPARTMENT WEATHERSTRIP - "A AND F" STYLES

Removal and Installation (Fig. 7-58)

1. Separate butt ends of weatherstrip at bottom rear of opening.

2. Using flat-bladed tool, such as sharp bladed putty knife, carefully cut cemented bond of weatherstrip from outer surface of gutter. Then with a narrower sharp tool, such as a wood chisel, cut cemented bond of weatherstrip from bottom of gutter around opening and remove weatherstrip.

NOTE: Kent Products Special Release Agent or equivalent may be used to loosen and/or dissolve weatherstrip cement.

3. To install, clean out gutter around opening to provide clean cementing surface.

4. Apply generous bead of black weatherstrip cement to bottom surface of gutter around opening. With suitable brush, gently level applied cement.

5. Starting at rear center of opening with one end of weatherstrip, insert weatherstrip into gutter while cement is still wet. Use flat-bladed tool to aid installing weatherstrip. Avoid stretching weatherstrip during installation.

6. If weatherstrip is new, cut end to form butt joint at rear center of opening. Apply cement to both ends of weatherstrip to form a neat joint. Secure weatherstrip uniformly in gutter.

7. Using a pressure type applicator, apply weatherstrip cement (neoprene type) between weatherstrip and outer surface of gutter completely around opening to assure a watertight seal.

8. Roll or press weatherstrip to aid in obtaining good cement bond. Allow sufficient time for cement to set before closing rear compartment lid.

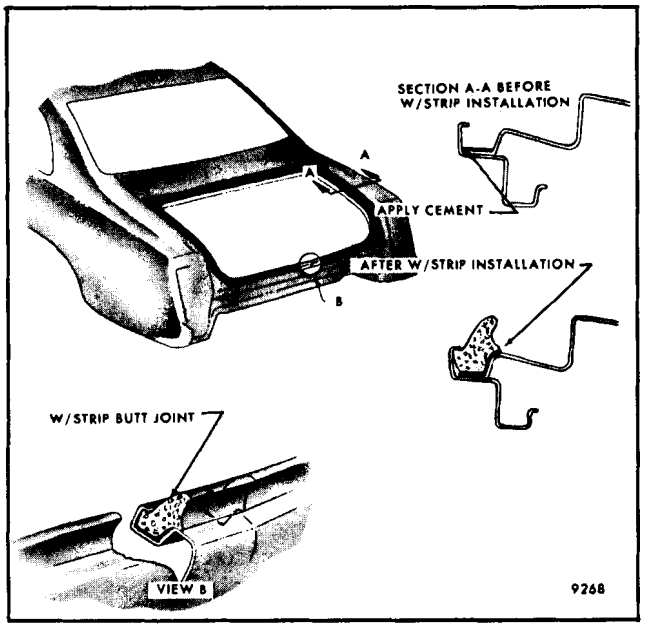


Fig. 7-58-Rear Compartment Weatherstrip - "A and F" Styles

REAR COMPARTMENT WEATHERSTRIP - All Styles Except "A and F"

Description (Figs. 7-59, 7-60, 7-61 and 7-63)

A supersoft foam clinch type weatherstrip is used on all "B, C, K, X" and "H-27" styles (Fig. 7-59 View A, Figs. 7-60 and 7- 61), while the "H-07" styles use a bulbular clinch type weatherstrip (Fig. 7-59 View B). Both types, supersoft foam and the bulbular, incorporate integral metal reinforced sections and a mastic material in the clinch cavity which grips and seals the weatherstrip to the gutter flange.

Removal and Installation

1. Separate butt joint at base of opening (on "H-07" styles remove and retain plug from old weatherstrip).

2. Peel weatherstrip from gutter flange toward lower corners and then around complete opening.

3. To install, begin inserting center of weatherstrip (marked with paint) onto the gutter flange at the forward center of the opening between hinges. Be sure clinch is competely seated to the flange around the entire opening.

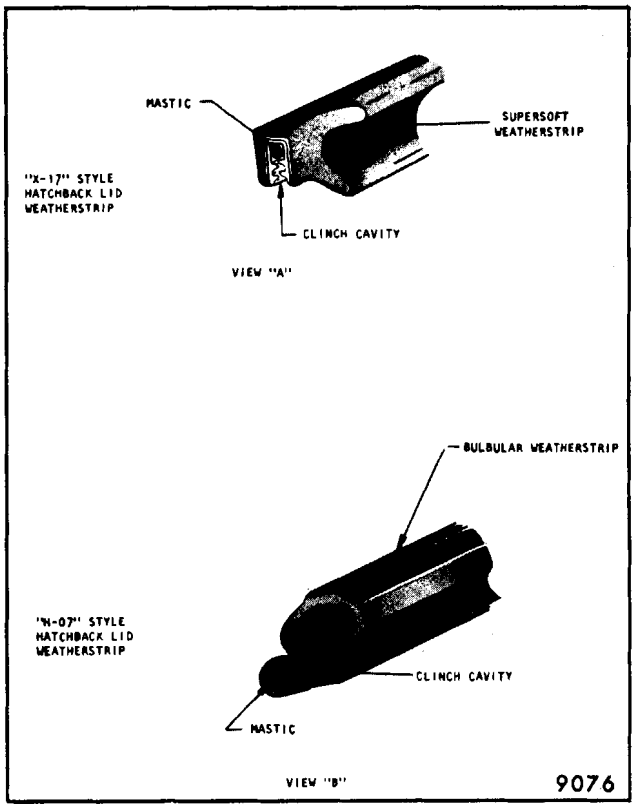


Fig. 7-59-"H-07" and "X-17" Weatherstrip

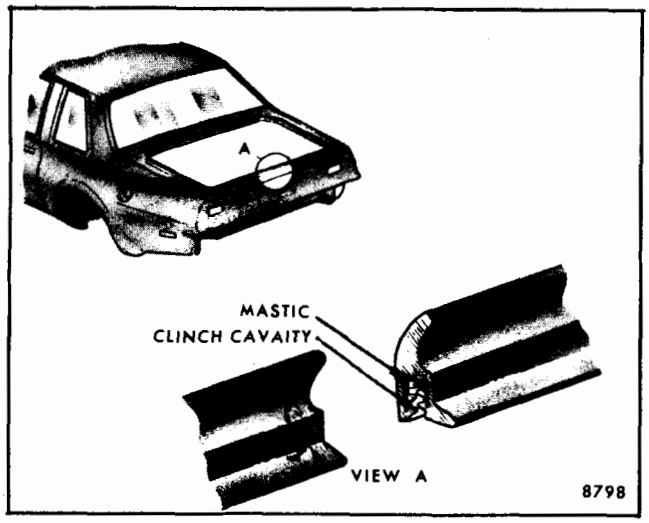


Fig. 7-60-"H-27" Weatherstrip

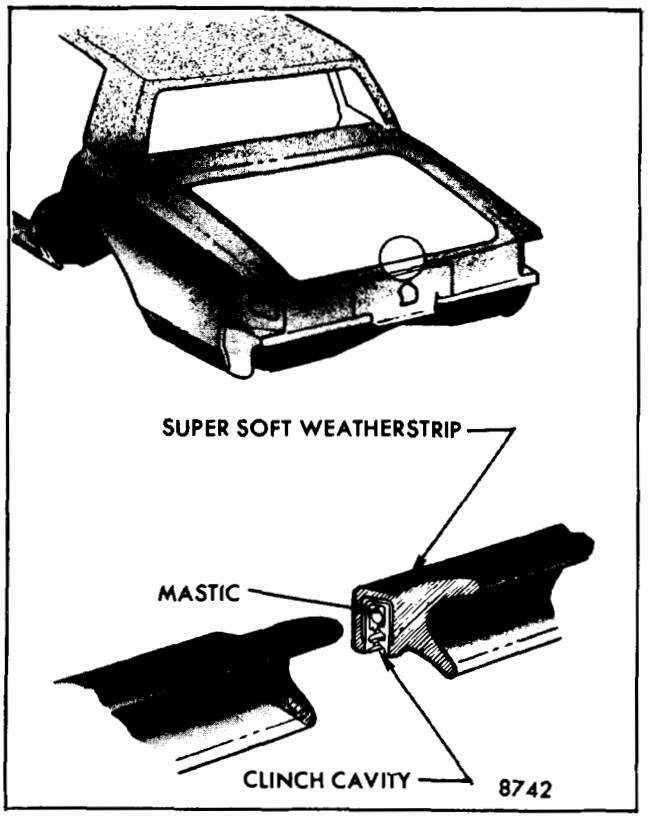


Fig. 7-61 - Rear Compartment Weatherstrip - Cadillac "K-69"

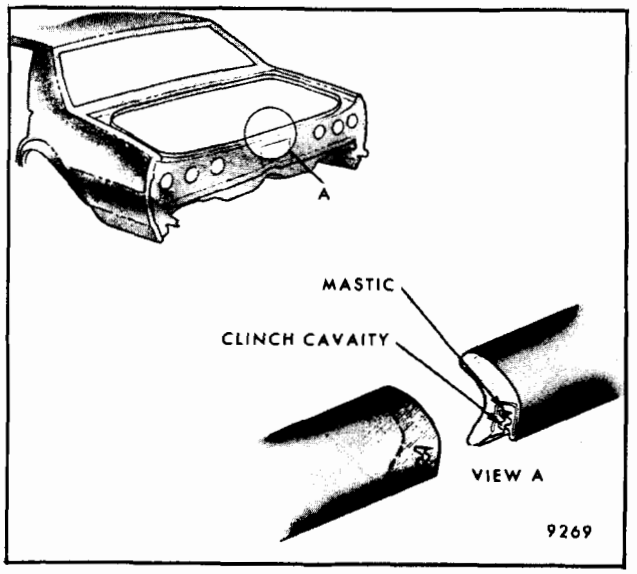


Fig. 7-62 - "B, C" Rear Compartment Weatherstrip

4. On "H-07" styles insert plug from old weatherstrip into new weatherstrip to maintain shape at butt end.
5. Cement butt ends together.

REAR COMPARTMENT FRONT PANEL - "B, C, F, X-69" and Oldsmobile "E" Styles

Removal and Installation

1. Remove back glass lower reveal molding on "B, C and F" styles (see Stationary Glass Section).
2. Remove screws from forward edge of panel.

   NOTE: In some cases it may be necessary to cut away a small amount of adhesive material used to seal the back glass in order to locate and remove screws. Care should be exercised so as not to break adhesive bond to rear glass.

3. Open rear compartment lid and remove screws retaining panel to body.
4. To install, reverse removal procedure.

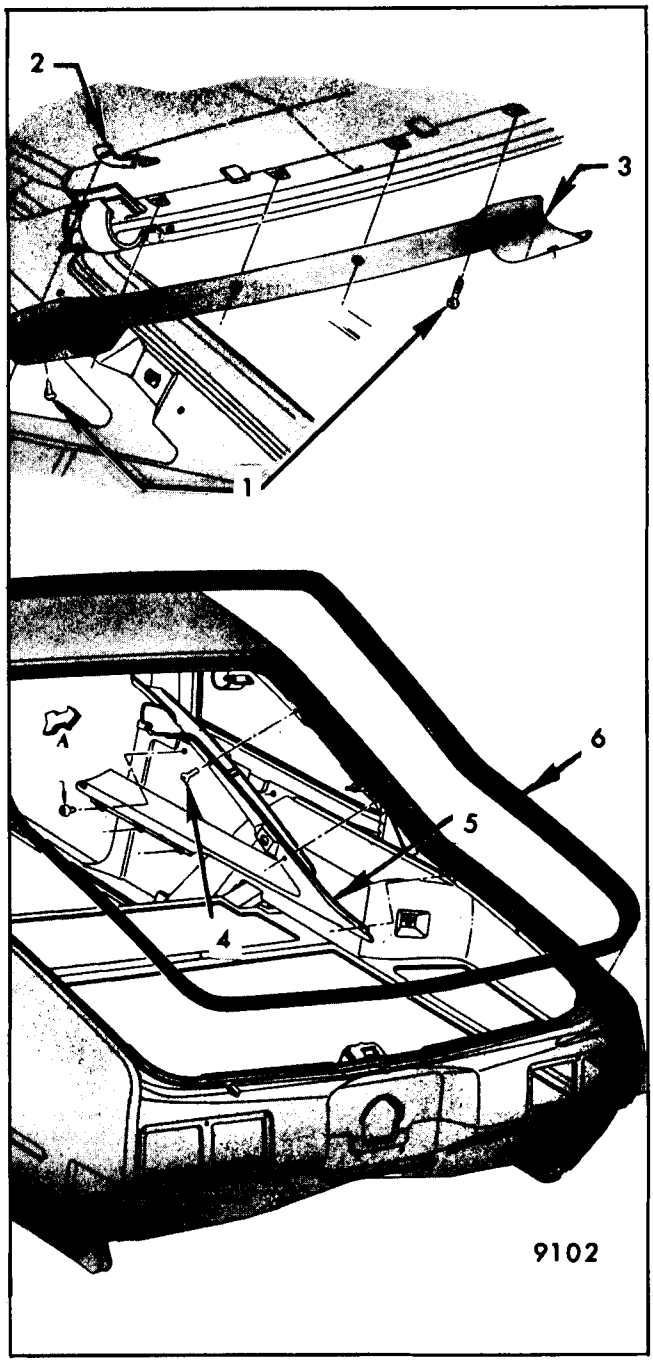


Fig. 7-63-"X-17" Weatherstrip and Trim Removal

1. Screw
2. Retainer
3. Garnish Molding
4. Trim Retaining Screw
5. Quarter Window Trim
6. Weathertstrip

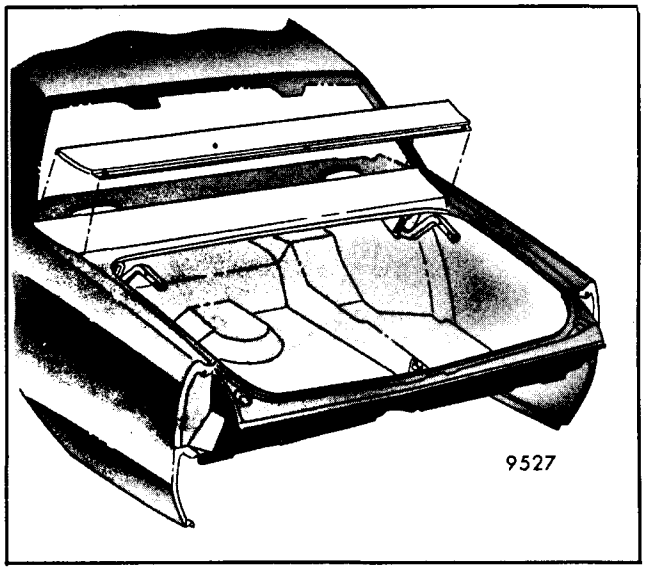


Fig. 7-64 - "B, C" Rear Compartment Front Panel "C" Style Shown

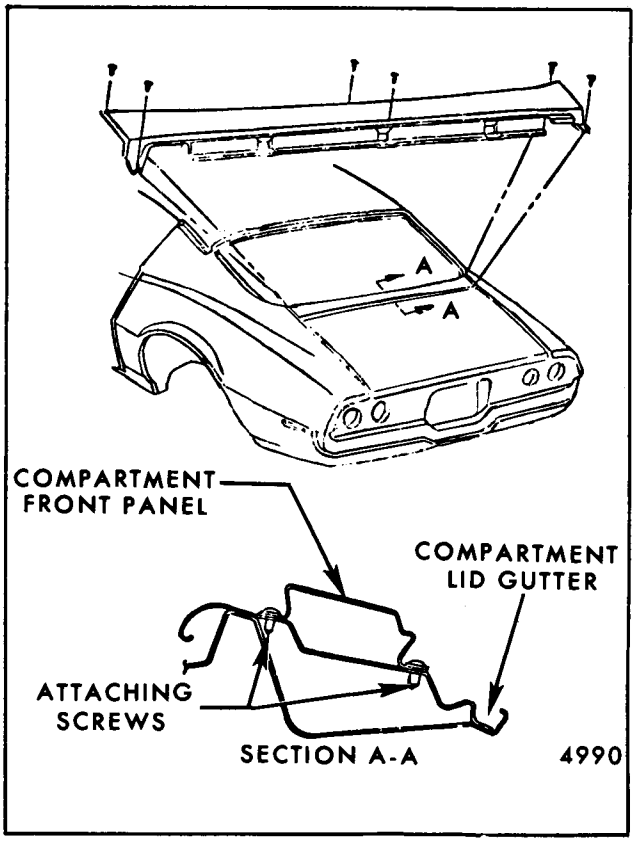


Fig. 7-65-Rear Compartment Front Panel - "F" Styles

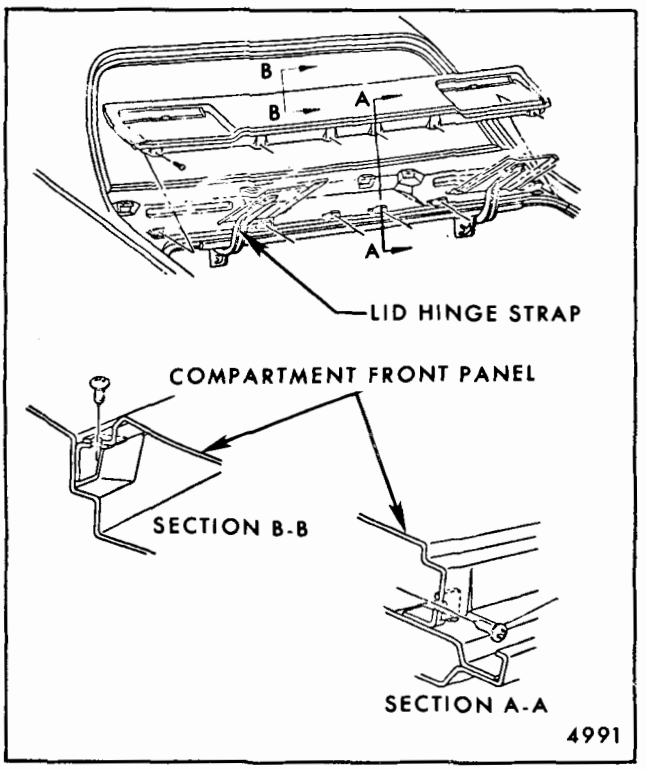


Fig. 7-66-Rear Compartment Front Panel - Oldsmobile "E" Style

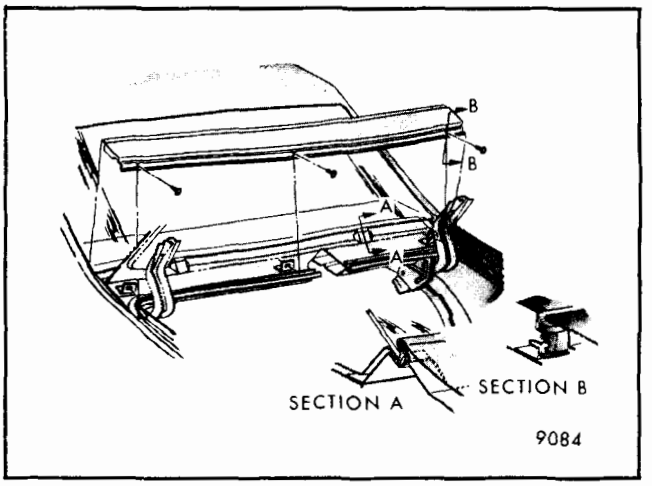


Fig. 7-67-Rear Compartment Front Panel - "X-69" Style

BACK WINDOW DEFOGGER (BLOWER TYPE)

DESCRIPTION

Defogger blower motors that are mounted to either the rear seat back panel or rear seat back to back window panel are illustrated in this section. Refer to the Electrical Section for diagnostic procedure and electrical characteristics.

The blower motors can be removed from inside the rear compartment without trim removal, except on Chevrolet "B-47" styles which require rear seat back removal for blower attaching bolt access. Refer to Figures 7-68, 7-69, 7-70 and 7-71 for typical defogger blower installations.

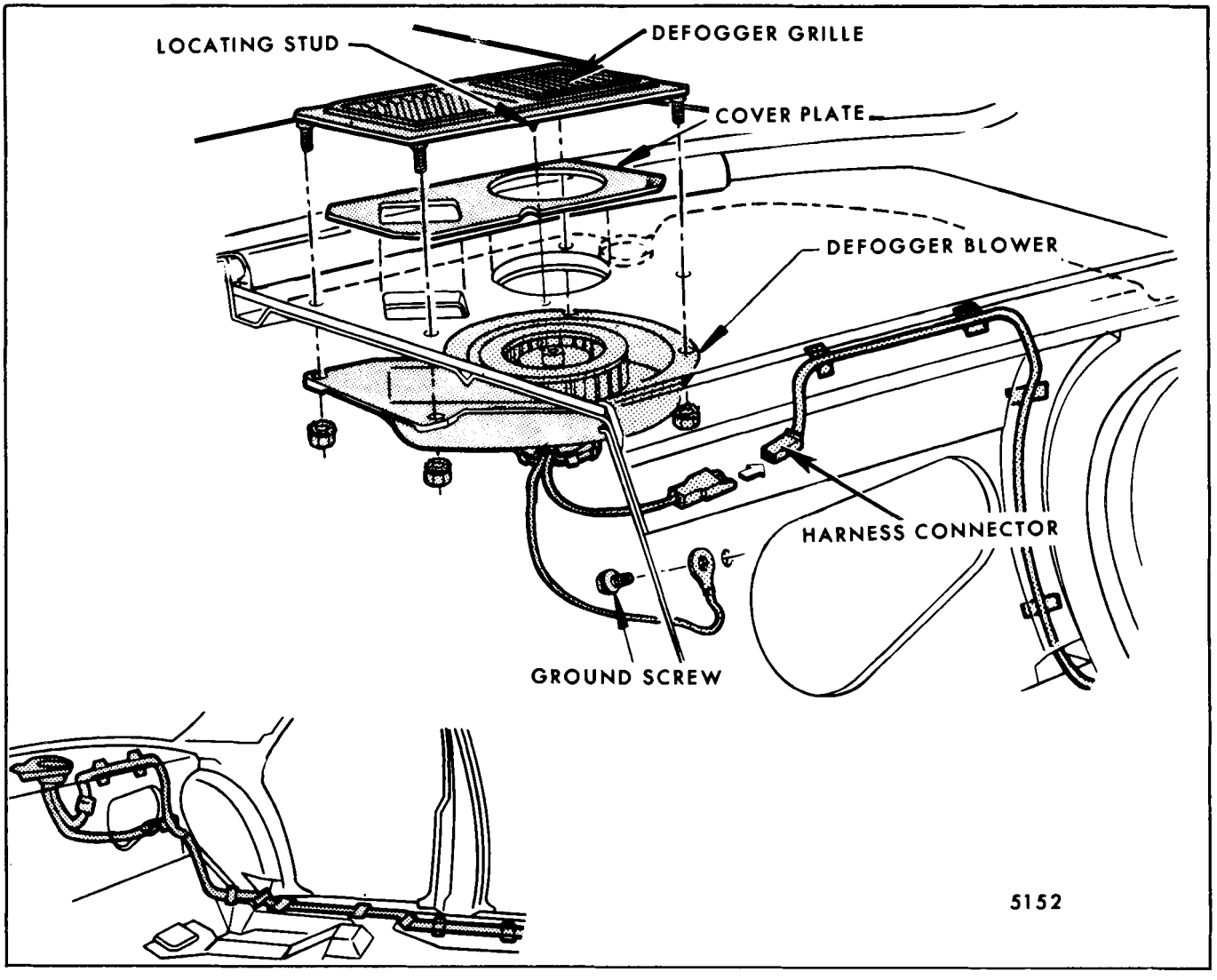


Fig. 7-68-Typical Defogger Blower Installation - "B" Style Shown

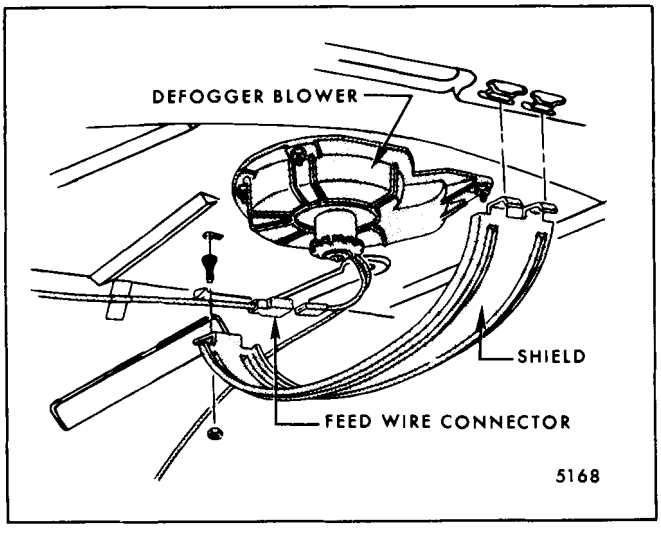


Fig. 7-69-Back Window Defogger Blower Shield - "A" Styles

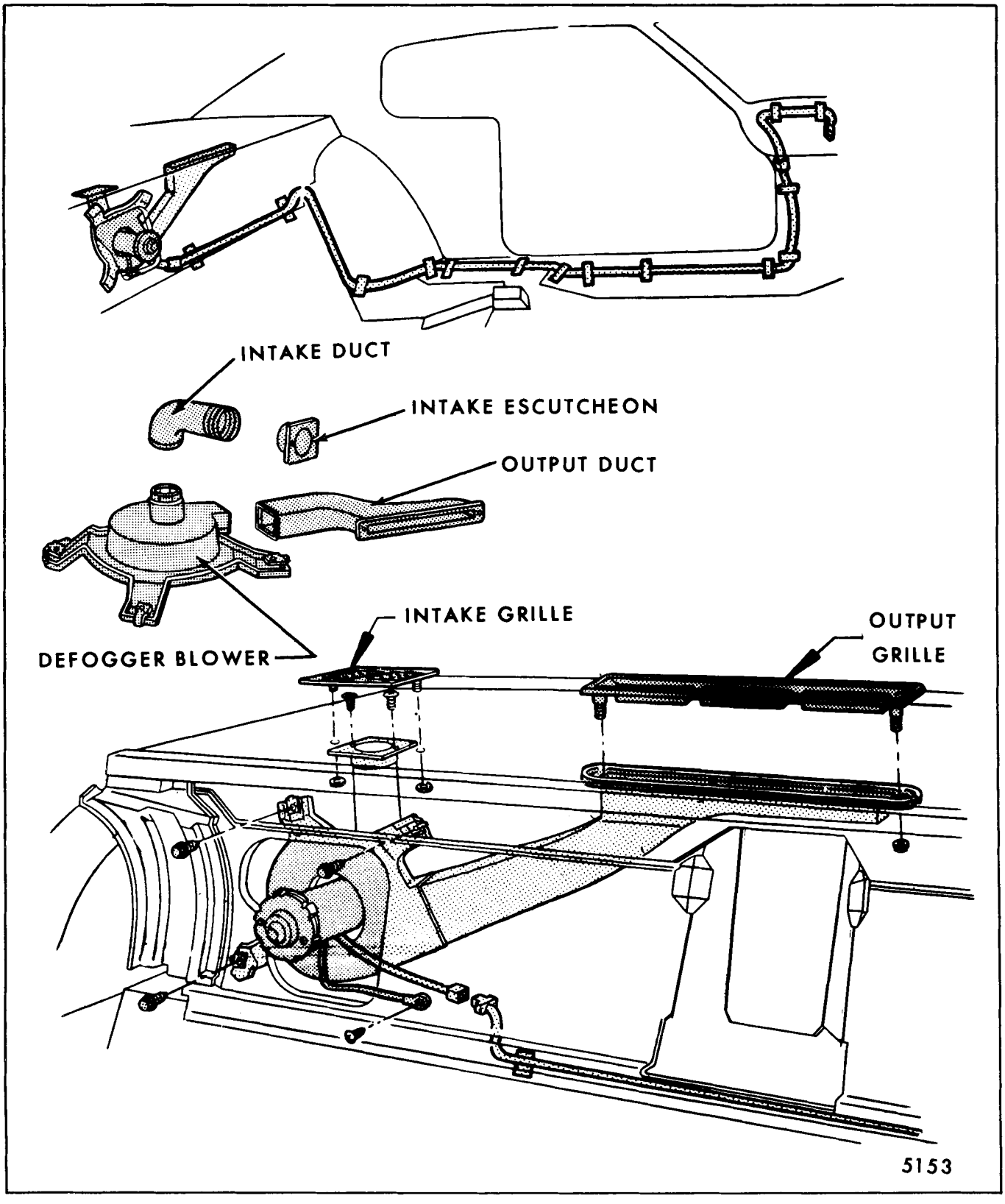


Fig. 7-70-Defogger Blower Installation - Chevrolet "B-47" Style

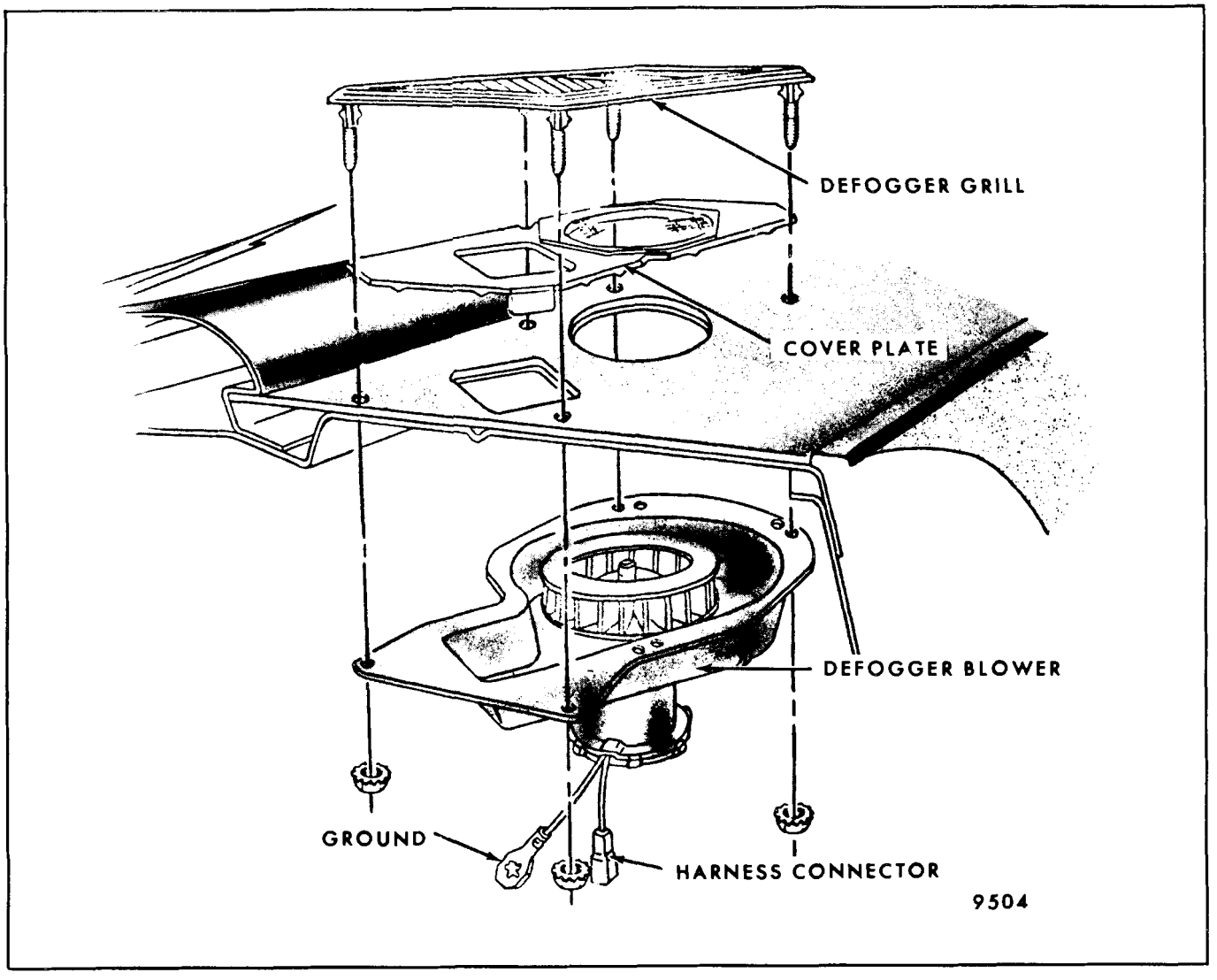


Fig. 7-71 - "X-27-69" Defogger Blower Installation

FIBER OPTIC MONITOR SYSTEM - CADILLAC "C, E and K" AND BUICK "C" STYLES

Description

The optional fiber optic system monitors tail, stop and directional lamp illumination from the passenger compartment.

Basically, the fiber optic conductor which is approximately 1/16" in diameter, consists of a bundle of transparent acrylic strands covered with an opaque black vinyl coating. Light is reflected along each strand within the bundle and is unaffected by the curves encountered during conductor routing. The ends of each bundle are cleanly cut and polished for maximum light transfer.

The conductor is routed along the rear quarter from the tail lamps to the monitor. The monitor is installed on the roof near the back window opening. Refer to Figures 7-72, 7-73 and 7-74 for conductor routing as well as monitor and sender installations.

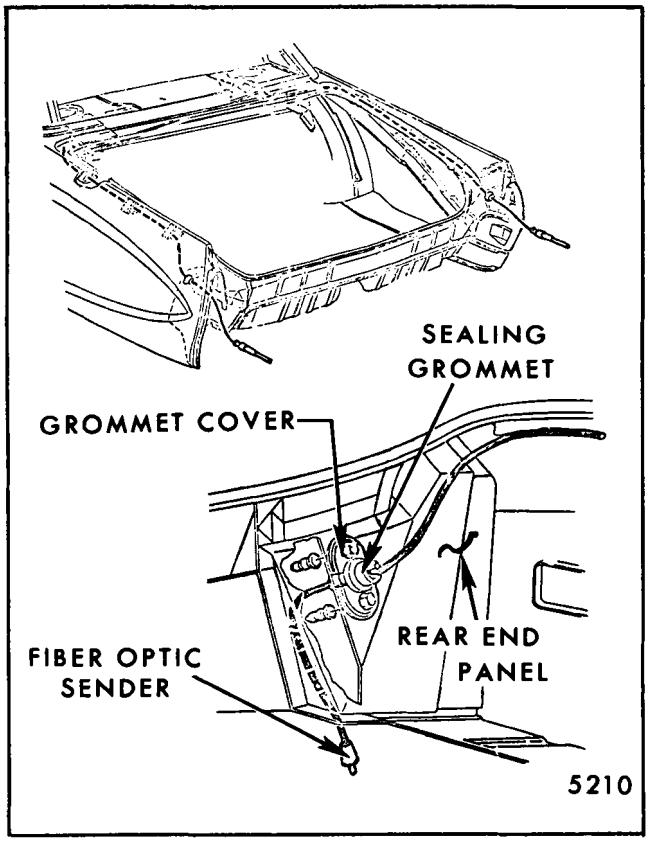


Fig. 7-72-Fiber Optic Routing - Cadillac "C and E" and Buick "C" Styles

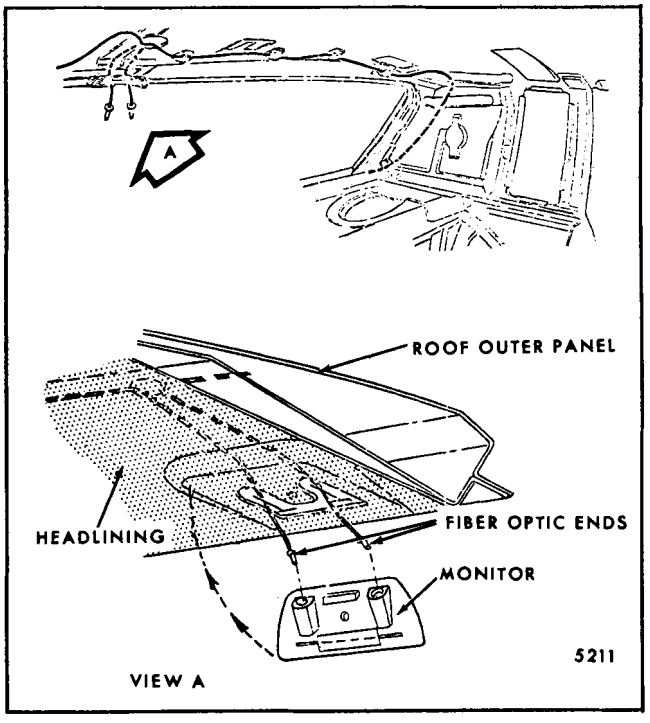


Fig. 7-73-Fiber Optic Monitor Installation - Cadillac "C and E" and Buick "C" Styles

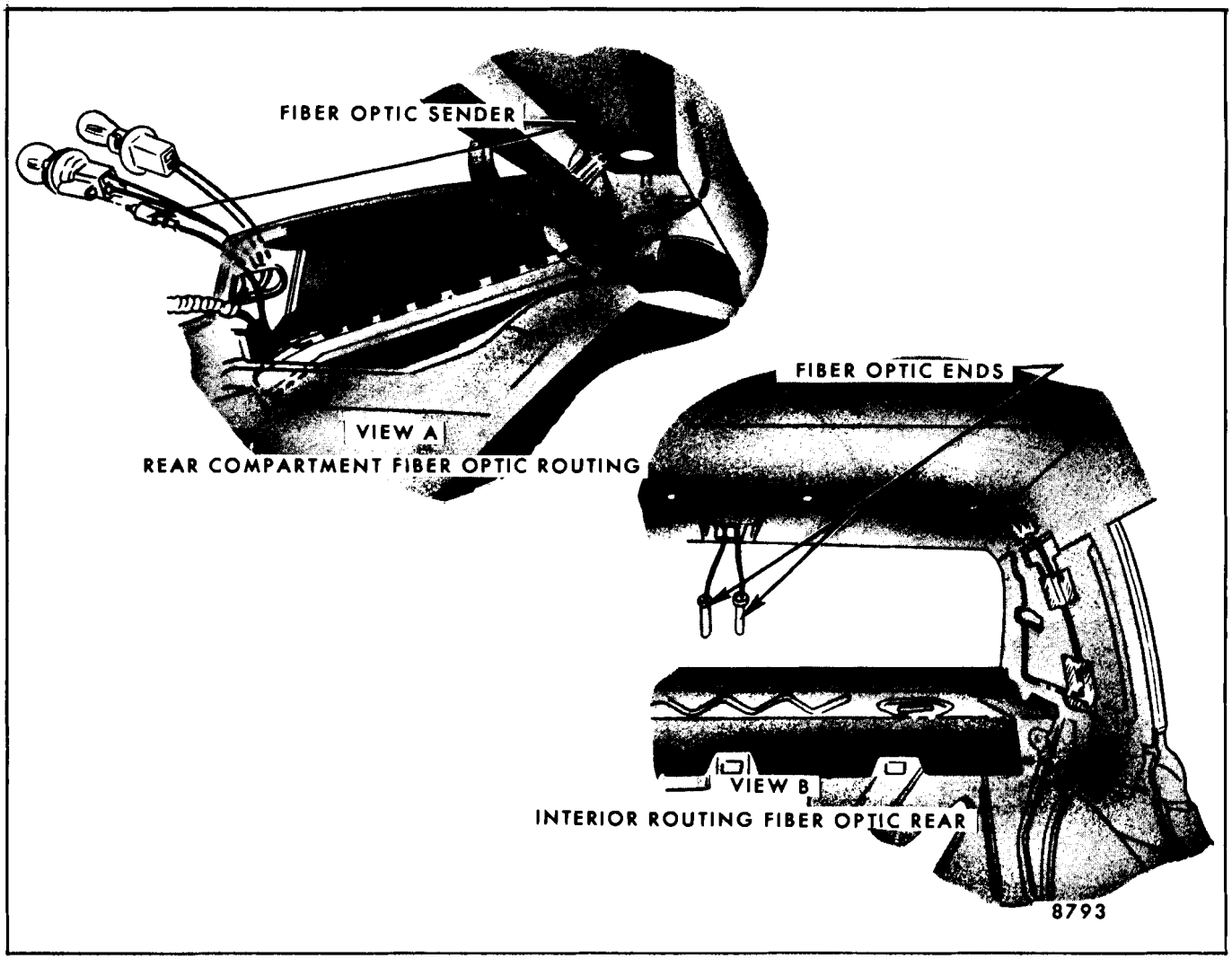


Fig. 7-74 - Fiber Optic Routing - Cadillac "K" Style - Right Side Shown, Left Side Similar

EXTERIOR LAMPS

TAIL LAMPS

Various methods are employed to remove and install the components of tail lamp assemblies. The following illustrations, Figures 7-75 through 7-88, will provide a quick reference for performing the basic service operations for each Car Division on styles where the tail lamp assembly is installed on the body. If the tail lamp assembly is installed in the bumper, refer to the chassis manual for service operations.

> **CAUTION:** *Do not rework or alter the reflective surface of tail lamps or side marker lamps.*

EXTERIOR LAMP SEALING

Care should be exercised to prevent waterleaks at the tail lamp area when sealing surfaces are disturbed. Damaged gaskets should be replaced.

If new gaskets are not installed, the use of sealer (body caulking compound or equivalent) is recommended at critical areas and where the old gaskets have taken a set.

SIDE MARKER LAMPS

All styles incorporate a rear quarter side marker lamp which operates in conjunction with the tail lamp circuit. Some styles use a wrap around tail lamp assembly which doubles as a side marker lamp.

There are two basic methods of retention for these lamp housings:

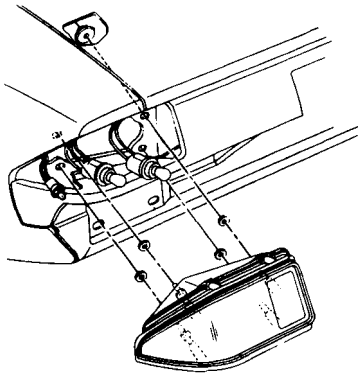
1. Studs with nuts accessible from the rear compartment.
2. External screws - used on all station wagons.

COMPARTMENT FRONT PANEL LAMPS - Oldsmobile "E" Styles

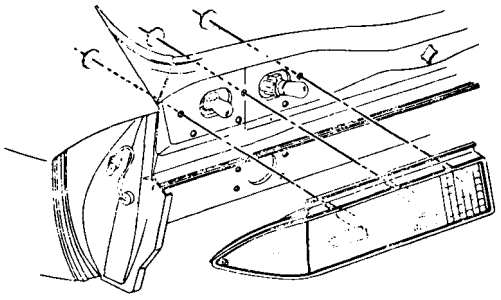
The lamp housings are mounted to integral studs on the back window drain panel and attached with nuts prior to installation of the applied rear compartment front panel. Bulb replacement can be accomplished from inside the rear compartment.

OPERA LAMP - Cadillac Styles

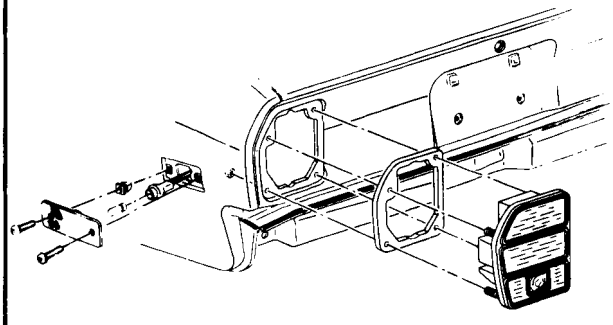
The lamp assembly mounted on the quarter panel sail area is attached with screws accessible under the screw attached lens.



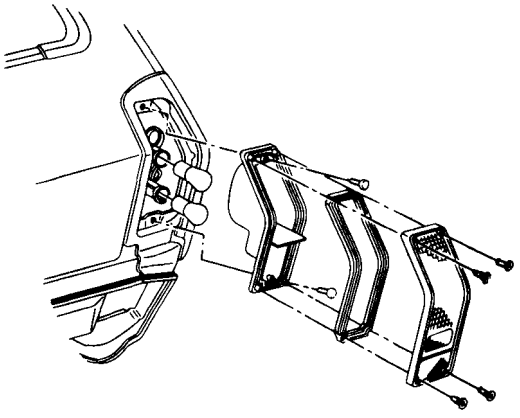
"1FQ-1FS-87" TAIL LAMP



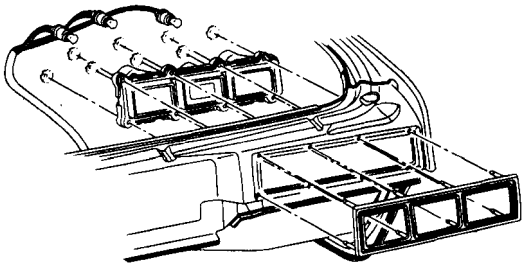
"1HM-1HR-07" TAIL LAMP



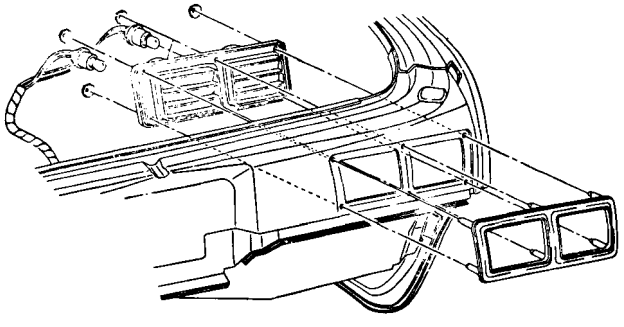
"1HV11-77" TAIL LAMP



"1HV15" TAIL LAMP



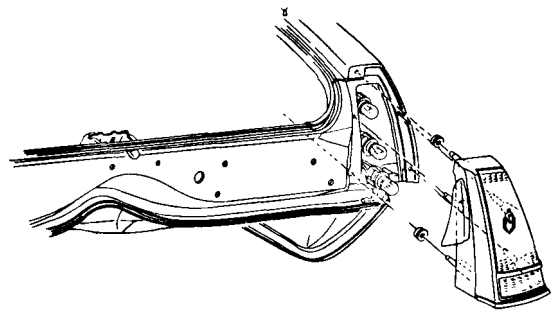
1XY-17-27-69" TAIL LAMP



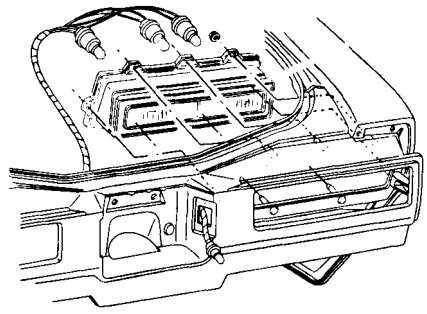
1XX17-27-69 TAIL LAMP

9386

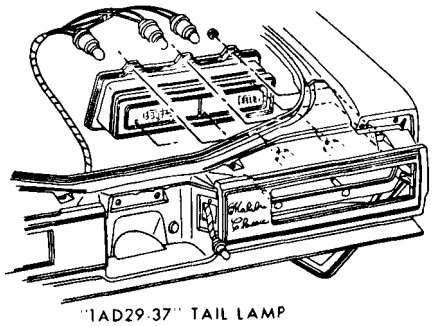
Fig. 7-75-Exterior Lamp Installation - Chevrolet Styles



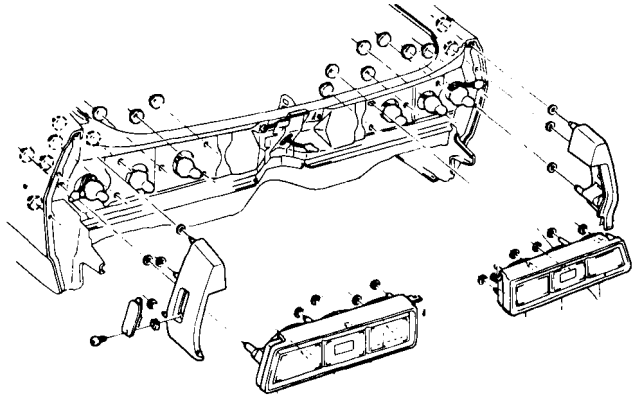
"A-57" TAIL LAMP



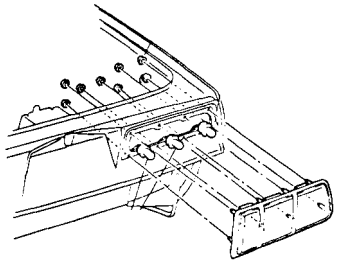
"1AC-1AE 29-37" TAIL LAMP



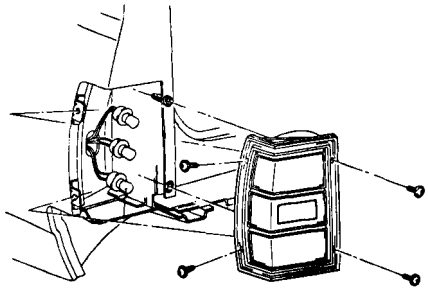
"1AD29-37" TAIL LAMP



1BL47-69 STYLE



H-27 STYLE



"1BL-1BN-35 TAIL LAMP

9387

Fig. 7-76-Exterior Lamp Installation - Chevrolet Styles

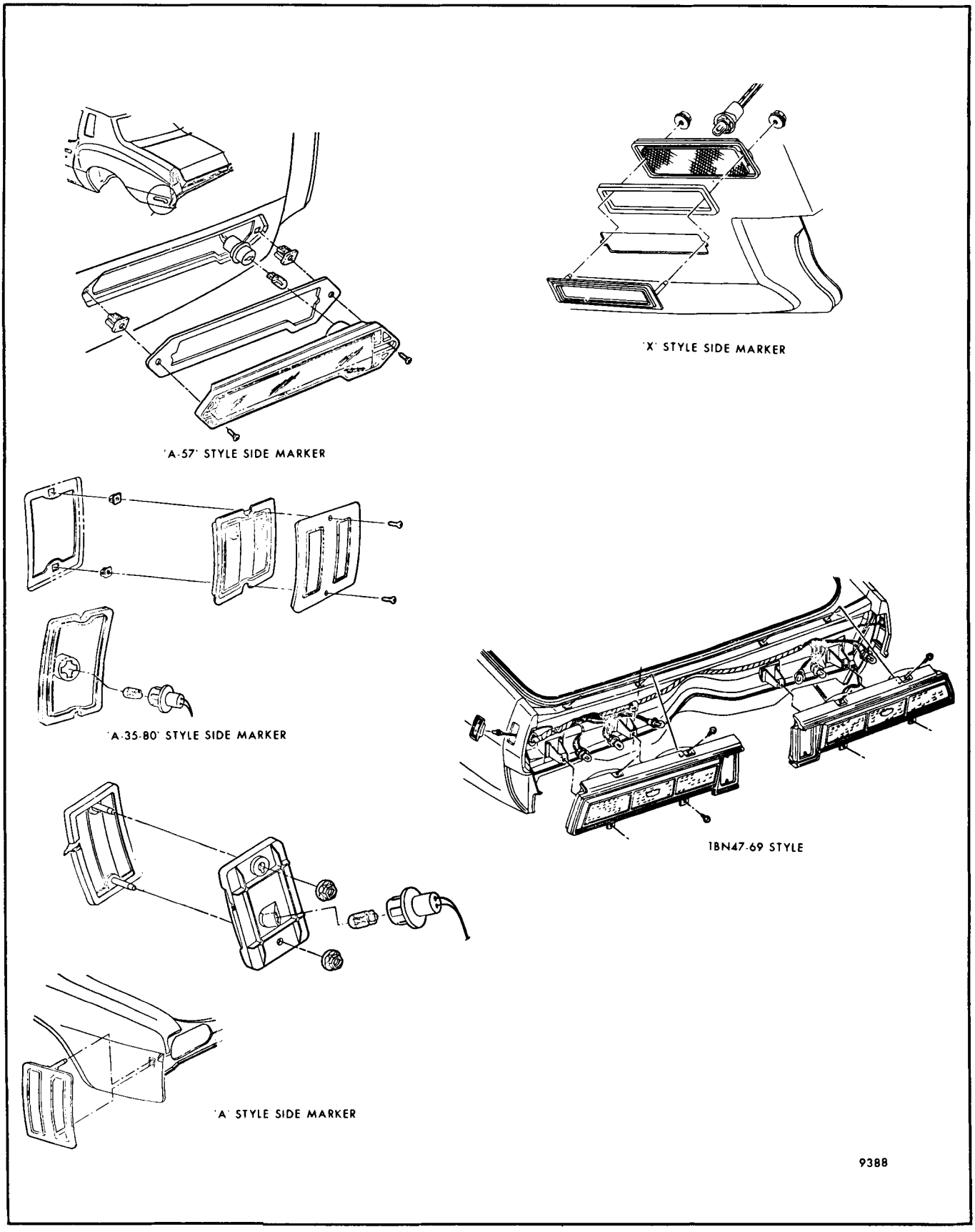


Fig. 7-77-Exterior Lamp Installation - Chevrolet Styles

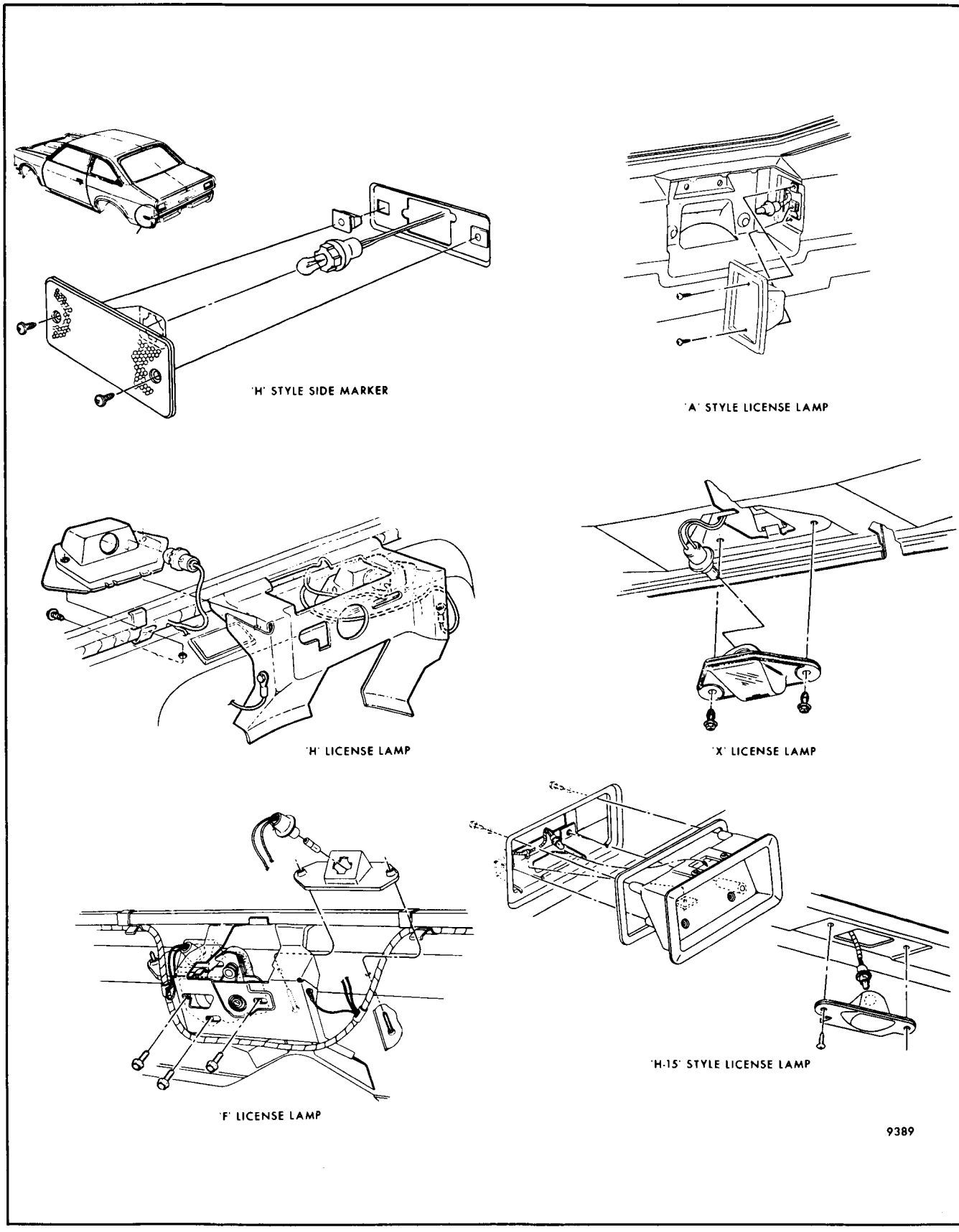
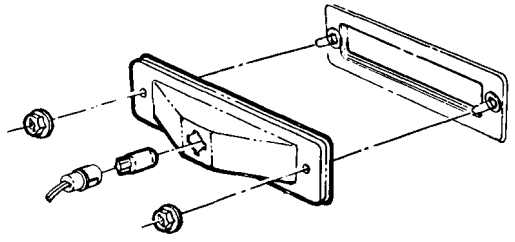
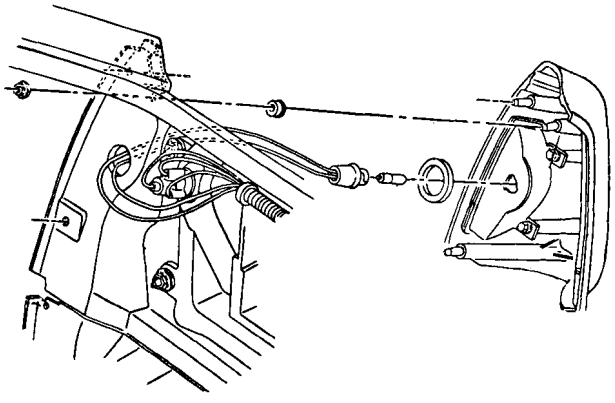


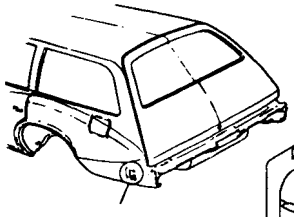
Fig. 7-78-Exterior Lamp Installation - Chevrolet Styles



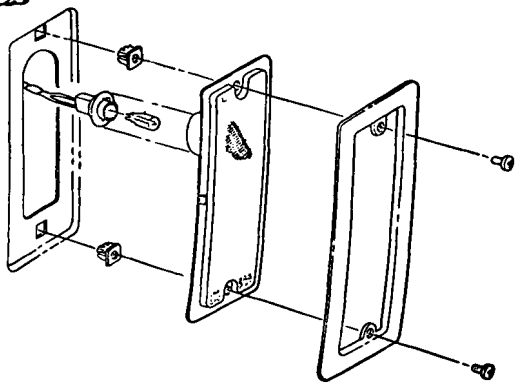
'A' STYLE SIDE MARKER LAMP

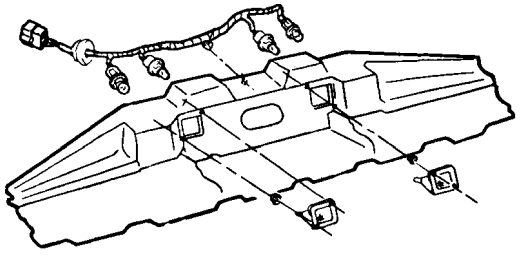


'A-57' STYLE SIDE MARKER LAMP

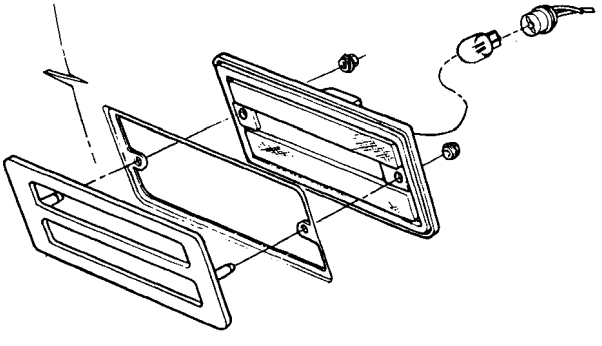


'A' STYLE
STATION WAGON
SIDE MARKER LAMP





'A-57' STYLE BACK-UP LAMP



'F' STYLE
SIDE MARKER LAMP

9390

Fig. 7-79-Exterior Lamp Installation - Pontiac Styles

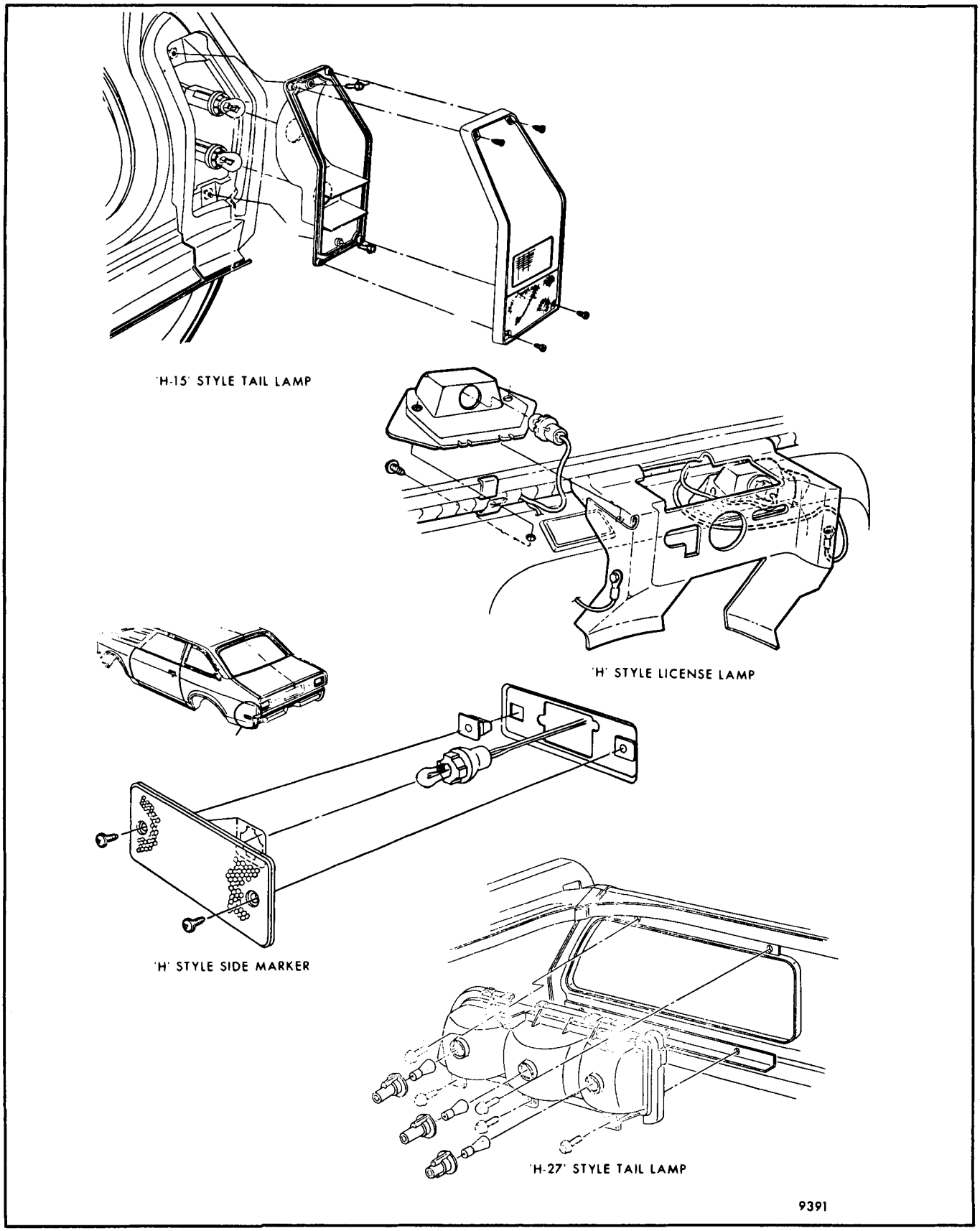
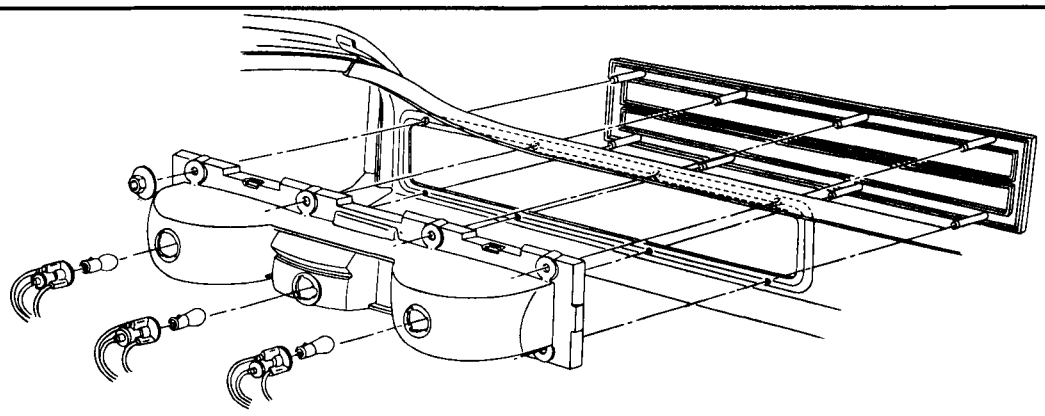
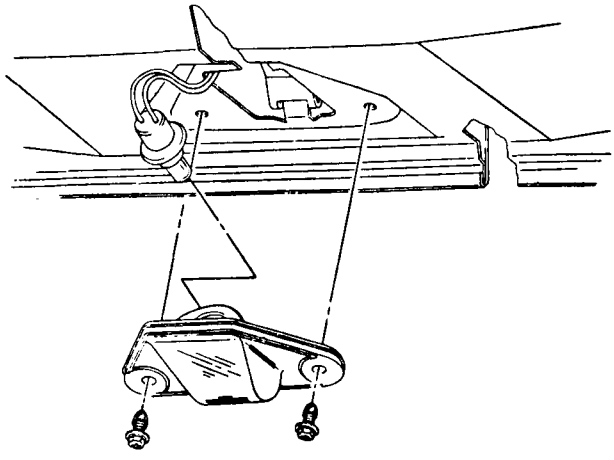


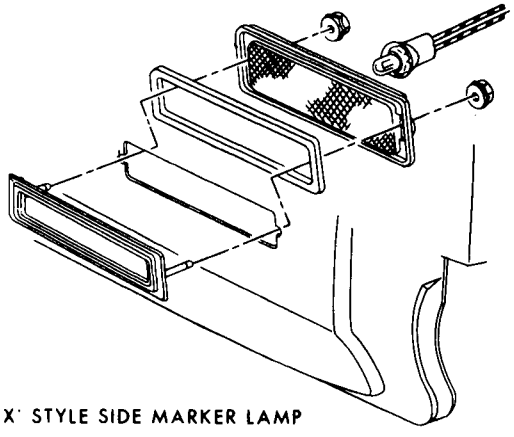
Fig. 7-80-Exterior Lamp Installation - Pontiac Styles



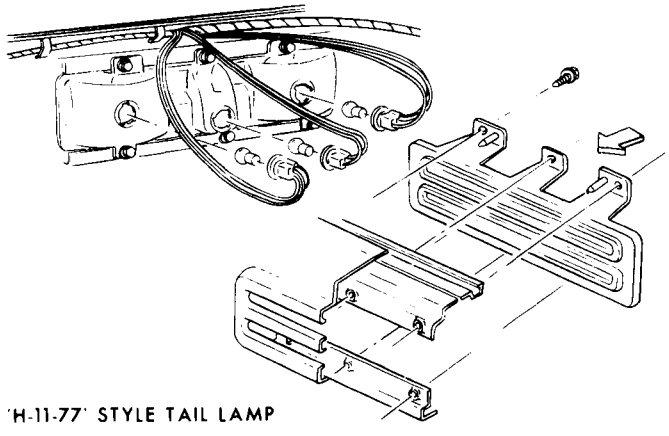
'X' STYLE TAIL LAMP



'X' STYLE LICENSE LAMP



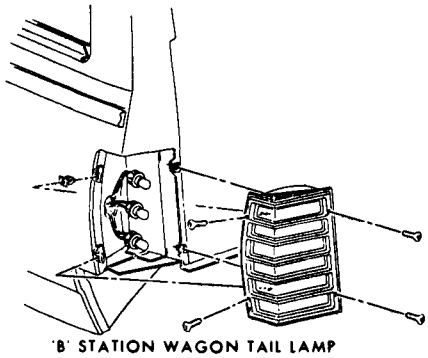
'X' STYLE SIDE MARKER LAMP



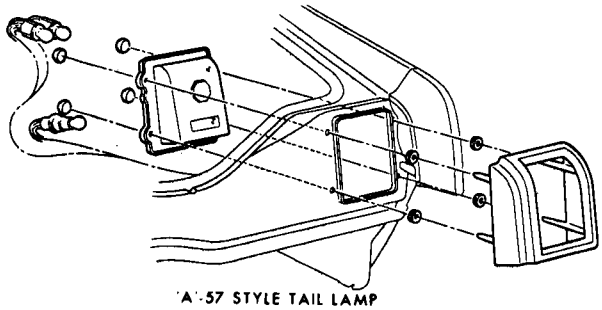
'H-11-77' STYLE TAIL LAMP

9392

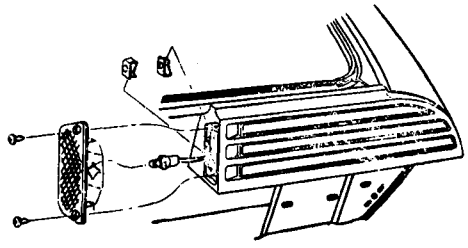
Fig. 7-81-Exterior Lamp Installation - Pontiac Styles



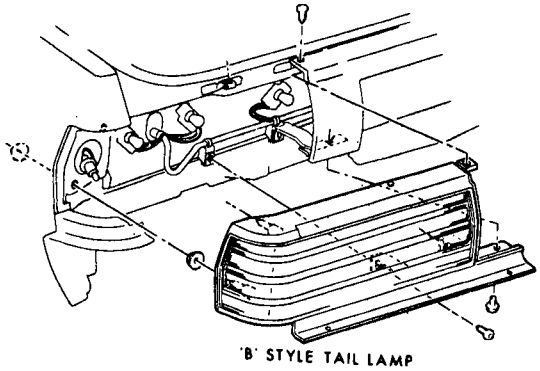
'B' STATION WAGON TAIL LAMP



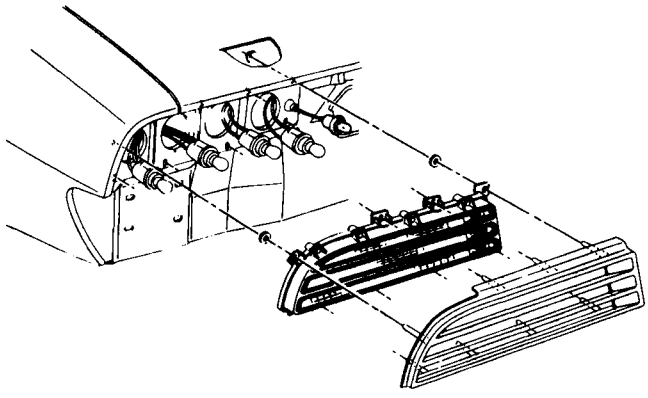
'A'-57 STYLE TAIL LAMP



'F' STYLE LICENSE LAMP



'B' STYLE TAIL LAMP



'F' STYLE TAIL LAMP

9393

Fig. 7-82-Exterior Lamp Installation - Pontiac Styles

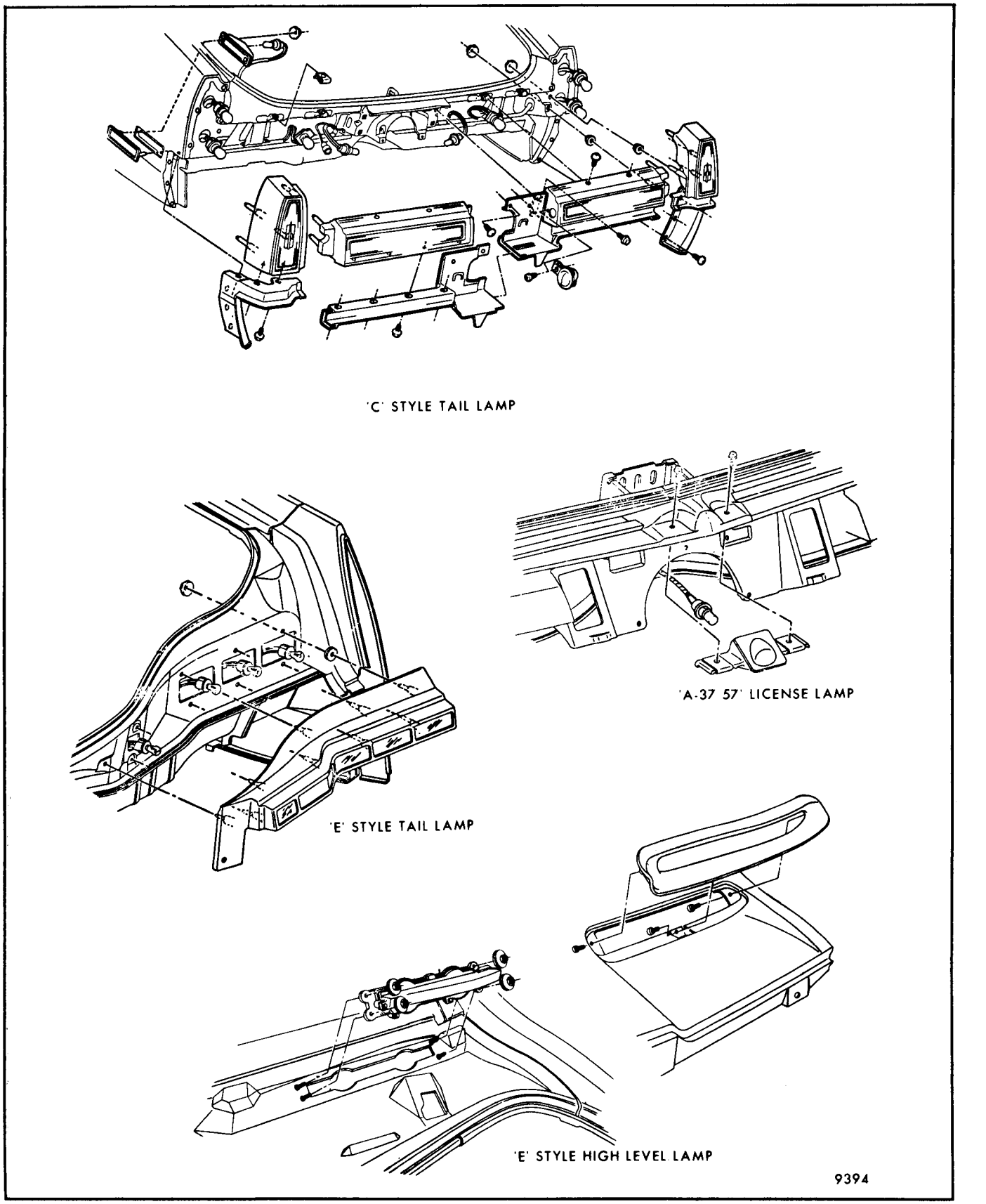


Fig. 7-83-Exterior Lamp Installation - Oldsmobile Styles

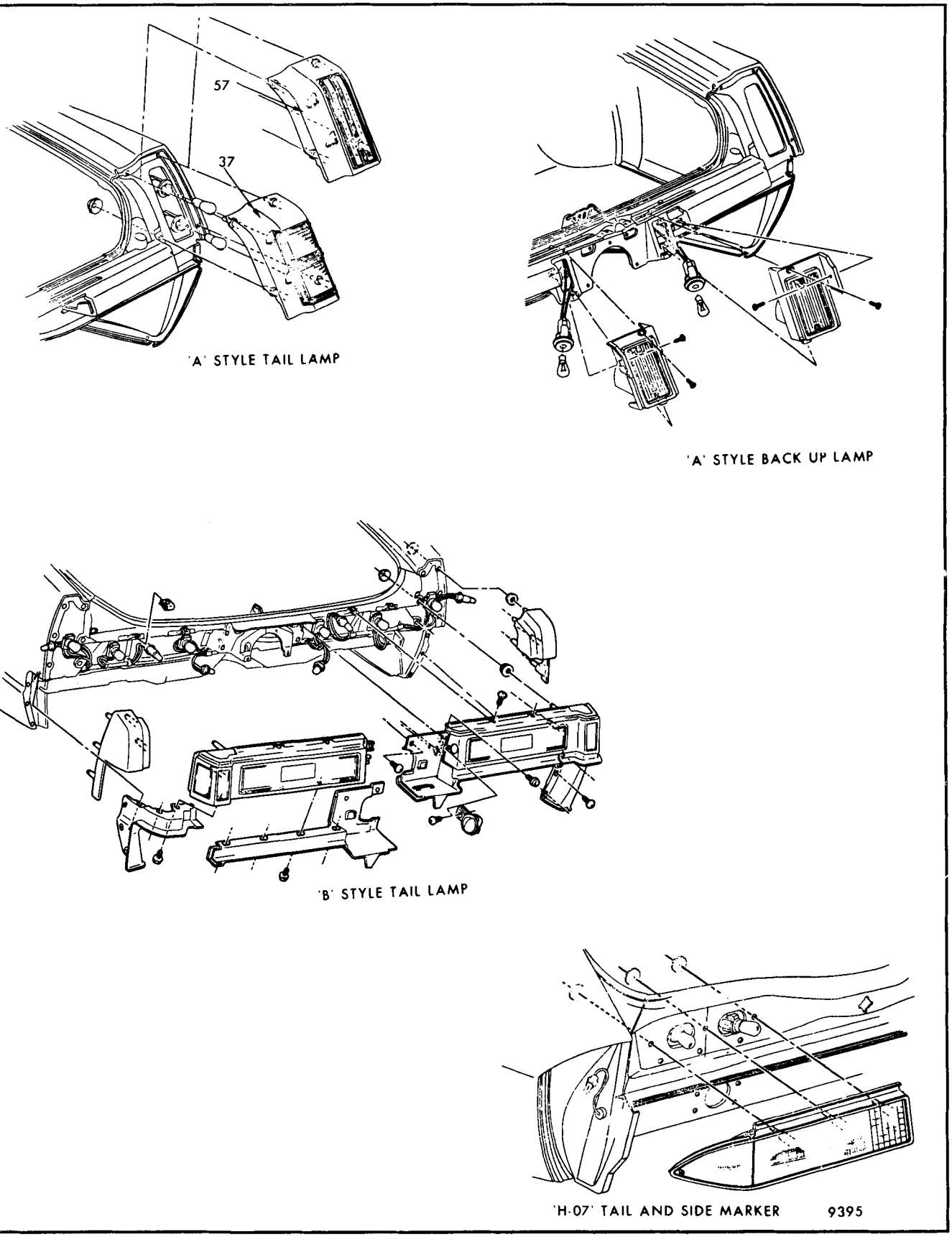


Fig. 7-84-Exterior Lamp Installation - Oldsmobile Styles

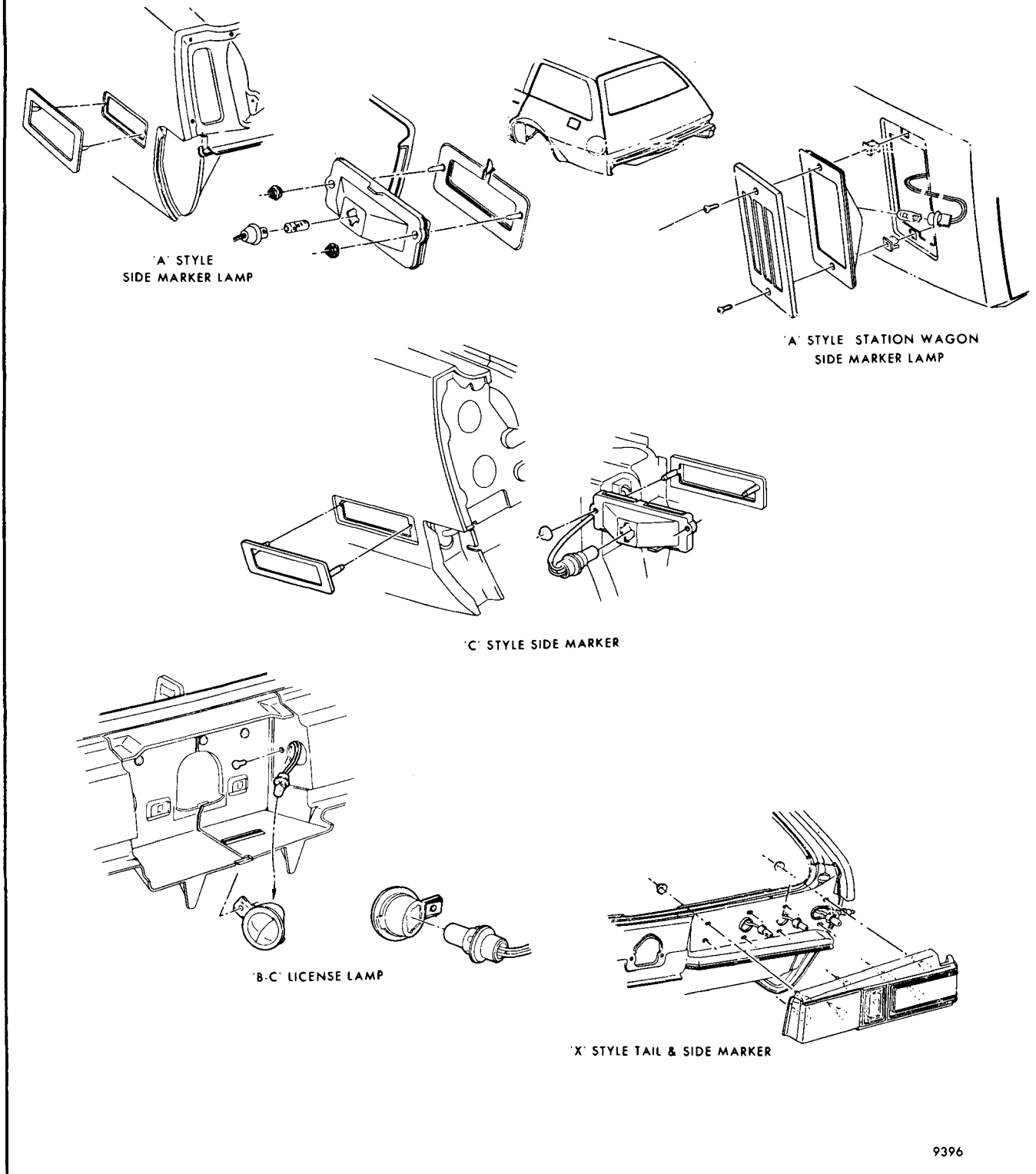


Fig. 7-85-Exterior Lamp Installation - Oldsmobile Styles

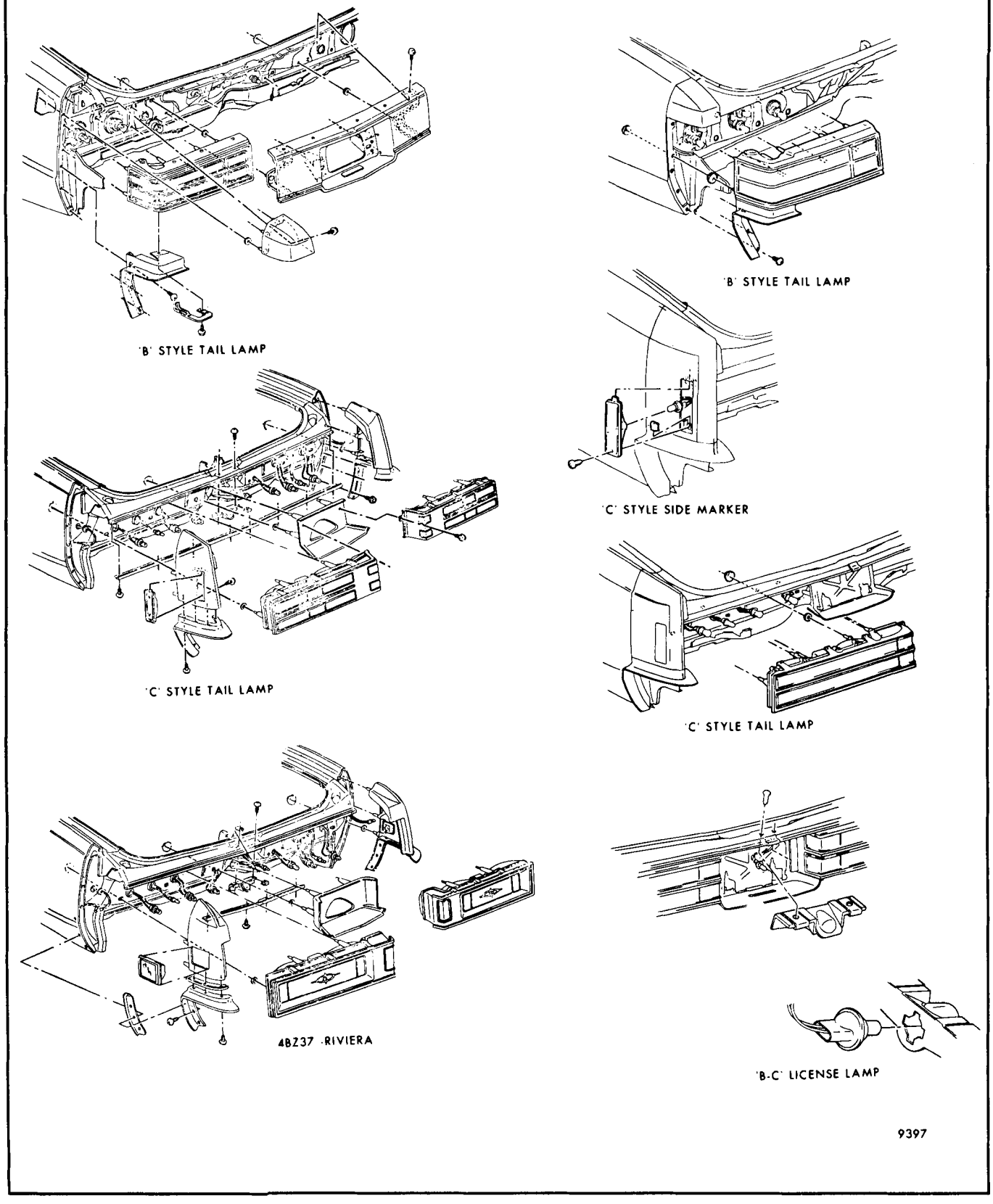
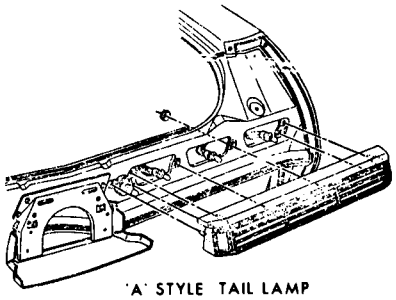
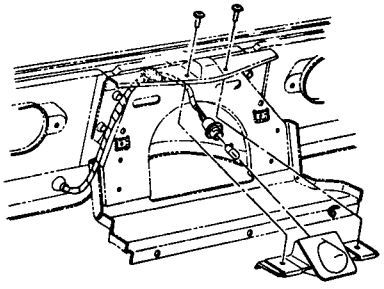


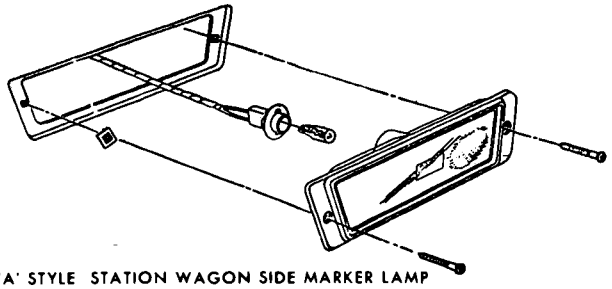
Fig. 7-86-Exterior Lamp Installation - Buick Styles



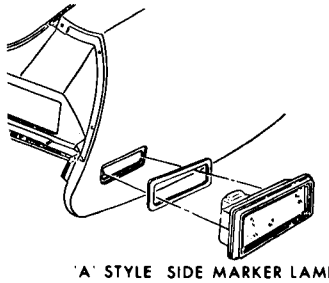
'A' STYLE TAIL LAMP



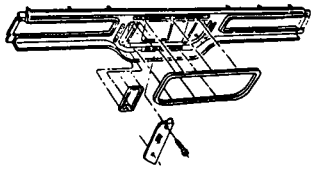
'A' STYLE LICENCE LAMP



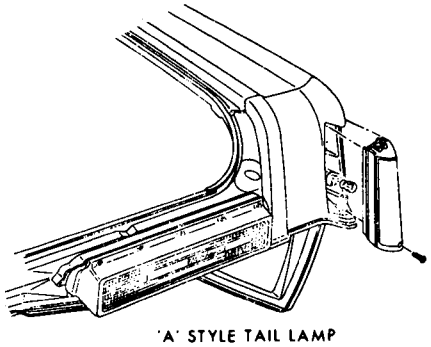
'A' STYLE STATION WAGON SIDE MARKER LAMP



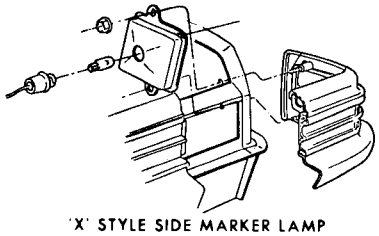
'A' STYLE SIDE MARKER LAMP



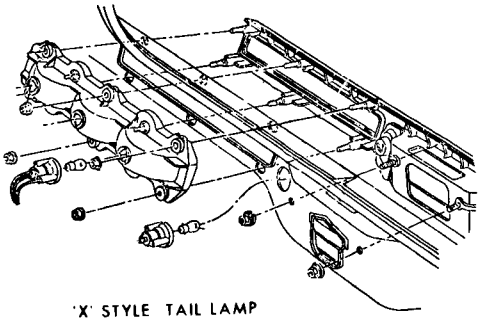
'X' STYLE LICENSE LAMP



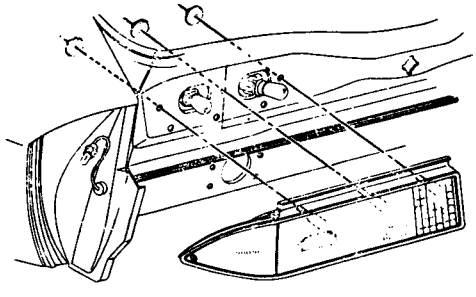
'A' STYLE TAIL LAMP



'X' STYLE SIDE MARKER LAMP



'X' STYLE TAIL LAMP



'H-07' STYLE TAIL LAMP

9398

Fig. 7-87-Exterior Lamp Installation - Buick Styles

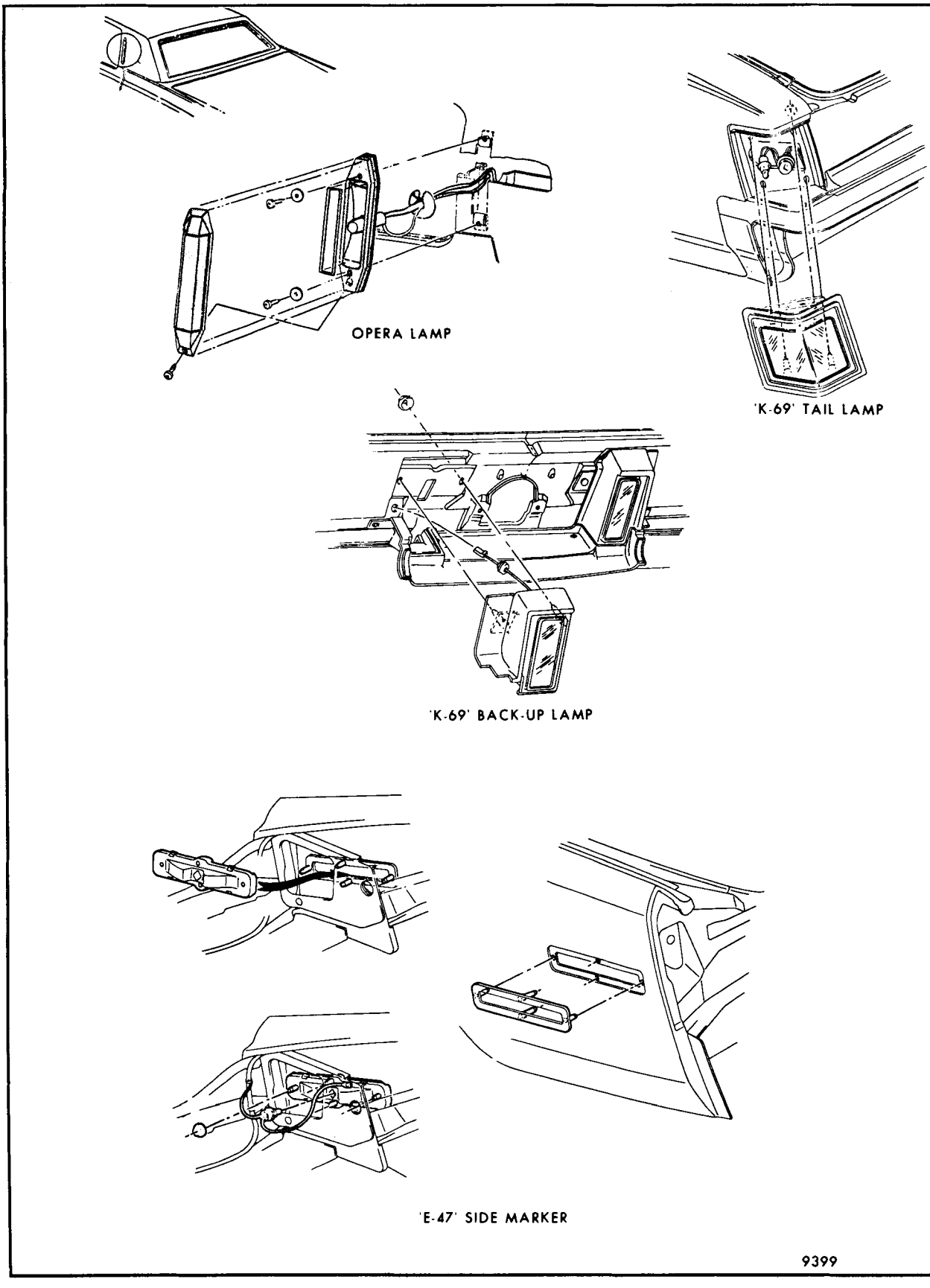


Fig. 7-88-Exterior Lamp Installation - Cadillac Styles

STATION WAGON BACK DOOR - "H-15" Styles

DESCRIPTION

The back door consists of an inner and outer panel bonded with structural adhesive. A stationary glass is retained within the back door by means of a rubber channel. The door is hinged at the top of the opening with hinges which are adjustable on the door side. The door is counterbalanced with a pair of torque rods which provide ease of operation and hold-open. A lock is welded onto the back door with adjustment provided through the striker which is bolted to the rear cross bar (Fig. 7-89). A license plate pocket assembly which incorporates two lamps is mounted into the lower center portion of the back door outer panel.

Removal and Installation (Fig. 7-90)

1. With the assistance of a helper to support door in full- open position, remove hinge strap to back door attaching bolts on both sides of door and remove back door.
2. Disconnect license lamp wire harness adjacent to left hinge. On styles equipped with electrically heated back windows disconnect feed wire connector from terminal on upper corner of back window.
3. To install, reverse removal procedure. Check door fit and operating effort.

Removal and Installation - Lock Cylinder

1. Open back door and disengage license plate inner panel access hole cover (Fig. 7-91).
2. Working through access hole, remove locking rod from lock cylinder (Fig. 7-92).

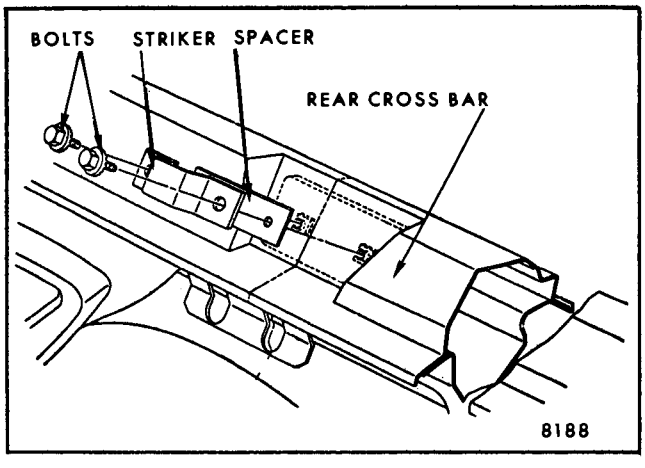


Fig. 7-89-Back Door Striker Installation - "H-15" Styles

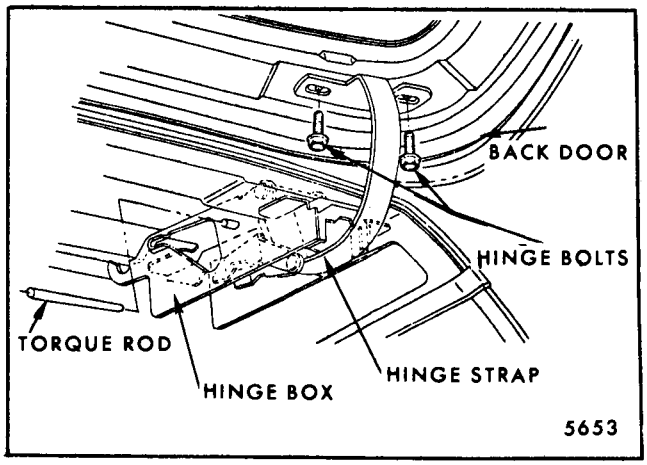


Fig. 7-90-Back Door Hinge Attachment - "H-15" Styles

3. Remove retainer from lock cylinder.
4. To install, reverse removal procedure. Make certain sealing gasket seats properly to outer panel.

   If new lock cylinder is being installed, code cylinder as described in General Information Section.

LOCK

Description

The back door lock is spot welded to a reinforcement which is then spot welded to the back door. Individual lock replacment can be made with the procedure listed below. It is not necessary to transfer lock when REPLACING back door as service part. Back door will include welded-in lock.

Removal (Fig. 7-93)

1. Remove back door lock cylinder and locking rod.
2. Drill out spot welds securing back door inner panel at lock reinforcement using spot weld cutter tool J-8943-01 or equivalent.
3. As lock is spot welded to the reinforcement, remove lock and reinforcement assembly from back door.
4. Scribe location of lock on reinforcement, using spot weld cutter J-8943-01 or equivalent, drill out spot welds securing lock to reinforcement.

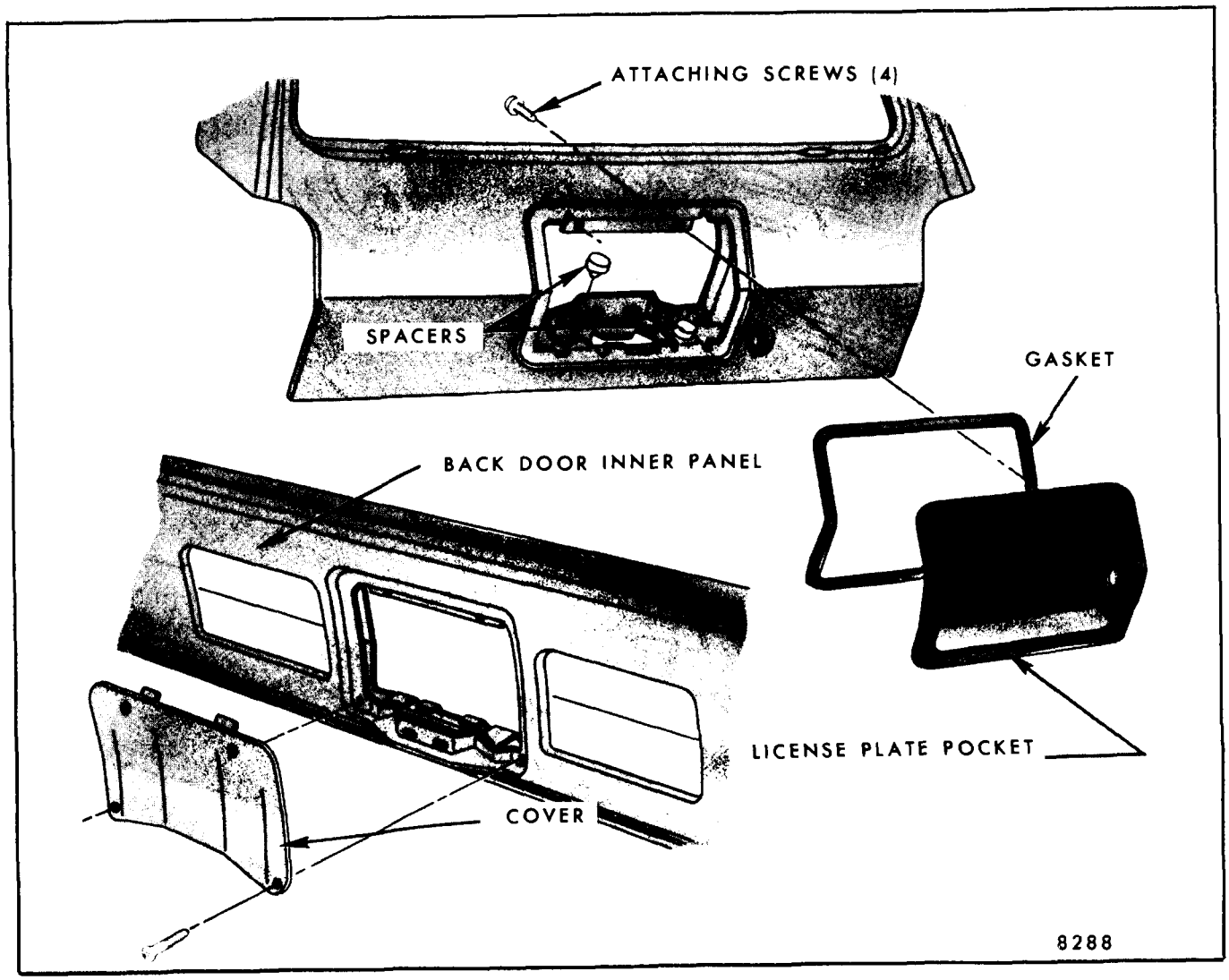


Fig. 7-91-License Plate Pocket and Inner Cover - "H-15" Styles

Installation

1. Position and clamp new lock to back door inner panel reinforcement within scribe marks of lock previously removed.
2. Gas weld or spot weld new lock to reinforcement. Use a minimum of four spot welds or two 1/2" of gas weld.
3. Load lock and reinforcement assembly into back door and position reinforcement in same location as it was prior to removal.
4. Working through 3/8" holes that were drilled to remove lock and reinforcement, gas weld reinforcement to back door inner panel.
5. Metal finish and refinish as required.

WEATHERSTRIP (Fig. 7-94)

Description

A bulbular clinch type weatherstrip is snapped on the pinchweld around the back door opening. The weatherstrip serves as a weatherseal and a finishing lace and requires no cement except at the butt joint. A mastic material is incorporated within the clinch cavity which seals the weatherstrip to the pinchweld flange. The butt joint utilizes a plug and weatherstrip cement to maintain shape and sealing.

Removal and Installation

1. Separate butt joint at the center of the rear cross bar.
2. Peel weatherstrip from pinchweld flange. Do not

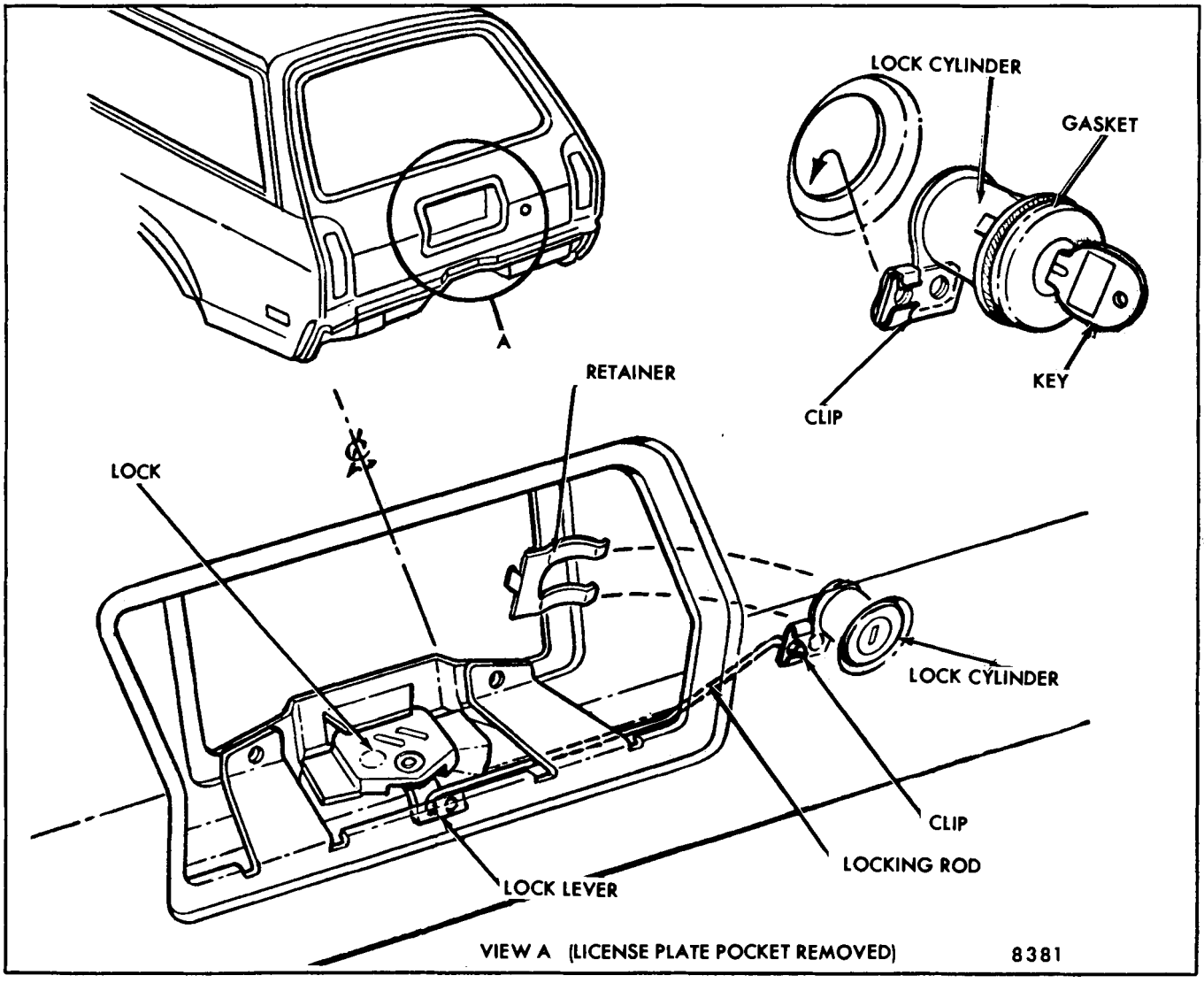


Fig. 7-92-Lock Cylinder Installation - "H-15" Styles

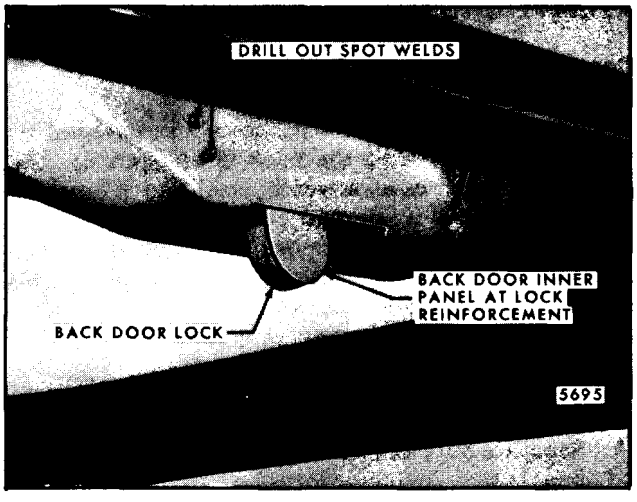


Fig. 7-93-Back Door Lock - "H-15" Styles

pull on bulbular section of weatherstrip as it may tear.

3. To install, begin inserting center of weatherstrip (marked with paint) onto gutter pinchweld flange at the top center of the opening between hinges. Be sure the clinch cavity containing the mastic is completely seated to the pinchweld flange around the entire opening.

4. Insert the old plug into the weatherstrip at the butt joint and cement joint.

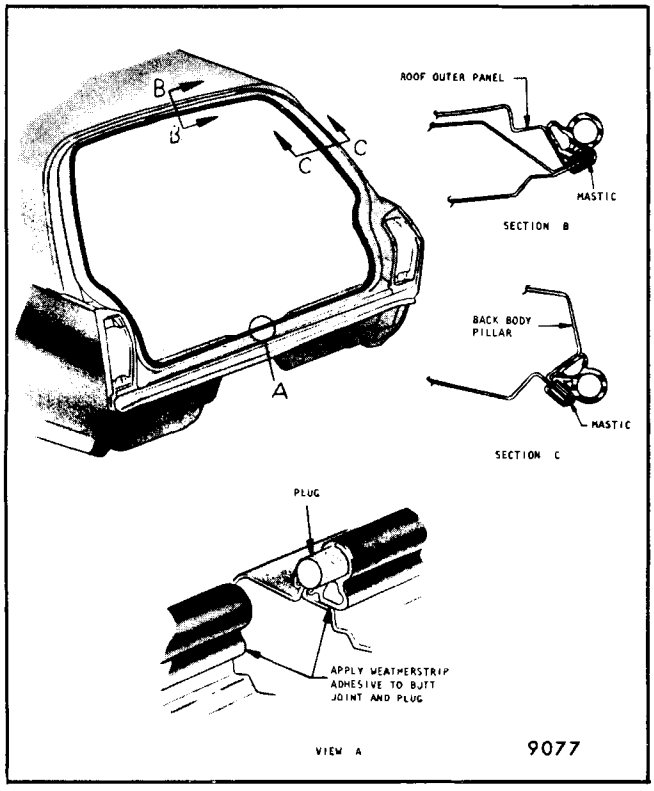


Fig. 7-94-"H-15" Back Door Weatherstrip

STATION WAGON BACK DOOR TORQUE RODS - "H-15" STYLES

Description

Torque rods are used to control the amount of effort to operate the back door and can be adjusted to increase or decrease operating effort.

Adjustments (Fig. 7-96)

1. To increase the amount of effort required to raise the back door or to decrease the amount of effort required to close the back door, reposition the end of the rod to a lower torque rod adjusting notch.

2. To decrease the amount of effort required to raise the back door or increase the amount of effort required to close the back door, reposition the end of the rod to a higher torque rod adjusting notch.

Removal and Installation

1. For removal and/or adjustment of back door torque rods, use tool J-24877 or equivalent.

2. To remove torque rods, open back door and remove trim covers as shown in Figure 7-95, disengage end of torque rod from adjusting notches as shown in Figure 7-96. Then allow handle of removal tool to rotate forward to relieve tension on rod.

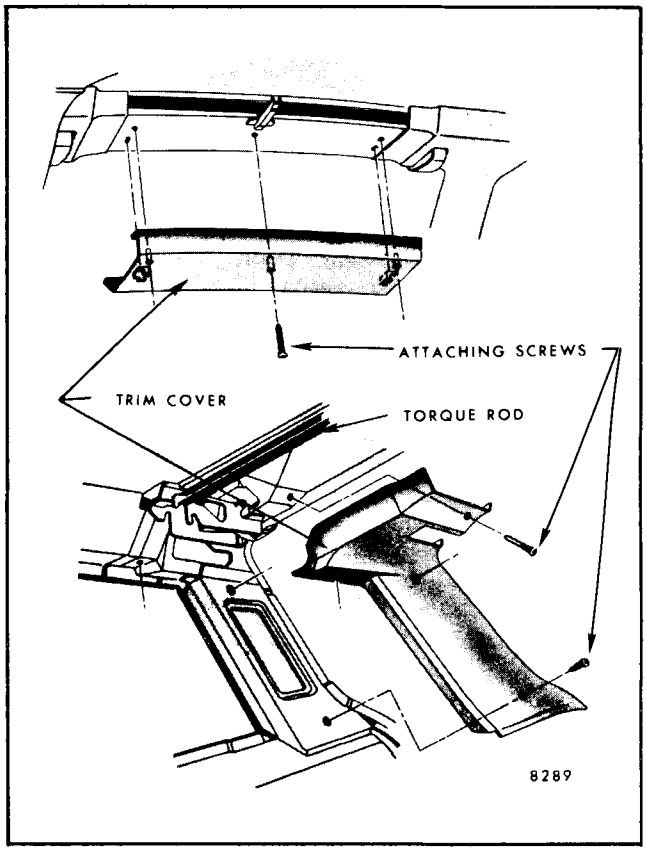


Fig. 7-95-Torque Rod Trim Removal - "H-15" Styles

3. Disengage opposite end of torque rod from adjusting notches and remove from body.

4. To install, reverse removal procedure.

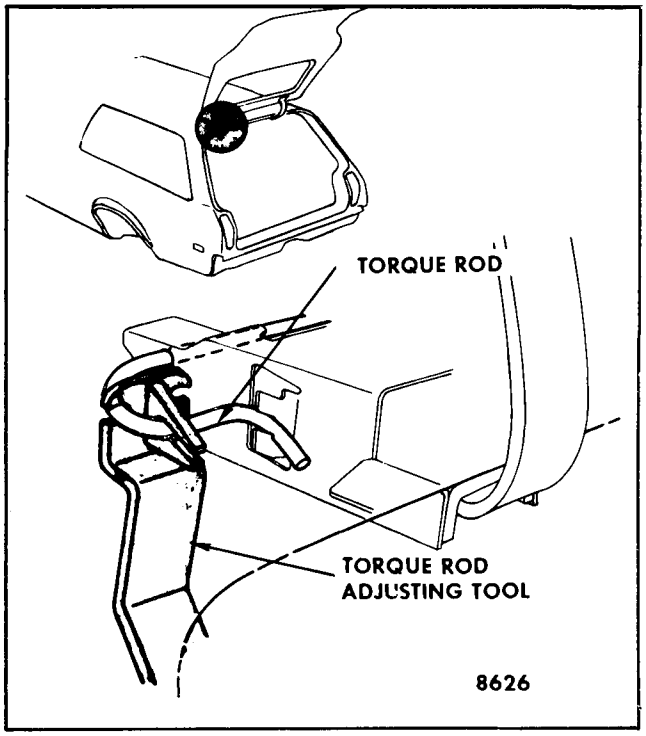


Fig. 7-96-Torque Rod Adjustment - "H-15" Styles

STATION WAGON TAILGATE - "A-35" STYLE

DESCRIPTION (Fig. 7-97)

The "A" style tailgate consists primarily of an inner panel, outer panel and a stationary glass. It is hinged at the top of the back body opening and secured by means of a striker-lock combination at the bottom of the opening. The gate is unlocked with the round key inserted into a lock cylinder at the lower center area of the tailgate outer panel. An instrument panel mounted UNLOCK button which functions only with the ignition switch in the run position and the transmission in park or neutral (park only on some models) is standard on three seat models and optional on two seat models. Once unlocked, the gate can be raised from the rear of the vehicle. On Chevrolet styles with manual transmissions, the emergency brake must be engaged before the dash mounted unlock switch can be activated.

Tubular counterbalance support assemblies attached to the sides of the tailgate provide both a opening assist and hold-open feature. An instrument panel warning lamp will be illuminated if the gate is not fully closed and the ignition switch ON.

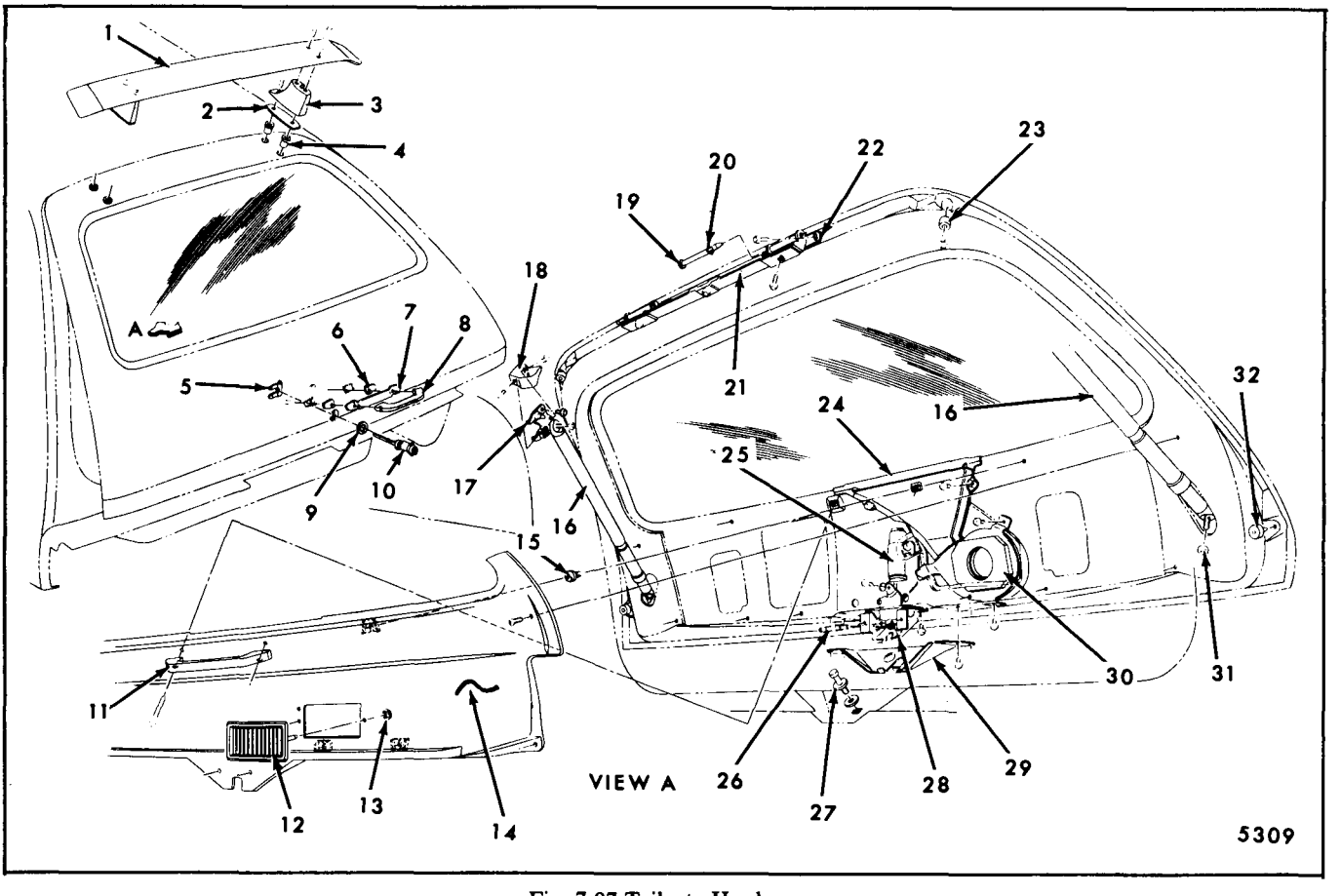


Fig. 7-97-Tailgate Hardware

1. Wind Deflector
2. Deflector Support Gasket
3. Wind Deflector Support
4. Deflector Anchor Nut
5. Lock Cylinder Retainer
6. Handle Gasket
7. Handle Escutcheon - Transfer Option Only
8. Tailgate Outside Handle
9. Lock Cylinder Gasket
10. Lock Cylinder
11. Inside Pull Handle
12. Defogger Grille
13. Grille Nut
14. Inner Cover Panel
15. Fastener
16. Counterbalance Support Assembly
17. Pillar Anchor Plate
18. Upper Support Assembly Cover
19. Hinge Pin
20. Hinge Pin Retaining Ring
21. Body Side Hinge Strap
22. Gate Side Hinge Strap
23. Upper Corner Bumper
24. Defogger Duct Assembly
25. Lock Release Solenoid
26. Warning Lamp Jamb Switch
27. Lock Striker
28. Lock Assembly
29. Lock Assembly Cover
30. Defogger Blower
31. Torque-Tight Nut
32. Lower Corner Bumper

BACK BODY OPENING WEATHERSTRIP

Description (Fig. 7-98)

A one-piece weatherstrip seals the tailgate along both sides and across the top of the back body opening. At the top of the opening, the weatherstrip is cemented into a weld-on retainer. Nylon fasteners are a component part of the weatherstrip and secure the weatherstrip along the sides of the opening by engaging piercings in the back body pillar. Serrations on the fasteners retain the fastener into the piercings and seal the openings from water entry. In addition, a bead of weatherstrip cement is applied between the outboard surface of the weatherstrip and the vertical wall of the back body pillar along each side of the back body opening as well as beneath the lower end of the weatherstrip.

To disengage nylon fasteners from the back body pillar piercings, use tool J-21104 or equivalent. This tool permits removal of the weatherstrip without fastener damage so that the weatherstrip can be reinstalled. Although replacement weatherstrip will include fasteners, individual fasteners are available as service parts.

Removal

1. Use a flat-bladed tool to break cement bond between pillar and weatherstrip along sides of back body opening.

   NOTE: Kent Products Special Release Agent or equivalent may be used to loosen and/or dissolve weatherstrip cement.

2. Disengage fasteners from pillar using tool J-21104 or equivalent.

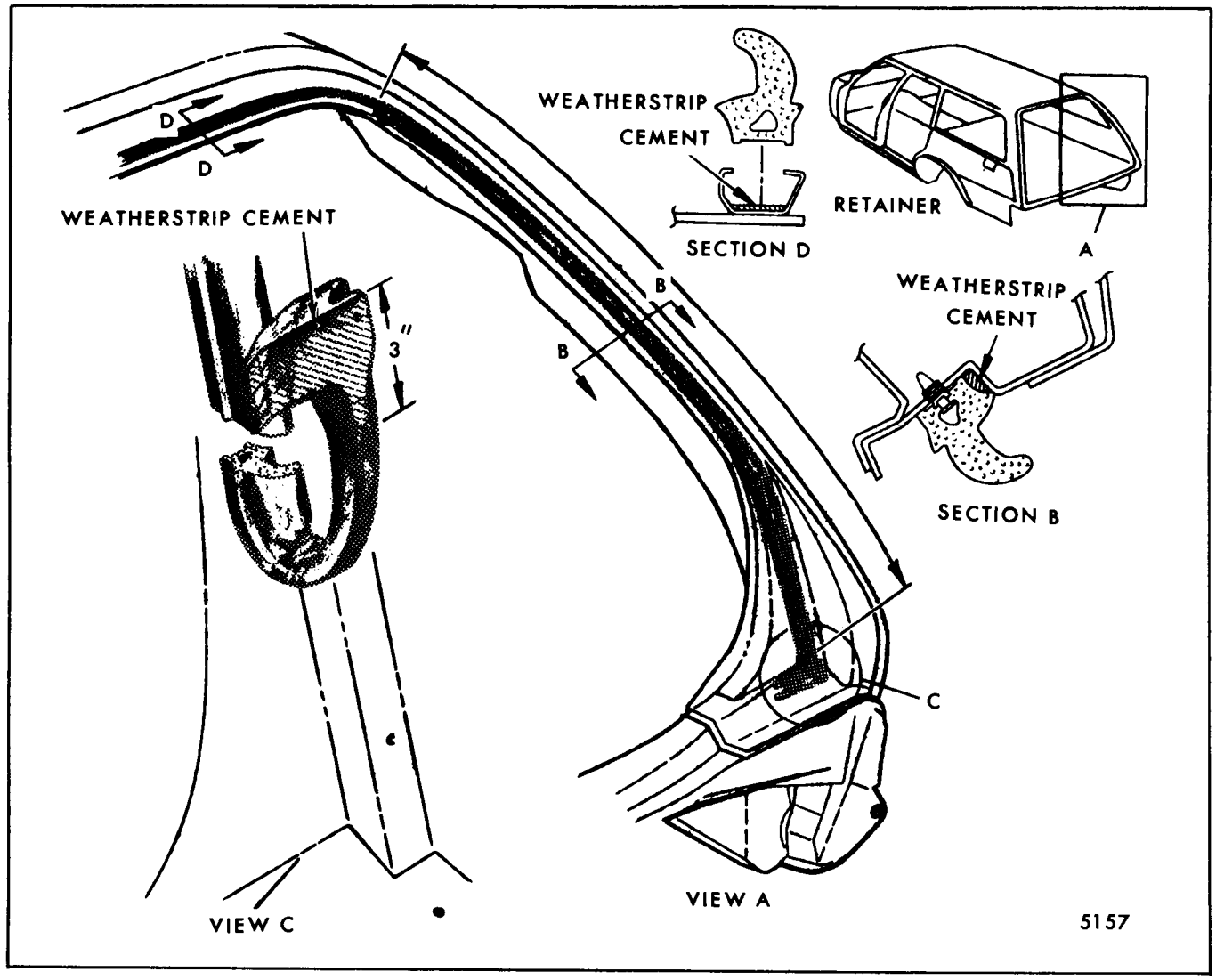


Fig. 7-98-Back Body Opening Weatherstrip Installation

3. Carefully peel weatherstrip from pillar beginning at lower corner toward retainer at upper radius and repeat on opposite side.

   NOTE: Use a flat-bladed tool to break bond of any remaining cement while peeling weatherstrip from opening (see note above).

4. Peel weatherstrip from retainer along top of opening using a flat-bladed tool to separate cement bond between weatherstrip and retainer.

Installation

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

2. Remove old weatherstrip cement from retainer and back body pillar.

3. Apply weatherstrip cement to base of retainer at top of opening.

4. Locate upper weatherstrip fasteners (each side) to uppermost piercings and insert weatherstrip into retainer.

5. Continue inserting fasteners into pierced holes down both back body pillars.

   NOTE: If required, tap nylon fasteners into piercings with a hammer and blunt caulking tool.

6. Apply cement to lower end of weatherstrip and secure by driving one loose nylon fastener (repeat at opposite side).

7. Flow a bead of weatherstrip cement between the outboard surface of the weatherstrip and vertical wall of the back body pillar along each side.

   NOTE: Although weatherstrip cement is specified at certain locations, it can be used at any point where additional retention or sealing is required. For example, if weatherstrip becomes damaged at fastener location and will not retain fastener, discard fastener and secure weatherstrip to pillar with cement.

TAILGATE LOWER WEATHERSTRIP

Description

The lower section of the back body opening is sealed by the tailgate lower weatherstrip. The seal is formed by compressing the weatherstrip to the rear end panel and to the ramped surface of the back body opening weatherstrip end details by the closing action of the tailgate. Serrated nylon fasteners are a component part of the weatherstrip and are used to secure it to the lower section of the tailgate (Fig. 7-99).

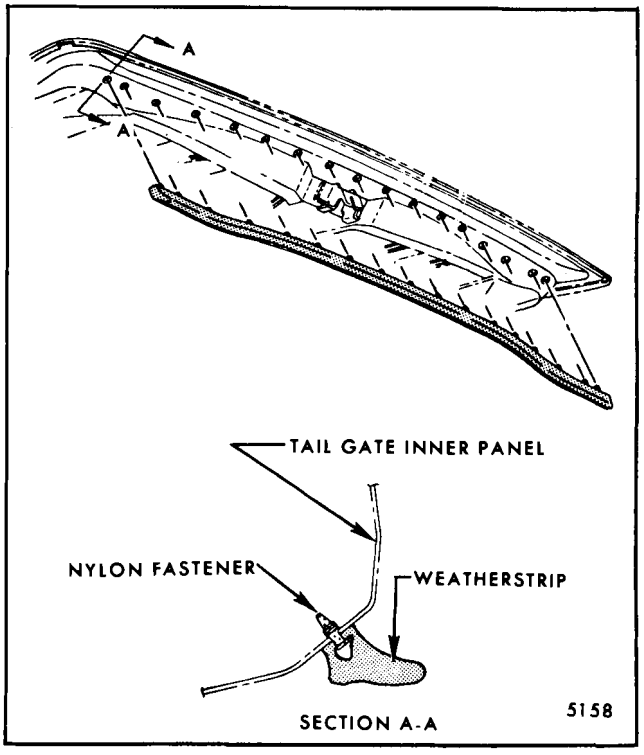


Fig. 7-99-Tailgate Lower Weatherstrip Installation

Removal and Installation

1. Using tool J-21104 or equivalent, disengage fasteners from tailgate piercings and remove weatherstrip.

2. To install, align weatherstrip (sealing lip rearward - Section A-A, Fig. 7-99) fasteners to piercings in tailgate panel and press into position.

   NOTE: If weatherstrip becomes damaged at fastener location and will not retain fastener, discard fastener and secure weatherstrip to tailgate with cement.

BACK BODY OPENING FINISHING STRIP

Description

The back body opening finishing strip is constructed of a black rubberlike material. The strip is secured to the rear edge of the quarter panel adjacent to the tailgate. It follows the upper radius of the back body opening, down along the outboard edge of the tailgate to the rear end panel. It serves to close out the gap that is required between the sides of the

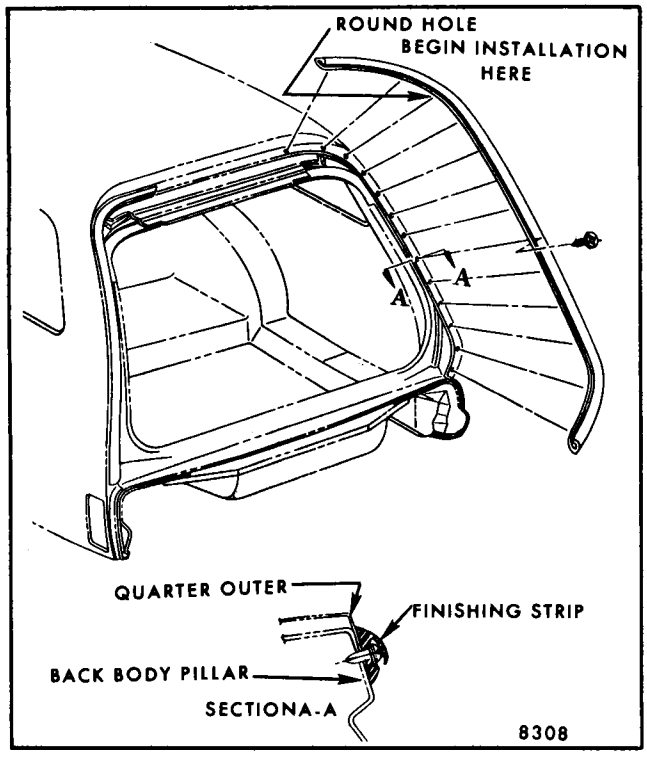


Fig. 7-100-Back Body Opening Finishing Strip

tailgate and the quarter panel. Since roof to tailgate gap is minimal, no finishing strip is required across the top of the opening. The finishing strip is designed so as to conceal the screws used in attaching it to the quarter panel (Fig. 7-100).

Removal and Installation

1. Lift outer lip of finishing strip to expose attaching screws and remove. Repeat on opposite side if required.
2. To install, reverse removal procedure.

   NOTE: Begin installation at round hole near top of finishing strip.

TAILGATE WINDOW GARNISH MOLDING

Description

A one piece plastic garnish molding is used around the tailgate window opening above the belt line (Fig. 7-101). It is secured to the tailgate inner panel with exposed screws. It is designed to conceal the tailgate window pinchweld and finish the area immediately adjacent to the glass.

Removal and Installation

1. Remove screws securing garnish molding to inner panel and remove.
2. To install, position garnish molding to overlap upper ends of tailgate inner cover panel and drive one upper screw to hold molding.
3. Finish by driving remaining screws.

TAILGATE INNER COVER PANEL

Description

The tailgate inner cover panel is used to conceal the lower tailgate window pinchweld flange and to finish the lower half of the tailgate inner panel. It is secured to the inner panel by a series of push-on fasteners and exposed screws. An inside pull handle is mounted at tailgate centerline just below the tailgate window opening (Fig. 7-101).

Removal and Installation

1. Remove screws securing inside pull handle to tailgate inner panel and remove handle (Section C-C, Fig. 7-101).
2. Remove screws from inner cover panel at outboard corners and at lock reinforcement (bottom center of tailgate). Also lower attaching screws on garnish molding if not previously removed.
3. Using trim pad remover tool J-9886 or equivalent, disengage cover panel push-on fasteners from inner panel along bottom edge of cover panel (Section D-D, Fig. 7-101).
4. Grasp cover panel along the sides and lift upwards (telescoping upper cover panel corners beneath lower ends of garnish molding) until cover panel becomes disengaged from upper fasteners just below window opening.
5. Hold cover panel away from tailgate inner panel and pull downward to remove from beneath garnish molding.
6. To install, reverse removal procedure.

   NOTE: Remove clips from inner panel holes and replace in cover. Snap cover on with clips in place, locate cover and drive screws to replace.

TAILGATE LOCK COVER

Description

The tailgate lock cover is secured by screws to the bottom of the tailgate (Fig. 7-102). Its function is to conceal and protect the tailgate lock mechanism and warning light jamb switch from accidental abuse.

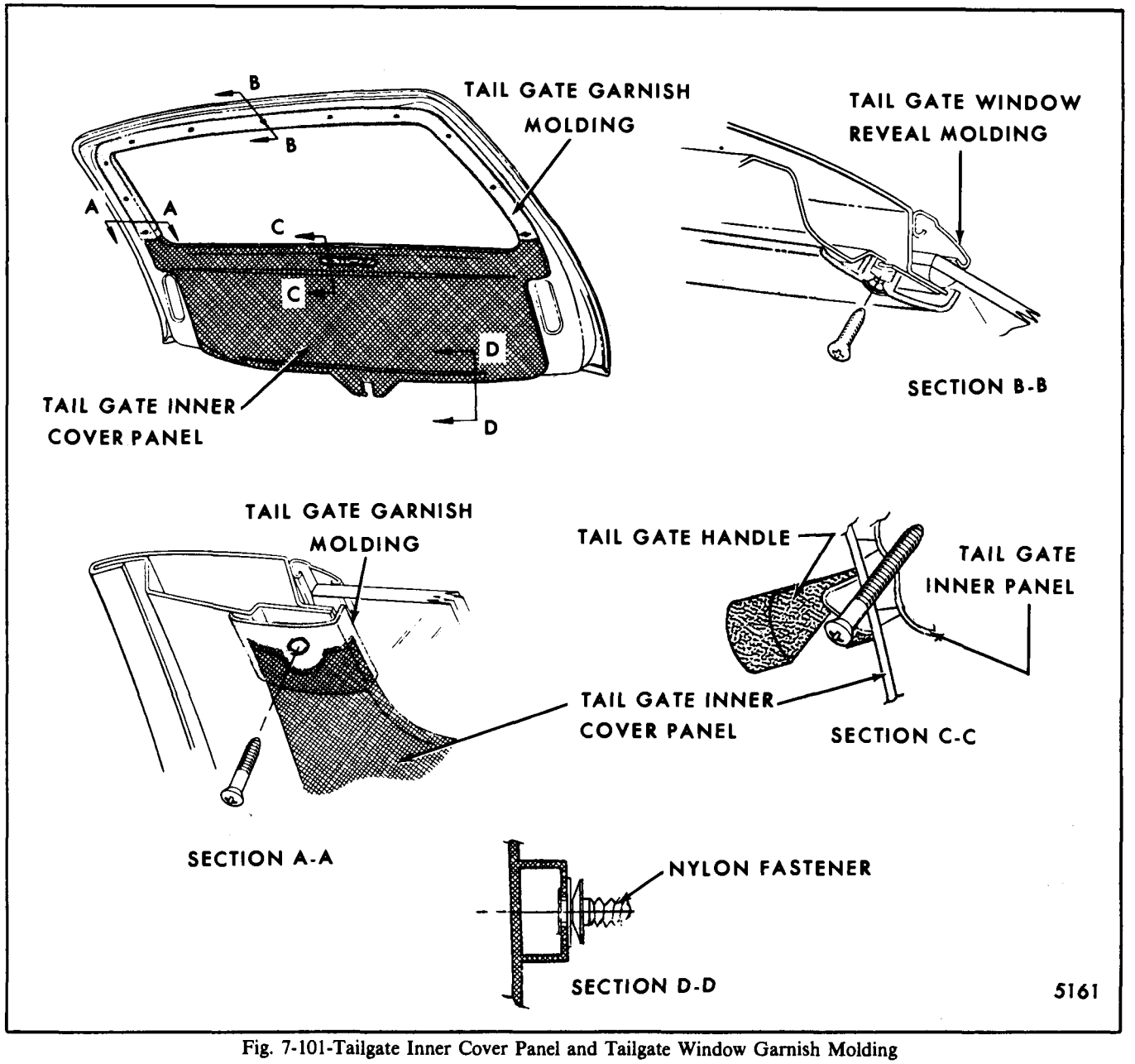


Fig. 7-101-Tailgate Inner Cover Panel and Tailgate Window Garnish Molding

Removal and Installation

1. Remove screws securing lock cover to underside of tailgate and remove cover.

2. To install cover, reverse removal procedure making sure switch insulator is in place to prevent grounding against cover.

TAILGATE OUTSIDE PULL HANDLE

Description

A zinc die-cast outside pull handle is mounted on the tailgate outer panel near the bottom center of the gate (Fig. 7-103). Its function is to afford a means of lifting the gate from the unlocked position (gate partially opened) to a point where the counterbalance support tubes can complete the opening cycle unassisted. Small indexing studs which are an integral part of the handle insure correct installation.

Removal and Installation

1. Remove tailgate inner cover panel as previously described.

2. Reaching through inner panel access hole, remove bolts securing handle to outer panel and remove.

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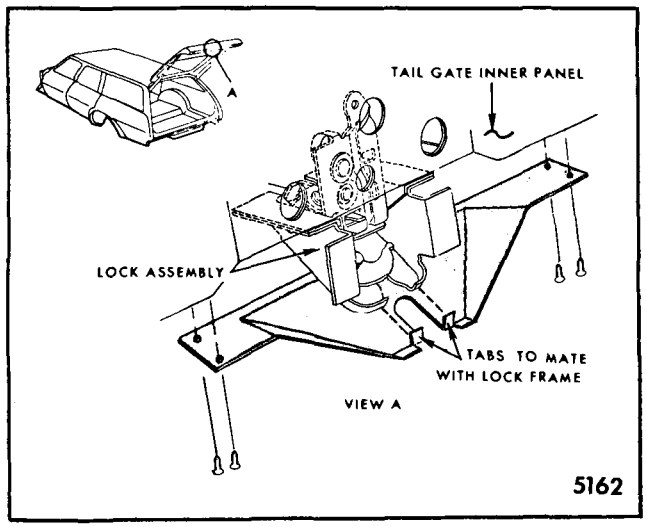


Fig. 7-102-Tailgate Lock Cover

3. To install, reverse removal procedure.

NOTE: Align escutcheon (wood grain transfer only) or gaskets with indexing studs and outer panel prior to driving bolts that secure handle.

TAILGATE LOCK CYLINDER

Description

The tailgate lock cylinder is mounted on the tailgate outer panel between the outside handle and the bottom of the gate. It is secured to the outer panel by a side loading slide-on retainer, inboard of the outer panel. The lock is actuated by the round key (Fig. 7-104).

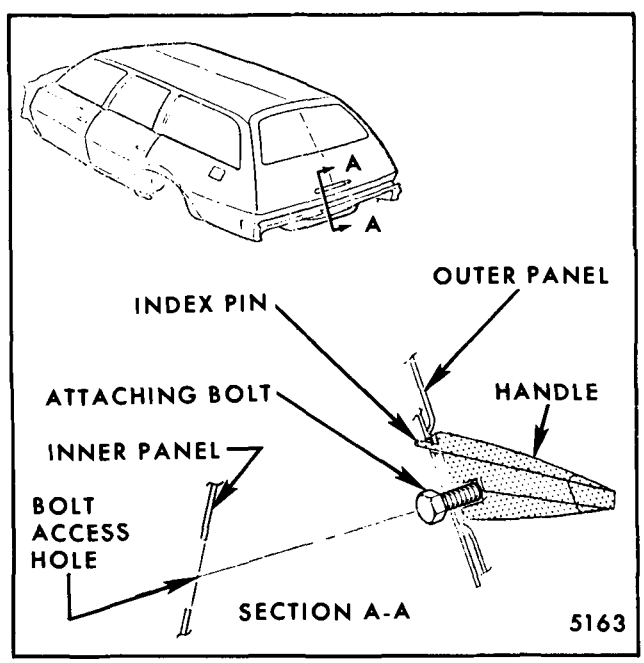


Fig. 7-103-Tailgate Outside Handle

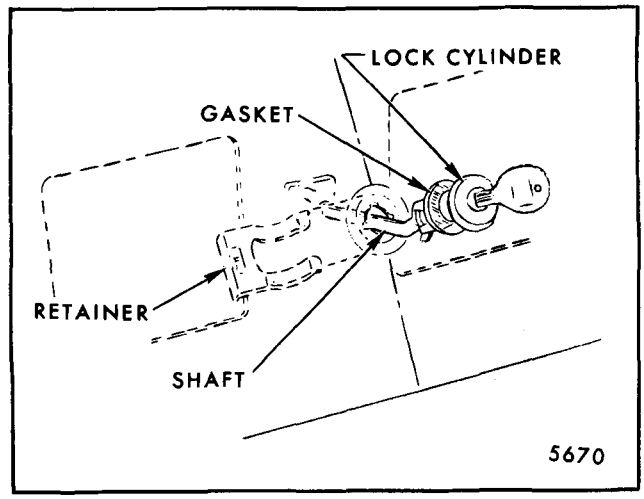


Fig. 7-104-Tailgate Lock Cylinder

Removal and Installation

1. Remove tailgate inner cover panel as previously described.
2. Reaching through large inner panel access hole, disengage retainer and remove lock cylinder.
3. To install, reverse removal procedure.

TAILGATE LOCK RELEASE SOLENOID ASSEMBLY

Description

An electric tailgate lock release solenoid is designed to permit unlocking of tailgate from a switch on the instrument panel. The switch that activates the solenoid will function only with the ignition switch in the run position and the transmission in park or neutral (park only on some models). The solenoid is bolted to the outboard surface of the tailgate inner panel and lock at two locations. It also incorporates an indexing tab which mates with a slot in the lock assembly. Unlock force of the solenoid is transferred to the lock by means of a steel cable. This cable connects the solenoid plunger to a shank and ball fitting which engages into a wedge slot on the lock release lever (Fig. 7-105).

Removal and Installation

1. Remove inner cover panel as previously described.
2. Reach through large inner panel access hole and hold solenoid assembly while removing bolts that secure it to the inner panel.
3. Rotate key in tailgate lock cylinder to unlock position and hold until solenoid is removed.

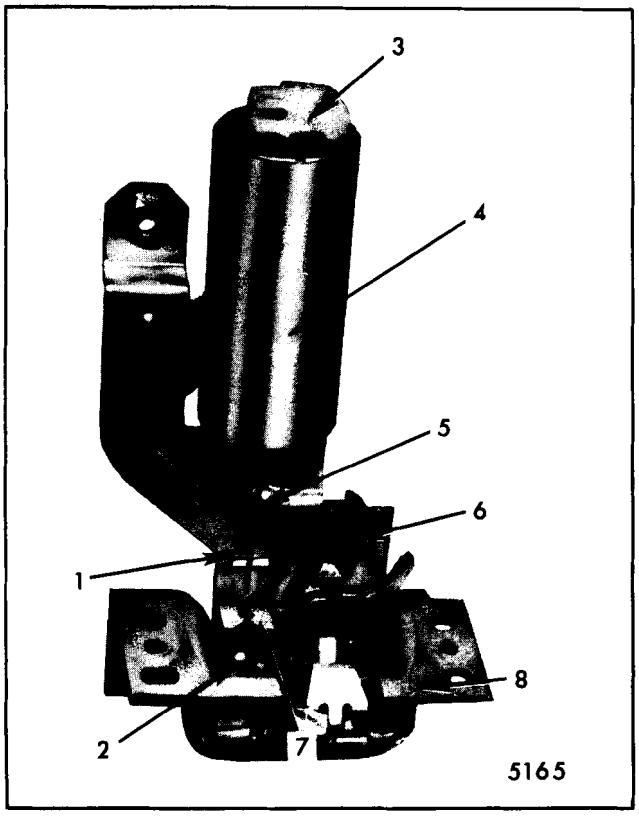


Fig. 7-105-Tailgate Lock and Lock Release Solenoid

1. Solenoid Index Tab
2. Solenoid Shank and Ball Fitting
3. Feed Wire Connector
4. Solenoid Assembly
5. Actuating Cable
6. Lock Cylinder Release Cam
7. Lock Release Lever Wedge Slot
8. Lock Assembly

NOTE: This action will hold lock release lever to the uppermost position aiding solenoid removal and installation.

4. Move solenoid assembly rearward to disengage indexing tab from lock assembly.
5. Lower solenoid assembly until shank and ball fitting is lower than wedge slot in lock release lever.
6. Move solenoid assembly toward outer panel to disengage cable from release lever wedge slot and withdraw solenoid from tailgate.
7. Release lock cylinder key and allow it to return to neutral position.
8. Disconnect solenoid feed wire from solenoid.
9. To install, reverse removal procedure.

TAILGATE LOCK ASSEMBLY

Description

The tailgate utilizes a fork bolt lock design which includes a secondary lock feature. The gate is secured in a closed position when the lock fork bolt snaps over and engages a striker bolt which is mounted to the bottom of the back body opening. The lock is unlocked by the round key at the lock cylinder on the tailgate outer panel or optionally by means of an electrically operated solenoid (Fig. 7-105).

CAUTION: *Do not attempt repairs to correct lock discrepancies. Make corrections through replacement of lock assembly.*

Removal and Installation

1. Remove screw retained lock cover from bottom of tailgate.
2. Disconnect wire harness terminal from warning light jamb switch on lock assembly (Fig. 7-106).
3. Remove two inner cover panel screws from lock assembly tabs (Fig. 7-101).

   NOTE: If equipped with electric solenoid lock release option, it will be necessary to complete inner cover panel removal and solenoid removal.

4. Remove four bolts securing lock assembly to bottom of tailgate.
5. Withdraw lock assembly from bottom of tailgate while disengaging lock cylinder actuating rod from lock.

   NOTE: Actuate lock cylinder with key to aid lock removal.

6. To install, reverse removal procedure.

   NOTE: If lock assembly is to be replaced, install new warning lamp jamb switch.

TAILGATE WARNING LIGHT JAMB SWITCH

Description

A grounding type jamb switch is mounted to the tailgate lock assembly. Its function is to complete an electrical circuit for the instrument panel warning light when the tailgate lock is in any position other than fully locked (primary lock position) provided the ignition is ON (Fig. 7-106).

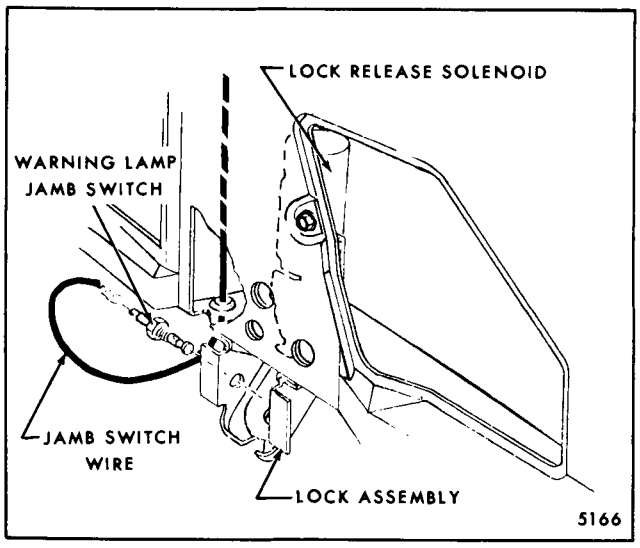


Fig. 7-106-Tailgate Warning Lamp Jamb Switch

Removal and Installation

1. Remove tailgate lock cover from bottom of gate.
2. Disconnect wire harness terminal from jamb switch.
3. Remove jamb switch and retaining nut assembly.
4. To install, reverse removal procedure making sure switch is insulated from lock cover.

   NOTE: Lock assembly must be unlocked when installing new jamb switch. Torque required to properly seat jamb switch is 9 to 15 ft-lb. Adjustment is accomplished automatically when tailgate is fully locked.

TAILGATE LOCK STRIKER

Description

The lock striker consists of a single metal bolt and washer assembly that is threaded into a tapped, floating cage plate located in the center of the rear cross bar at the bottom of the back body opening (Fig. 7-107). Also, it permits fore-aft and lateral adjustment of the bottom of the tailgate.

Removal and Installation

1. Mark position of striker on rear cross bar.
2. Insert tool J-23457 or equivalent into the star-shaped tool recess in the head of the striker bolt and remove striker.

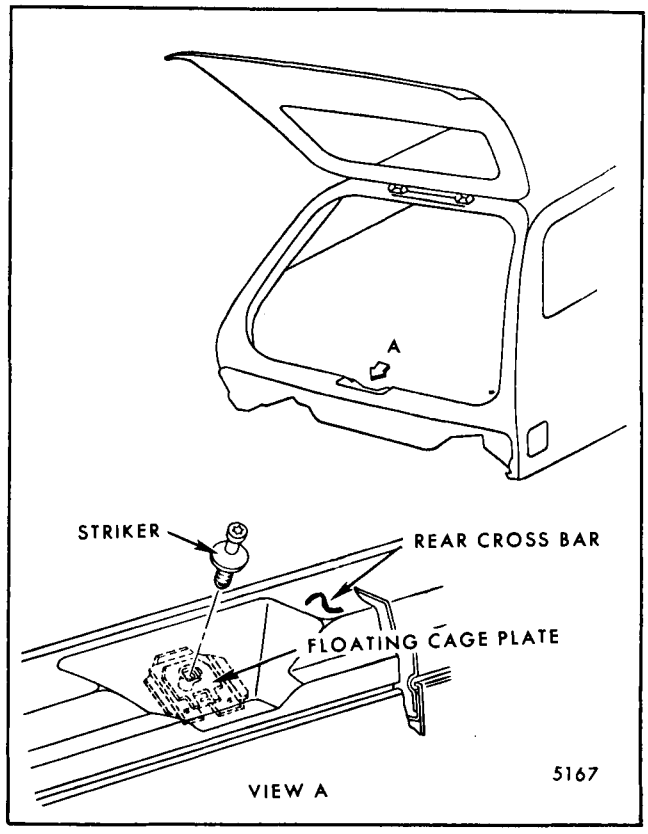


Fig. 7-107-Tailgate Lock Striker

3. To install, reverse removal procedure. Make certain striker is positioned within mark. If striker is repositioned, touch-up exposed unpainted surface on rear cross bar adjacent to striker assembly. Torque striker bolt to 34 to 46 ft-lb.

Adjustment

The following steps are performed with counterbalance support assembly and tailgate inner cover panel removed. However, if either counterbalance support assembly or inner cover panel is installed, refer to Fore-Aft and Lateral Adjustment-Bottom of Tailgate near the end of this section.

1. Close tailgate to fully locked position.
2. Using striker tool J-23457 or equivalent, loosen striker while inside of vehicle.
3. Have assistant position tailgate into proper alignment from outside of vehicle.

   NOTE: Striker must be centered in lock frame.

4. Torque striker 34 to 46 ft-lb.

5. Paint touch-up body facing around perimeter of striker bolt as required.

TAILGATE WINDOW DEFOGGER

Description - Blower Type

A blower type defogger motor is mounted on the tailgate inner panel and concealed by an inner cover panel designed for this option. Air is drawn into the blower from the passenger compartment by way of a grille which is secured to the inner cover panel. Air exhausted from the blower is forced into a duct which directs the flow of air onto the glass. Control switch for the defogger blower is located on the instrument panel.

Removal and Installation

1. Remove inner handle and inner cover panel as previously described.

NOTE: To separate grille from inner cover panel, pry push-on retainers from grille studs (Fig. 7-108).

2. Remove screws securing defogger duct assembly to inner panel at beltline and disengage duct from blower outlet nozzle to remove duct assembly.

3. Remove screws securing blower to inner panel (lower screw accessible from bottom of tailgate) and lift from inner panel access hole and disengage wire harness connector (Fig. 7-108).

4. To install, reverse removal procedure.

NOTE: Locate ground wire eyelet beneath one blower motor attaching screw.

Description - Grid Type

A heated grid type defogger tailgate glass is available on some styles. It consists of a number of element

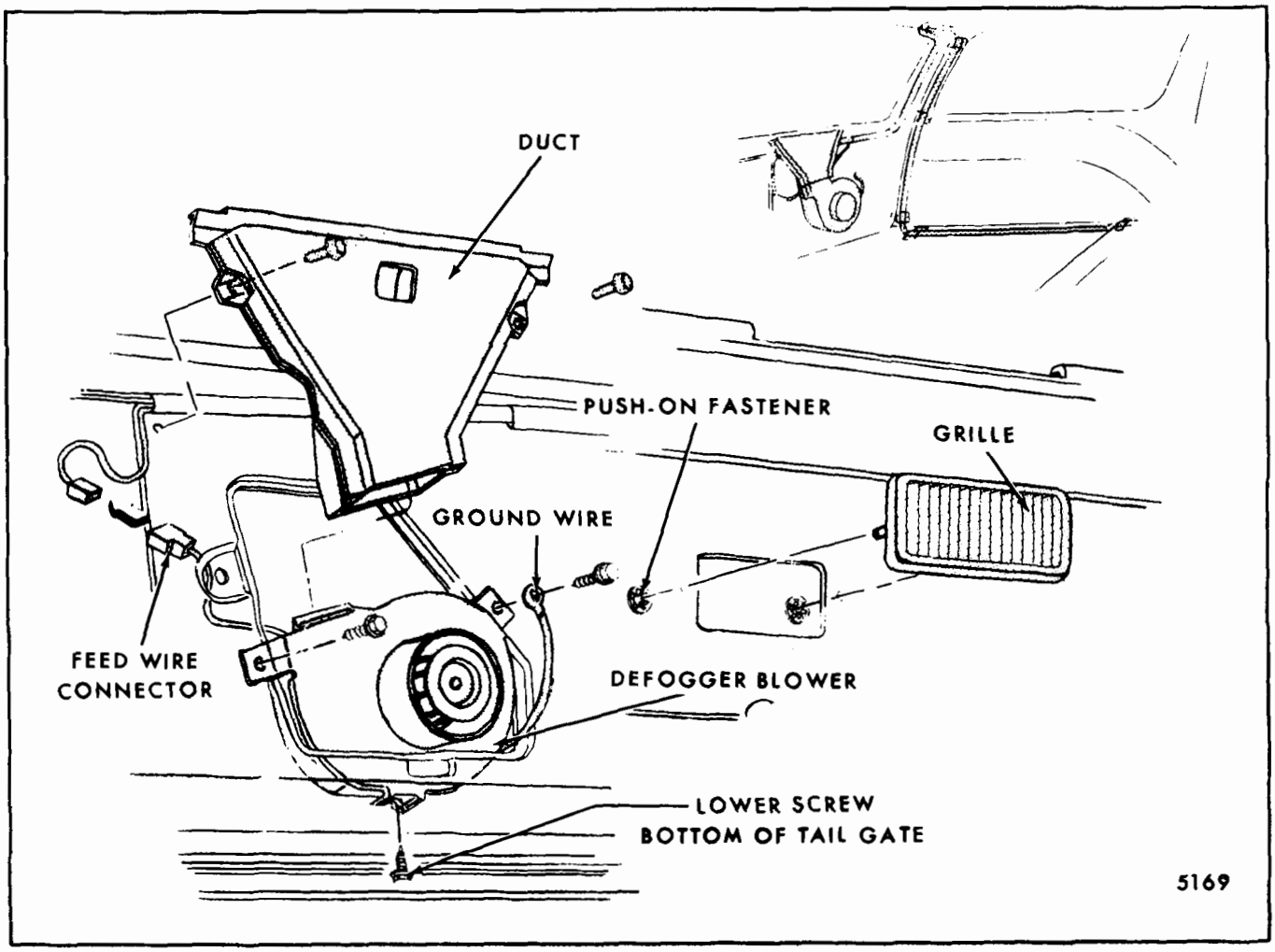


Fig. 7-108-Tailgate Window Defogger Installation

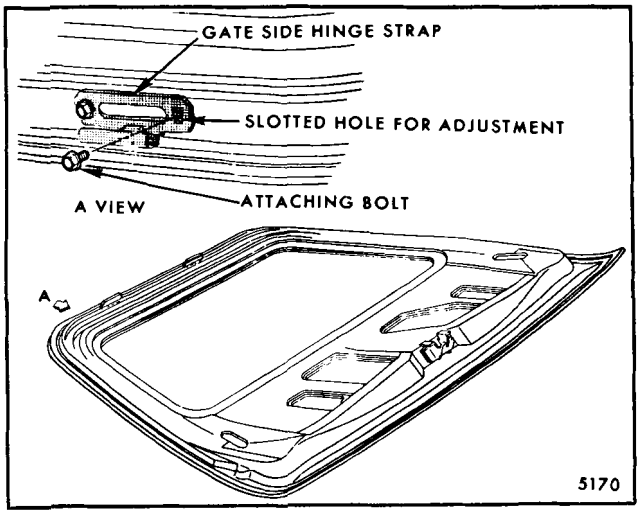


Fig. 7-109-Tailgate Hinge Assembly

lines and two vertical bus bars baked into the inside surface of a tinted tailgate glass. The ground wire lead is secured by a screw to the inner panel just below the lower right corner of the glass opening. The feed wire connector is clipped to the inner panel near the center of the gate below the glass opening. Both leads are concealed by the inner cover panel.

Refer to Section 11 for glass removal and installation.

TAILGATE ASSEMBLY

Description

The tailgate is constructed of an inner and outer panel welded together to form an assembly. The upper half of the gate consists primarily of a stationary glass. Bolt-on hinges are mounted along the upper edge of the gate with a lock at the bottom (Fig. 7-109). Tubular counterbalance support assemblies are mounted to the gate and provide opening assist.

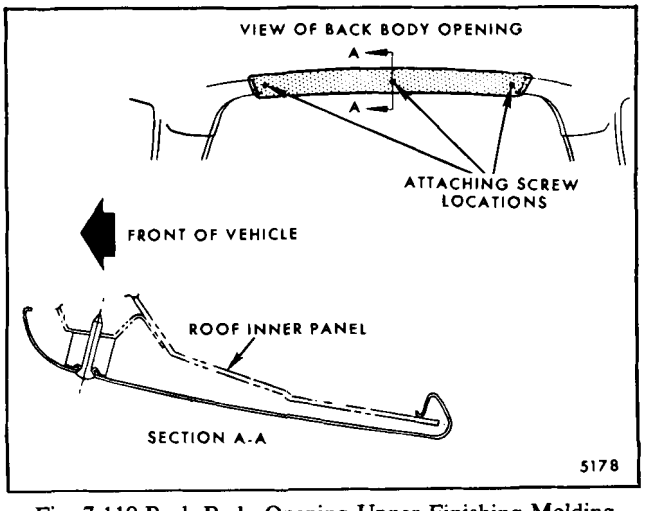


Fig. 7-110-Back Body Opening Upper Finishing Molding

Removal

1. Remove screw retained back body opening upper finishing molding (Fig. 7-110).
2. Disconnect ground cable from battery.
3. Peel tape from tailgate harness between bend-over tabs and cut wire(s) that lead into tailgate. One, two or three color coded wires may be found inside of taped loom depending on optional equipment.

   NOTE: Stagger cuts as shown in Figure 7-111 in order to prevent bulging of harness when wires are rejoined.
4. Remove screw from grommet and tube assembly clip at roof reinforcement.
5. Disengage grommet from roof reinforcement, pull harness remnant through hole and tape to inner surface of tailgate.
6. Place protective covering between upper edge of tailgate and roof panel.

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAILGATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

7. Perform following steps while helper(s) supports tailgate in full open position.
8. Remove both gate-side counterbalance support assembly attaching nuts, disengage from gate and allow support to rest against base of back body opening.
9. Use a 3/16" diameter rod, 18" long to remove hinge pins from hinge. As shown in Figure 7-112, place end of rod against pointed end of hinge pin; then strike rod firmly to shear retaining clip tabs and drive pin through hinge. Repeat operation on opposite side hinge and remove tailgate from body.

Installation

1. Install new retaining rings onto notches provided in hinge pins. Position rings so that tabs point toward head of pin as shown in Figure 7-112.
2. Place protective covering between upper edge of tailgate and roof panel.

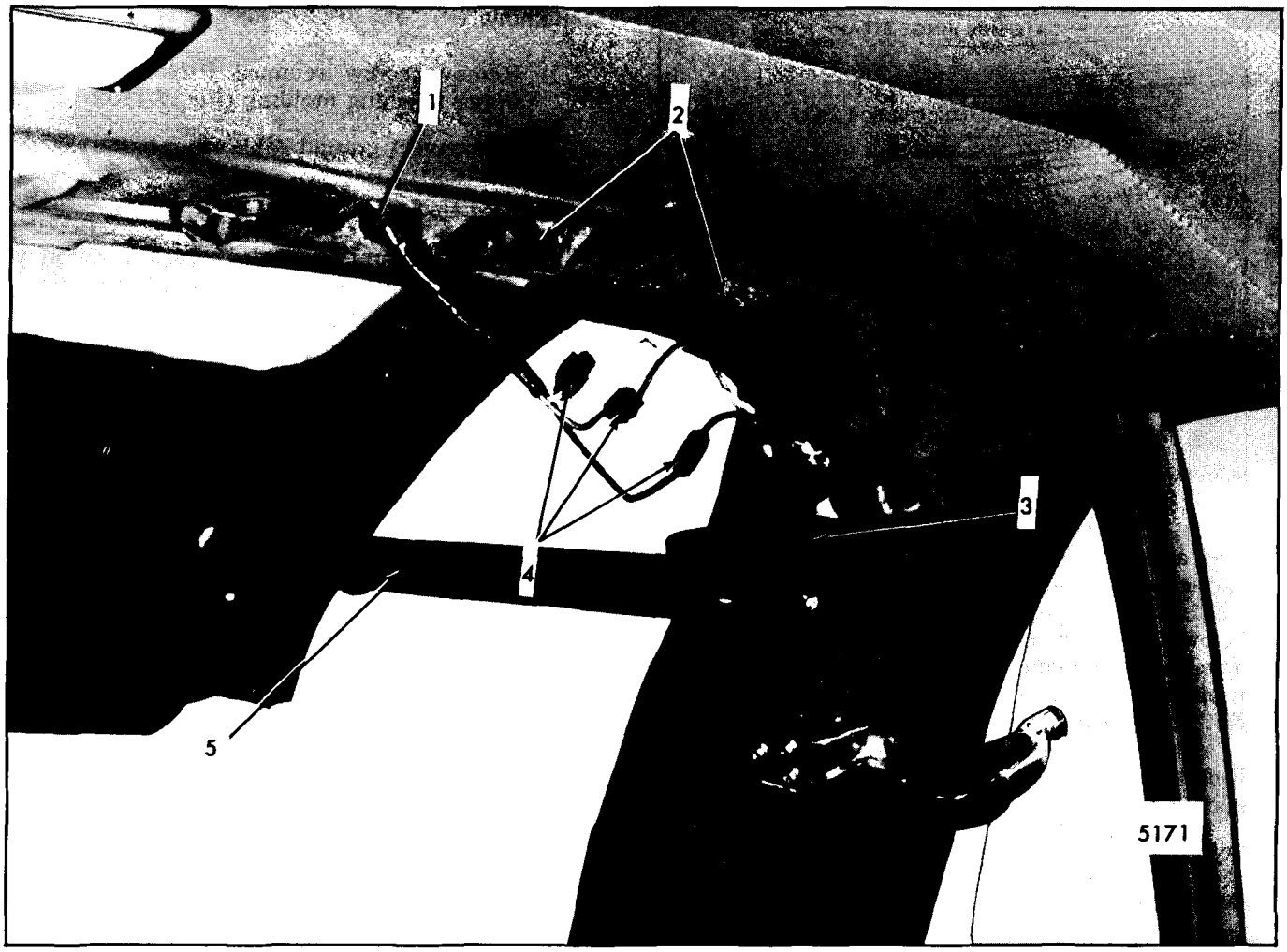


Fig. 7-111-Cut and Splice Tailgate Harness

1. Sealing Grommet
2. Weld-On Clips
3. Counterbalance Support Assembly Pillar Anchor Plate
4. Scotchlok Connectors, Taped Splice Joints or Equivalent
5. Counterbalance Support Assembly

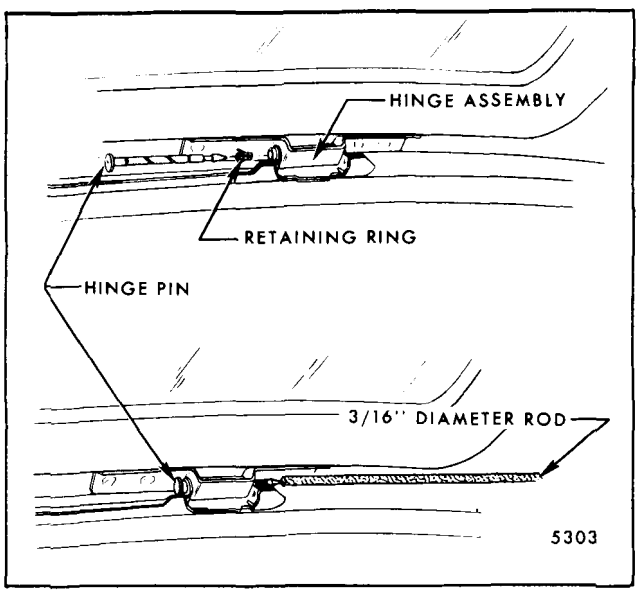


Fig. 7-112-Tailgate Hinge Pin Removal

3. With the aid of helper(s), mate tailgate hinge with body side hinge and install hinge pins with pointed end of pin facing outboard.

4. With tailgate held fully open, position counterbalance support assembly onto gate side mounting stud and torque new retaining nut from 14 to 22 ft-lb. Repeat operation for opposite side.

   NOTE: Replace torque-tight nuts, part no. 9664875 or equivalent, when installing counterbalance support assembly. If not available, use previously removed attaching nuts after applying retaining adhesive, Loctite/75, part no. 1051343 or equivalent, as directed on package.

5. Remove protective cover from roof panel.

6. Apply weatherstrip cement to grommet flange and seat into hole in roof reinforcement.

7. Secure grommet and tube assembly clip to roof reinforcement.

8. Splice tailgate harness wire(s) together or fasten with Scotchlok connector or equivalent, tape securely and retain under weld-on bend over tabs.

   NOTE: One, two or three color coded wires may be included in harness loom depending on optional equipment in tailgate.

9. Reconnect battery ground cable and check operation of circuits involved in wire splice.

10. Position back body opening upper finishing molding to roof and secure with screws.

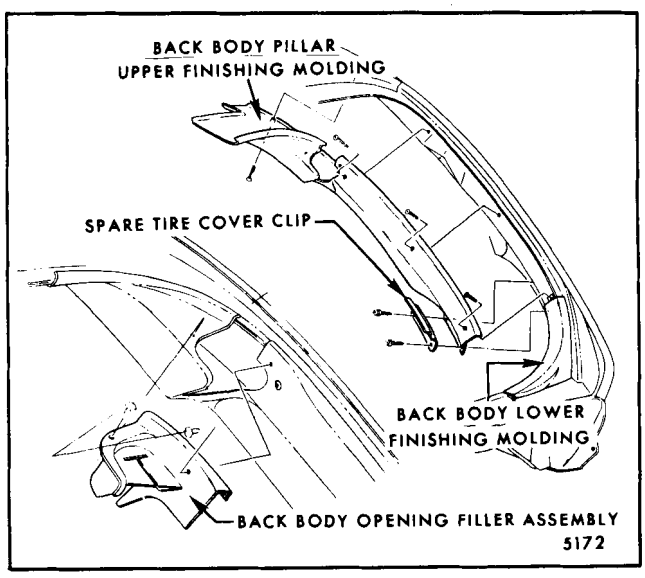


Fig. 7-113-Back Body Pillar Upper Finishing Molding - Right Side Shown

TAILGATE COUNTERBALANCE SUPPORT ASSEMBLY

Description

The counterbalance support assembly is a spring loaded, telescoping tubular device that is utilized to assist tailgate opening effort. Two springs are securely retained into each unit. A heavy quick response spring is used on initial opening so that gate will clear the lock when the key or solenoid is actuated. The other spring is used to assist the tailgate through completion of the opening cycle.

A circular spring clip mounted near the center of the outer tube provides the hold-open feature. It is actuated when the counterbalance support assembly is fully extended (tailgate fully open) and overcome as the tailgate is pulled into the closing cycle. Up stop is provided within each assembly.

A snap-in, nylon type grommet is used at each counterbalance support assembly end. Special grommet composition eliminates need for lubrication.

No adjustment is provided in the counterbalance support assembly. A high output assembly using heavier springs is available and used when optional equipment (lock solenoid, defogger, etc.) is specified for Chevrolet only. The standard output counterbalance support assembly used on Pontiac, Oldsmobile and Buick is identified by a red nylon grommet while the high output assembly is identified by a yellow grommet. Both standard and high output supports are to be used in pairs.

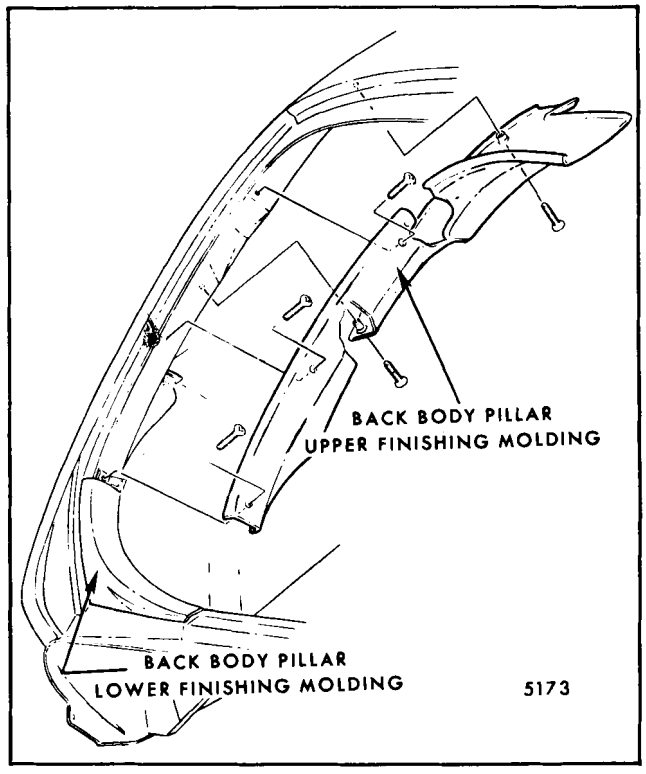


Fig. 7-114-Back Body Pillar Upper Finishing Molding - Left Side Shown

WARNING: DO NOT ATTEMPT TO DISASSEMBLE COUNTERBALANCE SUPPORT ASSEMBLY UNDER ANY CIRCUMSTANCES BECAUSE THE SPRINGS CONTAINED THEREIN ARE ALWAYS UNDER COMPRESSION AND RELEASE OF SPRING MAY RESULT IN PERSONAL INJURY.

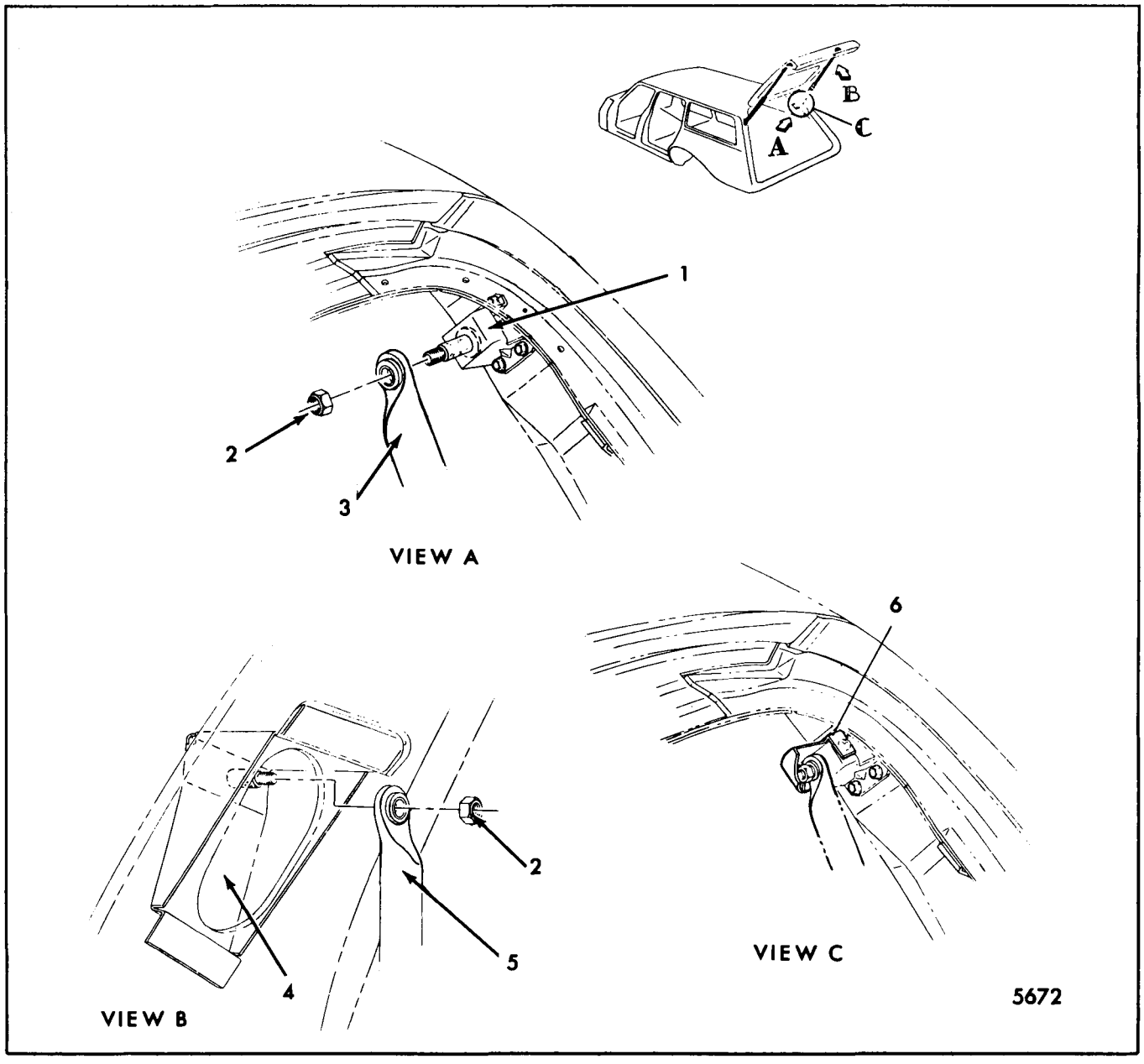


Fig. 7-115-Counterbalance Support Assembly Attachment

1. Back Body Pillar Anchor Plate
2. Torque-Tight Nuts
3. Counterbalance Support Assembly - Large Diameter (Outer) Tube
4. Tailgate Anchor Plate
5. Counterbalance Support Assembly - Small Diameter (Inner) Tube
6. Counterbalance Support Assembly Upper Cover

Removal and Installation

1. Remove back body opening filler assembly attaching screws and disengage filler assembly from back body pillar upper finishing molding (Fig. 7-113).

2. Remove screws securing back body pillar upper finishing molding and disengage pillar molding from back body pillar (Figs. 7-113 and 7-114).

NOTE: It may be necessary to loosen adjacent moldings to remove and/or install pillar molding.

3. Remove pillar anchor plate cover screws and slide cover from pillar and/or plate (Fig. 7-115).

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAILGATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

4. While helper supports gate in fully open position, remove counterbalance support assembly attaching nut and disengage from tailgate and pillar anchor plate (Fig. 7-115).

5. Refer to Figure 7-116 for disposal procedure.

6. To install reverse removal procedure. Torque counterbalance support assembly attaching nuts from 14 to 22 ft-lb.

   NOTE: Replace torque-tight nuts, part no. 9664875 or equivalent, when installing counterbalance support assembly. If not available, use previously removed attaching nuts after applying retaining adhesive Loctite/75, part no. 1051343 or equivalent, as directed on package. Outer tube of counterbalance support assembly (black) is mounted to the back body pillar anchor plate.

COUNTERBALANCE SUPPORT ASSEMBLY PILLAR ANCHOR PLATE

Description

A shoulder bolt welded onto a bracket forms the anchor plate. The anchor plate is bolted to back body pillar near the roof at each side of the opening (View A, Fig. 7-115). A metal cover is secured by screws to the pillar anchor plate after the counterbalance support assembly is attached. The function of the anchor plate cover is to entrap the counterbalance support assembly if the anchor plate shoulder bolt shears or attaching torque-tight nut works loose (Fig. 7-115).

Removal and Installation

WARNING: DO NOT ATTEMPT TO REMOVE OR LOOSEN COUNTERBALANCE SUPPORT ASSEMBLY ATTACHING NUTS WITH TAILGATE IN ANY POSITION OTHER THAN FULLY OPEN AS PERSONAL INJURY MAY RESULT.

1. Remove tailgate counterbalance support assembly as previously described.

2. Remove bolts securing pillar anchor plate to back body pillar and remove. Anchor plate shim is secured with same bolts.

3. To install, reverse removal procedure.

TAILGATE HINGE ASSEMBLY

Description

The tailgate hinge assembly consists primarily of a bolt-on body side hinge strap and two bolt-on gate side hinge straps. Hinge pins are used to join the gate and body side hinge straps together (Figs. 7-117 and 7-109). Retaining clips are used to secure the hinge pins. The body side hinge strap is adjustable fore-aft and laterally. The gate-side hinge strap is adjustable up-down to accomplish flush fit at top of tailgate to roof panel.

Removal and Installation

1. Remove tailgate as previously described. Gate side hinge is removed as a bench operation.

2. Mark location of hinge strap to aid installation.

3. Remove screw retained back body opening upper finishing molding - body side hinge strap only.

4. Remove hinge strap attaching bolts and remove hinge strap.

5. To install, reverse removal procedure.

   NOTE: Prior to installation, apply heavy-bodied sealer to surface of hinge that contacts roof reinforcement, also underside of bolt and washer.

Adjustment

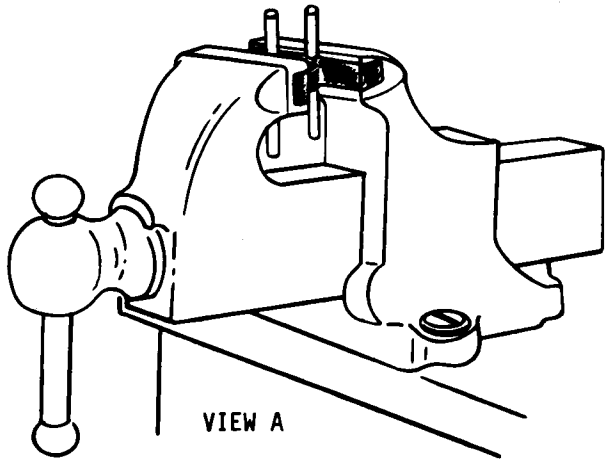
Prior to installing counterbalance support assemblies to tailgate, the body side hinge should be adjusted. However, adjustment may be performed after the counterbalance support assemblies have been attached to the tailgate by referring to Tailgate Alignment at the end of this section.

1. While inside the rear of the vehicle and the tailgate closed to the fully locked position, loosen three body-side hinge strap attaching bolts.

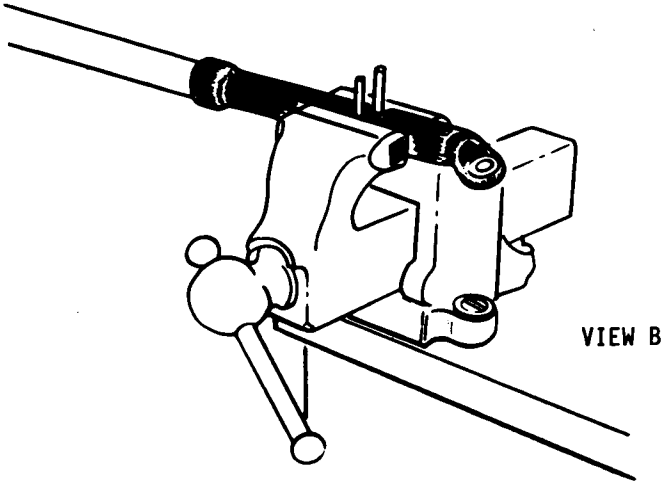
   NOTE: Attaching bolt washers incorporate locking barbs, therefore, it may be necessary to pry washer from roof reinforcement in order to permit relocation of hinge strap assembly.

2. Have helper outside of vehicle position tailgate in opening. Top of tailgate must be 1/4" from roof panel. When counterbalance support

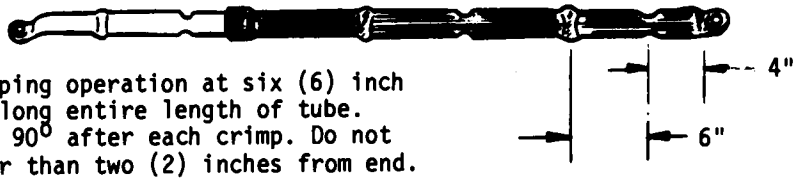
WARNING: DO NOT ATTEMPT TO DISASSEMBLE COUNTERBALANCE SUPPORT ASSEMBLY UNDER ANY CIRCUMSTANCES BECAUSE THE SPRINGS CONTAINED THEREIN ARE UNDER COMPRESSION AND RELEASE OF SUCH A SPRING MAY RESULT IN PERSONAL INJURY.



1. Tape two (2) pieces of 1/4 inch diameter steel rod, approximately four (4) inches long, to the jaws of a bench vise (View A).



2. Starting at black end, place counterbalance support in vise and crimp approximately four (4) inches in from end (View B). Depth of each crimp should be approximately 1/4".



3. Repeat crimping operation at six (6) inch intervals along entire length of tube. Rotate tube 90° after each crimp. Do not crimp closer than two (2) inches from end.

4. Discard counterbalance support assembly.

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Fig. 7-116-Disposal Procedure for Replaced Counterbalance Support Assembly

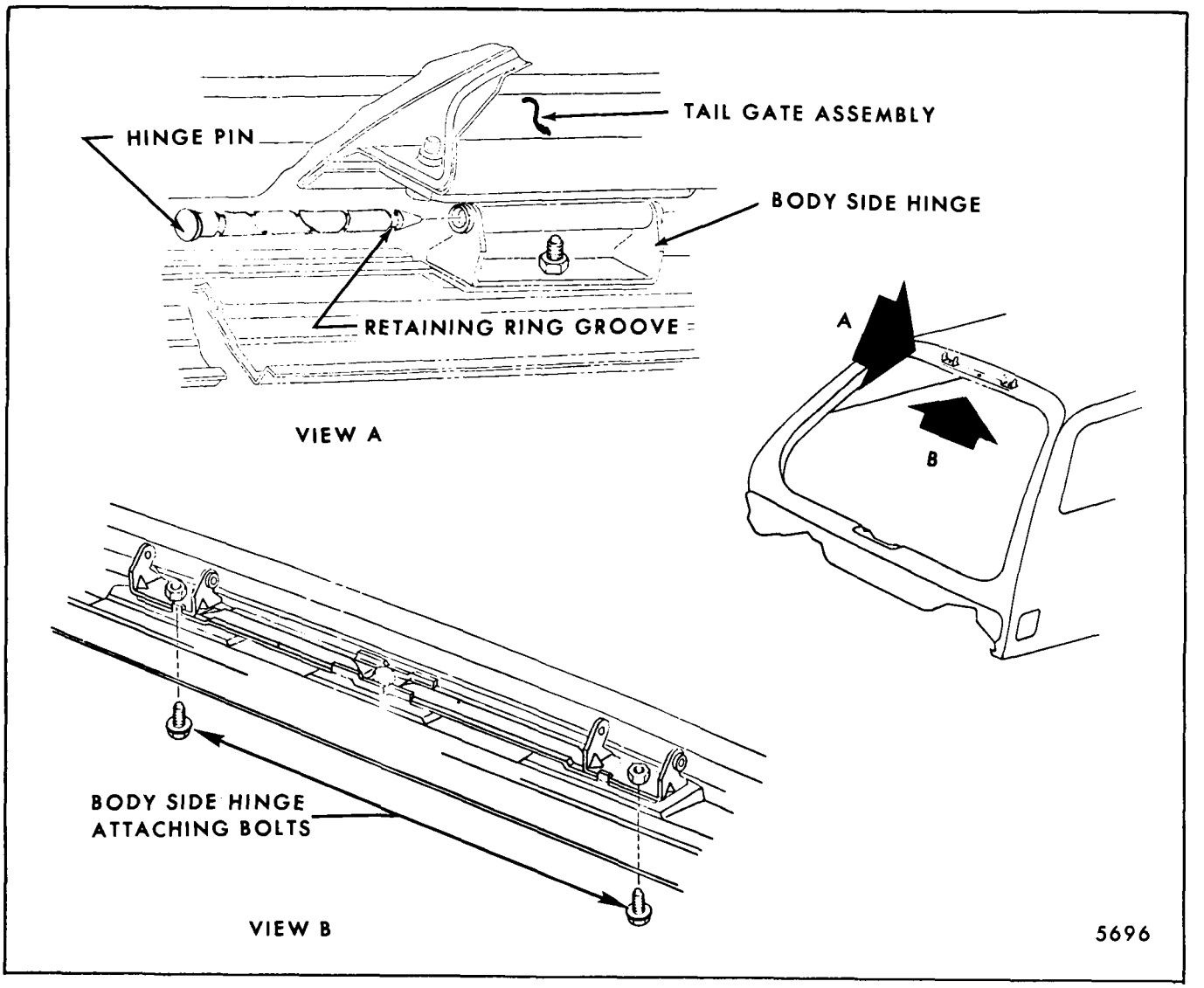


Fig. 7-117-Body Side Hinge Attachment

assemblies are installed tailgate will move slightly rearward resulting in a proper gap of 5/16" at roof panel.

3. Torque body-side hinge strap attaching bolts 7 to 8 ft-lb.

4. Paint touch-up perimeter of hinge strap as required.

NOTE: Refer to Up-Down Adjustment at rear of this section for gate side hinge adjustment.

TAILGATE ALIGNMENT

Description

The tailgate is adjustable up-down, fore-aft and laterally within its body opening. All adjustments are performed at the hinge straps (both gate and body side) and at the lock striker.

The gate-side hinge strap and lock striker are accessible without trim removal. Only the back body opening upper finishing molding need be removed for body side hinge strap accessibility.

CAUTION: *Do not loosen body-side hinge strap attaching bolts with tailgate in any position other than fully open because force exerted by counterbalance support assemblies will cause hinge strap to lunge rearward into the extreme adjusting slot.*

Fore-Aft and Lateral Adjustment - Top of Tailgate

1. With tailgate closed, determine amount of adjustment required.

2. Open tailgate and mark perimeter of body-side hinge strap.

3. Remove screw retained back body opening upper finishing molding.

4. Loosen both body-side hinge strap attaching bolts located beneath finishing molding.

   NOTE: Attaching bolt washers incorporate locking barbs; therefore, it may be necessary to pry washer from roof reinforcement in order to permit relocation of hinge strap assembly.

5. Use wooden block or similar caulking tool and mallet to shift hinge strap to desired location.

6. Securely tighten both hinge strap attaching bolts.

7. Slowly close tailgate to fully locked position. If lock does not engage with striker because of new tailgate position, relocate striker.

8. Check tailgate position in opening. If further adjustment is required, repeat preceding steps (Fig. 7-118).

9. Torque hinge strap attaching bolts 7 to 9 ft-lb.

10. Install back body opening upper finishing molding.

11. Touch-up painted surface as required.

Fore-Aft and Lateral Adjustment - Bottom of Tailgate

1. With tailgate closed, determine amount of adjustment required.

2. Open tailgate and mark perimeter of striker washer.

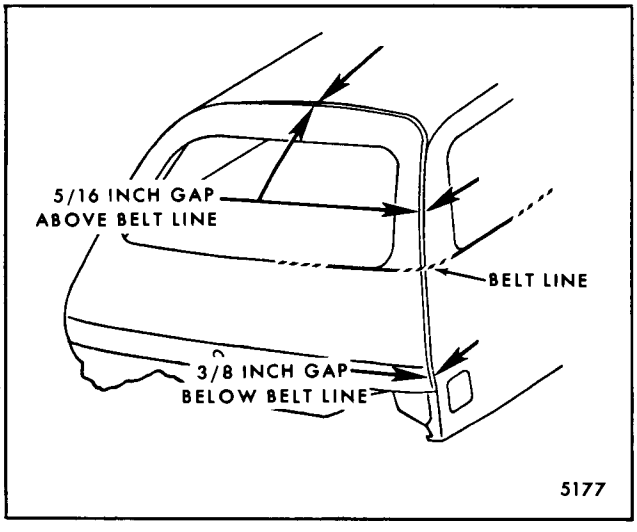


Fig. 7-118-Tailgate Alignment

3. Using striker bolt tool J-23457 or equivalent, loosen striker and relocate as required.

   NOTE: Striker must be centered in lock frame.

4. Securely tighten striker bolt and close gate to check alignment. Repeat preceding steps if required (Fig. 7-118).

5. Open tailgate and torque striker bolt 34 to 46 ft-lb.

6. Remove mark and touch-up with paint perimeter of striker washer as required.

Up-Down (Flush) Adjustment - Top of Tailgate to Roof Panel

1. With tailgate closed, determine amount of adjustment required (above or below flush).

2. Open tailgate and mark perimeter of gate-side hinge strap(s).

3. Loosen two gate-side hinge strap bolts and shift gate on hinge. Repeat on opposite gate-side hinge if required.

4. Securely tighten hinge bolts and close to check alignment. Repeat preceding steps if required.

5. Open tailgate and torque hinge bolts 7 to 9 ft-lb.

TAILGATE LUBRICATION

Description

All mechanical components that have relative motion with other parts are lubricated during assembly. If additional lubrication is required, the specified materials or their equivalents as stated here should be used.

The following tailgate components should be lubricated when required with a thin coat of white lithium soap grease (Fiske Bros. Lo-Temp Lubriplate No. 777 or equivalent).

1. Tailgate lock fork bolt.

2. Tailgate hinge pins.

Counterbalance support assembly grommets are constructed of a special material that does not require lubrication.

SINGLE ACTING TAILGATE - "A-80" STYLE

DESCRIPTION

The single acting tailgate for pick-up delivery styles is fabricated primarily of an outer and an inner panel with reinforcements provided at critical attachment locations. An opening in the inner panel allows access to the lock remote control and remote control rods. The tailgate is unlatched by a remote control handle located at top center of the outer panel and is supported in the open (horizontal) position by a support cable on each side of the gate.

TAILGATE INNER PANEL ACCESS HOLE COVER

The single acting tailgate employs an inner panel access hole cover which is secured to the inner panel entirely by screws (Fig. 7-119). The cover panel may be removed with the tailgate in either the open or closed position.

Removal and Installation

1. Remove screws securing cover panel to inner panel and remove panel.
2. To install, reverse removal procedure.

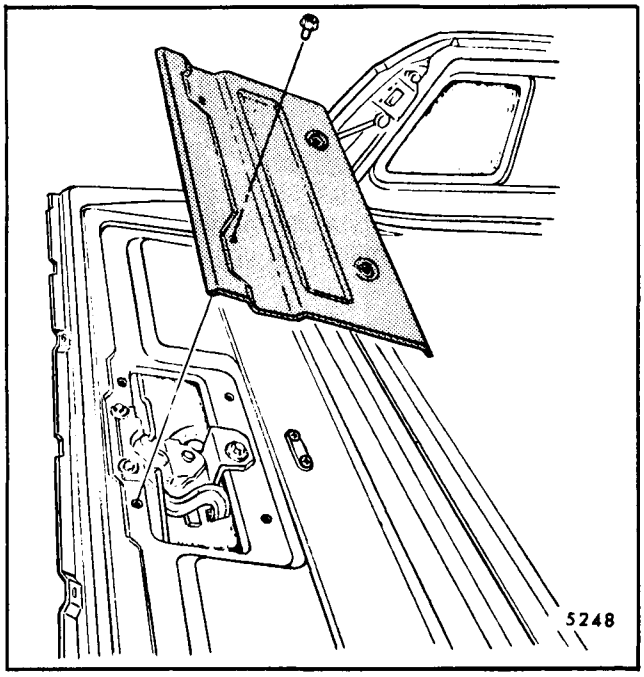


Fig. 7-119-Tailgate Inner Panel Access Hole Cover

TAILGATE HINGE ASSEMBLY

Removal and Installation

1. Open tailgate and provide support on side from which hinge is to be removed. Mark location of hinge on tailgate and body.
2. Remove tailgate hinge attaching bolts from tailgate and body and remove hinge (Fig. 7-120).
3. To install, reverse removal procedure. Prior to installation, apply a coat of heavy-bodied sealer to surface of hinge that contacts body and tailgate.
4. Check alignment of tailgate in body opening and adjust as required (Refer Adjustments - Tailgate Assembly).

TAILGATE SUPPORT CABLE(S)

Removal and Installation

1. Support tailgate in open position.
2. Disengage support cable return spring and remove cable attaching bolts on tailgate and body pillar (Fig. 7-121). Remove support cable.
3. To install, reverse removal procedure.

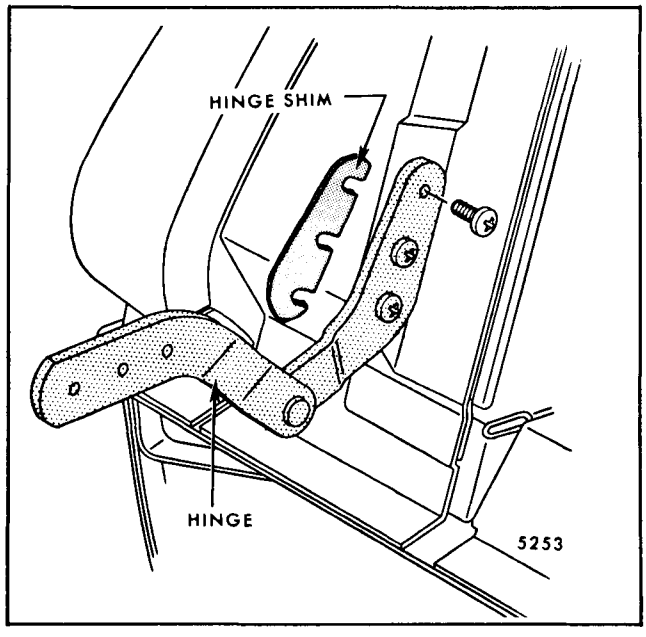


Fig. 7-120-Tailgate Hinge Assembly

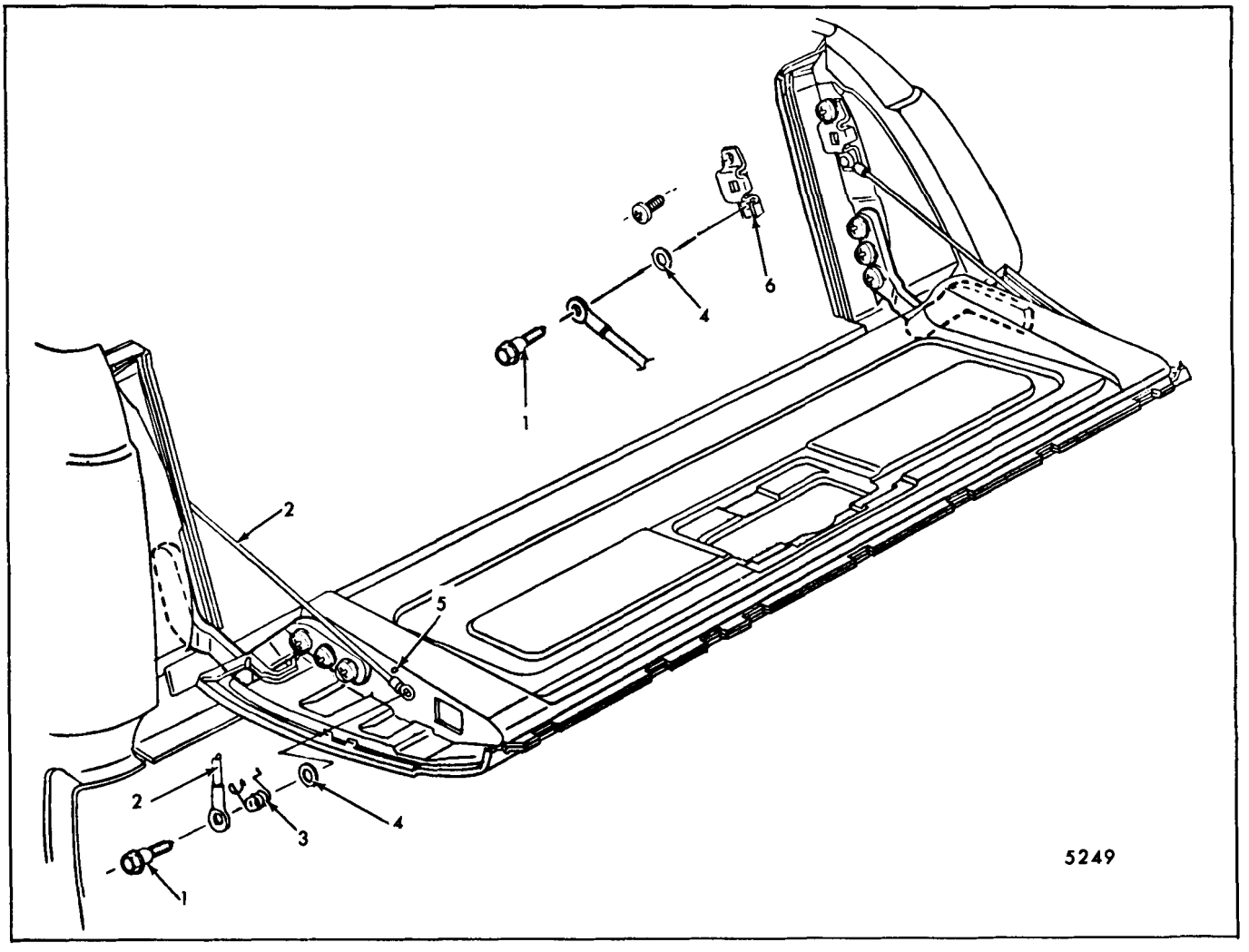


Fig. 7-121-Tailgate Support Cable Attachment

1. Support Cable Shoulder Bolt
2. Support Cable
3. Support Cable Assist Spring
4. Support Cable Washer
5. Assist Spring Anchor Hole
6. Latch Striker

TAILGATE ASSEMBLY

Removal and Installation

1. Open tailgate and support in horizontal position.
2. Disengage support cable return springs and remove support cable attaching bolts on tailgate (Fig. 7-121).
3. With the aid of a helper, remove right and left tailgate hinge to gate attaching bolts and remove tailgate from body.
4. To install, reverse removal procedure. Prior to installation, apply a coat of heavy-bodied sealer to surface of hinges that contact tailgate.

Adjustments

Up-down and fore-aft adjustment is provided at hinge to gate attaching bolts. Side to side adjustment is achieved at hinge to body attaching bolts with spacer(s) (Fig. 7-120). Use spacer(s) provided or substitute with 1/2" inside diameter plated flat washer 1/16" thick at each hinge attaching bolt location on affected side.

NOTE: Following any adjustment of the tailgate, check engagement of latches to strikers as described in Tailgate Latch Striker Adjustment.

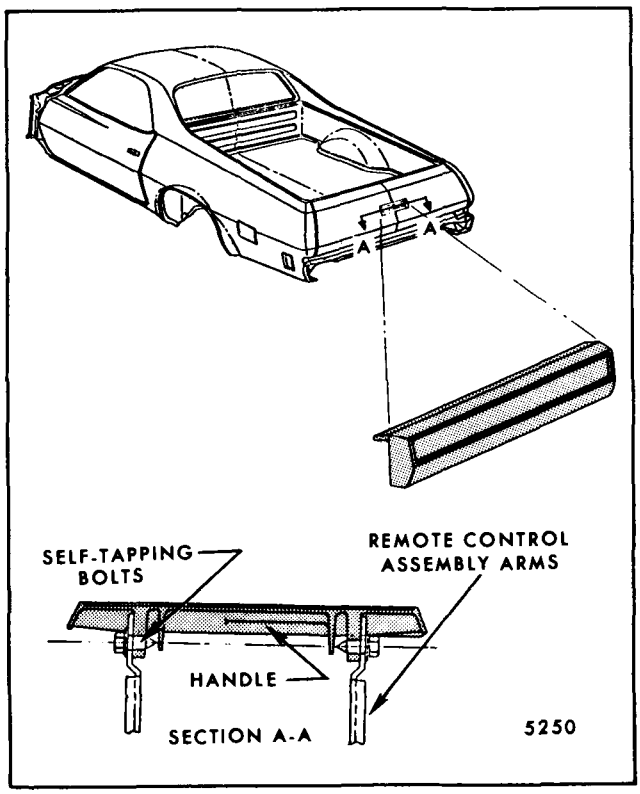


Fig. 7-122 - Tailgate Outside Handle

TAILGATE LOCK REMOTE CONTROL ASSEMBLY

Removal and Installation

1. Remove tailgate inner panel access hole cover (Fig. 7- 119).
2. Disconnect remote control-to-latch rods at remote assembly by sliding rod attaching clips out of engagement (Fig. 7-124).
3. Remove two self-tapping bolts securing outside pull handle to lock remote control assembly and remove handle (Fig. 7-122).
4. Remove remote control attaching bolts and withdraw assembly from tailgate. Refer to Figure 7-123 showing hardware components removed from tailgate.
5. To install, reverse removal procedure.

Adjustments

To assure simultaneous action of right and left latches, loosen remote control assembly bolts, position assembly so that remote arms contact latch rod rotors and tighten remote control bolts (Fig. 7-124).

TAILGATE LATCH ASSEMBLY - RIGHT OR LEFT

Removal and Installation

1. Remove tailgate inner panel access hole cover (Fig. 7- 119).
2. Disengage remote control-to-latch rods at remote control assembly (Fig. 7-124).
3. Remove bolts securing latch assembly to tailgate and withdraw latch with control rod attached from gate. Remove control rod from latch, if required, as a bench operation (Fig. 7-124).
4. To install, reverse removal procedure.

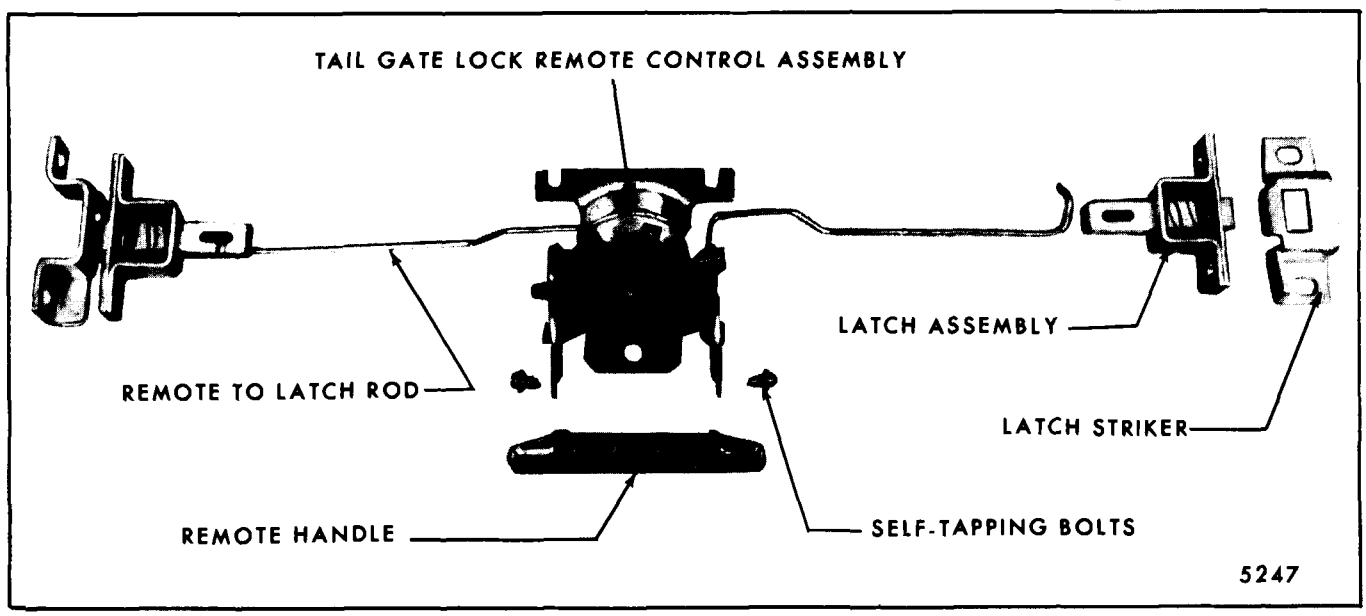


Fig. 7-123-Tailgate Hardware Components

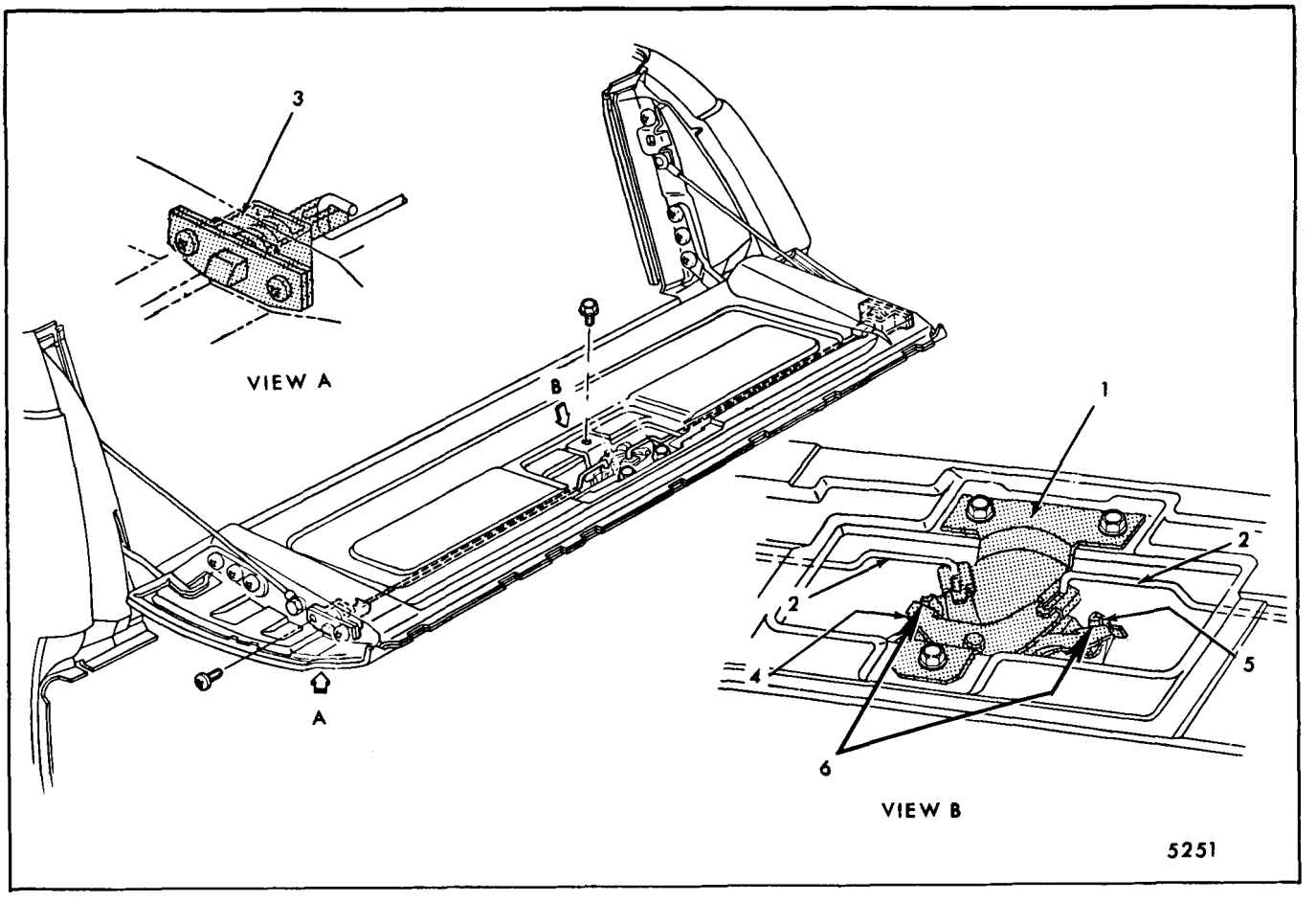


Fig. 7-124-Tailgate Hardware Installed

1. Remote Control Assembly
2. Remote Control to Latch Rod
3. Latch Assembly
4. Latch Arm Rotors
5. Remote Arms
6. Point of Contact, Remote Arms to Contact Latch Rod Rotors

TAILGATE LATCH STRIKER - RIGHT OR LEFT

Removal and Installation

1. Open tailgate and mark position of striker on body pillar.
2. Remove latch striker attaching screws and remove striker from body pillar (Fig. 7-121).

   NOTE: Lower latch striker attaching screw is used to secure support cable to body pillar; therefore, it will be necessary to support tailgate if both latch strikers are to be removed.

3. To install, align striker within marked area and install attaching screws.

TAILGATE ADJUSTMENTS

1. To adjust the tailgate latch striker up and down or fore and aft, loosen striker attaching screws, shift striker to desired position and tighten attaching screws.
2. Dimensional specifications for use of latch striker spacers are found in Figure 7-125.

   a. Tailgate should be properly aligned before checking spacer requirements.

   b. To determine if tailgate latch striker spacers are required, mark the latch as indicated in Section B-B, Figure 7-125, with a bright colored crayon, then slam gate closed to insure full latch to striker engagement.

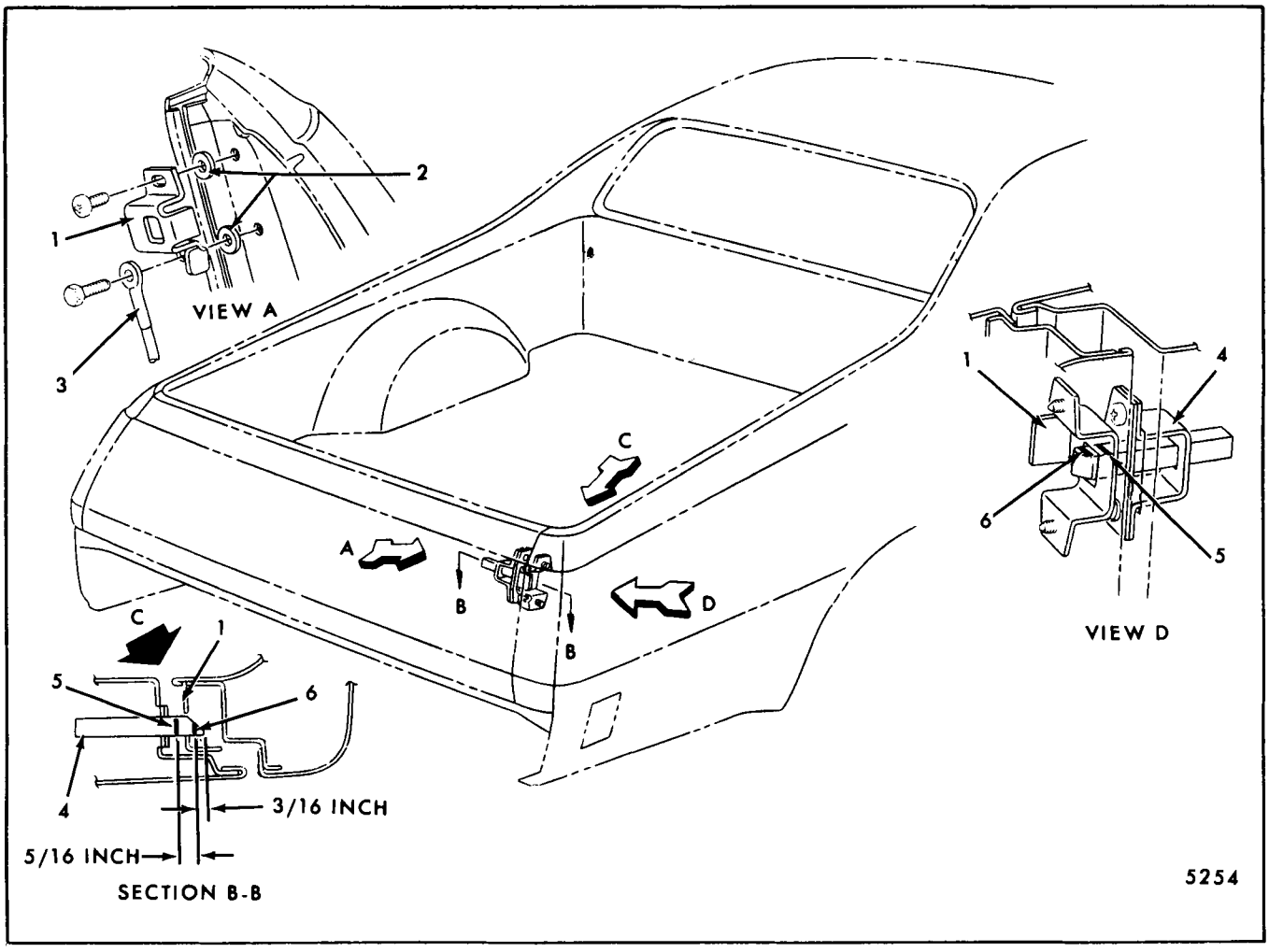


Fig. 7-125-Tailgate Latch to Striker Adjustment

1. Striker
2. Spacers
3. Support Cable
4. Latch Assembly
5. Crayon Mark B
6. Crayon Mark A

c. If marks "A and B" are visible when viewed through gap between back body pillar and tailgate pillar (Arrow C, Fig. 7-125), install a spacer (1/16" thick plated flat washer - 1/2" I.D.) between striker and pillar at striker attaching bolt locations. Add additional spacers as required until only mark "B" is visible inboard of striker.

d. If neither mark "A" or "B" appear inboard of striker, remove spacers from behind striker until only mark "B" is visible.

e. If only mark "B" is visible inboard of striker during initial check, latch to striker engagement is satisfactory.

THREE-WAY TAILGATE

DESCRIPTION

The three-way tailgate incorporates a unique hinge and locking arrangement that allows the tailgate to be operated as a tailgate with the glass fully down or as a door with the glass up or down.

All styles are equipped with a power tailgate glass that can be operated by an instrument panel switch or key operated at the lock cylinder switch on the tailgate. The three-way tailgate employs a hang-on type inner trim panel cover that attaches over the top of the tailgate inner panel. The trim is further

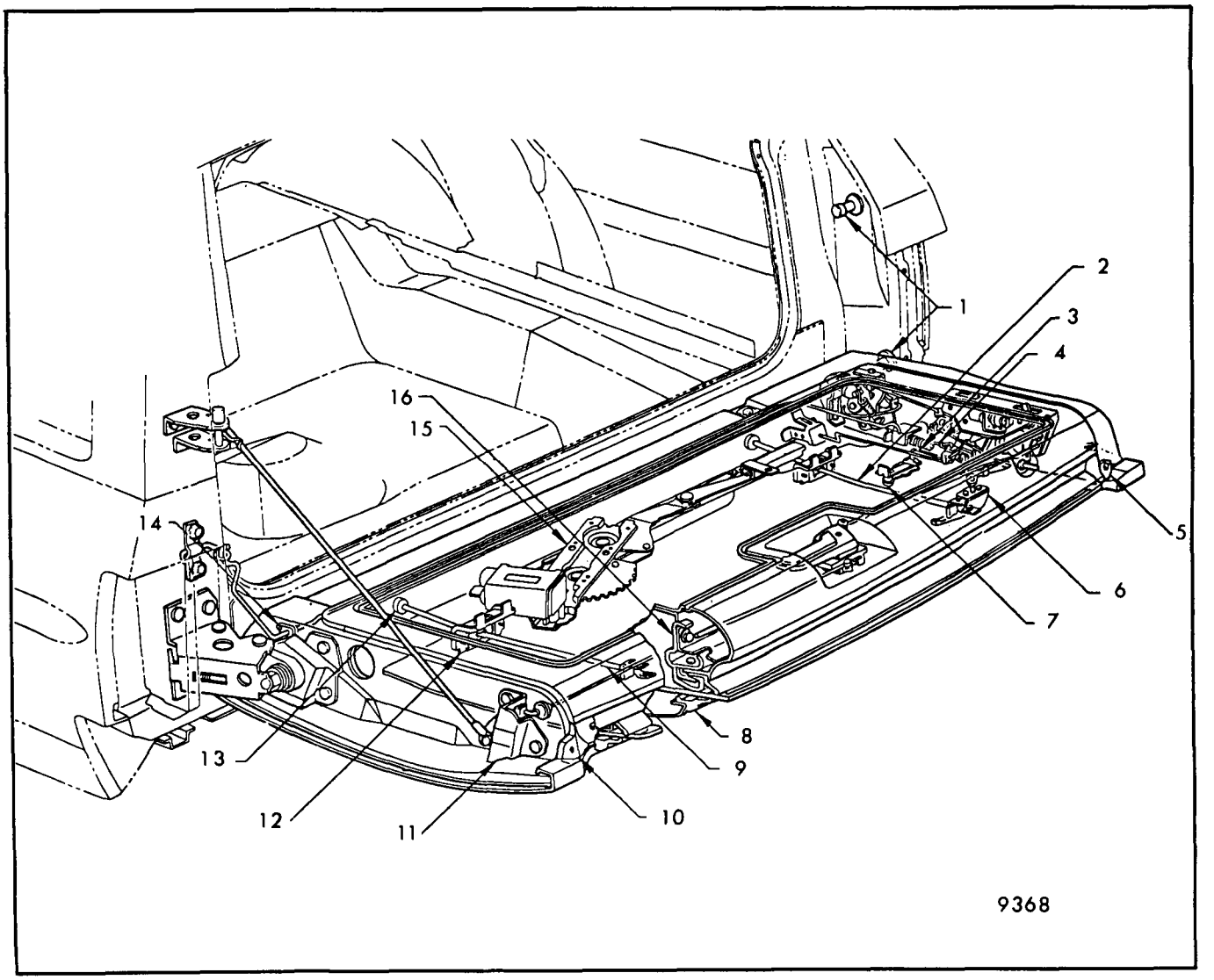


Fig. 7-126 - "B-35" Tailgate Hardware

1. Striker Asm. - Tailgate Lock Upper Rt. Side
2. Tube Asm. - Guide Tailgate Window
3. Rod Asm. - Tailgate Lock Cylinder to Lock
4. Rod Asm. - Tailgate Lock to Power Actuator
5. W/Strip Asm. - Tailgate Window Otr. at Belt Rt. Side
6. Handle Asm. - Tailgate Outside
7. Lock Cylinder Asm. - Tailgate
8. Sealing Strip Asm. - Tailgate Window Outer (at belt)
9. Tube Asm. - Guide Tailgate Window
10. W/Strip Asm. - Tailgate Window Outer (at belt) Lt. Side
11. Lock Asm. - Tailgate Upper Hinge Lt. Side
12. Plate Asm. - Tailgate Window Guide - Lt. Side
13. Bumper - Tailgate Window Down Stop
14. Grommet - Tailgate Torque Rod
15. Regulator Asm. - Tailgate Window Electric
16. Retainer Asm. - Tailgate Belt Trim Support

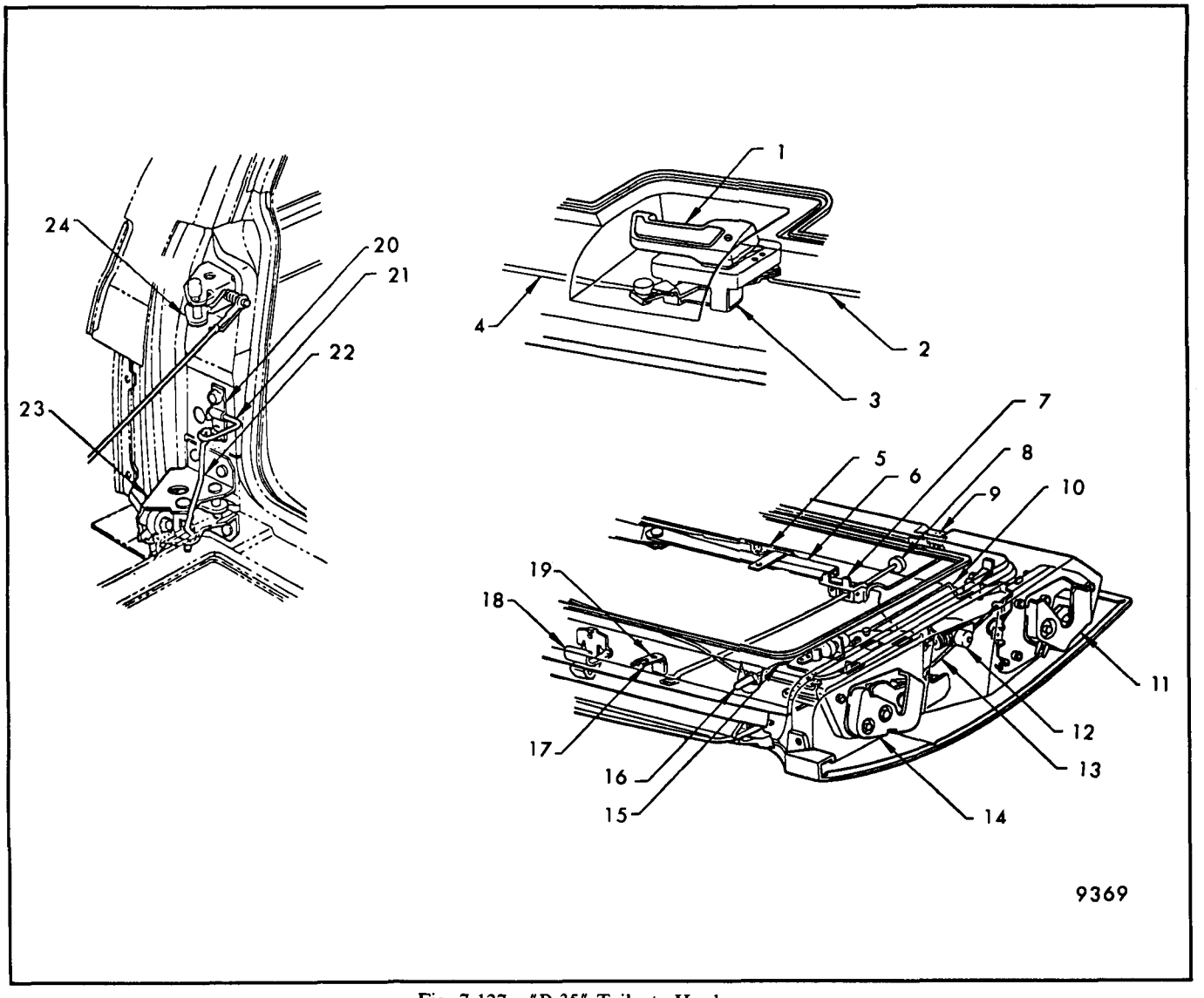


Fig. 7-127 - "B-35" Tailgate Hardware

1. Handle - Tailgate Remote Control
2. Rod - Tailgate Lock Remote Control
3. Control Asm. - Tailgate Lock Remote
4. Rod Asm. - Tailgate Lock Remote Control to Lock Left Side
5. Cam - Tailgate Glass Regulator
6. Cam - Tailgate Inner Panel
7. Plate - Tailgate Window Guide Right Side
8. Bumper - Tailgate Window Down Stop
9. Retainer Asm. - Torque Rod Tailgate Hinge
10. Rod - Tailgate Window Blockout
11. Lock Asm. - Tailgate Lower Right Side
12. Actuator Asm. - Electric Lock
13. Rod Asm. - Tailgate Upper to Lower Lock Connection
14. Lock Asm. - Tailgate Upper Right Side
15. Rod - Tailgate Inside Locking to Lock
16. Knob - Door Inside Locking Rod
17. Stop - Tailgate Window Up
18. Retainer Asm. - Tailgate Belt Trim Support
19. Stop - Tailgate Window Up
20. Retainer - Tailgate Hinge Torque Rod Link
21. Link - Tailgate Hinge Torque Rod
22. Rod - Torque Tailgate Hinge
23. Hinge Asm. - Tailgate Lower Lt. Side
24. Striker Asm. - Tailgate Upper Hinge Lt. Side

secured by a series of nylon trim pad fasteners. The trim cover can be removed with the tailgate in the closed position by first removing the right and left lower quarter trim.

The three-way tailgate uses an inside locking knob similar to the doors. The design of the locking rod knob prevents unlocking except from the outside with the key or, if electric, from the switch mounted in the front. The tailgate is opened to the gate position with the glass down by means of an inside handle located at the top center of the gate. To open the tailgate as a door with the glass either up or down, an outside rotating handle is provided. The tailgate is counterbalanced by a torque rod that assists in reducing the effort required to open and/or close the gate. Figures 7-126 and 7-127 identify the component parts of the three-way tailgate.

TAILGATE INNER TRIM PANEL (Figs. 7-128, 7-129)

The tailgate inner trim panel is of one-piece construction which hangs over the inner panel across the top and is secured by plastic trim fasteners down the sides and across the bottom. An integral sealing strip attached to the trim panel eliminates the need for a water deflector. Trim pad removal can be accomplished without removing the locking knob.

Removal

1. Open tailgate as a gate or door and remove inside remote handle.
2. Using tool J-24595 or BT-7323 loosen plastic trim retainers from gate inner panel and remove trim assembly.

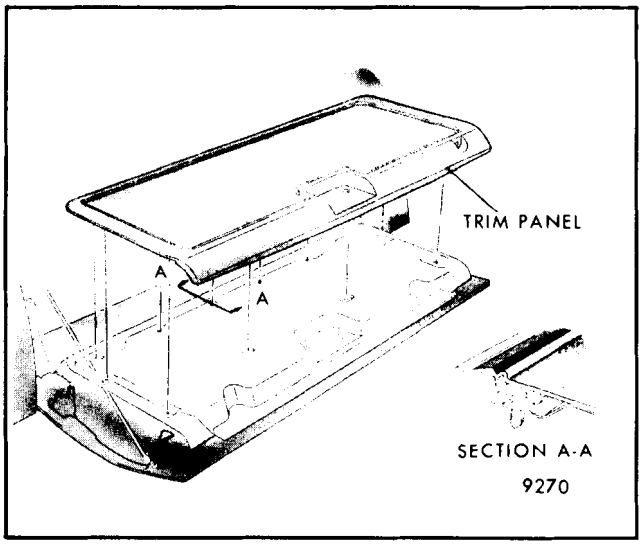


Fig. 7-128 - "B-35" Tailgate Inner Trim Panel Removal

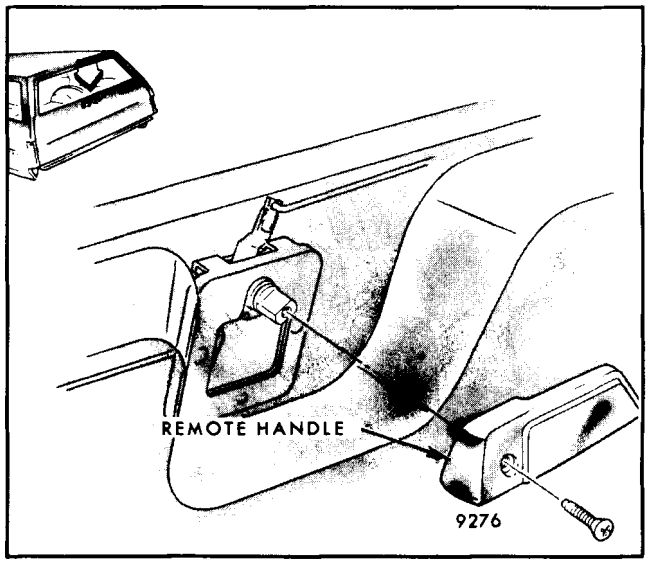


Fig. 7-129 - Tailgate Center Remote Handle

Installation

1. Position trim assembly to gate inner panel so retainers are aligned with attaching holes in gate inner panel and tap retainers into holes with a clean rubber mallet.
2. Reinstall remote handle.

TAILGATE INNER PANEL ACCESS HOLE COVERS (Fig. 7-130)

Removal and Installation

1. Remove tailgate inner panel cover as previously described.
2. Remove inner access hole cover attaching screws and remove cover.
3. To install access hole covers, reverse removal procedure.

TAILGATE OPENING WEATHERSTRIP (Figs. 7-131, 7-132)

The tailgate opening weatherstrip is a one-piece design. The lower section (below the belt line) is a bulbular clinch type construction which snaps over the pinchweld flange. A mastic material is incorporated within the clinch cavity which seals the weatherstrip to the pinchweld flange. The butt joint utilizes a plug and weatherstrip cement to maintain shape and sealing.

The upper section (above the belt) of the weatherstrip is retained by cement and screw attached retainers.

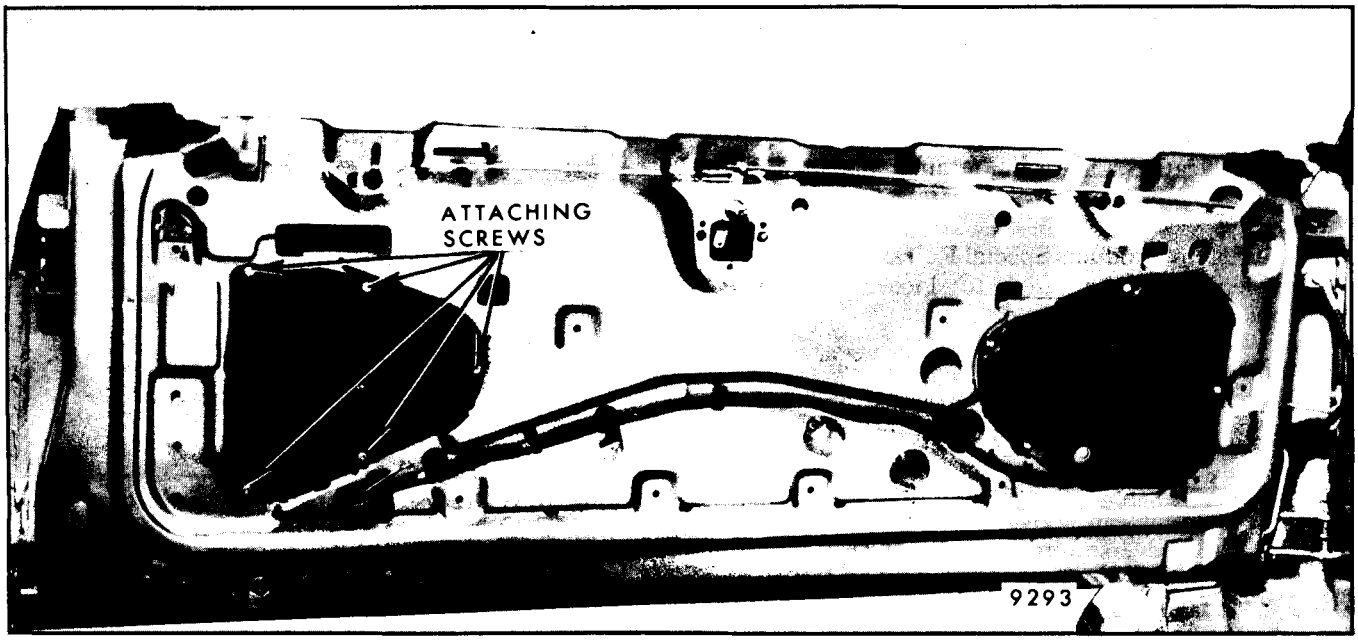


Fig. 7-130 - Tailgate Inner Panel Access Hole Covers

In addition, screws are used at the belt area to retain the weatherstrip.

TAILGATE WEATHERSTRIP

Removal

1. Open tailgate as a door and remove upper and lower quarter trim from right and left sides. Refer to REAR QUARTER SECTION of this manual for quarter trim removal.

2. Remove attaching screws from load floor module rear cross bar and using a 5/32" drill, drill out four rivets attaching rear cross bar to side rails. Remove rear cross bar.

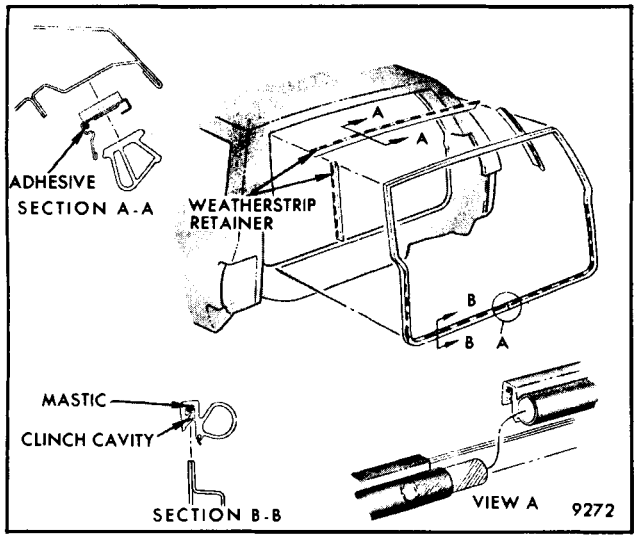


Fig. 7-131 - Tailgate Weatherstrip

3. Remove three weatherstrip attaching screws at belt from right and left sides, Figure 7-132.

4. Separate butt joint at center bottom of the opening, remove and retain plug, Figure 7-131, View "C".

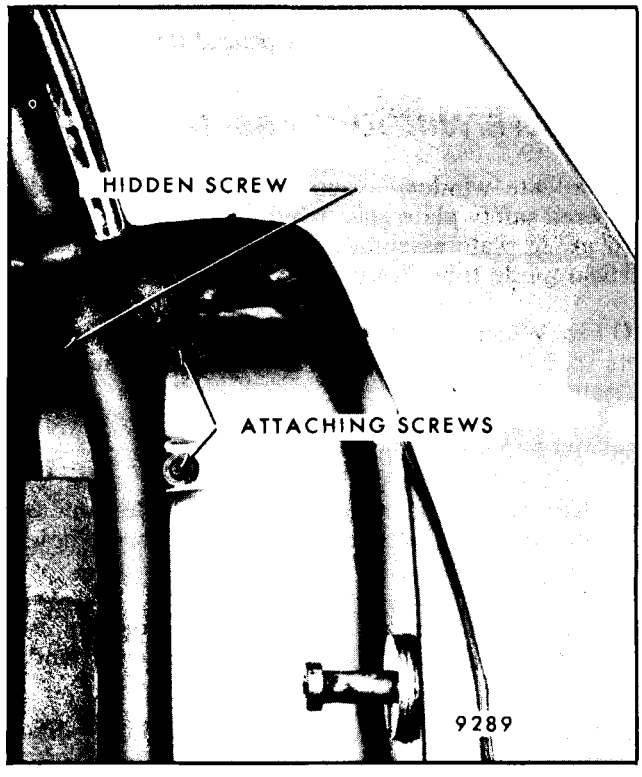


Fig. 7-132 - Tailgate Weatherstrip Screw Retained

5. Peel weatherstrip from pinchweld flange. Do not pull on bulbular section of weatherstrip as it may tear.

6. With a flat-bladed tool carefully cut cemented bond of weatherstrip from retainer above the belt area.

   NOTE: Kent Products Special Release Agent or equivalent may be used to loosen and/or dissolve weatherstrip cement.

Installation

1. Clean weatherstrip retainer around opening above belt to provide a clean cementing surface.

2. Apply a bead of black weatherstrip adhesive cement to retainers above belt, Figure 7-131, View B, and reverse removal procedure.

TAILGATE WINDOW GUIDE TUBES

Removal and Installation

1. Remove tailgate window as subsequently described.

2. Remove guide tube attaching nuts located on the bottom of the gate outer surface.

3. Remove upper guide tube attaching bolts and remove guides.

4. To install, reverse removal procedure.

TAILGATE WINDOW ASSEMBLY

The tailgate window assembly consists of a solid tempered safety plate glass window, bolted-on lower sash guide plate assemblies which operate on dual vertical guide tubes located in the tailgate.

NOTE: When installing glass attachment, torque nuts to 8 N·m (72 in- lb). Also, when replacing a tailgate glass, replace spacers and washers.

Removal and Installation

1. Open tailgate as a gate, remove inside remote handle, trim cover and inner panel access hole covers.

   NOTE: If heated tailgate glass option is specified, disconnect power feed and ground wire from glass (Fig. 7-133).

2. Mark location of up-travel stop attaching bolts and remove up stops, Figure 7-135, Item 1.

3. Mark location of belt trim support retainers, loosen attaching bolts and slide away from glass, Figure 7-135, Item 2.

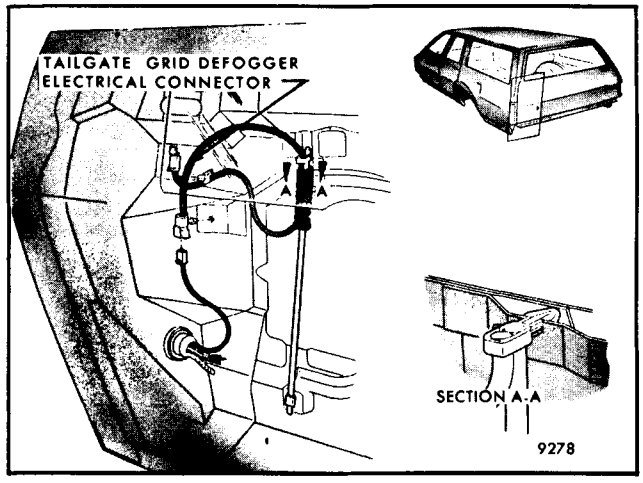


Fig. 7-133 - Tailgate Glass Grid Defogger Electrical Connector

4. Manually latch left upper lock, Figure 7-134.

WARNING: WITH TAILGATE OPEN IN THE GATE POSITION AND THE LEFT UPPER LOCKS MANUALLY ENGAGED, THE TAILGATE HAS BEEN PLACED IN A VULNERABLE POSITION AND COULD DROP FROM THE RIGHT LOWER LOCK IF THE LOCKING ROD AND/OR OUTSIDE HANDLE IS ACTIVATED. DO NOT ACTIVATE HANDLE OR RODS AS PERSONAL INJURY AND/OR DAMAGE TO THE TAILGATE COULD RESULT.

Fig. 7-134 - Manually Latch Left Upper Tailgate Lock

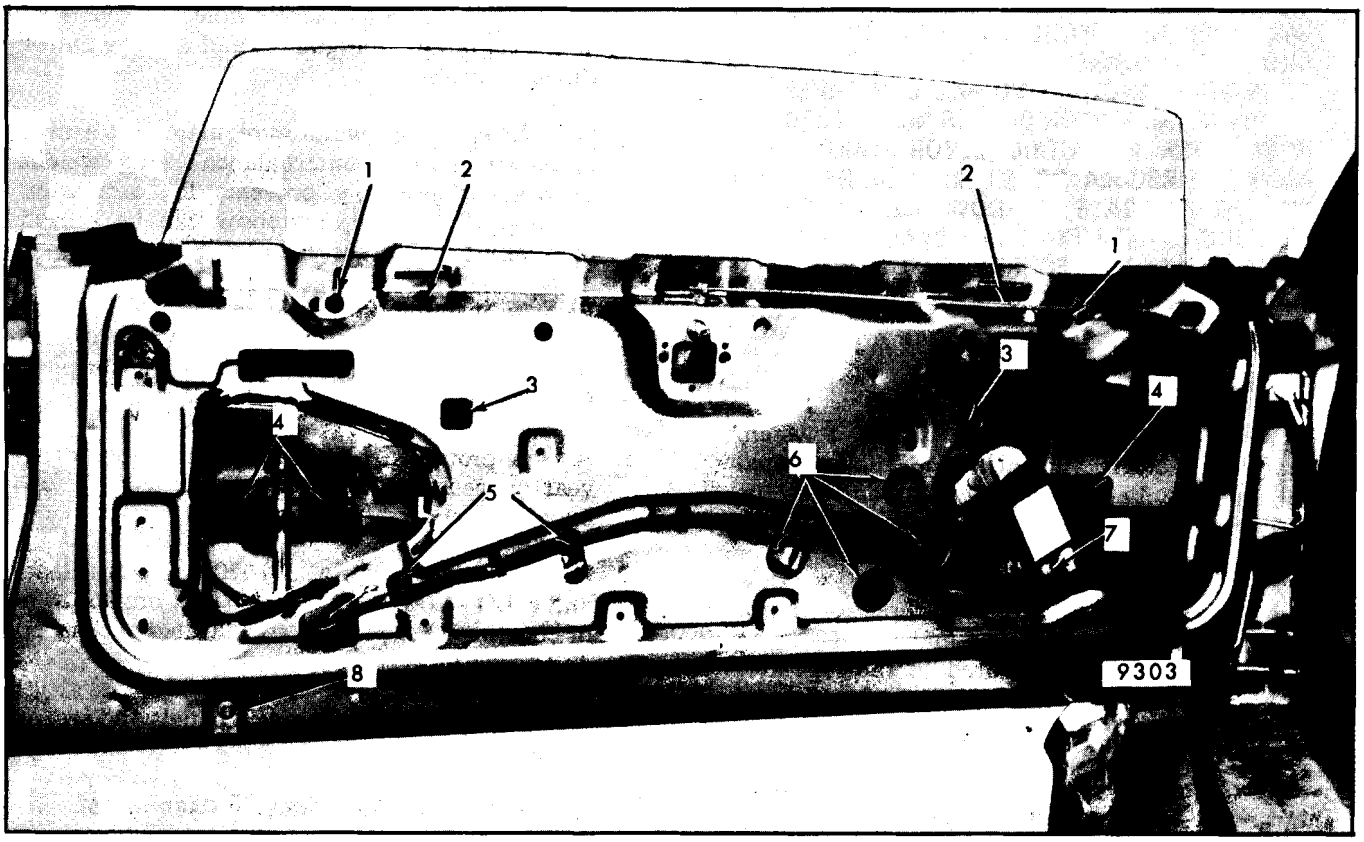


Fig. 7-135 - Tailgate Glass Removal

1. Up-travel Stop Attachments
2. Belt Trim Support Retainers
3. Sash Channel Cam to Glass Attachment
4. Guide Plate to Glass Attachments
5. Inner Panel Cam Attachments
6. Regulator Rivets
7. Motor Rivet
8. Torque Rod Retainer Attaching Bolt

5. Operate tailgate glass to a point that sash channel to glass attaching nuts are visible through holes in inner panel and remove attachments, Figure 7-135, Item 3.

6. Remove guide plate to glass attachments working through left and right access holes, Figure 7-135, Item 4.

7. Remove glass through belt opening.

8. To install, reverse removal procedure.

9. Check glass for proper alignment and operation prior to reinstalling covers and trim.

TAILGATE WINDOW REGULATOR

Removal and Installation

1. Open tailgate as a gate and remove remote handle, trim and inner panel access hole covers and disconnect electric motor wiring harness.

2. With glass in the full up position, mark location of belt trim support retainer attaching bolts and loosen bolts, Figure 7-135, Item 2.

3. Mark location and remove inner panel cam attaching bolts, Figure 7-135, Item 5.

4. Remove sash panel cam to glass attaching nuts and pull cam from glass, Figure 7-135, Item 3.

5. Drive out regulator and motor attaching rivet center pins with punch, then drill out rivets with 1/4" drill bit. Remove regulator and motor as an assembly through access hole, Figure 7- 135, Item 6 and 7.

6. If replacement regulator does not have attaching nuts, place "U" nuts (part no. 3916700 or equivalent) over each attaching hole with integral nut on outboard side of regulator back plate.

7. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4 - 20 x 7/16" attaching screws (part no. 9642853 or equivalent). Torque regulator attaching screws and lower sash channel cam attaching nuts to 8 N·m (72 in- lb).

WARNING: THE REGULATOR LIFT ARM IS UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE INJURY IF THE SECTOR GEAR IS NOT LOCKED IN POSITION. IF ELECTRIC MOTOR REMOVAL FROM THE REGULATOR IS REQUIRED, REFER TO THE TAILGATE WINDOW REGULATOR ELECTRIC MOTOR REMOVAL AND INSTALLATION PROCEDURE.

TAILGATE WINDOW REGULATOR ELECTRIC MOTOR

The power-operated tailgate glass system incorporates an electric motor and a dash mounted control switch. The tailgate glass can also be operated from the tailgate lock cylinder with a key.

The electric motor which powers the window regulator 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 and to the tailgate inner panel with one rivet.

On all styles, the electric motor can be removed without removing the window regulator if the glass IS INTACT AND ATTACHED TO THE REGULATOR. If the glass is broken or detached from the regulator, the regulator and motor must be removed as an assembly. Motor removal and installation procedures for both conditions follow.

Removal and Installation - Glass Intact and Attached to Regulator

WARNING: THIS PROCEDURE CAN BE USED ONLY IF GLASS IS INTACT AND ATTACHED TO THE REGULATOR. THE REGULATOR LIFT ARMS ARE UNDER TENSION FROM THE COUNTERBALANCE SPRING AND THE WEIGHT OF THE GLASS IS REQUIRED TO NEUTRALIZE THE SPRING DURING MOTOR REMOVAL. IF GLASS HAS BEEN BROKEN OR REMOVED, THE SECTOR GEAR MUST BE SECURELY FASTENED TO REGULATOR BACK PLATE PRIOR TO MOTOR REMOVAL TO PREVENT SERIOUS INJURY. FOR MOTOR REMOVAL WHEN GLASS HAS BEEN BROKEN OR REMOVED, REFER TO THE FOLLOWING SECTION OF THIS MANUAL.

1. Open tailgate as a door with glass up. Remove remote handle, trim and left access hole cover, disconnect harness at motor.
2. Drive out motor attaching rivet center pin with punch, then drill out rivet with 1/4" drill bit.
3. Working through left access hole, remove bolts attaching motor to regulator and remove motor through access hole.

   NOTE: Although window regulator lift arm is under tension of counterbalance spring, weight of window assembly prevents lift arm from moving. If necessary, window can be moved manually to clear access holes.
4. Prior to installation, lubricate motor drive gear and regulator sector teeth with white lithium soap grease (Fiske Bros. Lo-Temp Lubriplate No. 777 or equivalent).
5. Attach motor to regulator making sure drive gear properly engages sector gear teeth before installing motor attaching bolts.
6. Use "U" nut (part no. 3916700 or equivalent) and a 1/4 - 20 x 7/16" screw (part no. 9642853 or equivalent) in place of rivet drilled out in step 2. Torque to 8 N·m (72 in-lb).
7. Install all previously removed panels and seal as required.

Removal and Installation - Glass Broken or not Attached to Regulator

1. If glass is broken or not attached to regulator, motor and regulator MUST be removed as an assembly as described under TAILGATE WINDOW REGULATOR Removal and Installation prior to motor removal.

WARNING: STEP 2 MUST BE PERFORMED WHEN REGULATOR IS REMOVED FROM TAILGATE. THE REGULATOR LIFT ARMS ARE UNDER TENSION FROM THE COUNTERBALANCE SPRING AND CAN CAUSE SERIOUS INJURY IF THE MOTOR IS REMOVED WITHOUT LOCKING THE SECTOR GEAR IN POSITION.

2. Drill a 1/8" hole through the regulator sector gear and back plate (Fig. 7-136). DO NOT drill hole closer than 1/2" to edge of sector gear or back plate. Install a pan head sheet metal tapping screw (no. 10-12 x 3/4") in drilled hole to lock sector gear in position.
3. Remove regulator motor attaching bolts and remove motor assembly from regulator.
4. Prior to installation, lubricate the motor drive gear and regulator sector teeth.

   NOTE: The lubricant used must be cold weather approved to a minimum of minus 20 degrees F.

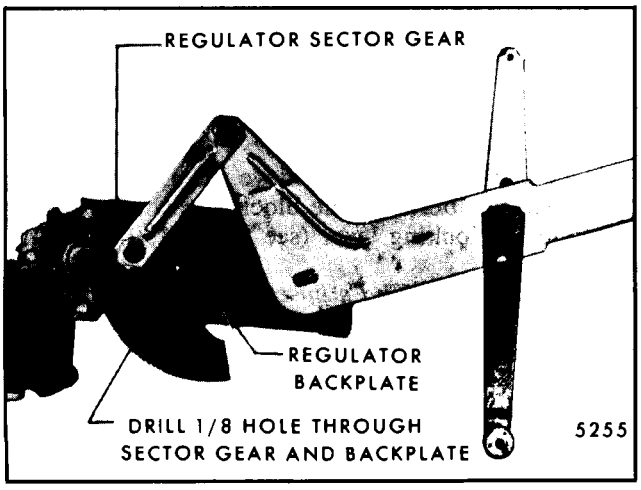


Fig. 7-136 - Tailgate Window Regulator Motor Removal

5. Install regulator motor to regulator. Make sure the motor pinion gear teeth mesh properly with the sector gear teeth before installing the motor attaching bolts. When teeth are properly meshed, drive and tighten motor bolts. Torque motor attaching bolts to 8 N·m (72 in-lb).

6. Remove screw locking sector gear in a fixed position.

7. Reinstall regulator and motor with "U" nuts (part no. 3916700 or equivalent) and screws (part no. 9642853 or equivalent) as described under TAILGATE WINDOW REGULATOR Removal and Installation. Torque to 8 N·m (72 in-lb).

Diagnosis and Adjustments

1. WINDOW NOT PARALLEL WITH SIDE AND UPPER WEATHERSTRIP - A rotated tailgate window (glass cocked in opening) can be corrected by loosening up-travel stops, inner panel sash channel cam and raising or lowering right or left side of glass as required. Then torque inner panel sash channel cam attaching nuts to 8 N·m (72 in-lb) and raise glass to desired height to establish proper contact with top and side weatherstrip. Position up-travel stops to contact stops on glass and torque attachments to 8 N·m (72 in- lb). Position glass and torque to 8 N·m (72 in-lb).

2. TAILGATE WINDOW TOO FAR INBOARD OR OUTBOARD ALONG UPPER EDGE - Loosen tailgate window guide plate attaching nuts, Figure 7-137, on right and left sides and glass stabilizer attaching bolts. With glass in full-up position, position belt trim support retainers against inner surface of glass and tighten bolts. Tighten all previously loosened attaching nuts and bolts torque to 8 N·m (72 in-lb).

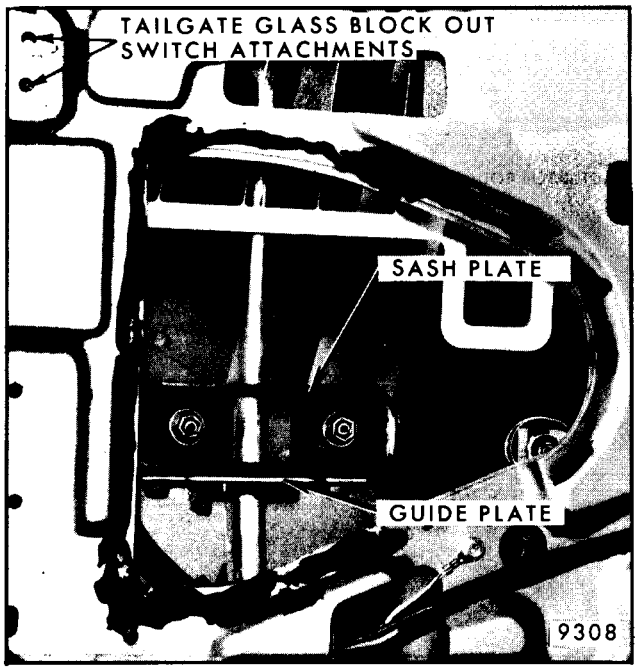


Fig. 7-137 - Tailgate Window Guide Plate Attachments

3. WINDOW TOO HIGH OR LOW IN UP POSITION - Loosen up-travel stops and operate window to desired position to establish proper glass to upper weatherstrip contact. Torque up-travel stop attaching bolts to 8 N·m (72 in-lb).

4. WINDOW MECHANISM BINDS WHEN OPERATING - Ease of window operation and window stability depend to a great extent on the adjustment of the belt trim support retainers. The belt trim support retainers should contact the glass throughout the full cycle of the window. Due to slight variations in glass contour, however, in some cases the strip may lose contact with the glass halfway through the cycle. This is permissible provided it does not result in loose glass.

   Contact should be sufficient to stabilize glass but not restrict ease of window operation. Torque all previously loosened attachment components to 8 N·m (72 in-lb).

TAILGATE P.M. MOTOR LOCK ACTUATOR (Fig. 7-138)

Removal and Installation

1. Open tailgate as a door with glass up and remove remote handle, trim panel and right access hole cover.

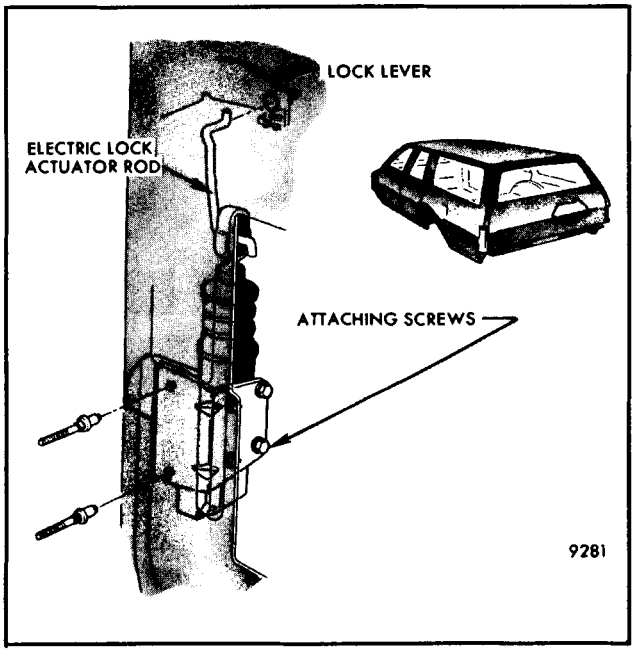


Fig. 7-138 - Tailgate Electric Lock Actuator

2. Disengage electric connector from P.M. motor and lock actuating rod from upper lock lever.

3. Remove P.M. motor attaching screws and remove motor through access hole.

4. To install, reverse removal procedure.

TAILGATE GLASS BLOCKOUT SWITCH (Fig. 7-139)

Description

All station wagons are equipped with power operated tailgate windows and utilize an electrical blockout switch which prevents upward movement of the glass when the tailgate is opened as a gate.

NOTE: In the event the tailgate glass blockout switch fails with gate closed and glass in the fully lowered (open) position, refer to Three-Way Tailgate Diagnosis Chart for procedures to raise glass.

Removal

1. With the tailgate open in a door position and glass in full-up position, remove tailgate remote handle inner panel cover and right access hole cover as previously described.

2. Remove screws securing switch to right upper lock as shown in Figure 7-137. Disconnect electrical connector and remove switch through access hole.

Installation

1. Connect electrical connector and loosely attach switch to lock assembly.

2. Adjust switch to achieve a 1 mm (.039) clearance between the blockout switch plunger and the locking lever (see Fig. 7-139).

   CAUTION: *The adjustment specified in step 2 is absolutely necessary to insure proper operation of switch.*

3. Following proper adjustment of blockout switch, secure attaching screws and cycle tailgate window and gate to insure proper operation prior to installation of cover panel.

TAILGATE LOCK CYLINDER (Fig. 7-140)

Removal and Installation

1. Open gate as a door with glass in full-up position and remove remote handle, trim panel and right access hole cover.

2. Disconnect locking rod from pawl.

3. Slide lock cylinder retainer clip away from lock cylinder and remove cylinder from gate.

4. To install, reverse removal procedure.

TAILGATE OUTSIDE HANDLE (Figs. 7-140, 7-141)

Removal and Installation

1. Open gate as a door with glass in full-up position and remove remote handle, trim panel and right access hole cover.

2. Working through access hole remove handle attaching nuts and remove handle and gaskets from outside of tailgate.

3. To install, reverse removal procedure.

TAILGATE LOCK REMOTE CONTROL ASSEMBLY (Fig. 7-142)

Removal

1. Open tailgate to door position, remove inside remote handle, trim panel right access hole cover.

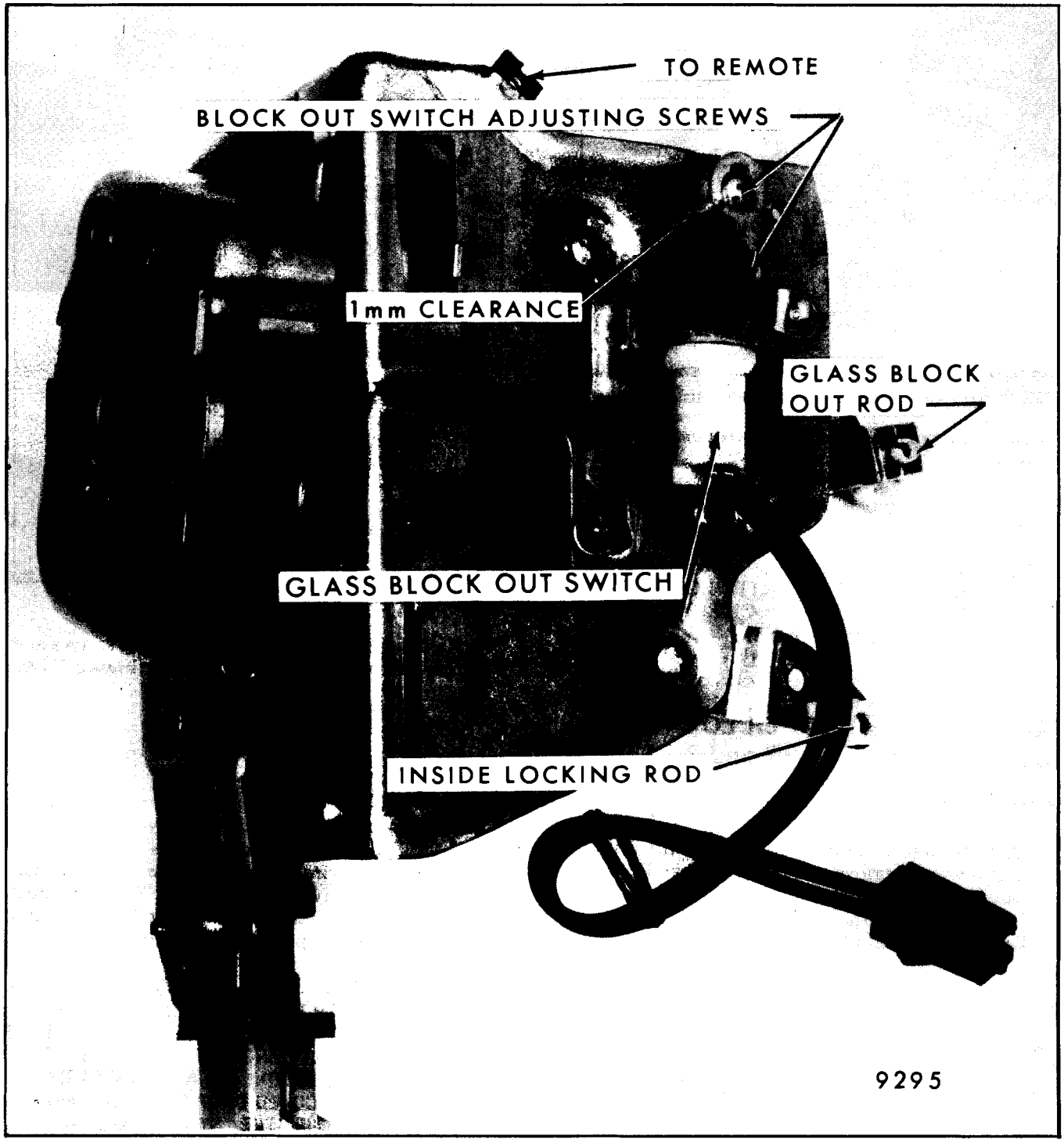


Fig. 7-139 - Tailgate Upper Right-Hand Lock Assembly

2. Disconnect right and left remote control to lock connecting rods at remote control.

3. Using spot weld cutter J-8943-01 or equivalent drill out spot welds securing remote assembly to tailgate inner panel (Fig. 7- 135).

Installation

1. Door open, glass up and locking button down. Install remote control assembly to gate inner panel using "U" nuts, part number 3916700 or equivalent, and 1/4 - 20 x 7/16" attaching bolts,

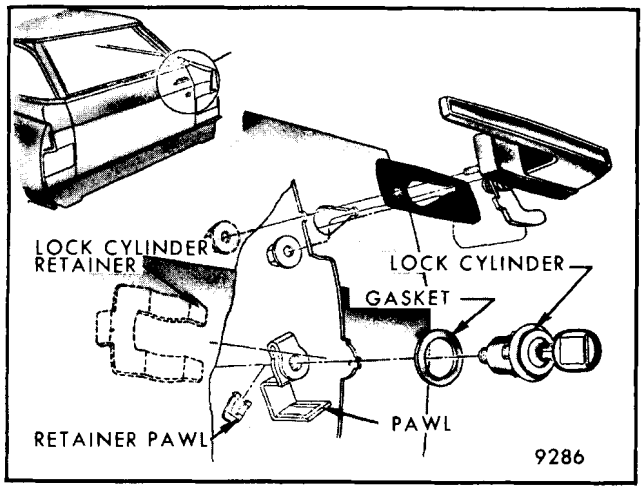


Fig. 7-140 - Tailgate Lock Cylinder and Outside Handle

part number 9642853 or equivalent. Tighten bolts to 8 N·m (72 in-lb).

2. Attach right upper lock remote rod to remote assembly.
3. Synchronize left and right upper locks as described under TAILGATE LOCK AND SYNCHRONIZATION CHECK AND PROCEDURE in this section.
4. Replace all previously removed components.

TAILGATE RIGHT UPPER LOCK ASSEMBLY (Figs. 7-139 and 7-143)

Removal

1. Open tailgate as a door with glass in the full-up position and remove inside remote handle, trim panel and right access hole cover.
2. Disconnect from the right upper lock assembly all rods (Fig. 7- 144).
3. Disconnect electrical connectors.

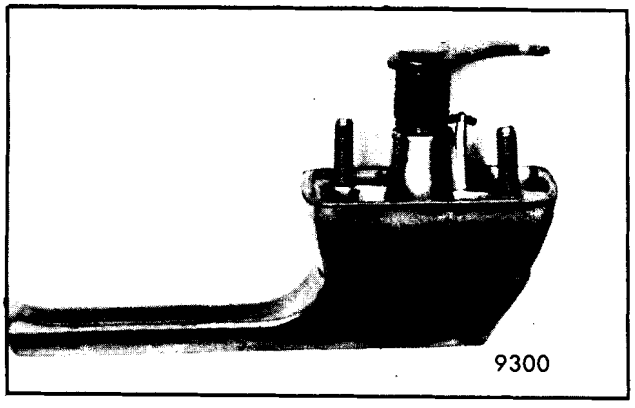


Fig. 7-141 - Tailgate Outside Handle

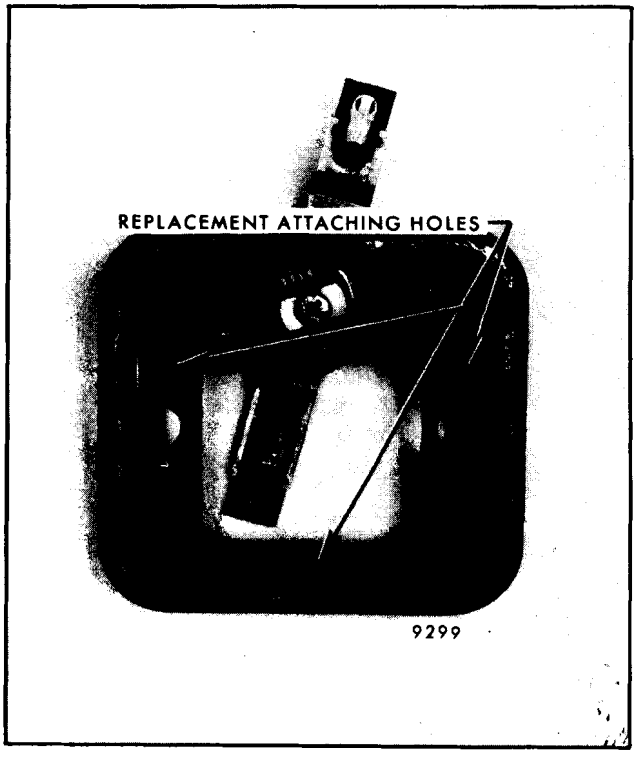


Fig. 7-142 - Tailgate Remote Control Assembly

4. Remove three gate to lock attaching screws and remove lock through access hole, Figure 7-145.

Installation

NOTE: All locks must be installed in the latched position to accomplish proper lock synchronization. All service replacement locks will have synchronization wire installed and be in the latched position when received, Figure 7-143. This wire must be removed after lock installation and synchronization for proper lock operation.

WARNING: WITH TAILGATE OPEN IN THE DOOR POSITION AND THE RIGHT UPPER AND LOWER LOCKS MANUALLY ENGAGED, THE TAILGATE HAS BEEN PLACED IN A VULNERABLE POSITION AND COULD DROP FROM THE LEFT UPPER LOCK IF THE SYNCHRONIZATION LOCKING ROD IS ACTIVATED BY PULLING IT INBOARD. WHEN MAKING SWIVEL ADJUSTMENT ON LEFT UPPER LOCKING ROD, DO NOT PULL ON ROD AS PERSONAL INJURY AND/OR DAMAGE TO THE TAILGATE COULD RESULT.

1. With tailgate open in the door position, install three screws securing lock to tailgate, Figure 7-145. Torque to 9 to 11 N·m (80 to 100 in-lb).

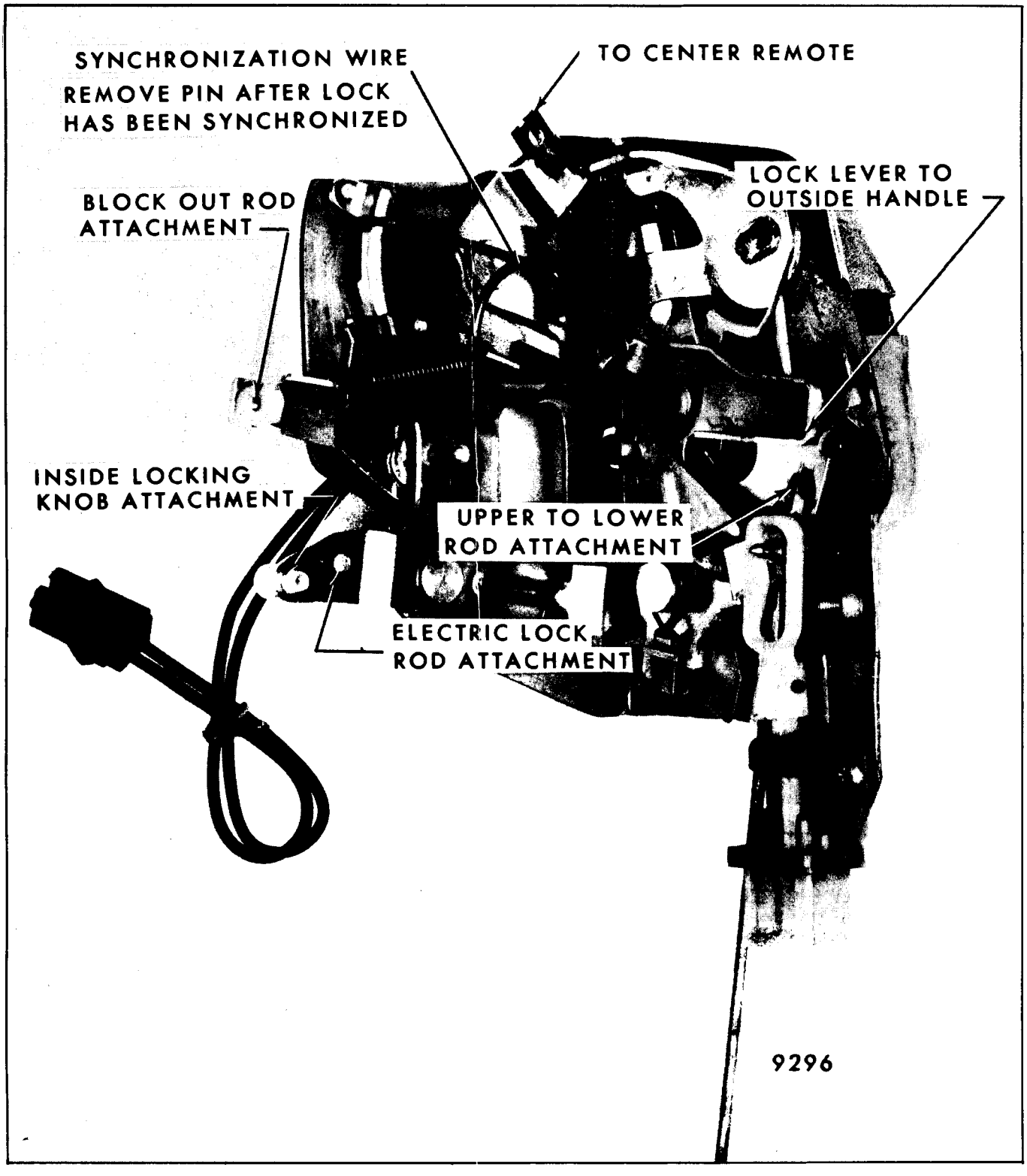


Fig. 7-143 - Tailgate Upper Right Lock and Synchronization Wire

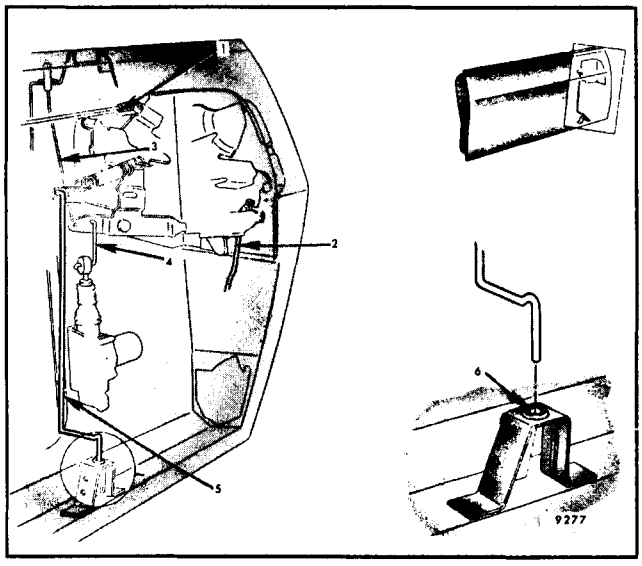


Fig. 7-144 - Right Upper Lock Connecting Rods

1. Upper Right Remote Locking Rod
2. Upper to Lower Locking Rod
3. Inside Locking Rod
4. Rod Power Actuator to Lock
5. Blockout Rod
6. Grommet

2. Engage all previously removed rods and electrical connectors except right upper to lower locking rod, "2" Figure 7- 146.

3. Disengage left upper remote synchronization locking rod attaching swivel from clip at center remote assembly, Figure 7- 147, Item 1.

4. Manually latch right lower lock assembly.

WARNING: WITH TAILGATE OPEN IN THE DOOR POSITION AND THE RIGHT UPPER AND LOWER LOCKS MANUALLY ENGAGED, THE TAILGATE HAS BEEN PLACED IN A VULNERABLE POSITION AND COULD DROP FROM THE LEFT UPPER LOCK IF THE SYNCHRONIZATION LOCKING ROD IS ACTIVATED BY PULLING IT INBOARD. WHEN MAKING SWIVEL ADJUSTMENT ON LEFT UPPER LOCKING ROD, DO NOT PULL ON ROD AS PERSONAL INJURY AND/OR DAMAGE TO THE TAILGATE COULD RESULT.

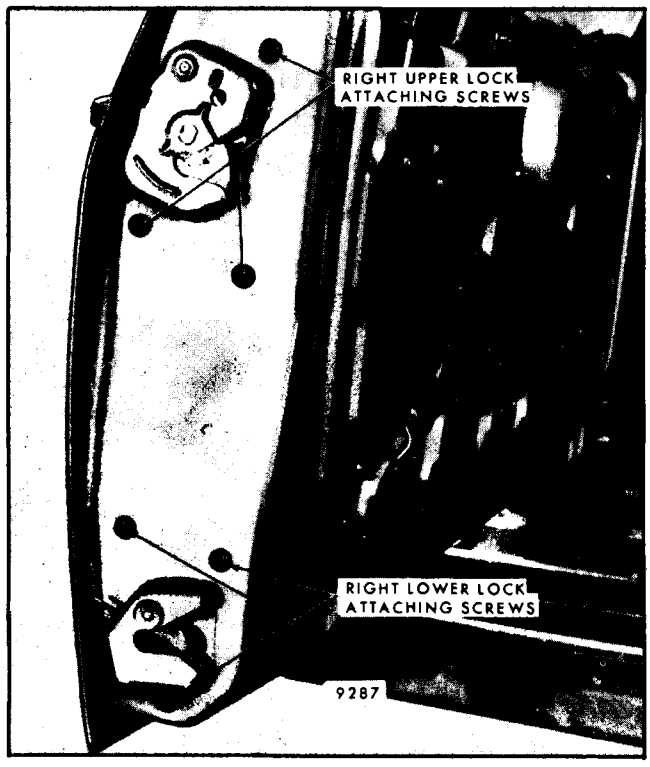


Fig. 7-145 - Tailgate Right Upper and Lower Lock Attaching Screws

5. Adjust swivel on left upper remote locking rod until it aligns with hole in remote lever. Insert swivel end through hole on remote lever and engage retaining clip.

6. Adjust swivel on lower right synchronization locking rod until it aligns with hole in lock lever. Insert swivel end in hole in lock lever and engage retaining clip.

7. Remove synchronization wire from right upper lock if using new lock and unlatch upper and lower right locks by actuating tailgate outside handle. Perform synchronization checks as subsequently described.

8. Reinstall all previously removed components.

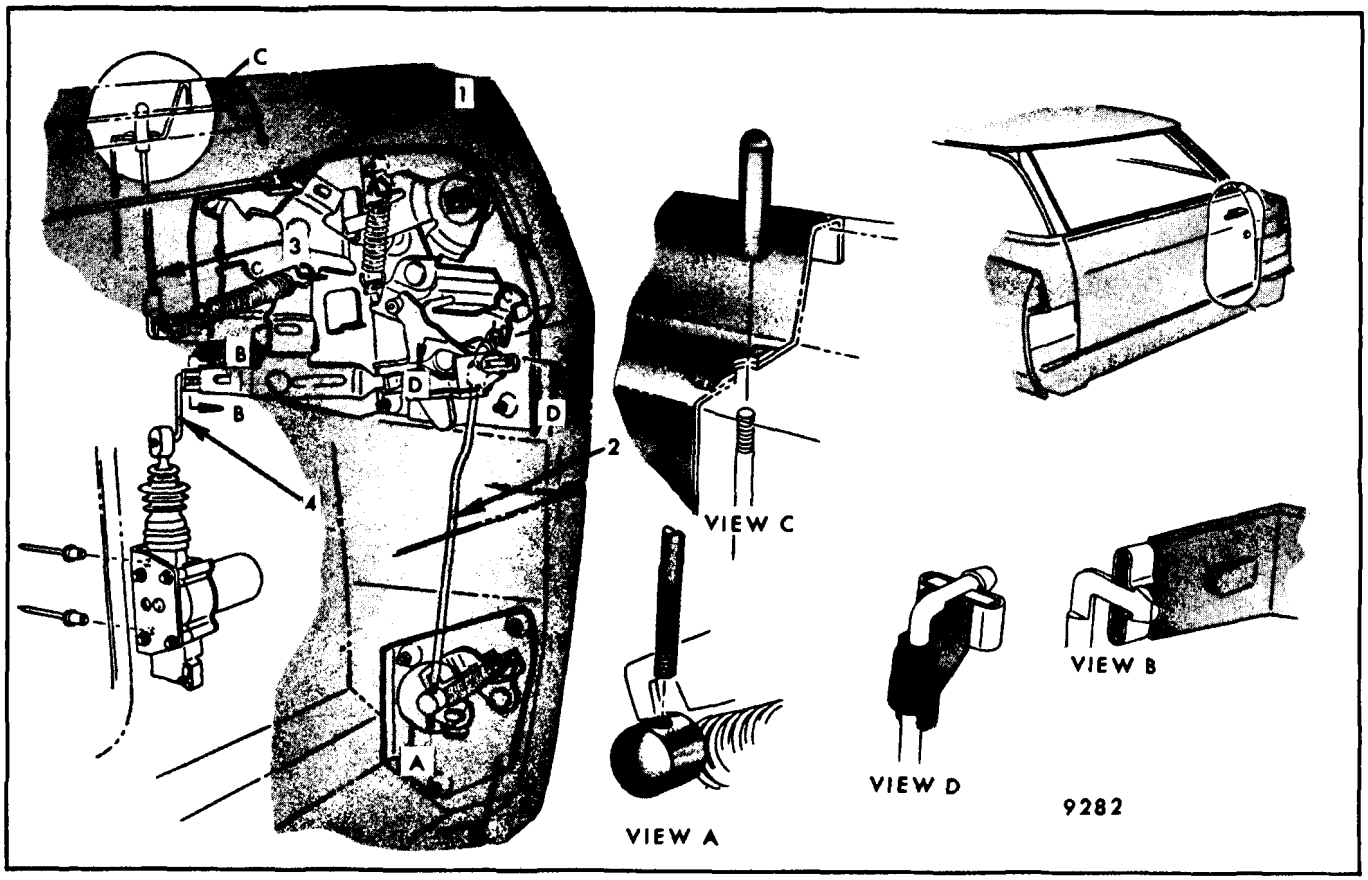


Fig. 7-146 - Tailgate Locking Rods

1. Right Upper to Center Remote Locking Rod
2. Right Upper to Lower Locking Rod
3. Inside Locking Rod
4. Electric Lock Actuator Rod

TAILGATE RIGHT LOWER LOCK ASSEMBLY (Fig. 7-148)

Removal and Installation

1. Open tailgate as a door with the glass in the full-up position and remove inside remote handle, trim panel and right access hole cover.
2. Disengage right upper to lower synchronization locking rod swivel from lock clip, Figure 7-146, "2". Disconnect electrical connector for tailgate ajar switch.
3. Remove three gate to lock attaching screws, Figure 7-145, and remove lock assembly through access hole.

Installation

NOTE: All locks must be installed in the latched position to accomplish proper lock synchronization. All service replacement locks will have a synchronization wire installed and be in the latched position when received, Figure 7-148. This wire must be removed after installation and synchronization for proper lock operation.

1. With tailgate open in the door position, install three screws securing lock to tailgate, Figure 7-145. Torque to 9 to 11 N·m (80 to 100 in-lb).
2. Engage tailgate ajar switch harness (Fig. 7-148).
3. Disengage left upper remote synchronization locking rod attaching swivel from clip at center remote assembly, Figure 7- 147.
4. Manually latch right upper lock as shown in Figure 7-149.

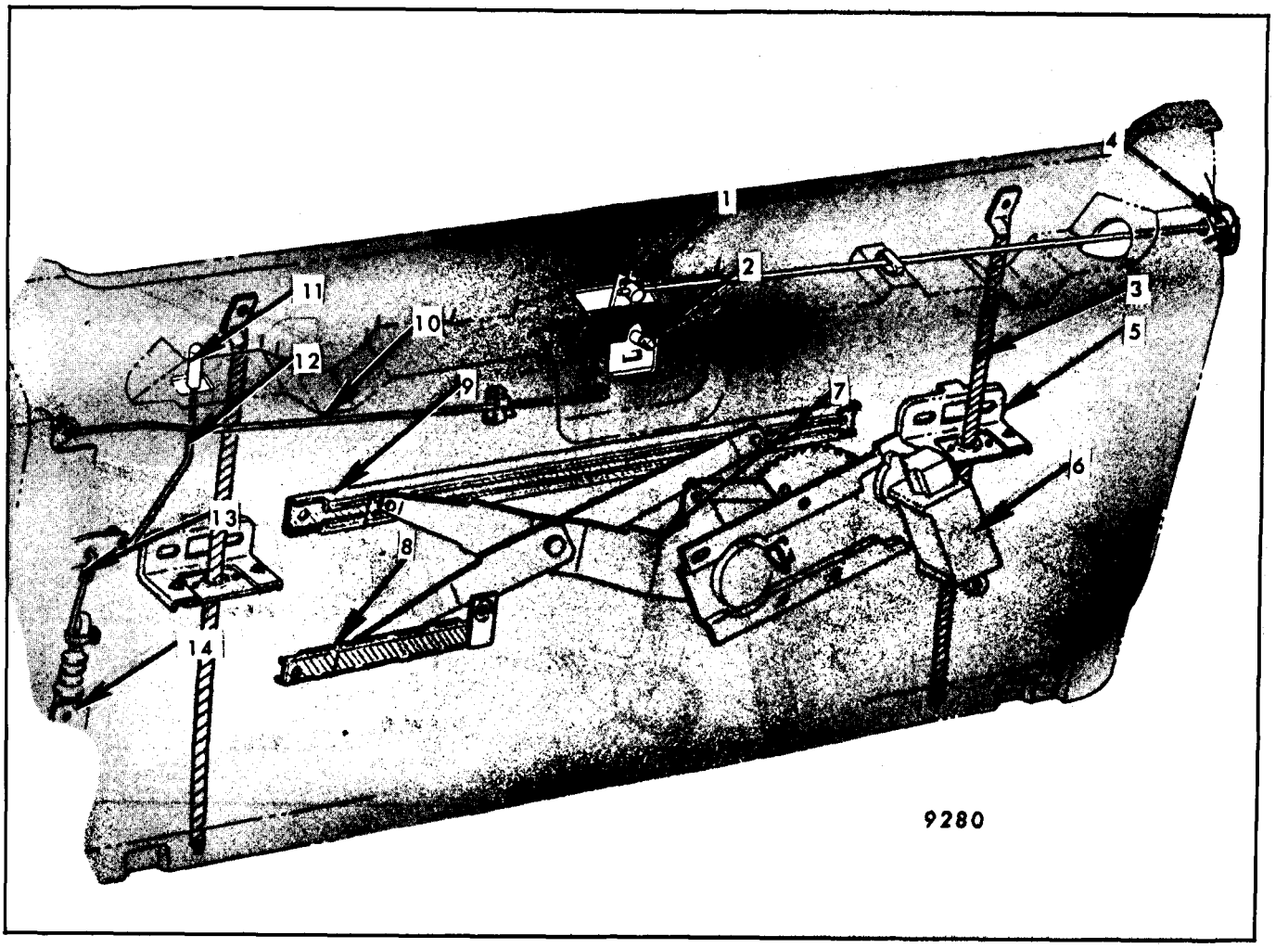


Fig. 7-147 - Tailgate Lock Synchronization Rods

1. Left Upper Remote Synchronization Lock Rod
2. Remote Control
3. Guide Tube
4. Left Upper Hinge Lock
5. Guide Plate Assembly
6. Motor, Window Regulator
7. Tailgate Window Regulator
8. Tailgate Inner Panel Cam
9. Tailgate Glass Regulator Cam
10. Right Upper Remote Locking Rod
11. Knob Door Inside Locking
12. Tailgate Inside Locking to Lock Rod
13. Rod Tailgate Lock to Power Actuator
14. Electric Lock Power Actuator

WARNING: WITH TAILGATE OPEN IN THE DOOR POSITION AND THE RIGHT UPPER AND LOWER LOCKS MANUALLY ENGAGED, THE TAILGATE HAS BEEN PLACED IN A VULNERABLE POSITION AND COULD DROP FROM THE LEFT UPPER LOCK IF THE LOCKING ROD IS ACTIVATED BY PULLING IT INBOARD. WHEN MAKING SWIVEL ADJUSTMENT ON LEFT UPPER LOCKING ROD, DO NOT PULL ON ROD AS PERSONAL INJURY AND/OR DAMAGE TO THE TAILGATE COULD RESULT.

5. Adjust swivel on left upper remote synchronization locking rod until it aligns with hole in remote lever. Insert swivel end through hole on remote lever and engage retaining clip.
6. Adjust swivel on lower right synchronization locking rod until it aligns with hole in lock lever. Insert swivel end in hole in lock lever and engage retaining clip.
7. Remove synchronization wire from right lower lock and unlatch upper and lower right locks by

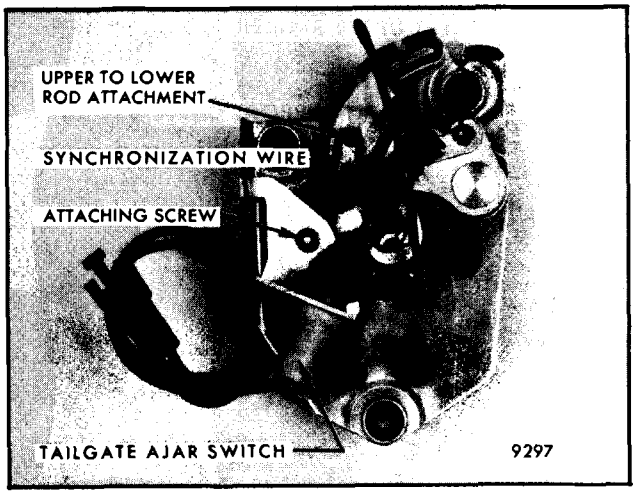


Fig. 7-148 - Tailgate Left Lower Lock Assembly

actuating tailgate outside handle. Perform synchronization checks as subsequently described.

8. Reinstall all previously removed components.

TAILGATE LEFT UPPER HINGE LOCK ASSEMBLY - GATE SIDE (Fig. 7- 150)

Removal

1. Open tailgate as a gate, remove remote handle trim panel and left side access hole cover.

2. Disconnect upper locking synchronization rod from left hinge lock and remove support cable attaching bolt. Lock right upper lock with locking knob.

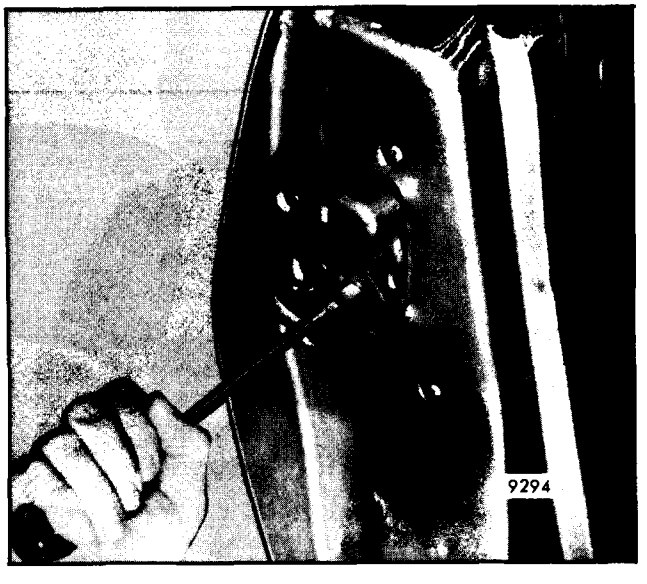


Fig. 7-149 - Manually Latch Upper Right Lock - Upper Lock Shown, Lower Lock Same

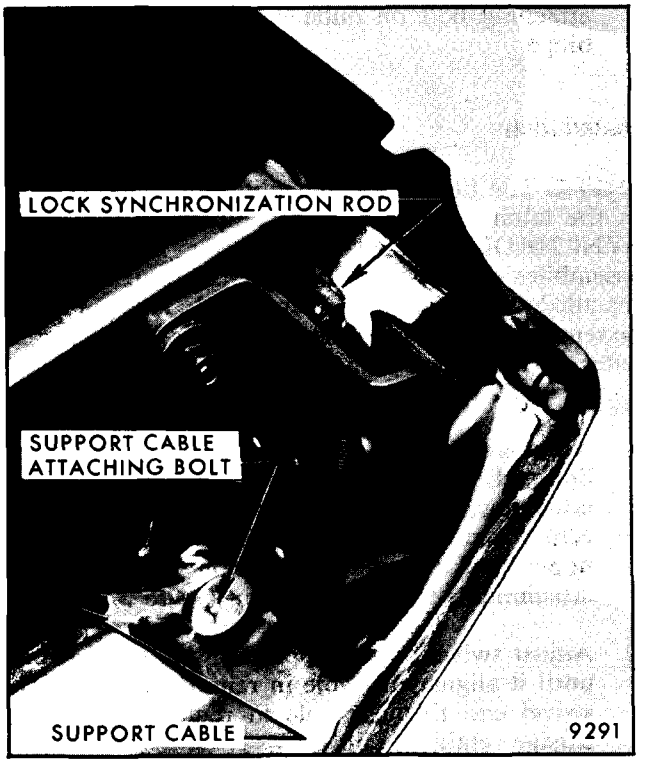


Fig. 7-150 - Tailgate Upper Left Lock Assembly

3. Mark a line around outer perimeter of hinge lock assembly on the tailgate.

4. If hinge lock assembly being removed is to be reinstalled, manually latch assembly as illustrated in Figure 7-134 prior to removal.

5. Working through the access hole, remove hinge to tailgate attaching nuts, remove support cable

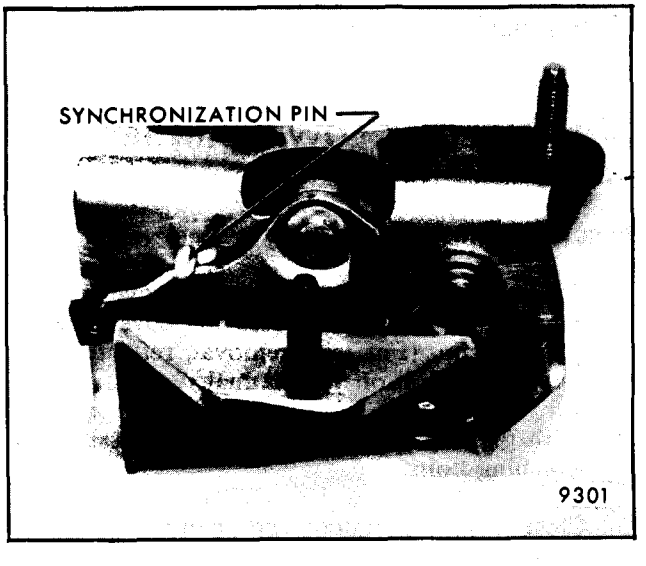


Fig. 7-151 - Tailgate Left Upper Hinge Lock Synchronization Pin

attaching bolt on outside of gate and remove hinge.

Installation

NOTE: The hinge lock assembly must be installed in the latched position to accomplish proper lock SYNCHRONIZATION. Service hinge lock assemblies will have a (plastic) synchronization pin installed when received, Figure 7-151. This pin must be removed after hinge lock assembly is installed and gate has been synchronized.

1. Align hinge lock assembly within premarked lines, install attaching nuts and support cable attaching bolt. Disconnect swivel attachment at center remote assembly. Then reconnect left upper locking synchronization rod. Torque attachments to 20 to 29 N·m (14 to 22 ft-lb).
2. Adjust swivel on left upper remote locking rod until it aligns with hole in remote lever. Insert swivel end through hole in remote lever and engage retaining clip.
3. Unlock right upper lock.
4. Remove left upper lock synchronization plastic pin.
5. Temporarily install center remote handle and activate to release left upper hinge lock.
6. Check tailgate operations as outlined under LOCK SYNCHRONIZATION CHECKS as subsequently described.
7. Reinstall all previously removed components.

TAILGATE LEFT LOWER HINGE ASSEMBLY (Figs. 7-152 and 7-153)

Removal and Installation

1. Open tailgate as a door and remove remote handle, trim cover, left access hole cover and left quarter trim. (For trim removal, refer to Rear Quarter Section of this manual.)
2. With gate open, remove torque rod assist link attaching bolts.
3. Close tailgate as a door and open as a gate and support in the full-open position. Remove support cable attaching bolt from left upper hinge and mark location of lower hinge to gate.

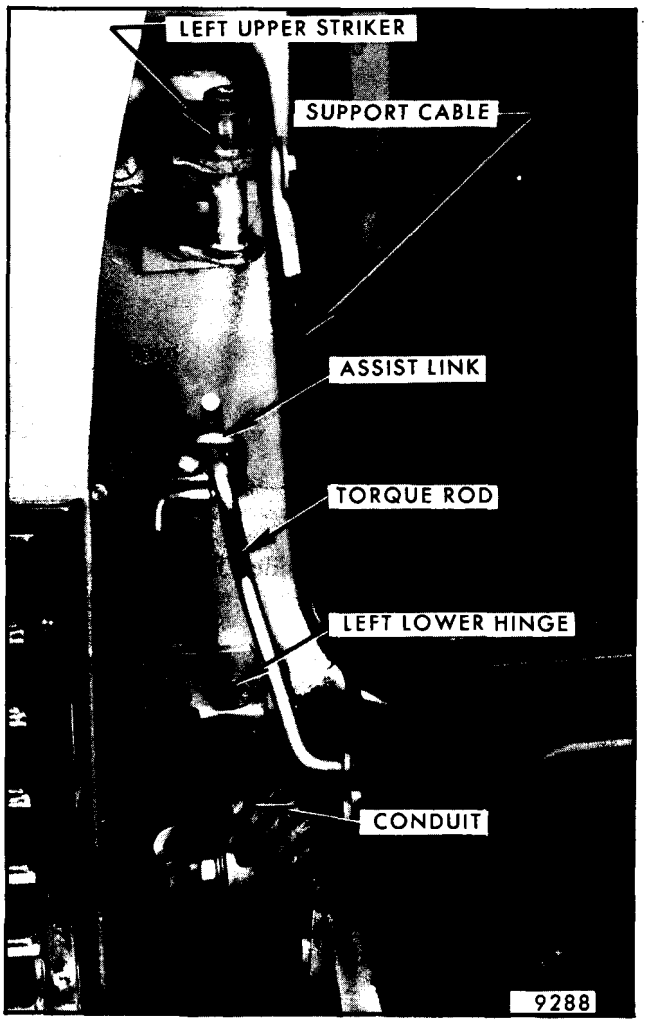


Fig. 7-152 - Tailgate Left Upper and Lower Lock Assemblies

4. Manually latch right and left upper locks, Figures 7-134 and 7- 149.

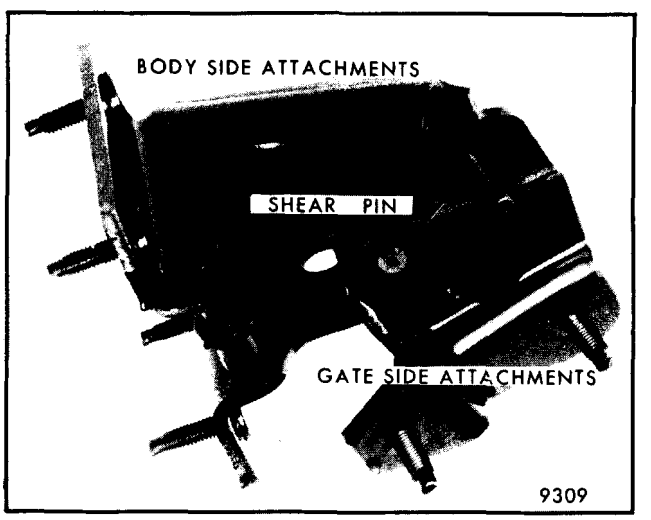


Fig. 7-153 - Tailgate Left Lower Hinge Assembly

WARNING: WITH TAILGATE OPEN IN THE GATE POSITION AND THE RIGHT AND LEFT UPPER LOCKS MANUALLY ENGAGED, THE TAILGATE HAS BEEN PLACED IN A VULNERABLE POSITION AND COULD DROP FROM THE RIGHT LOWER LOCK IF THE LOCKING ROD AND/OR OUTSIDE HANDLE IS ACTIVATED. DO NOT PULL ON ROD OR ACTIVATE OUTSIDE HANDLE AS PERSONEL INJURY AND/OR DAMAGE TO THE TAILGATE COULD RESULT.

5. Raise tailgate glass sufficiently to allow access to lower hinge attachments and remove nuts.
6. Mark location of hinge to body and remove attachments from inside rear body opening left pillar.
7. Remove hinge assembly.

Installation

1. Align hinge to premarked locations on body pillar and tailgate. Install attaching nuts and torque to 27 N·m (20 ft- lb).
2. Lower glass, (full-down position) and release (unlatch) left and right upper locks by activating remote handle.
3. Reinstall all previously removed components.

NOTE: New left lower hinge assemblies are serviced with a shear pin, Figure 7-135, which is automatically sheared off with gate operation. Also a "T" bar is installed in the hinge assembly bottom side and must be removed for proper operation.

TAILGATE LEFT UPPER HINGE AND STRIKER ASSEMBLY - BODY SIDE (Fig. 7-152)

Removal and Installation

1. With tailgate properly supported in an open gate position, remove support cable attaching bolt and mark location of hinge striker.
2. Remove left quarter trim (see Rear Quarter Section of this manual).
3. Remove attaching nuts.
4. To install, align hinge striker assembly within previously marked lines and replace attaching nuts. Torque to 20 to 29 N·m (14 to 22 ft-lb).

CAUTION: *This lock striker is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.*

TAILGATE RIGHT UPPER AND LOWER STRIKER ASSEMBLIES (Fig. 7-154)

The right upper and lower striker assemblies consist of a single metal bolt and washer assembly that is threaded into back pillar. With this design, the tailgate is secured in the closed position when the right upper and lower tailgate locks engage with the striker bolts.

Removal and Installation

1. Mark position of striker on back body pillar.
2. Insert tool J-23457, BT 7107 or equivalent into the star-shaped tool recess in the head of the striker bolt and remove striker.
3. To install, reverse removal procedure, making certain the lock striker is torqued to 50 to 60 N·m (36 to 45 ft-lb).

CAUTION: *The tailgate lock strikers are an important attaching part in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.*

Adjustments

Right upper and lower striker assemblies are adjustable up or down, fore or aft.

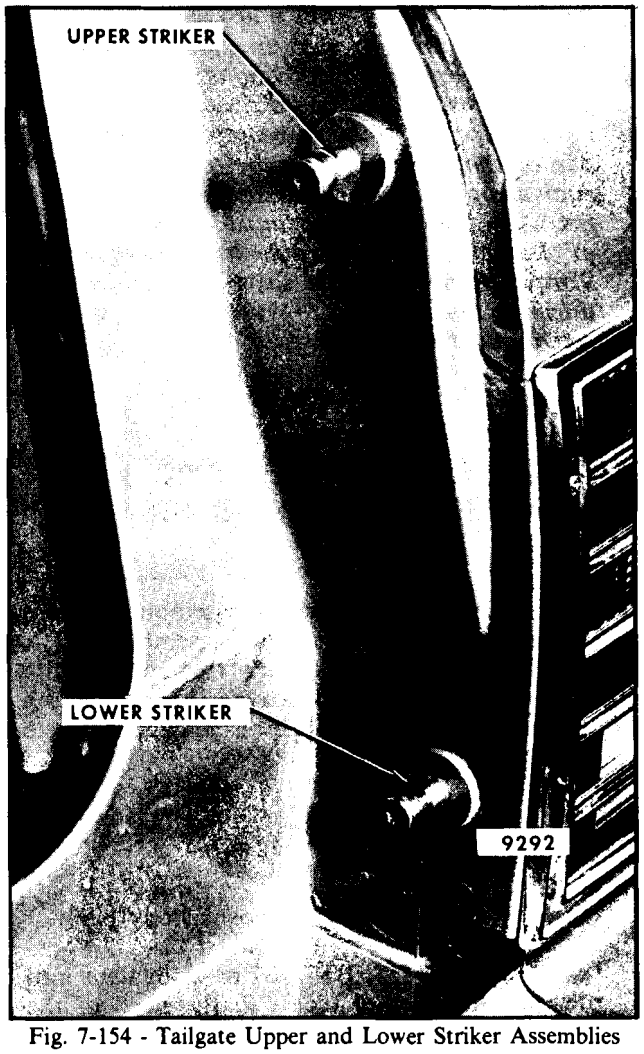


Fig. 7-154 - Tailgate Upper and Lower Striker Assemblies

TAILGATE TORQUE ROD AND ASSIST LINK

Removal and Installation (Figs. 7-135 and 7-152)

1. Open tailgate sufficiently as a door to achieve a neutral torque rod position or until tension on torque rod has been relieved. With torque rod in a neutral position, remove torque rod assist link retainer attaching bolts and disengage assist link from end of torque rod. Close tailgate and open as a gate and support in full open position.
2. Remove left quarter trim (see Rear Quarter Section of this manual).
3. Remove left lower hinge to body attachments, disconnect all electrical connectors and remove screws retaining electrical conduit to body. Remove support cable attachment from gate side.
4. Manually latch upper left lock, Figure 7-134.

WARNING: WITH TAILGATE OPEN IN THE GATE POSITION AND THE LEFT UPPER LOCK MANUALLY ENGAGED, THE TAILGATE HAS BEEN PLACED IN A VULNERABLE POSITION AND COULD DROP FROM THE RIGHT LOWER LOCK IF THE LOCKING ROD AND/OR OUTSIDE HANDLE IS ACTIVATED. DO NOT PULL ON ROD OR ACTIVATE OUTSIDE HANDLE AS PERSONAL INJURY AND/OR DAMAGE TO THE TAILGATE COULD RESULT.

5. With the aid of a helper to support the gate, activate outside handle and remove gate from lower right striker. Place gate on a covered work bench to protect painted surface.
6. Remove torque rod retainer attaching bolt from right side of gate, Figure 7-135, Item 8.
7. As a bench operation, drill out rivet retaining torque rod guide and remove from gate.
8. To install, reverse removal procedure.

TAILGATE ASSEMBLY

Removal and Installation

1. Open tailgate sufficiently as a door to achieve a neutral torque rod position or until tension on torque rod has been relieved. With torque rod in a neutral position, remove torque rod assist link retainer to body attaching bolts (Fig. 7-152). Close tailgate and open as a gate.
2. Support tailgate in a full-open position and remove support cable to left upper hinge striker assembly attaching bolt (Fig. 7- 150).
3. Remove left quarter trim (see Rear Quarter Section of this manual).
4. With the aid of a helper, remove left lower hinge to body attaching bolts (Fig. 7-152) and disconnect electrical harness connector. Remove screws retaining electrical conduit at body attachments.

WARNING: WITH TAILGATE OPEN IN THE GATE POSITION AND THE RIGHT AND LEFT UPPER LOCKS MANUALLY ENGAGED, THE TAILGATE HAS BEEN PLACED IN A VULNERABLE POSITION AND COULD DROP FROM THE RIGHT LOWER LOCK IF THE LOCKING ROD AND/OR OUTSIDE HANDLE IS ACTIVATED. DO NOT PULL ON ROD OR ACTIVATE OUTSIDE HANDLE AS PERSONAL INJURY AND/OR DAMAGE TO THE TAILGATE COULD RESULT.

5. Manually latch left upper lock as shown in Figure 7-134. Then with the aid of helper to support the tailgate, activate the DOOR HANDLE (right side) to unlock and free the right lower lock from the striker assembly. Remove gate assembly by lifting upward, then rearward.

6. To install, reverse removal procedure.

Adjustments

Proper evaluation of a misaligned condition can eliminate performing unnecessary adjustments. To properly evaluate a misaligned tailgate condition, the upper right lock striker should be removed. If the gate, when operated as a door, rides up or is pulled down by the lower right lock striker, the lower right lock striker should be adjusted.

NOTE: Prior to performing any adjustments, the position of the hinge, lock or striker to be adjusted should be marked to facilitate realignment from original position.

The left hinges provide adjustment for properly positioning the tailgate in the body opening and providing flush alignment of the tailgate outer panel with adjacent panels as well as proper lock operation.

NOTE: The upper left lock striker adjustments and the right upper and lower lock striker adjustment are not provided for up or down adjustment of either side of the gate assembly. However, some adjustment at one or more of these locations is usually required when the left lower hinge is adjusted to raise, lower or move the gate sideways in the opening.

1. The lower left hinge assembly at body attachment is adjustable up or down and laterally.

   To gain access to lower left hinge-to-body attachments, remove left quarter trim. Loosen hinge to body attachments and adjust up, down, laterally or rotate as required.

   Rotating the hinge slightly will raise or lower the right side of the gate. This can be accomplished by loosening the lower hinge- to-body attachments. Then with the tailgate open as a door, support the right side of the tailgate in the desired position and tighten the hinge attachments. If this adjustment is performed or if the tailgate is moved sideways, it may be necessary to also adjust the left upper hinge striker assembly.

   If the lower left hinge is adjusted upward or downward, clearance between the upper left lock frame on tailgate and the hinge lock striker on body pillar should be checked, specified clearance 8 mm (5/16"), and where required, the upper left lock should be adjusted.

2. Lower left hinge assembly at gate attachment is adjustable forward or rearward.

   Forward and rearward adjustment of lower left hinge at the gate attachment is primarily for flush alignment of tailgate outer panel with adjacent panels in the area of the lower left hinge.

   The lower left hinge-to-tailgate attaching nuts are located inside the tailgate. To loosen nuts for adjustment of tailgate on hinge, remove tailgate inner cover panel and left access hole cover to gain access to hinge-to-tailgate attachments. Adjust tailgate on hinge as required, then tighten nuts and replace previously removed parts.

3. Upper left hinge lock assembly is adjustable forward and rearward.

   The forward and rearward adjustment of the upper left hinge lock is available to provide a flush alignment of the tailgate outer panel with adjacent body panels in the area of the upper left lock.

   Prior to adjusting upper left lock, mark position of lock on tailgate. Two of the lock attaching nuts are located inside the tailgate, one outside. To loosen inside nuts, remove tailgate trim cover panel and access hole cover. Then loosen hinge-to-gate attaching nuts. Adjust lock, as required, then replace all previously removed parts.

   NOTE: After any adjustment of the upper left lock, synchronization of the lock system should be checked and, where required, the lock system should be synchronized as described in this section.

4. The upper left striker assembly is adjustable up, down and laterally. The up or down adjustment is to provide adequate clearance, 8 mm (5/16"), between the bottom of the lock frame (on tailgate) and the top of the hinge pin striker plate.

   To check clearance, open gate as a door and measure distance between the upper surface of the upper left hinge pin and striker plate and the lower surface of the upper left lock frame.

   To make necessary adjustment, remove left quarter trim to gain access to attachments. Loosen attaching nuts and reposition striker hinge assembly as required.

This adjustment is available to provide proper engagement of the hinge pin and lock striker with the lock. This adjustment is not intended as a means of raising or lowering the left or right side of the gate.

To determine the correct adjustment, open gate as a gate; then, while closing gate, carefully observe how the striker pin engages in the slot in the bottom surface of the lock. The striker pin should enter into the slot with side pressure.

5. Right upper and lower lock striker assemblies are adjustable forward or rearward, up or down and laterally by using spacers.

   NOTE: The upper and lower right strikers should be removed prior to performing any other hinge or lock adjustment.

   To properly adjust the upper or lower right strikers, first open tailgate as a door and remove striker with tool J-23457 or equivalent. Check alignment of tailgate in body opening. THE TAILGATE SHOULD BE PROPERLY ALIGNED WITH THE LEFT UPPER HINGE LOCK PRIOR TO ADJUSTMENT OF STRIKERS. Install striker slightly more than fingertight. Then carefully close gate to allow striker to self-align. Then carefully open gate and tighten striker.

   Operate gate both as a door and a gate and check flush alignment of outer panels in area of striker. If any further minor adjustment is required, mark position of striker on body pillar, loosen striker, make required adjustment from marked position and tighten striker.

   NOTE: Do not use right upper and lower striker to align right side of gate up or down in body opening.

THREE-WAY TAILGATE LOCK AND SYNCHRONIZATION CHECK PROCEDURE

The lock system on the three-way tailgate is designed to perform the following two blockout functions.

1. Allow the tailgate to be opened and closed as a door with glass up or down and at the same time prevent accidental operation of the upper left lock (which allows the gate to be opened as a gate).

2. Allow the tailgate to be opened and closed as a tailgate with glass down and at the same time prevent accidental operation of the lower right lock (which allows the gate to be opened as a door).

These blockout functions are accomplished by levers in the upper right lock. Figure 7-143 shows the upper right lock and identifies the levers which perform blockout functions.

To assure that the upper right lock levers perform the blockout functions properly, the upper right lock and gate remote control must be synchronized with the rest of the tailgate lock system (lower right lock and upper left lock). This synchronization is required to prevent accidental operation of the upper left lock when the gate is opened as a door and to prevent accidental operation of the lower right lock when the gate is opened as a gate.

CAUTION: *Whenever any of the locking system components inside the tailgate are serviced, the locking system MUST BE synchronized as described under Lock Synchronization Procedure.*

Lock Synchronization Checks

1. Synchronization check for lower right lock.

   a. Open tailgate as a gate (horizontal position). Take precautions to prevent damage if tailgate should become disengaged from lower right lock by placing a protective support beneath the gate.

      Allow gate to open approximately halfway. Then actuate outside handle with moderate pressure rearward. Release handle and close gate. Open and close gate as a door.

   b. Repeat above procedure (step 1a) five times. If tailgate lower right lock does not become disengaged, synchronization of the lower right lock is correct. If tailgate becomes disengaged at lower right lock, reinstall gate on lower right lock and proceed with Synchronization Procedure as described.

2. Synchronization check for upper right and left locks.

   a. Open tailgate as a door with the glass down.

   CAUTION: *Place a protective support under right side of gate in the event gate becomes disengaged from upper left lock.*

   b. Operate center remote control handle (gate operation) with moderately heavy pressure.

   c. Close tailgate and repeat above operation

(step 2a and b) five times. If tailgate upper left lock does not become disengaged, the upper locks are in synchronization.

If tailgate becomes disengaged at the upper left lock, reinstall gate on upper left lock and proceed with Synchronization Procedure as described.

Lock Synchronization Procedure

1. Open gate as a door, then close gate securely. Lower glass and open tailgate to gate (horizontal) position.
2. Remove remote handle, trim cover and inner panel access hole covers.
3. Disconnect upper left locking rod from remote (center of gate) handle (Fig. 7-147).
4. Disconnect lower right locking rod from lower right lock, Figure 7-146, View A.
5. Manually latch completely upper right and left locks on gate using a wide blade screwdriver, Figures 7-149 and 7-134. Lower right lock MUST be fully engaged.
6. Adjust swivel on left upper remote locking rod until it aligns with hole in remote lever. Insert swivel end through hole on remote lever and engage retaining clip.
7. Adjust swivel on lower right locking rod until it aligns with hole in lock lever. Insert swivel end in hole in lock lever and engage retaining clip.
8. Unlatch upper right and left locks by actuating tailgate remote handle (center of gate).
9. Perform lock synchronization checks and check window operation.
10. Reinstall all previously removed covers and trim.

THREE-WAY TAILGATE DIAGNOSIS AND SERVICING PROCEDURES

CONDITION	APPARENT CAUSE	CORRECTION
1. Gate does not open as gate.	1. Glass blockout lever of upper right lock not actuated.	a. Check to see if glass blockout rod is installed and attached to the lever of the upper right lock. b. Check if glass is in the full-down position.
	2. Lower right lock not latched.	a. Open as a door and slam it to latch. b. If the lock still is unlatched, the lower striker should be adjusted. c. Open as a door, check operation of lower lock by manually latching. Then activate outside handle to unlatch.
	3. Synchronization (adjusting) switch at remote control not engaged.	NOTE: This condition can be determined by trying to unlatch the upper locks. Only the upper right lock will unlatch.

THREE-WAY TAILGATE DIAGNOSIS AND SERVICING PROCEDURES (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
		a. Open gate as door and remove remote handle and trim. Close gate as door and carefully so as not to bend, pull the upper left horizontal lock rod towards the centerline of body while simultaneously activating remote handle. Open to gate position. b. Synchronize locks as outlined in synchronization procedure. c. Make lock synchronization check.
2. Gate does not open as door.	1. Upper right hand striker too far rearward (gate out of flush, and/or chucks at right upper corner.	a. This condition can prevent the upper left hand hinge lock from latching. Readjustment of the upper right striker forward is necessary to allow both upper locks to latch.
	2. Upper left hinge lock not latched.	a. Check for unlatched upper left lock by pulling on corner of gate (gate will chuck if unlatched). b. Open gate and reslam to latch. c. If the lock is still unlatched, the gate side left upper hinge lock assembly will have to be adjusted forward as outlined under adjustment of left upper hinge lock assembly.
	3. Rod (upper to lower lock connecting rod right side) not engaged at upper and/or lower lock.	Determine if rod is detached by visually inspecting with gate open in the gate position and trim and access hole covers removed. a. If rod is disconnected at upper lock, attach rod to upper lock.

THREE-WAY TAILGATE DIAGNOSIS AND SERVICING PROCEDURES (Contd)

CONDITION	APPARENT CAUSE	CORRECTION
		NOTE: Do not pull up on rod as this will unlatch the lower lock and drop gate on bumper. b. If rod is disconnected from lower lock, perform lock synchronization. c. Make lock synchronization check.
3. With gate open as door and remote handle activated, upper left hinge lock assembly unlatches.	1. Improper synchronization of upper locks. 2. Bent upper horizontal lock rods.	a. Refer to lock synchronization procedure. a. Replace rods and resynchronize locks as outlined in lock synchronization procedure.
4. With gate open as gate, and door handle activated, lower right lock unlatches.	1. Improper synchronization of right upper and lower locks. 2. Bent vertical lock rod caused by using rod to unlock door.	a. Synchronize locks by following procedure outlined in lock synchronization procedure. a. Replace rod and resynchronize locks by following lock synchronization procedure.
5. Tailgate window will not raise or lower when gate is in a closed position or when open as a door.	1. Glass blockout switch connector not engaged. 2. Improperly adjusted blockout switch. 3. Open circuit in wiring between I.P. switch, tailgate switch and/or blockout switch. 4. Defective blockout switch.	a. Engage connector. a. Adjust blockout switch as described under tailgate blockout switch. a. Refer to electrical section of this manual for trouble shooting procedures. a. Replace switch.

SECTION 8

ROOF

TABLE OF CONTENTS

SUBJECT	PAGE
Headlining - Cloth and Vinyl Coated (Soft)	8-1
Headlining - Styles with Sun Roof	8-4
Headlining - One Piece Formed	8-6
Dome Lamps	8-13
Vanity Mirror and Lamp Assembly	8-15
Interior Garnish Moldings	8-17
Exterior Roof Moldings	8-24
Roof Drip Scalp Moldings	8-24
Upper Body Lock Pillar Finishing Molding - "H-27 and X-27" Styles	8-25
Upper Roof Moldings-Landau Styles	8-25
Quarter Belt Moldings	8-26
Fabric Roof Cover	8-26
Cover Removal - All Styles without Foam Pad	8-40
Cover Installation - All Styles without Foam Pad	8-40
Cover Removal - All Styles with Foam Pad	8-44
Foam Pad Installation	8-44
Cover Installation - All Styles with Foam Pad	8-46
All Styles with Sun Roof Option	8-48
Fabric Roof Cover Repair	8-51
Integral Padded Styles	8-57
Integral Padded Styles with Foam Pad	8-58
Sun Roof	8-59
Diagnosis Chart	8-61
Adjustments	8-62
Motor and Drive Gear	8-63
Control Switch	8-63
Headlining Panel	8-63
Sun Roof Panel	8-64
Rear Guide and Cable Assembly	8-65
Drain Hose	8-66
Weatherstrip (Opening)	8-66
Weatherstrip (Panel)	8-68
Housing	8-68
Lubrication	8-69
Vista Vent	8-70

HEADLINING - CLOTH AND VINYL COATED (SOFT)

HEADLINING - "A, E and K" STYLES

Description

The headlining assembly is attached to the roof inner panel by concealed plastic retaining strips. The retaining strips are sewn to the headlining assembly and have rectangular lugs that fit into "T"-slots in the roof inner panel (see Fig. 8-1).

The headlining is further retained along the side roof rails and roof extension areas by cement. Garnish moldings or finishing lace also assist in retaining the headlining. Side roof rail garnish moldings are secured to a headlining retainer or the side roof rail by clips which are located in the molding.

When finishing lace is used at the windshield and back window or back body opening, the headlining is secured at these areas with an approved nonstaining adhesive.

Removal of quarter upper trim is covered in the Rear Quarter Section of this manual.

Removal of adjacent interior moldings is covered later in this section.

Removal

1. Place protective cover over seat cushions and backs.

2. Prior to removing headlining, remove following hardware and trim assemblies if installed over headlining.

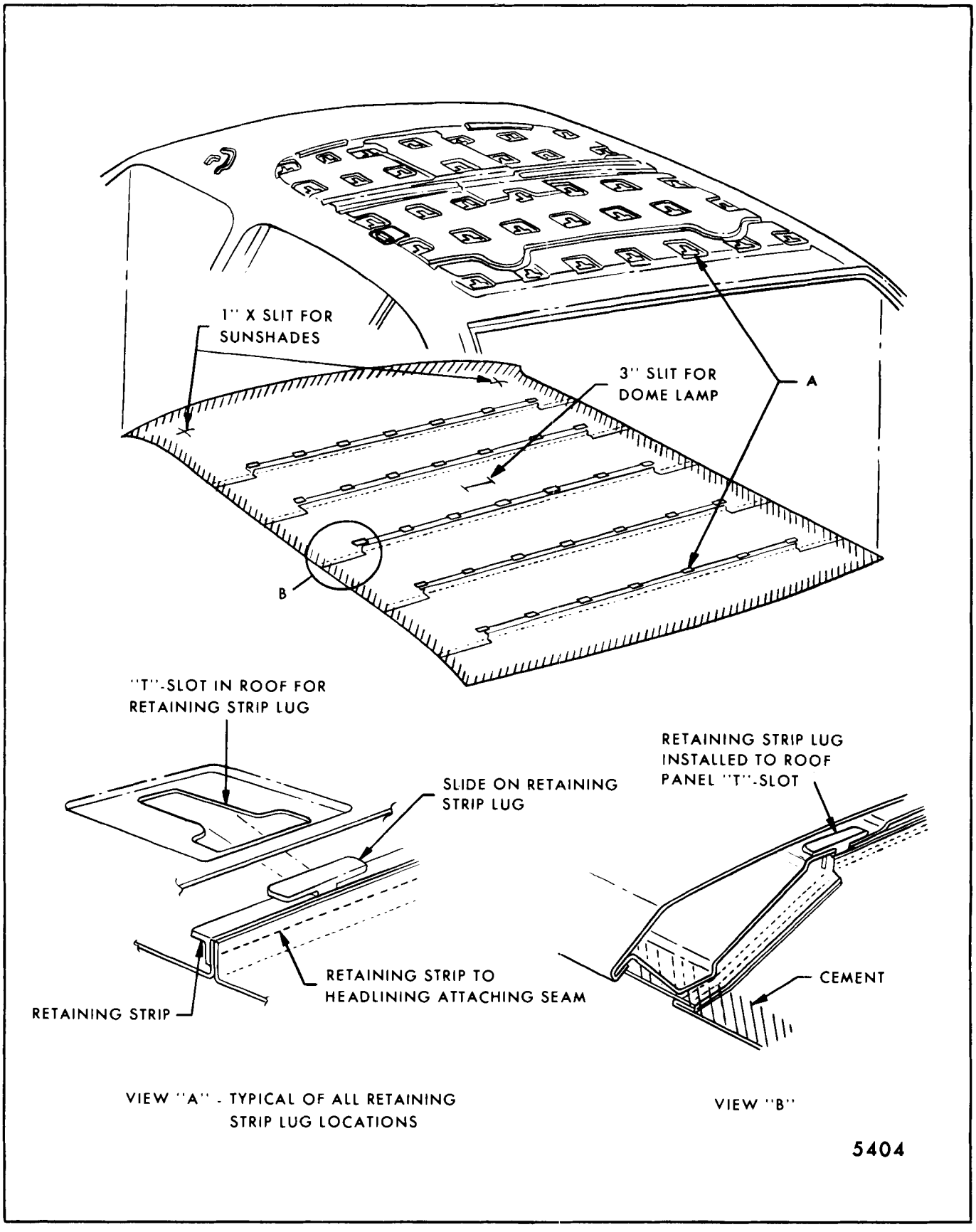


Fig. 8-1-Typical Cloth or Vinyl Headlining Installation - "A, E and K" Styles

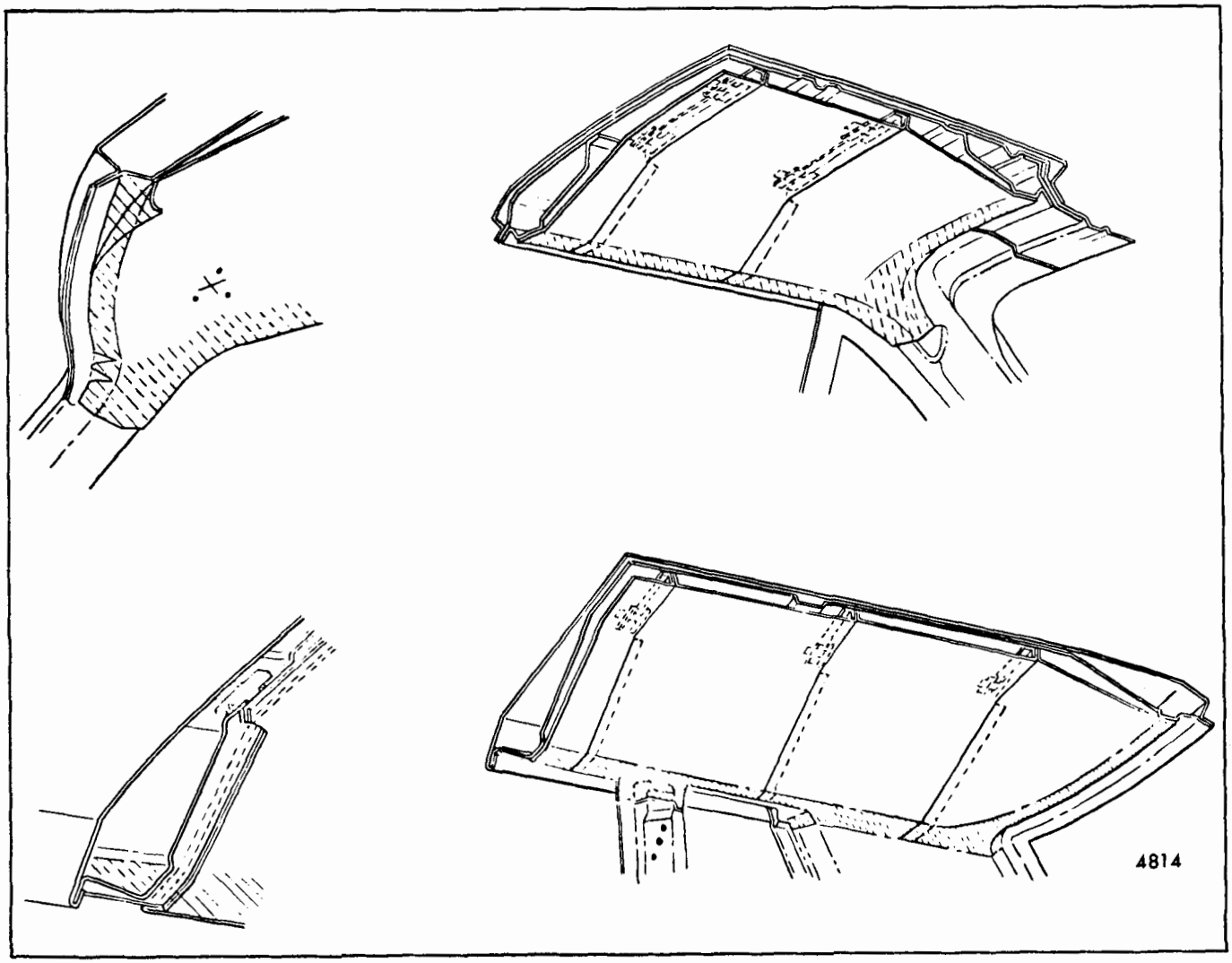


Fig. 8-2-Typical Trim Cement Application to Headlining

a. Windshield side and upper garnish moldings or finishing lace

b. Map lamp

c. Sunshade supports

d. Dome lamp

e. Coat hooks

f. Side roof moldings or finishing lace

g. Back window garnish moldings or finishing lace

h. Center pillar upper trim assembly

i. Rear quarter trim, where necessary

j. Quarter upper trim finishing panel

k. Vista vent moldings or finishing lace

l. Shoulder strap retainers and covers

m. Roof-mounted assists straps (if present)

3. Carefully detach cemented edge of headlining around entire perimeter at shoulder belt anchor locations and vista vent opening if present. If headlining is difficult to detach, apply heat with heat gun to cemented areas for easier removal and to prevent tearing.

   NOTE: Keep headlining clean by gathering or folding assembly with retaining strips to outside of material during removal.

4. Starting at front of body carefully detach retaining strips by pulling toward rear of body to disengage rectangular lugs from "T"-slots on each strip and remove headlining from body.

Installation

1. Check headlining retaining strips for cracked or broken rectangular lugs. If damaged use metal service clip to replace.

2. If replacing headlining on styles with vista vent, the headlining and plastic retaining strips must be cut and trimmed using the following procedure.

   a. Cut no. 1 and no. 2 retaining strips at point A and B, see Figure 8-3, View "C". On "A-35" styles, cut no. 1 retaining strip only, at same locations.

   CAUTION: *Exercise care not to damage headlining material when cutting retaining strip(s) and seams.*

   b. Carefully cut thread (top seam only) that attaches retaining strip to headlining between points A and B on no. 1 and no. 2 retaining strips and remove (see Fig. 8-3, View "C").

   c. Cement seam to prevent stitching from coming loose at remaining retainer lugs (see Fig. 8-3, View "C").

3. Lift headlining assembly into body. Starting at rear of body, engage outer lug of retaining strip to "T"-slot in roof inner panel and slide forward to secure. Working inboard, insert remaining lugs of attaching strip.

4. Working forward, keeping tension pulled toward front of body, install and secure remaining retaining strips.

   NOTE: Position headlining from side to side as required to keep headlining centered during installation.

5. Apply an approved nonstaining trim cement to headlining surface at windshield, side roof rail, shoulder belt anchor locations and back window or back body opening (see Fig. 8-2).

   NOTE: If sequence in step 6 is not followed, wrinkles may occur at ends of retaining strips when headlining is secured at side roof rails.

6. Stretch and secure headlining at windshield first; then secure at back window or back body opening, rear quarter areas and side roof rail.

   CAUTION: *To avoid possible interference with operation of shoulder belt retractors, be sure headlining material is thoroughly cemented and properly attached around base of retractor assembly openings. Maximum trim allowance inside flange of opening is 1/4" all around.*

7. On styles with vista vent option, cut out area of headlining at roof opening leaving sufficient material to fold over entire edge. Apply cement and secure around opening (see Fig. 8-3, View "B").

8. Permanently attach material removing all draws and wrinkles.

9. Depress headlining against roof inner panel to find locations of attaching screw holes for all previously removed inside hardware, moldings and trim assemblies.

HEADLINING - STYLES WITH SUN ROOF

Headlinings on styles with the sun roof option installed are cemented to the roof inner panel. When replacement is necessary, headlining material must be ordered by the yard and trimmed to the proper size.

Removal

1. Remove all hardware and trim assemblies as previously described.

2. With sun roof in open position, remove windlace and detach headlining at sun roof opening and around entire perimeter of body.

Installation

1. Place original headlining on new material and mark to determine approximate size, then trim with scissors.

   NOTE: Cut new headlining so that it is slightly larger than original to avoid a short or improper fit.

2. Place protective covering over seats.

3. Apply trim cement at area of headlining to rear of sun roof opening and lift into body.

4. Secure and stretch headlining to roof inner panel at rear of sun roof opening.

5. Apply trim cement to edges of headlining and secure at back window, windshield and side roof rail areas.

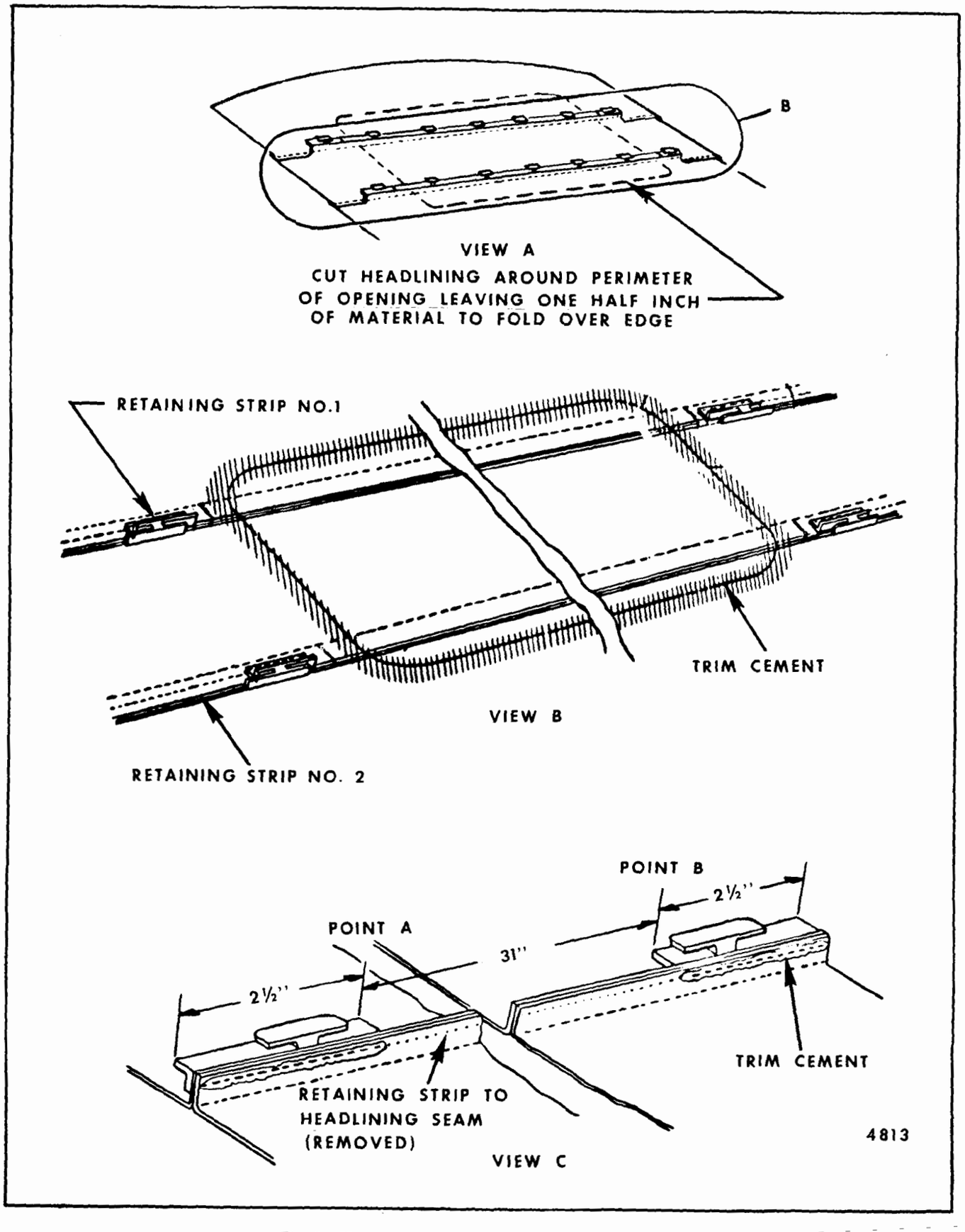


Fig. 8-3-Headlining Installation - Styles with Vista Vent

6. Depress headlining against sun roof opening and mark area to be cut out.

   NOTE: Leave sufficient material to fold over flanges of sun roof opening.

7. Using a sharp knife or scissors, cut an "X" slit across section of headlining covering sun roof opening. Then cut off triangular pieces.

8. Cement headlining around entire perimeter of sun roof opening smoothing out all draws and wrinkles.

9. Replace all previously removed components to complete installation.

FORMED HEADLINING

DESCRIPTION

The one-piece formed headlining on "B,C,F and X" styles consists of molded hardboard covered with a foam and cloth or vinyl facing. The "B" station wagon headlining is two-piece which uses a molding to close out the joint of the front and rear section. The molding engages to a retainer which attaches to slots in the roof panel (Fig. 8-4, Section A). On "H" styles the headliner is a scored and folded grained perforated hardboard with an insulator cemented to the upper surface. The headlining is held partially in place by retaining tabs located in the side roof rail which engage recessed slots in both sides of the headlining assembly. Final attachment is accomplished when the interior moldings and attaching screws that retain the sunshade brackets, dome lamp base, coat hooks and shoulder strap retainer covers are installed (see Figs. 8-7, 8-8 and 8-9).

The one-piece construction requires the headliner be serviced as a complete assembly in all cases. The station wagon headlining differs in that either front or rear section can be serviced without disturbing the opposite assembly.

Removal of adjacent interior moldings is covered later in this section.

Removal

1. Remove the following items:

   a. Courtesy lamps

   b. Sunshade support brackets

   c. Coat hooks

   d. Upper quarter trim finishing panels

   e. Side roof rail moldings

   f. Windshield and back window garnish moldings

   g. Shoulder strap retainers and covers

   h. Windshield side garnish molding

   i. Roof-mounted assist straps (if present)

2. Disengage tabs or clips on each side of the headlining assembly from the attaching slots and move the assembly rearward enough to provide clearance for the front portion of the assembly to unload through front door opening (see Figs. 8-7, 8-8 and 8-9). On "B-35" styles, use tool J-2772 or equivalent at one end of the molding and pry molding loose from retainer and remove molding.

3. On "B-35, X-17" and H-07,15 and 77" styles, remove headlining through back body opening.

Installation

If the replacement headlining does not have an insulator cemented to the upper surface (standard on "H-77 and 15" styles, optional on "H-11") carefully remove insulator from original headlining if present and spot cement insulator to replacement headlining sufficiently to hold insulator in position during installation.

1. On all styles (less "B-35, H-07,15,77 and X-17"), load the rear portion of headlining diagonally through side window opening or right front door opening.

2. On "B-35, H-07,15,77 and X-17" styles, load the headlining through back door or tailgate opening.

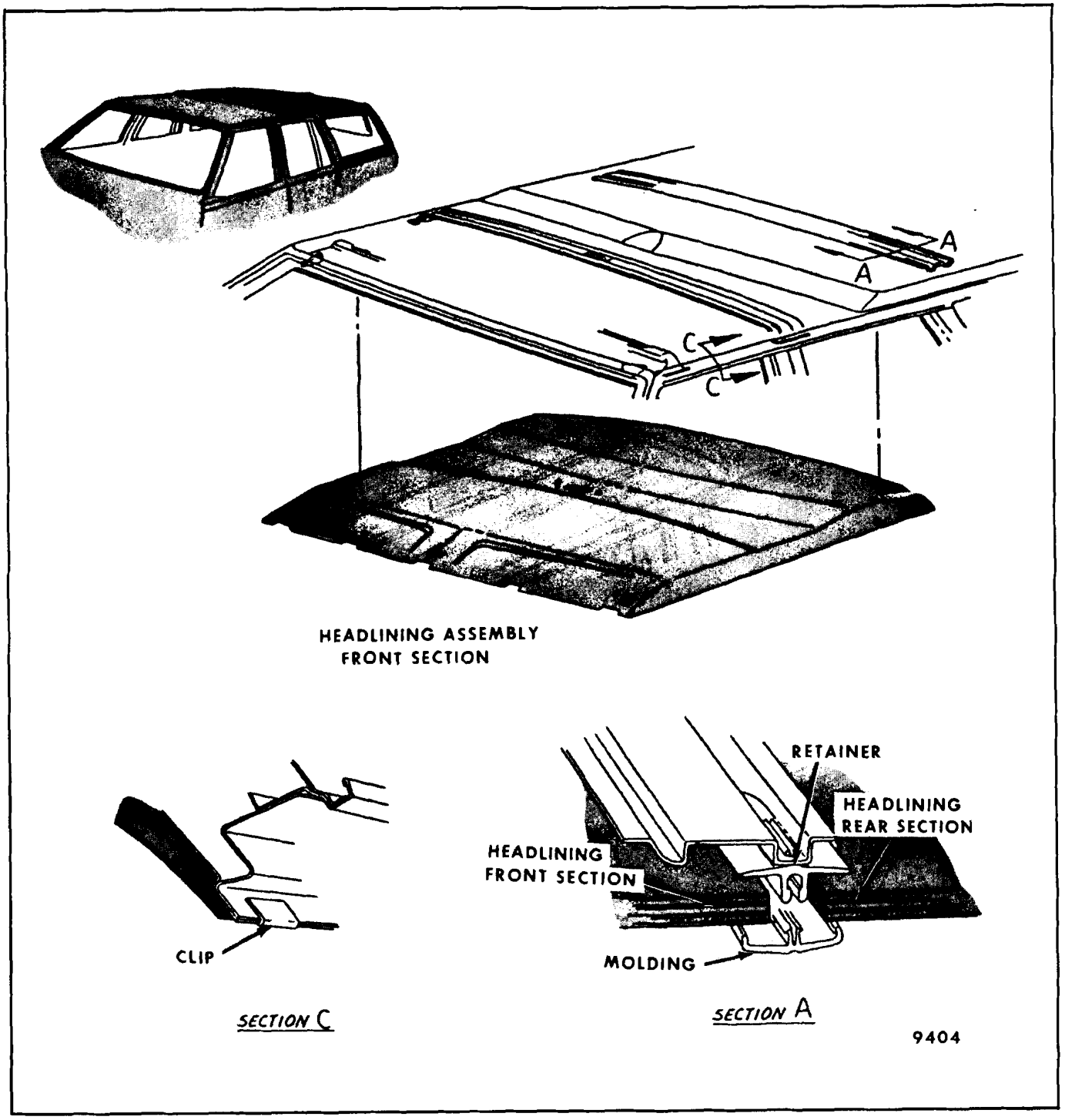


Fig. 8-4 - Headlining Front Section Assembly - "B-35" Style

CAUTION: *Care must be exercised when loading assembly. Over flexing may result in damage.*

3. Align headlining to roof inner panel with recessed slots positioned over retainers at side roof rail (see Fig. 8-9, View "A").
4. Engage headlining at tab locations to accomplish temporary retention to roof inner panel (see Fig. 8-9, View "A").
5. On "B and C" styles, install side roof rail attaching clips as shown in Figures 8-4, 8-5 and 8-6.

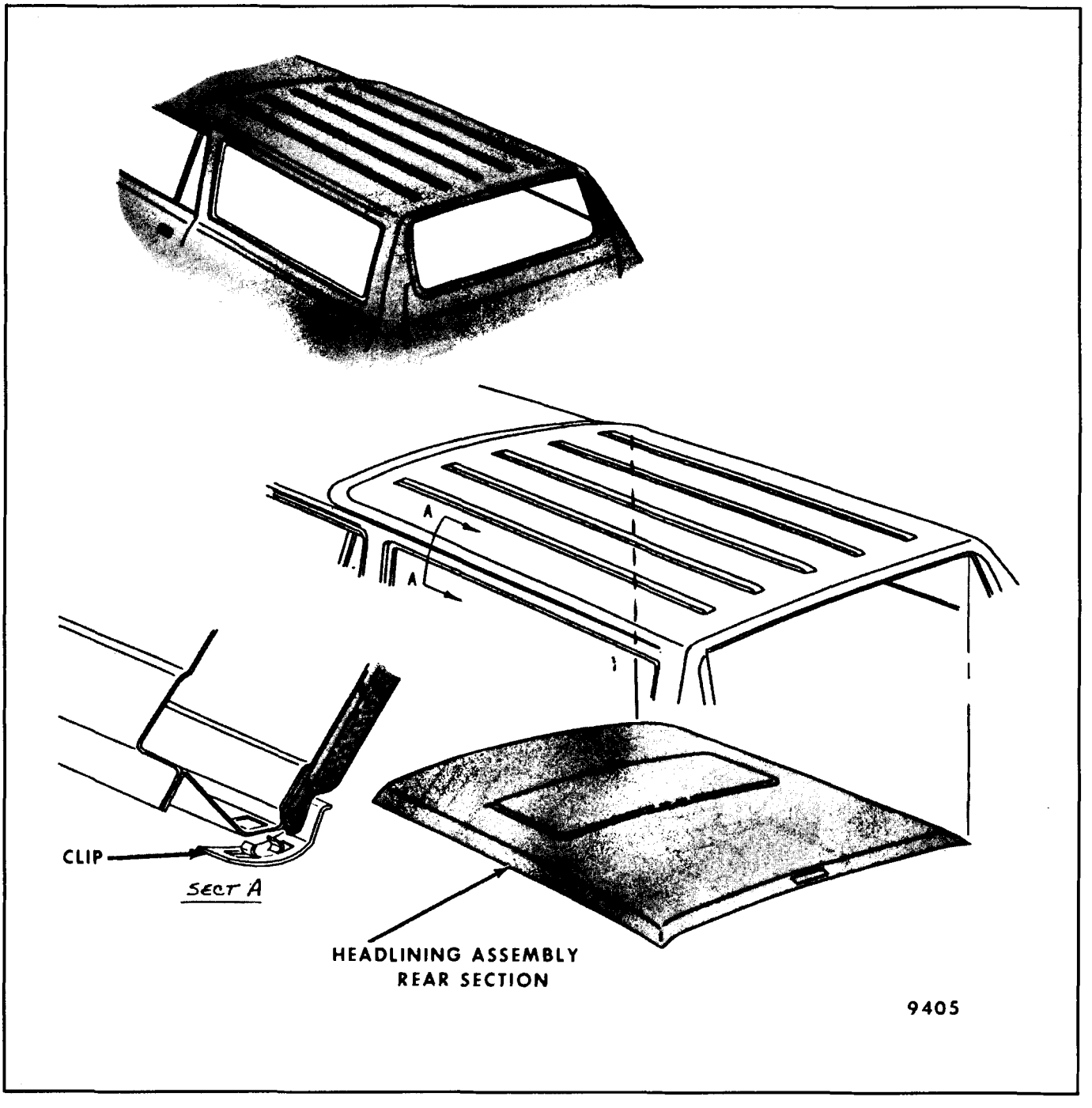


Fig. 8-5 - Headlining Rear Section Assembly - "B-35" Style

6. Align headlining with cutouts for sunshades and dome lamp and install sunshade brackets and dome lamp base.

   NOTE: Do not tighten sunshade bracket and dome lamp attaching screws completely until headlining is properly aligned at all other hardware attaching locations.

7. On "B" station wagon styles, align finishing molding at centerline of roof and engage to retainer. Install complete molding to both right and left sides (Section A, Fig. 8-4).

8. Install all other previously removed hardware and interior moldings.

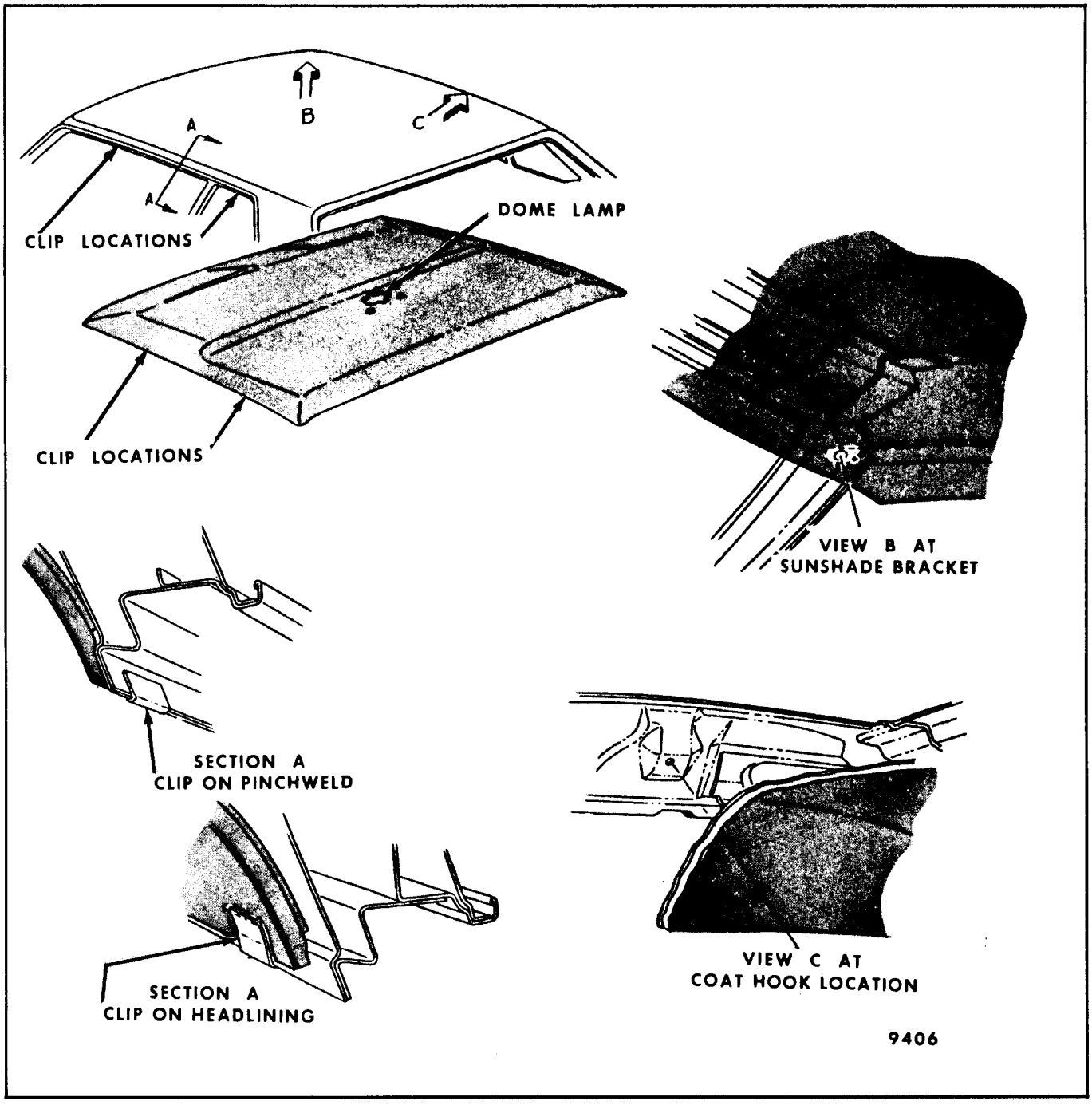


Fig. 8-6 - Formed Headlining Assembly - "B,C" Styles Typical

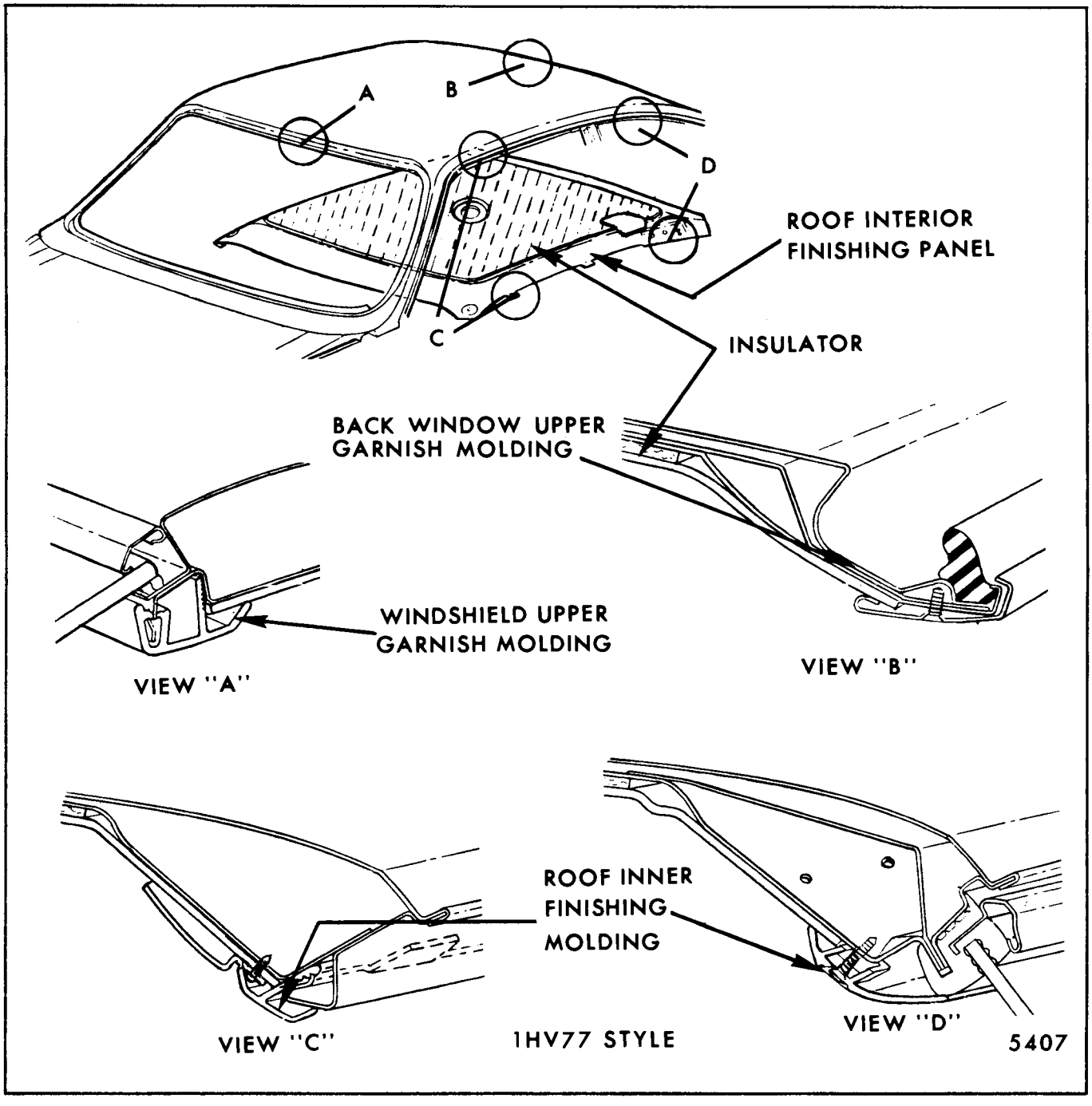


Fig. 8-7-Headlining (Roof Interior Finishing Panel) Assembly - "77" Styles ("07" Styles Similar)

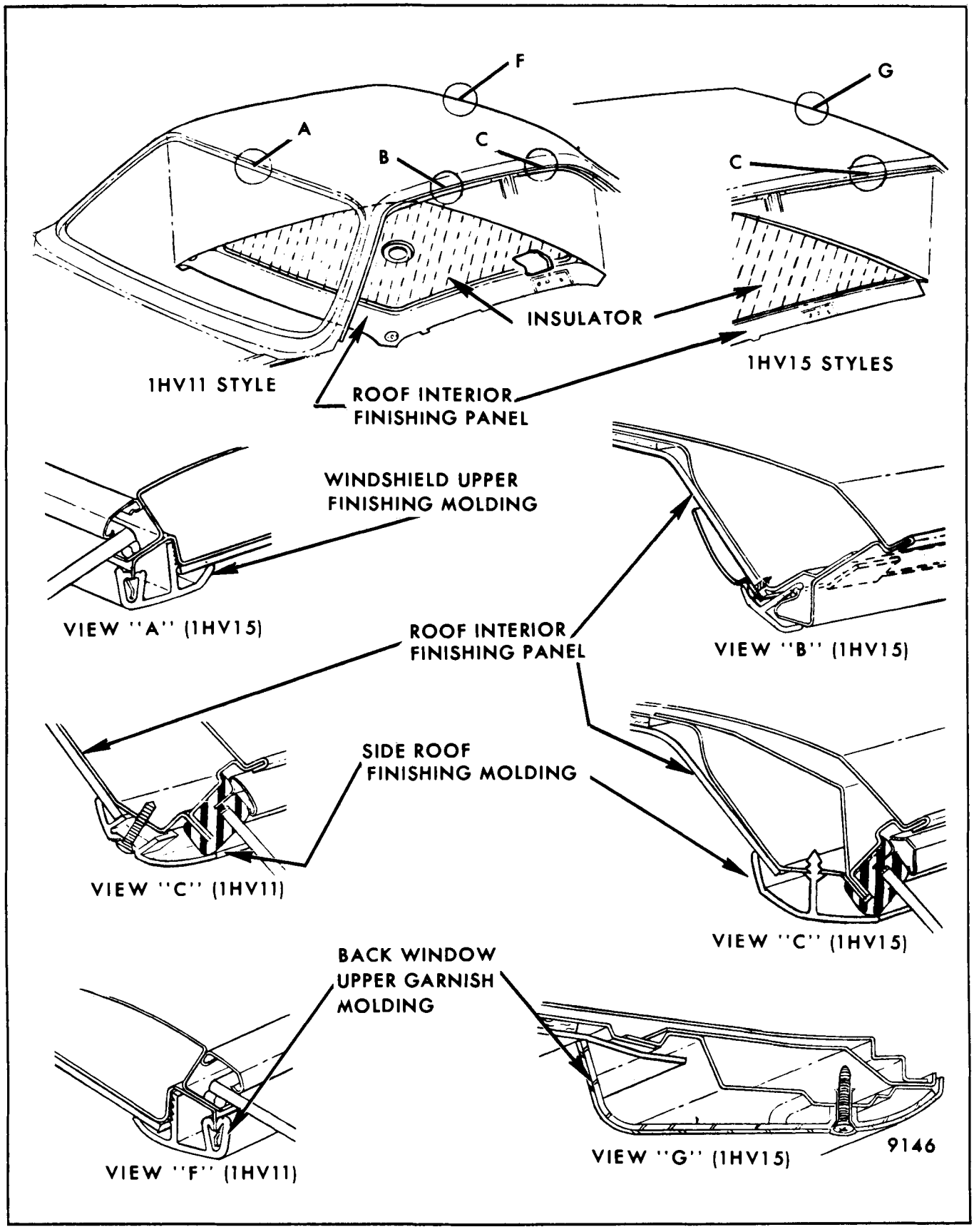


Fig. 8-8-Headlining (Roof Interior Finishing Panel) Assembly - "11 and 15" Styles

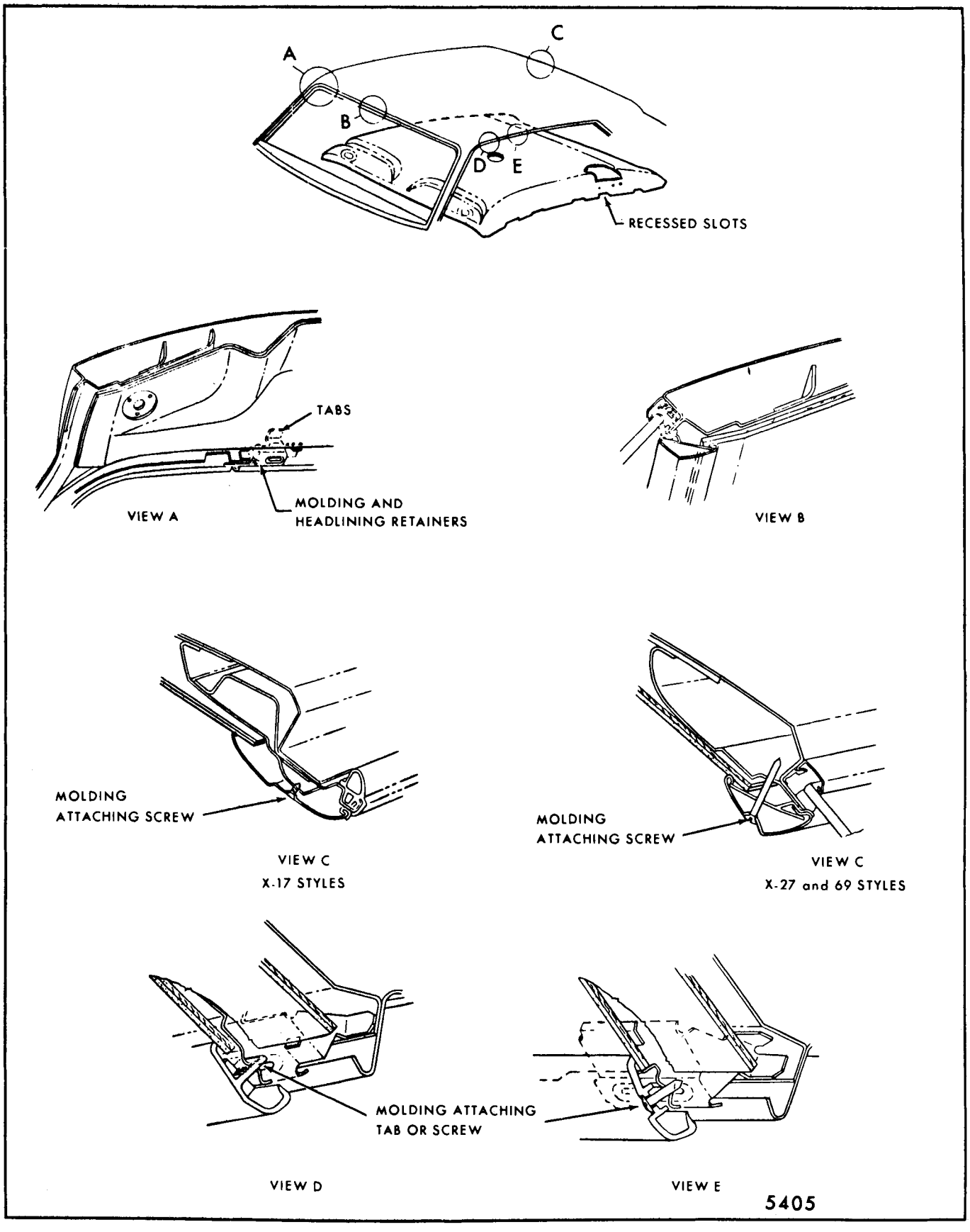


Fig. 8-9-One Piece Formed Headlining - "F, H and X" Styles

DOME LAMPS

DESCRIPTION

The dome lamp operates in conjunction with the door jamb switch and/or the headlamp switch. The dome lamp harness extends up the left windshield pillar, inboard of the sunshade support and across the roof inner panel to the dome lamp. Clips in the harness attach to retaining slots in the roof inner panel. Typical dome lamp components are shown in Figure 8-10.

Removal and Installation (Typical)

1. Insert a flat-bladed screwdriver or similar tool between dome lamp lens and lamp base. Press inward and down to disengage lens retaining tabs from base.
2. Remove bulb from terminal clips.
3. Remove two lamp base attaching screws.
4. To disengage wire harness from lamp base, grasp terminal clip with pliers and push clips through back of base.
5. To install dome lamp assembly, reverse removal procedure.

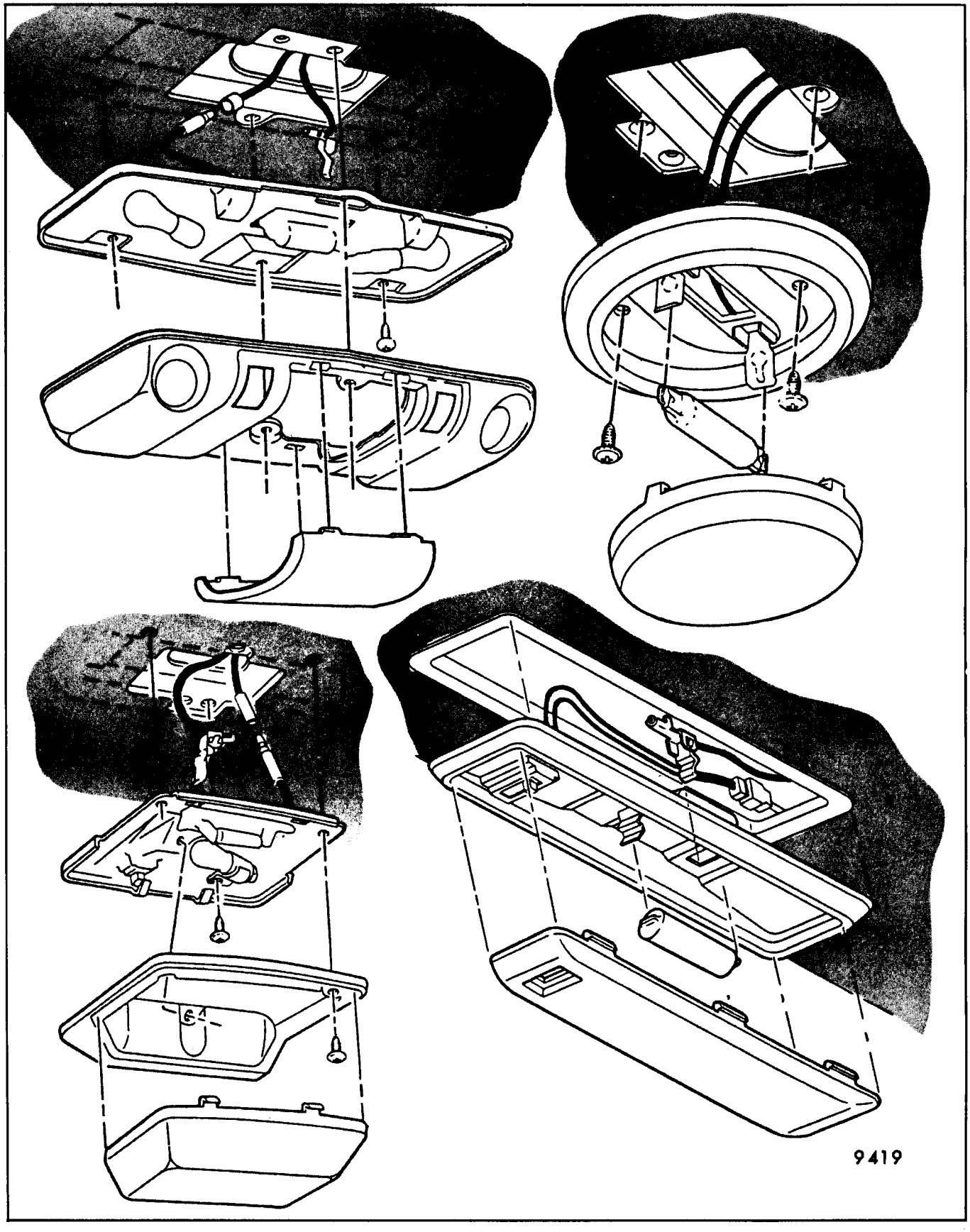


Fig. 8-10-Dome Lamps (Typical)

SUNSHADE AND VANITY MIRROR LAMP ASSEMBLIES

VANITY MIRROR AND LAMP ASSEMBLY (DOOR OPERATED SWITCH)

Description

The sunshade assembly is attached to the roof panel with three screws. When servicing the vanity mirror and lamp, it may not require removal of the shade from the roof.

The vanity mirror lamps are activated when the sunshade is lowered and the mirror cover (door) is raised. The lamps can be set at either high or low illumination by a switch located beneath the right side lens. The lamps turn off when the mirror cover (door) is closed.

The vanity mirror lamp harness extends above the windshield opening to the top of the windshield pillar. At this point a connector attaches to the lamp harness (Fig. 8-11).

Removal and Installation

1. Lower sunshade and raise mirror and lamp cover (door).
2. With a flat-bladed tool, pry at bottom edge of each lamp lens and remove.

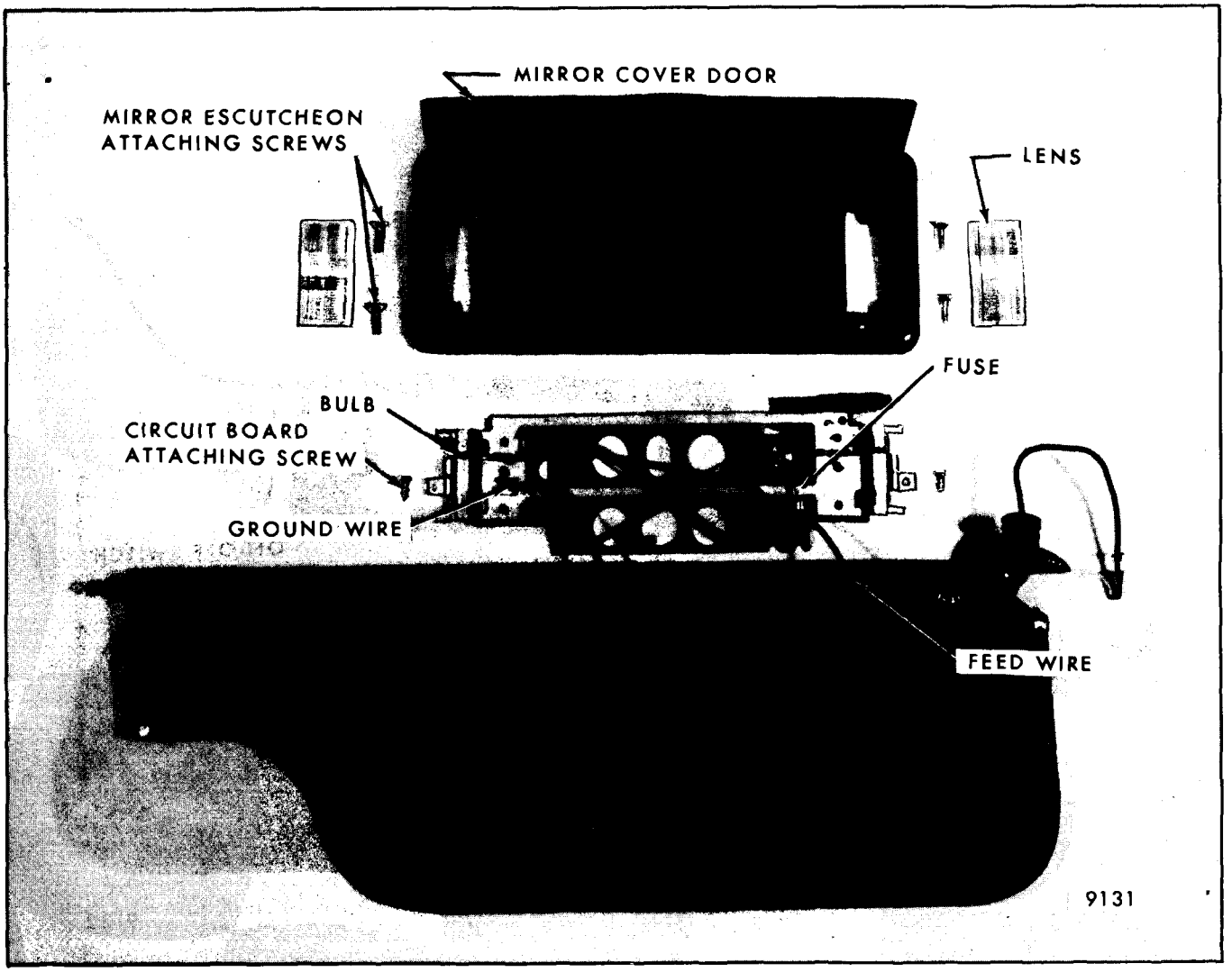


Fig. 8-11 - Vanity Mirror and Lamp Assembly

3. Remove four attaching screws that secure the mirror and escutcheon assembly to the shade.
4. On back of mirror and escutcheon assembly, remove two attaching screws and remove electrical circuit board and lamp assembly.
5. Disconnect feed and ground wire terminals (Fig. 8-11).
6. To install, reverse removal procedure.

NOTE: Fuse replacements can be made after step 3.

VANITY MIRROR AND LAMP ASSEMBLY (Chevrolet "A, B" and Pontiac "A,B,F,X" Styles)

Description

The vanity mirror retains to the sunshade assembly with two button type fasteners which are part of the mirror housing (see Fig. 8-12).

The lamps are activated when the sunshade is lowered and the lamp mirror cover (door) is raised.

Removal and Installation

1. Using a flat-bladed tool (putty knife) insert blade between escutcheon and sunshade trim.
2. Carefully disengage (pry) fasteners loose from sunshade.
3. The bulbs can now be serviced from the back side of the loose assembly.
4. To install, reverse removal procedure.

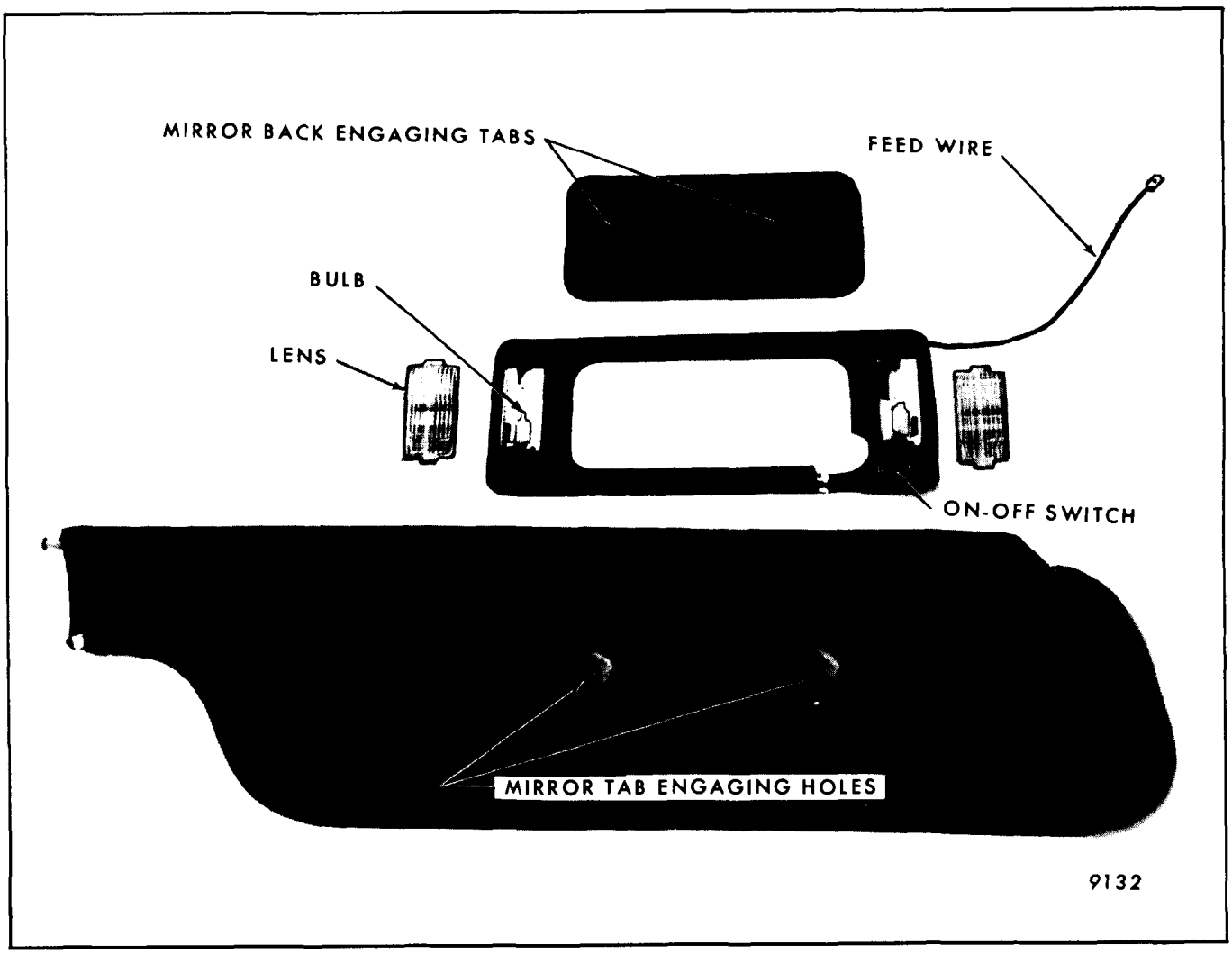


Fig. 8-12 - Vanity Mirror and Lamp Assembly

VANITY MIRROR AND LAMP ASSEMBLY (MANUAL OPERATED SWITCH)

Description

The sunshade assembly is attached to the roof panel with three screws. When servicing the vanity mirror it may not require a complete removal of the shade from the roof.

The vanity mirror retains to the shade assembly with two button type fasteners and, when engaged, the mirror lamp escutcheon is held in place.

The lamps are activated by an on-off switch located beneath the right side lens. In addition, a mercury switch is provided to prevent the lamps from remaining on when the sunshade is raised (Fig. 8-12).

Removal and Installation

1. Using a flat-bladed tool (putty knife), insert between escutcheon and sunshade trim and pry button type fasteners from sunshade.
2. To remove lens, use a flat-bladed screwdriver and depress locking tab on bottom or top edge of lens.
3. To install, reverse removal procedure.

   NOTE: Bulb replacement or electrical connector service operation can be performed after step 2.

INTERIOR GARNISH MOLDINGS - ALL STYLES

Interior garnish moldings are constructed of plastic or metal and painted to match the interior of the vehicle. Retention is accomplished with screws, metal and plastic clips or a combination of these.

WINDSHIELD UPPER GARNISH - All Styles

Removal and Installation

NOTE: On "A" styles the windshield upper garnish molding is retained by metal clips that fit over an integral plastic rib on the molding. The clip is then pressed into piercings in the roof inner panel to complete attachment of the molding. On "B and C" styles, the windshield upper garnish molding is attached with plastic clips which depress and open when inserted into slots within the windshield header.

1. Remove attaching screws at front ends of side roof rail garnish moldings and disengage ends of windshield upper garnish moldings. On "K" styles, it is necessary to remove the instrument panel cover prior to removing the windshield side garnish lower attaching screw. Refer to chassis service manual for instrument panel cover removal procedure (Fig. 8-14).
2. Pull down on molding to ascertain clip locations.
3. Insert tool J-2772 or equivalent between headlining and back of metal clip and pry clip forward to disengage clip and molding from roof inner panel (Fig. 8-13). On "B,C" styles, carefully force clip loose from header by inserting a flat-bladed tool between the headlining and molding and deflect retaining wings of clip.
4. To install, align clips to piercings in roof inner panel and press molding firmly in place.
5. On "E and X" styles, remove attaching screws.
6. On "F,H" styles, the windshield upper garnish molding is retained by inserting the corrugated rib of the molding into a slot along the roof inner panel. Remove attaching screws and pry or pull molding inboard with a flat-bladed tool (Fig. 8-9).
7. To install, align molding and press firmly in place.

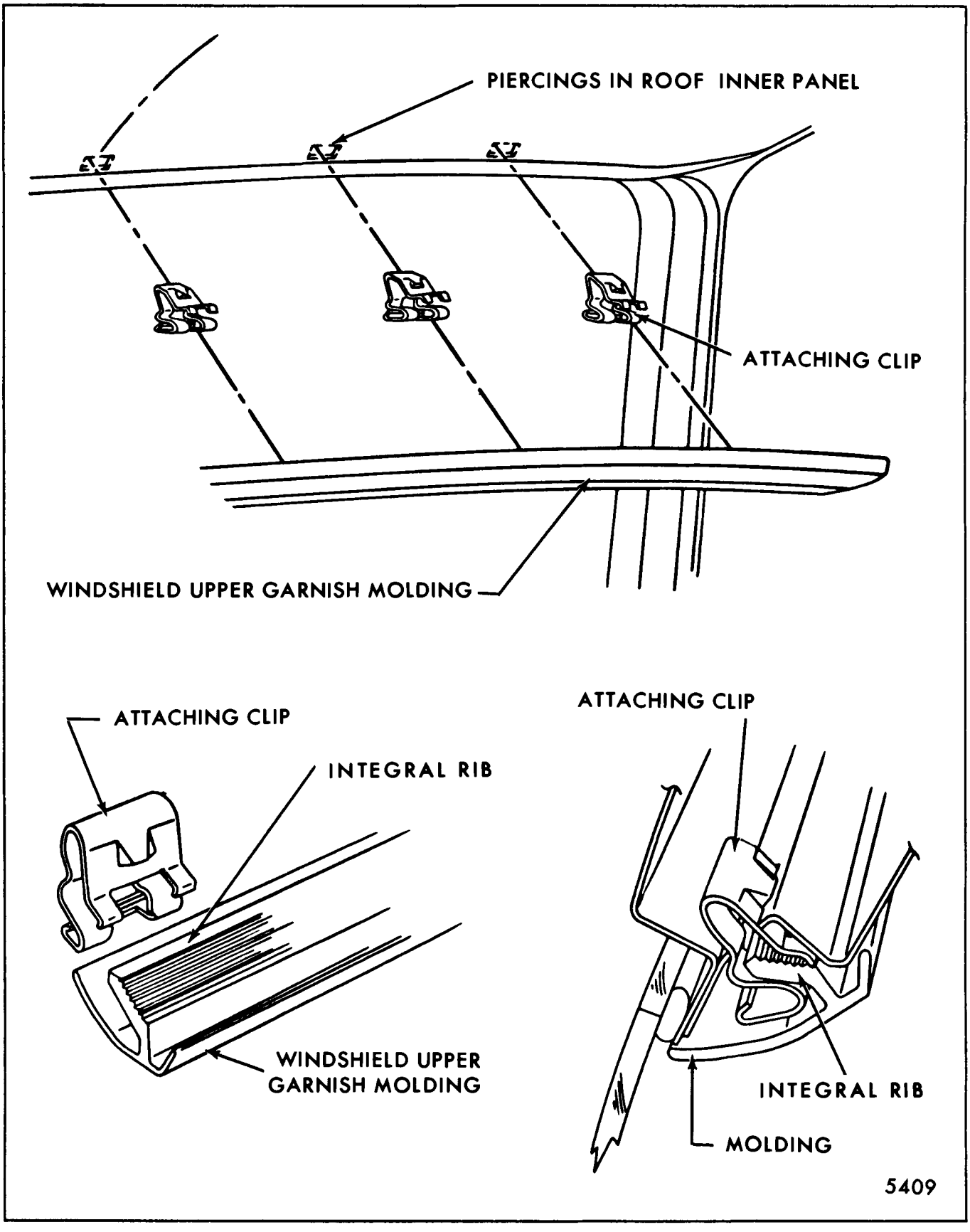


Fig. 8-13-Windshield Upper Garnish Molding - "A" Styles

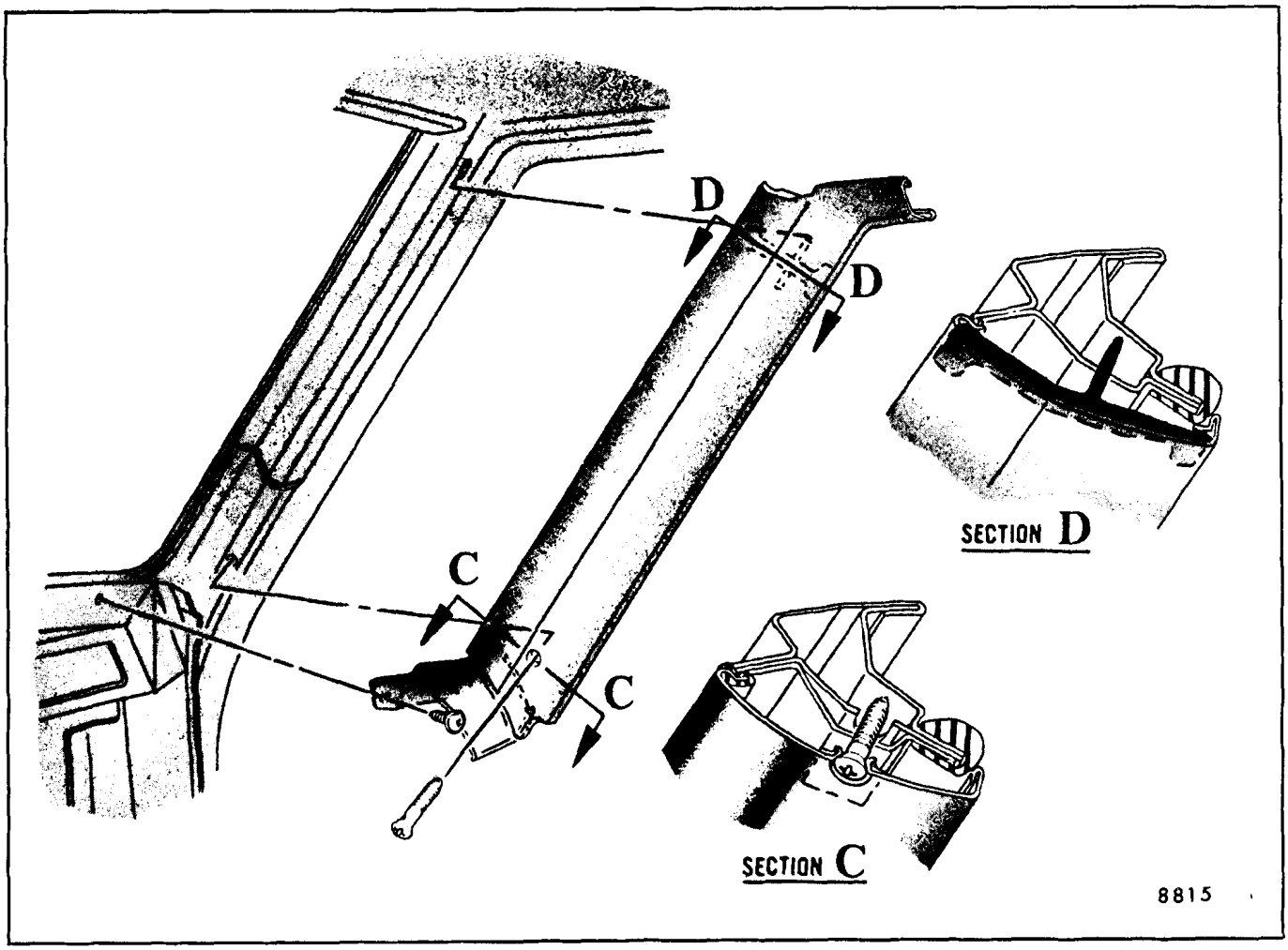


Fig. 8-14-Windshield Side Garnish Molding - "K" Styles

SIDE ROOF RAIL GARNISH MOLDINGS - All Styles

Removal and Installation

1. Remove attaching screws where necessary.
2. On "A,B and C" styles, pull molding down until plastic retaining clips are visible. Then insert tool J-24416 or equivalent and press center tab of clip outboard. Pry downward to disengage clip and molding from piercings in roof inner panel (Fig. 8-17). On "K" styles, refer to Figure 8-19.
3. To install, place clip in molding with tab of clip toward inside of body. Align clips to piercings in roof inner panel and press molding in place.
4. On "E" styles, lower side glass.
5. Working from outside of vehicle, insert a

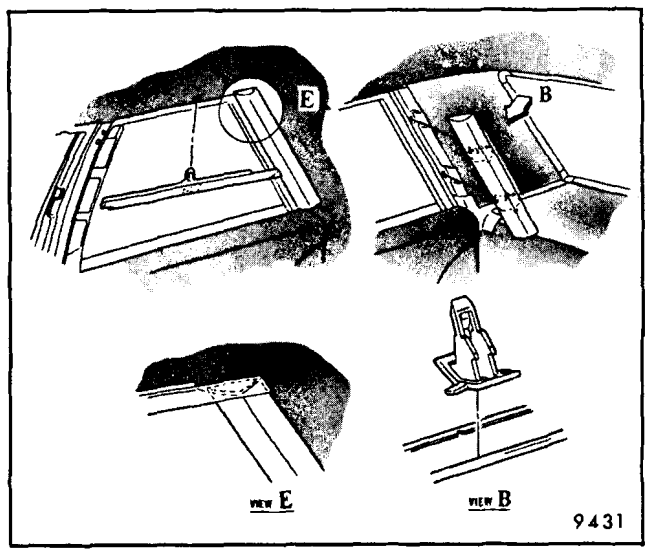


Fig. 8-15 - Rear Quarter Window Garnish Molding - "B,C" Styles Typical

screwdriver between garnish molding and side roof rail weatherstrip retainer to expose clip.

6. Using an awl or screwdriver, press downward alternately on front and rear tab of clip until clip disengages from roof inner panel (Fig. 8-18).
7. To install, align clips to piercings in roof inner panel and press molding firmly in place.
8. On "F, X and H" styles remove attaching screws and pry molding inboard with a flat-bladed tool to disengage integral plastic rib from slots in roof inner panel (View D, Fig. 8-9).
9. To install, reverse removal procedure.

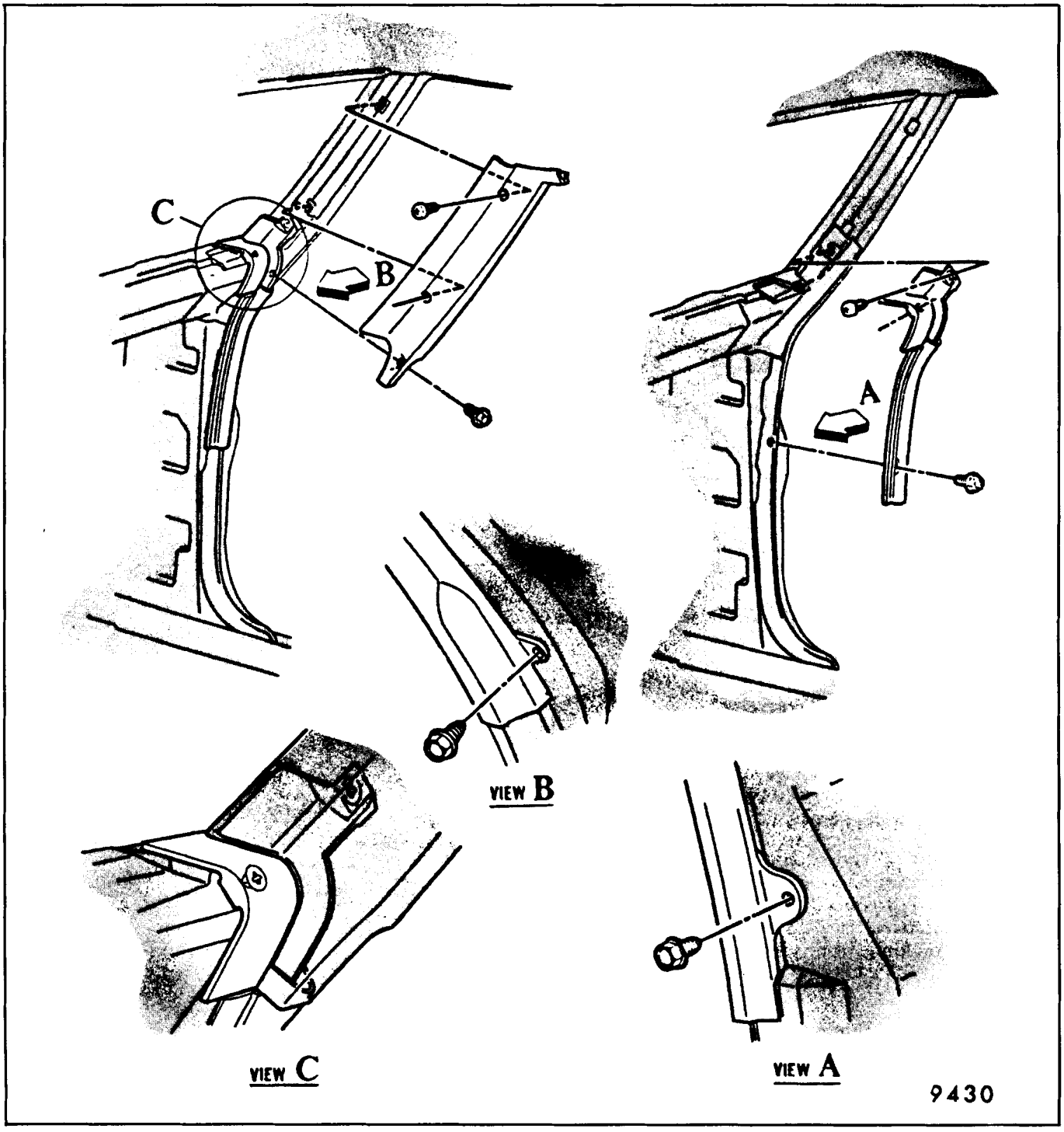


Fig. 8-16 - Windshield Pillar Side Garnish Molding - "B, C" Styles Typical

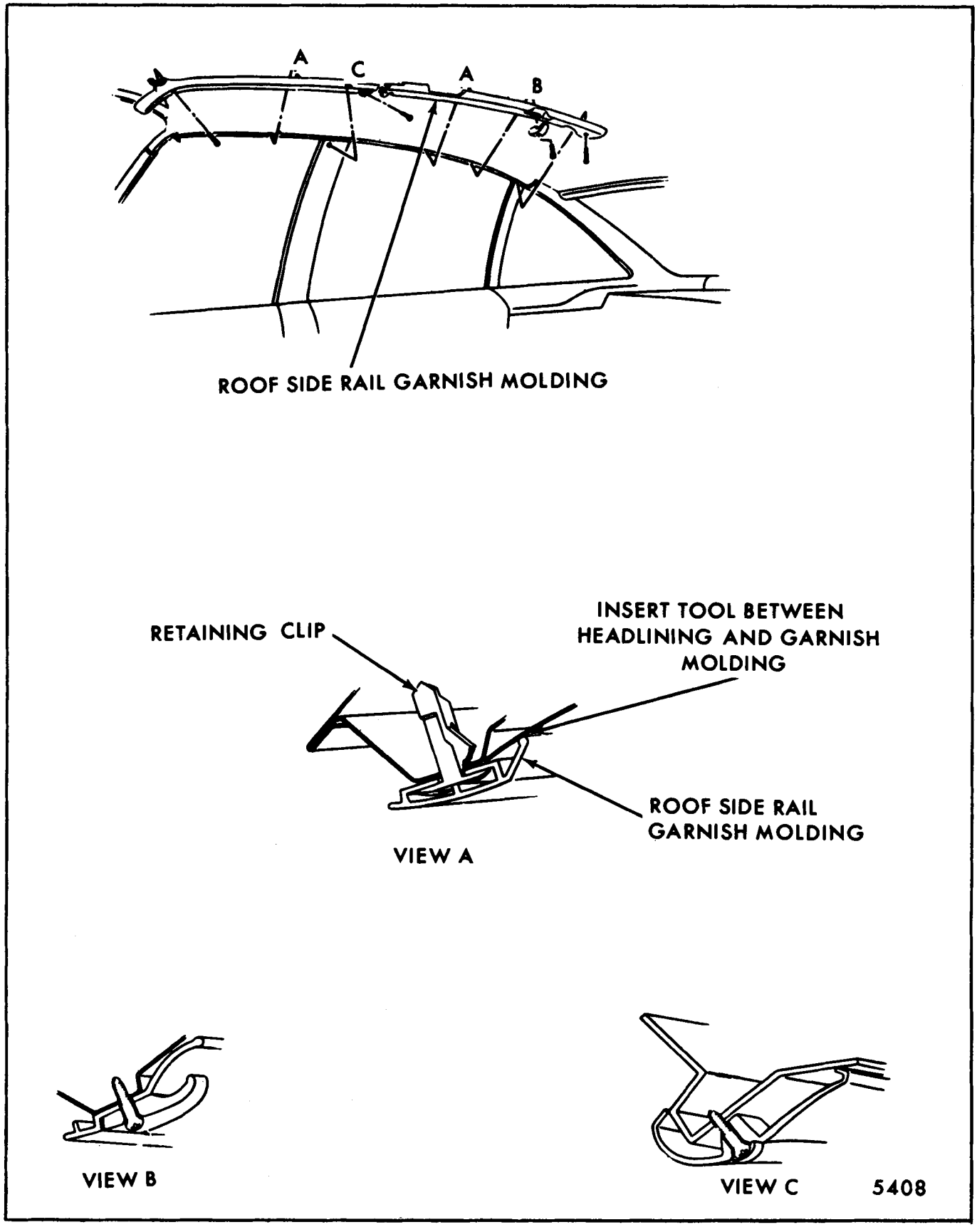


Fig. 8-17-Roof Side Rail Garnish Molding Attachment - "A" Styles

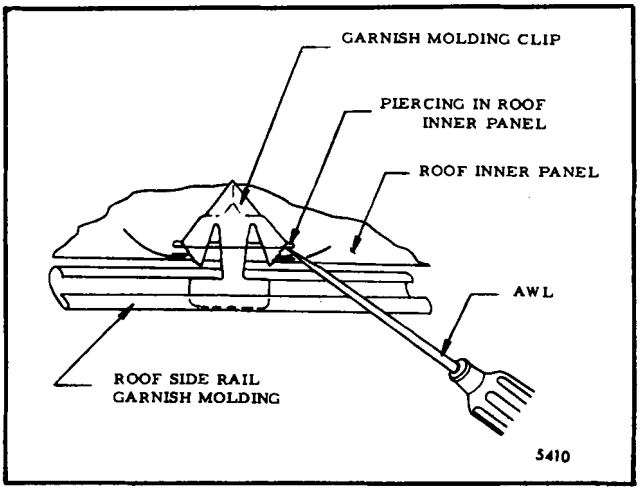


Fig. 8-18-Roof Side Rail Garnish Molding Attachment - "E" Styles Typical

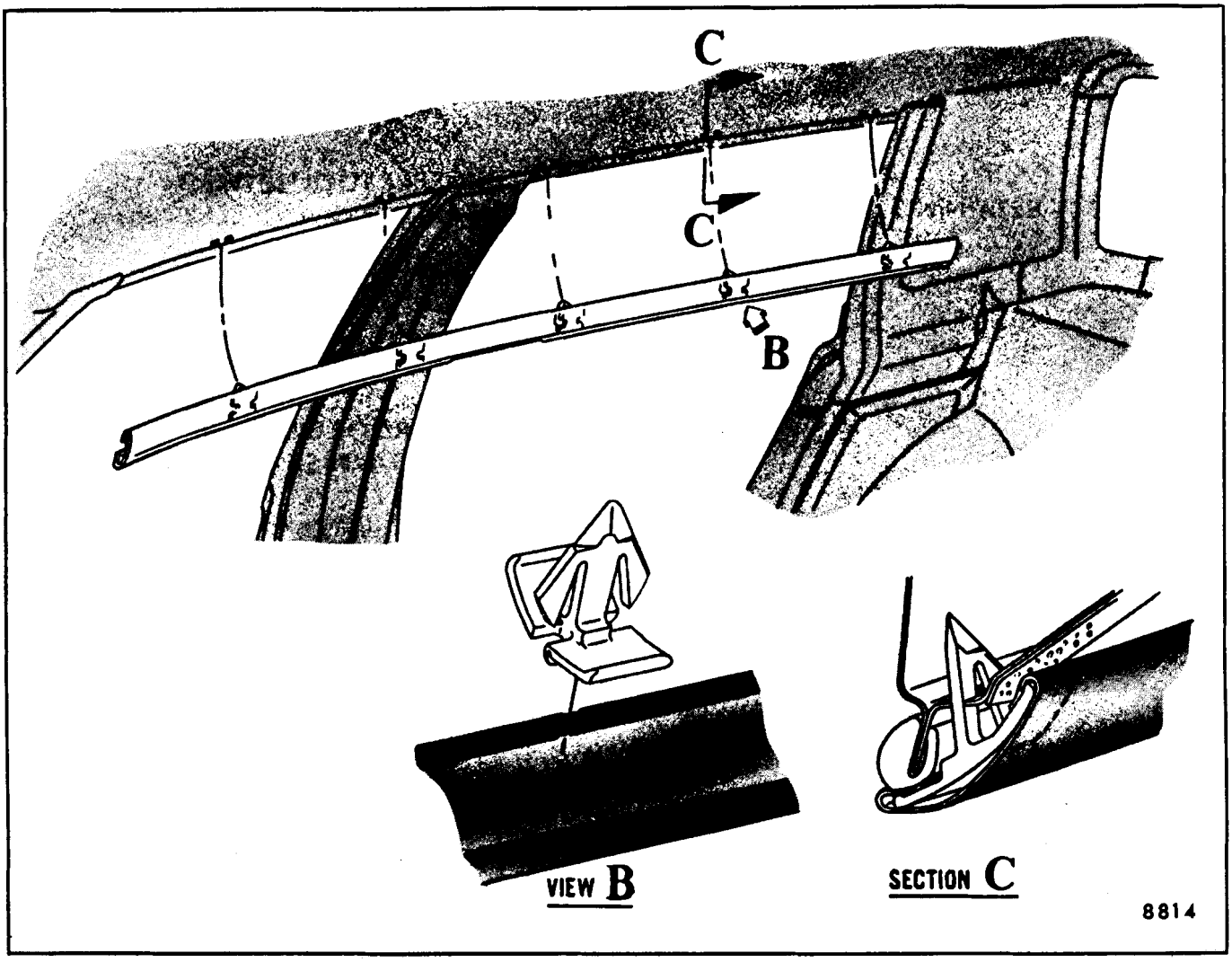


Fig. 8-19 - Side Roof Garnish Molding Attachment - "K" Styles

BACK WINDOW UPPER GARNISH MOLDINGS

Removal and Installation

The back window upper garnish molding on "A-29,37 and 57" styles is installed with screws and plastic retaining clips that fit into round holes in the roof inner panel.

1. Remove attaching screws.
2. Insert tool BT-7323 or equivalent between headlining and molding, then pry downward to disengage clip and molding (Fig. 8- 21).
3. On "B,C" styles, insert a flat-bladed tool between headlining and molding at clip location and carefully pry clip loose from retaining slot (Fig. 8-20).
4. On "80" styles, remove attaching screws and pull downward on molding. Then insert tool J-24416 or equivalent and depress center tab of attaching clip rearward to disengage clip and molding (View A, Fig. 8-17).
5. To install, align clips to holes and press molding in place. Then install attaching screws.

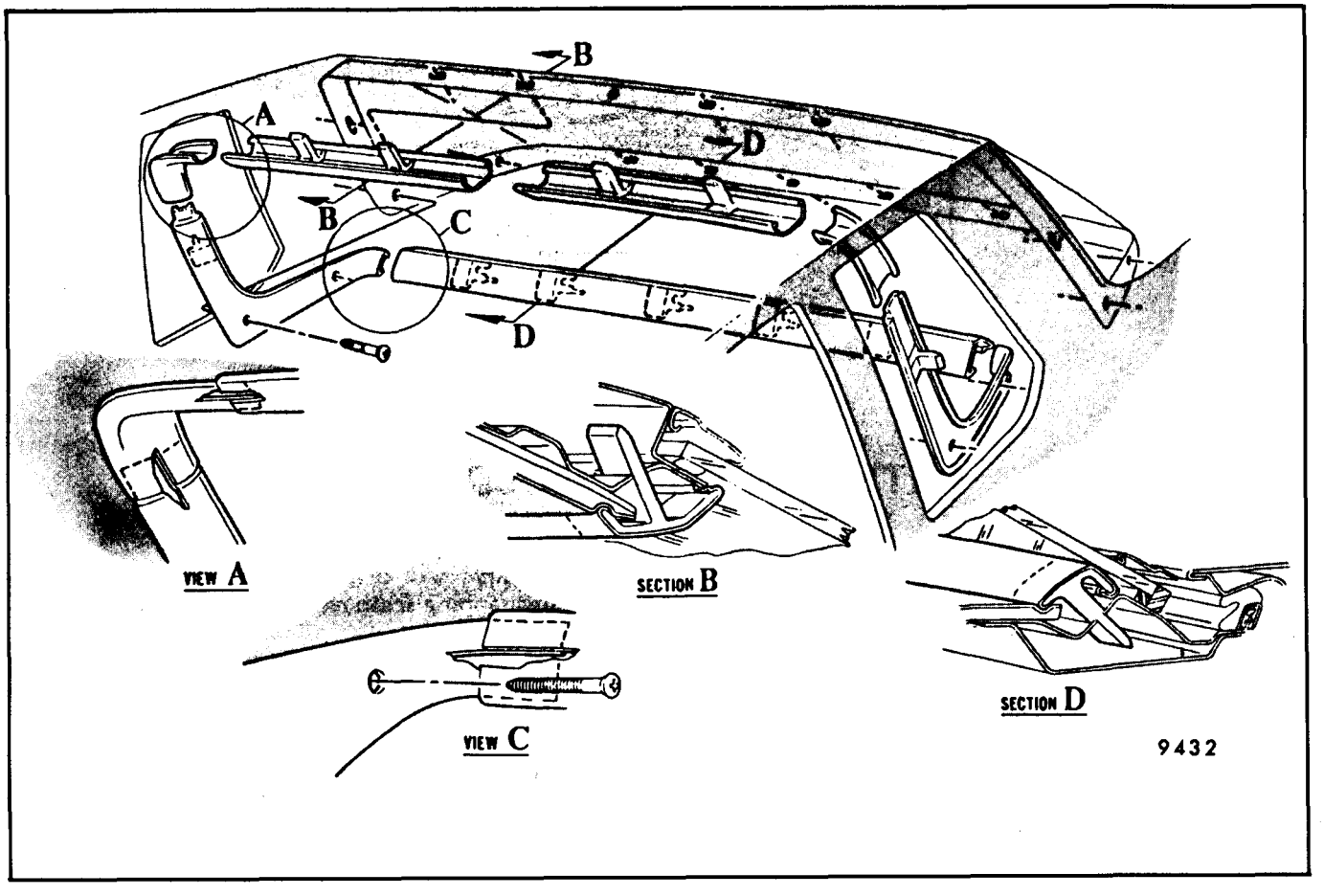


Fig. 8-20 - Back Window Garnish Moldings - "B,C" Styles

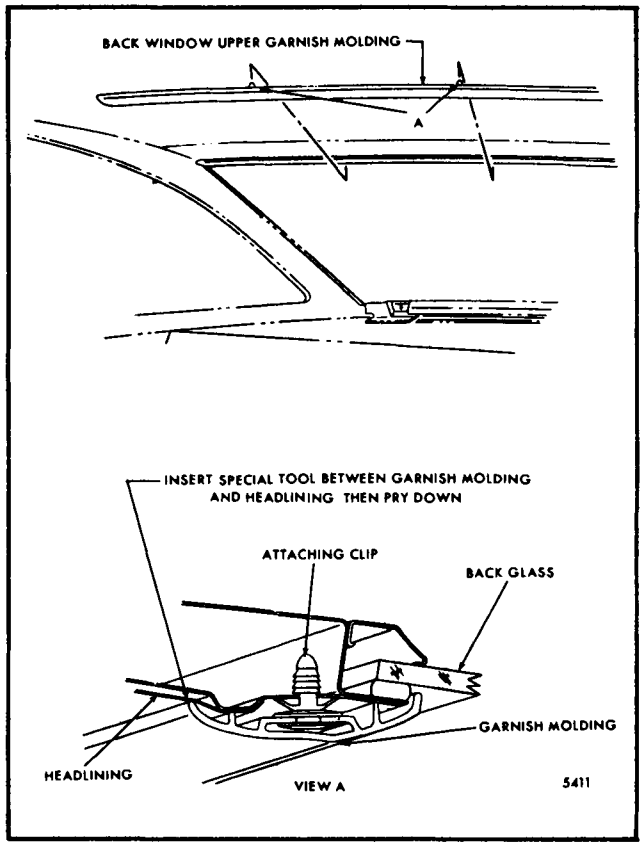


Fig. 8-21-Back Window Upper Garnish Molding - "A" Styles

EXTERIOR ROOF MOLDINGS

ROOF DRIP SCALP MOLDINGS

Removal and Installation - "A and E" Styles

1. Remove side roof rail weatherstrips and weatherstrip retainers as described in Section 5 of the manual.
2. Remove screws securing roof drip scalp molding and remove from body.
3. To install, reverse removal procedure making certain that scalp molding is sealed to roof rail and weatherstrip retainer is sealed to scalp molding using medium-bodied sealer.

Removal and Installation - "B and C" Styles

1. Remove windshield pillar drip scalp molding by removing screws securing molding to windshield pillar.
2. Remove roof drip scalp moldings by carefully unsnapping scalp moldings from drip moldings.
3. On "69" styles only, remove rear scalp molding by removing screws retaining molding to upper rear body lock pillar.
4. To install, reverse removal procedure making certain screws on windshield pillar and upper rear body lock pillar are sealed.

Removal and Installation - "H, F and X"

1. Starting at base of windshield pillar working upward and rearward, carefully pull molding away from body.
2. To install, apply adhesive (such as neoprene weatherstrip adhesive or equivalent) to cavity of molding and apply molding to correct position to body. Hold molding in position with tape for

approximately 30 minutes to allow adhesive to set up.

Removal and Installation - "K" Body

To remove roof drip scalp front, upper and rear moldings, remove ten attaching screws. To reinstall moldings, apply a body sealing compound such as 3M Strip-Caulk No. 8578 or equivalent between drip molding and attaching surface and secure with previously removed screws.

UPPER BODY LOCK PILLAR FINISHING MOLDING - "H-27" and "X-27" with C04 Fabric Roof Cover Option

Removal and Installation

1. Remove screws securing molding to body lock pillar and remove molding from body.
2. To install, reverse removal procedure making certain molding is sealed to body lock pillar with medium-bodied sealer.

ROOF PANEL EMBLEMS

1. Roof panel emblems that incorporate integral studs that snap into retaining clips in roof panel may be removed by snapping the emblem out of clips using a flat-bladed tool such as a putty knife. This type of emblem is used on the following bodies:
   a. All "A" except Chevrolet and Buick Custom
   b. All Buick "B" except Riviera
   c. All "C"
   d. All "X"
   e. Cadillac "E and K"
   f. Chevrolet "F"

   CAUTION: *Be certain to protect adjacent painted surfaces to avoid damage to paint.*

2. Roof panel emblems that incorporate integral studs retained by nuts inside of body require removal of upper quarter trim panel to gain access to the nuts. This type of emblem is used on the following bodies:
   a. All Chevrolet "H"
   b. Buick "B" Riviera
   c. Oldsmobile "E"

   NOTE: When installing, be certain studs and nuts are sealed with a medium-bodied sealer.

3. Roof panel emblems that are retained by adhesive are used on the following bodies:
   a. Chevrolet "A" and Buick "A" Custom
   b. All "B" except Buick
   c. Pontiac "F"
      1. To remove, apply heat using a heat gun, making certain heat gun is moved in a circular motion and held a minimum of 6" from molding.
      2. To install, be certain panel is completely clean and alignment is correct. When installing emblem on bodies equipped with fabric roof cover, a replacement emblem with integral studs that snap into retaining clips must be used. Holes must be drilled into roof panel, clips inserted (be certain to seal clips) and emblem snapped into clips.

UPPER ROOF MOLDINGS - LANDAU STYLES

The upper roof panel moldings that utilize a vinyl lace are retained to the body by metal retainers and plastic slide-on clips. To remove molding, unsnap molding from retainer at lower end and slide molding off plastic clips. To install, reverse the removal procedure.

On bodies equipped with moldings that do not utilize a vinyl lace (except Pontiac "B" with foam padded fabric roof cover), the moldings are retained by plastic clips which the molding snaps over. To remove, insert a flat-bladed tool such as a putty knife under molding and lift the molding off the clips.

On Pontiac "B" with foam padded fabric roof cover, vertical roof moldings are retained by screws in upper body lock pillar. Horizontal moldings are retained by plastic clips which the molding snaps over.

CAUTION: *Be certain to protect adjacent painted surfaces to avoid damage to paint.*

HALO MOLDINGS - Cadillac "E"

Removal and Installation

CAUTION: *Be certain to protect adjacent paint surfaces to avoid damage to paint.*

The front molding as well as the front corner escutcheon (which the front and side molding telescope into) may be removed by inserting a flat-bladed type tool such as a putty knife under moldings and escutcheons and lifting off snap-on type clips.

The side moldings may be removed in the same manner except at the rear corner. To remove at rear corner the molding must be pulled forward to disengage from slide-on plate retainer.

The side rear vertical molding is retained at the top by a slide- on plate retainer, snap-on type clips in center and telescopes into an escutcheon at lower corner. The molding may be removed in the same manner as the side molding.

QUARTER BELT MOLDINGS - All

1. Working in rear compartment area, remove all nuts (if present) from studs that retain molding.
2. If present, remove escutcheon on rear compartment front panel connecting right and left molding.

   NOTE: On certain styles a rear end belt reveal molding is utilized on rear compartment front panel which telescopes into the rear quarter belt reveal molding.
3. Using a flat-bladed tool such as a putty knife, insert under molding and lift molding off clips.

   CAUTION: *Be certain to protect adjacent painted surfaces to avoid damage to paint.*

   NOTE: On styles with an escutcheon connecting the quarter belt and upper roof moldings, perform steps 1, 2 and 3, then slide molding out of escutcheon.
4. To install, reverse removal procedure making certain studs are sealed with medium-bodied sealer.

BODY LOCK PILLAR APPLIQUE - "B-37" Styles

The body lock pillar applique incorporates integral studs and is retained by nuts inside the body. When removing and installing the applique, it is necessary to remove the upper quarter trim panel.

NOTE: When installing, make certain studs and nuts are sealed with a medium-bodied sealer.

BACK BODY OPENING MOLDING - "B" Station Wagons

The back body opening side and top moldings are retained by plastic clips which the moldings snap over. To remove, insert a flat-bladed tool such as a putty knife under moldings and lift molding off clips.

FABRIC ROOF COVER

DESCRIPTION

There are two basic types of vinyl roof covers: one is a vinyl coated fabric, the other is a vinyl coated material that has an integral pad. The vinyl roof covers are either cemented directly to the roof panel, plastic cap covering roof panel, or an additional foam pad between cover and roof panel. When the plastic cap or foam pad is used, entire cap or pad is cemented to roof panel, then the roof cover is cemented to cap or pad in its entirety.

On styles where cover extends into the windshield and back window opening, cover is retained in the opening by adhesive and one or more of the following: clips installed over weld-on studs, drive nails, reveal molding and finishing lace. On styles where back window reveal moldings are not exposed, cover is retained in that area by one or more of the following: cement, tabbed retainers and finishing lace. When cover extends in and around drip molding or folds around roof panel flange, it is retained by adhesive and drip scalp moldings, weatherstrip retainers or finishing moldings.

On styles equipped with roof panel moldings, cover is retained under the moldings by adhesive and clips installed over weld-on studs.

Fabric roof cover option codes are referred to in all removal and installation procedures. For purpose of identification, refer to the following.

1. CB4 Option - Landau Type - Rear Half
2. C04 Option - Landau Type - Rear Half with Foam Pad
3. C09 Option - Full Roof Cover
4. CB5 Option - Full Roof Cover with Foam Pad
5. CB6 Option - Full Roof Cover with Halo Molding
6. CB7 Option - Landau Type - Front Half

When installing the fabric roof cover or foam pads it is recommended that the vinyl trim adhesive be applied with a spray gun. As an alternate method, a brush or roller may be used. If spraying method is utilized, a spray gun along with the following equipment should be used.

1. Devilbiss Spray Gun Model MBC-510 or JGA-502 with one quart pressure cup KB-519, air cap 24, fluid tip and fluid needle "E" (or equivalent).
2. Binks Spray Gun Model 62 one quart pressure cup 80-256 (or equivalent) or Spray Gun Model 18 one quart pressure cup 80-210 (or equivalent). Air cap 66 PG and fluid tip 66 (or equivalent) may be used with either gun. On Spray Gun Model 62 use fluid needle 365 and on Gun Model 18 use fluid needle 65 (or equivalent).

   The recommended air pressures are as follows:

   a. Air line pressure - 50 lbs.

   b. Cup pressure - 2 to 4 lbs.

If adhesive is applied with a roller, a mohair type roller should be used. Make certain adhesive is applied evenly and there are no highlights from excess adhesive build-up.

Removal of Components Parts - All Fabric Roof Cover Options

1. The following parts must be removed prior to removing fabric roof cover.

   a. Windshield and back window reveal moldings (on styles so equipped) except on styles where the cover does not extend into windshield opening or back window opening.

   b. Roof drip molding scalps, weatherstrip retainers or finishing moldings (when cover extends into drip molding or folds around roof panel flange).

   c. Rear quarter belt reveal moldings and rear end belt reveal moldings.

   d. Roof cover retainer to rear body lock pillar on styles so equipped.

   e. Roof extension panel emblem, name plate assembly or opera light on styles so equipped.

   f. All roof panel moldings and finishing trim lace on styles so equipped.

   g. Quarter window reveal moldings on styles so equipped.

   h. Stationary quarter window (if necessary) on styles so equipped.

   i. Louver quarter stationary window on styles so equipped.

   j. Sliding sun roof panel when cover for panel is being replaced. Retract sliding panel if fabric roof cover only is being replaced and remove tape and weatherstrip from opening.

   k. Louver in quarter sail area on styles so equipped.

   l. Vista vent glass and weatherstrips on styles so equipped.

2. Remove reveal molding clips across top and sides of windshield, quarter or back glass openings. On styles where fabric cover extends below back window, remove reveal molding clips along bottom of back window opening. Clean off any excess adhesive material adjacent to fabric roof cover material.

3. On "A-29" styles, drill out four rivets and remove retainers (Fig. 8-23).

   NOTE: In the event a repair type clip has been installed and retaining screw is not accessible, carefully trim roof cover around clip.

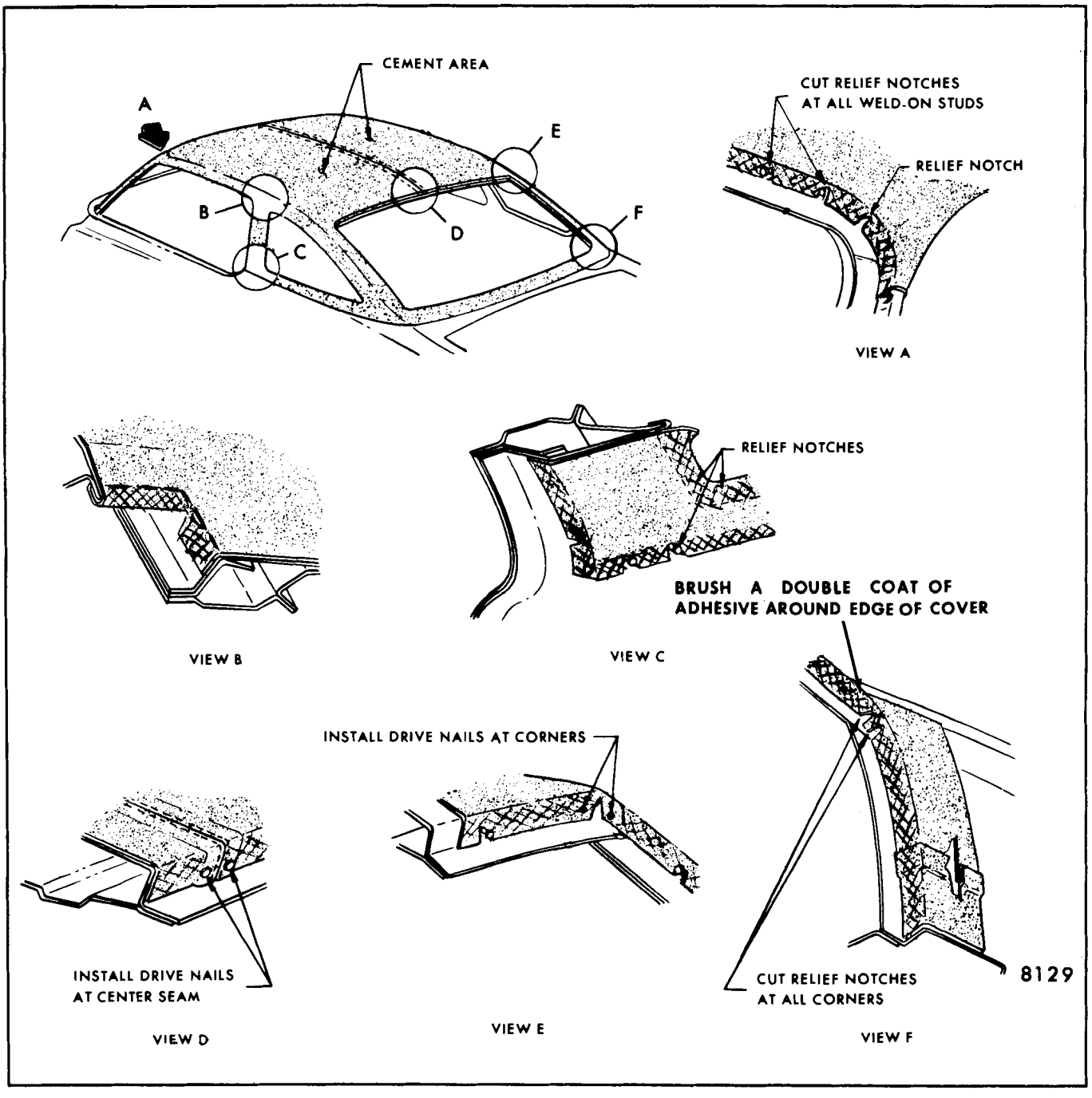


Fig. 8-22-Typical Fabric Roof Cover Installation - "A" Styles

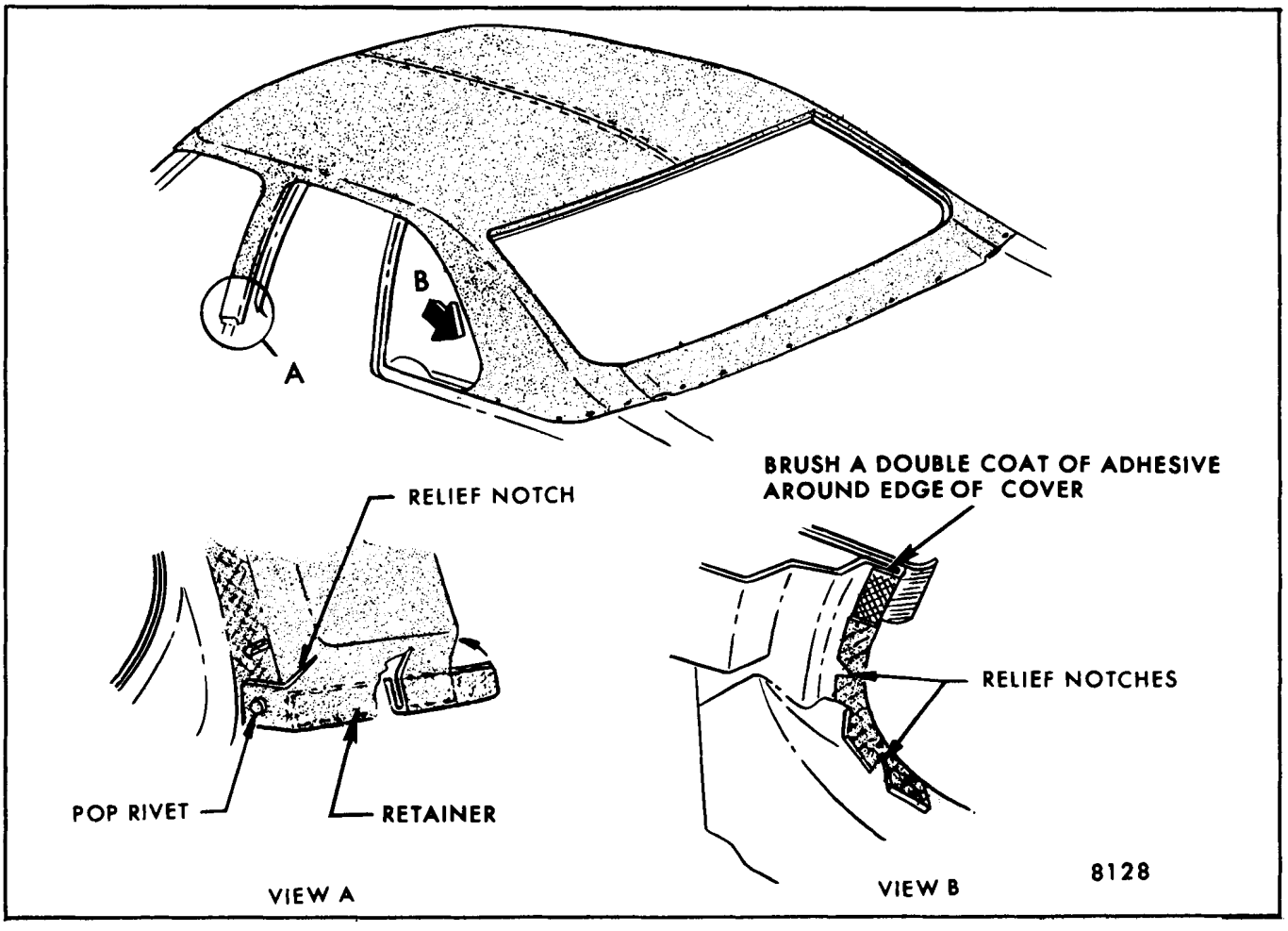


Fig. 8-23-Fabric Roof Cover Installation at Center Pillar and Quarter Window - "A-29" Styles

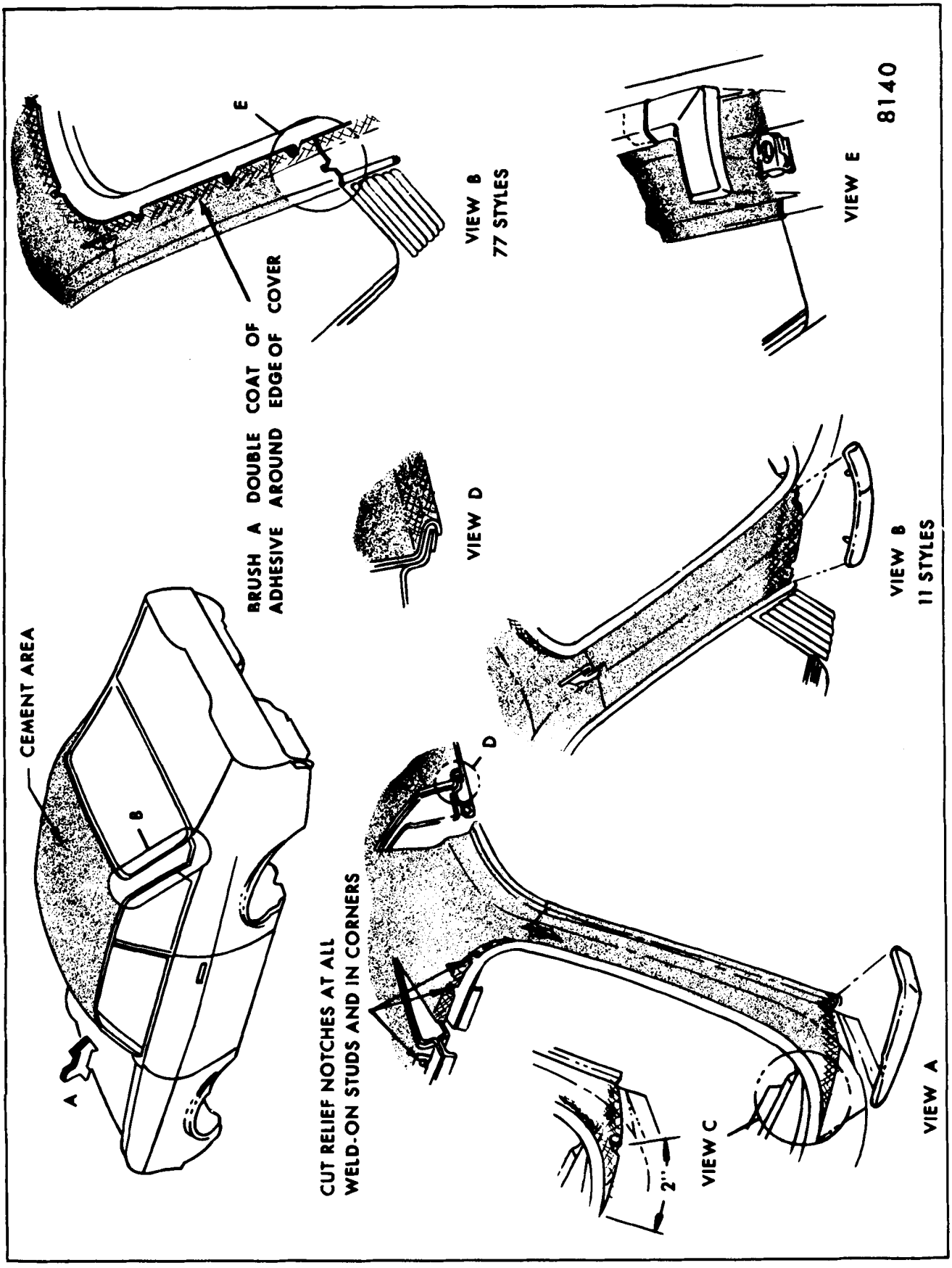


Fig. 8-24-Fabric Roof Cover Installation - "H" Bodies - C09 Option (Except "27" style)

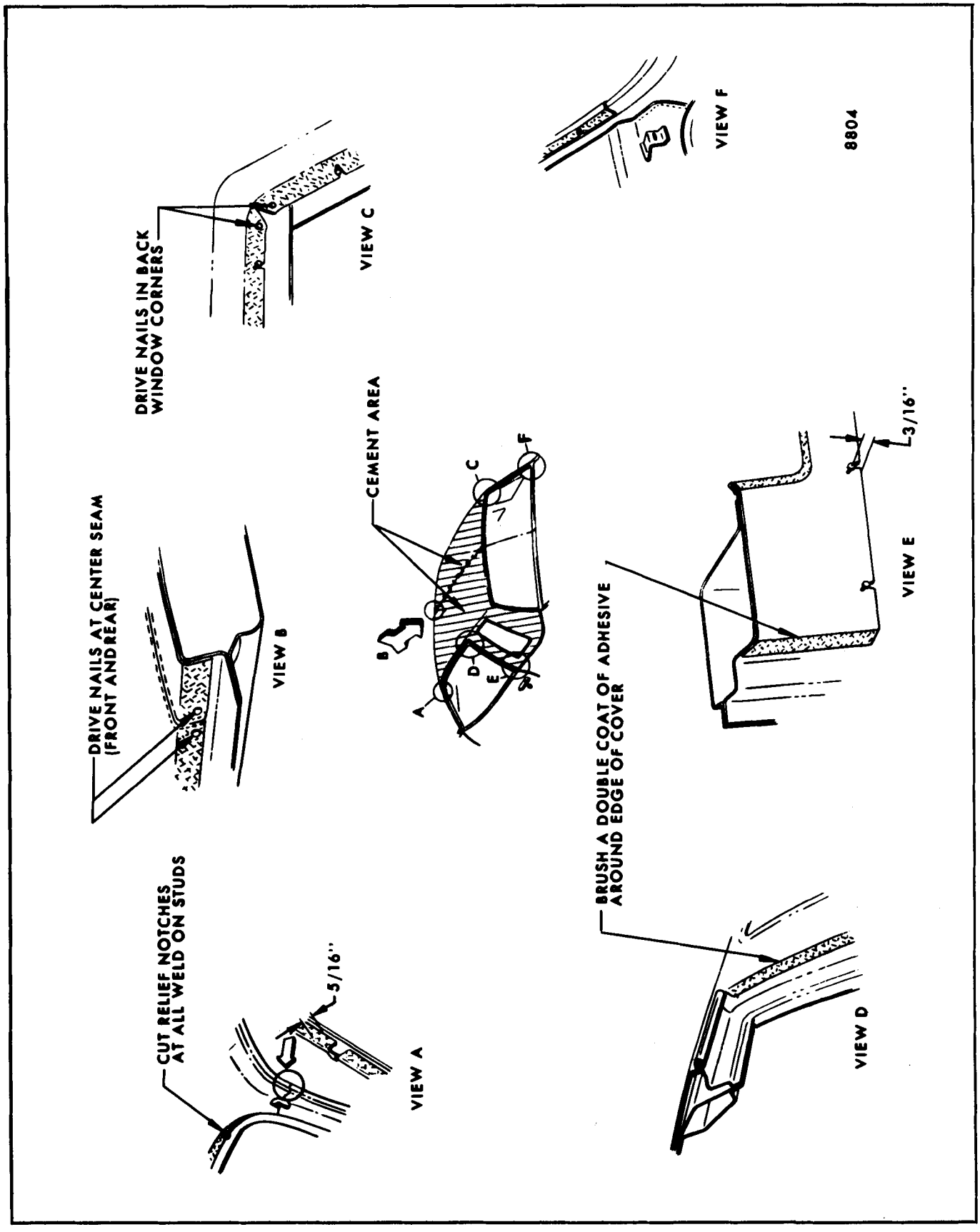


Fig. 8-25-Fabric Roof Cover Installation - "H-27" Style - C09 Option

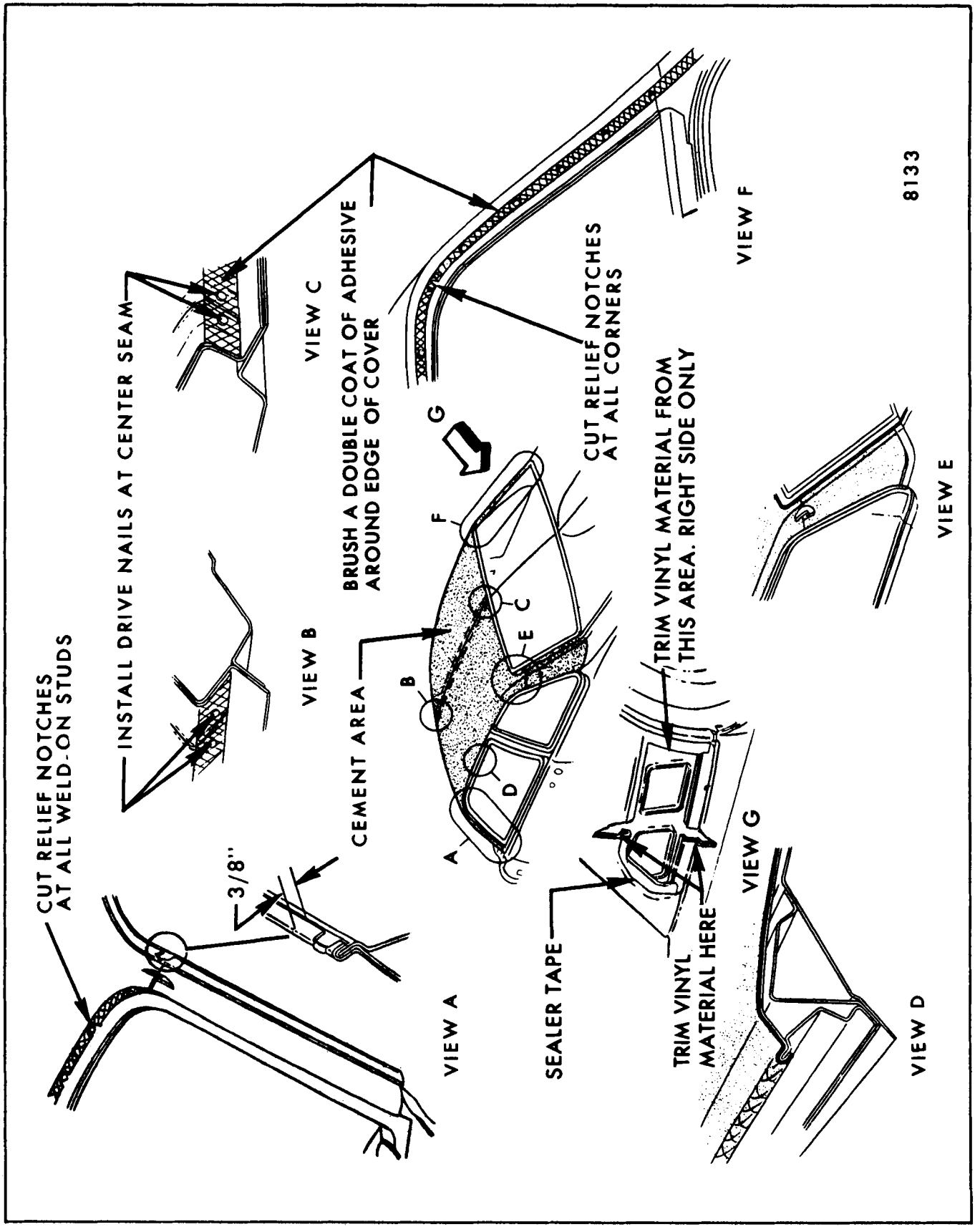


Fig. 8-26-Fabric Roof Cover Installation - "X" Bodies - C09 (Except "27" Style with Formal Quarter Window)

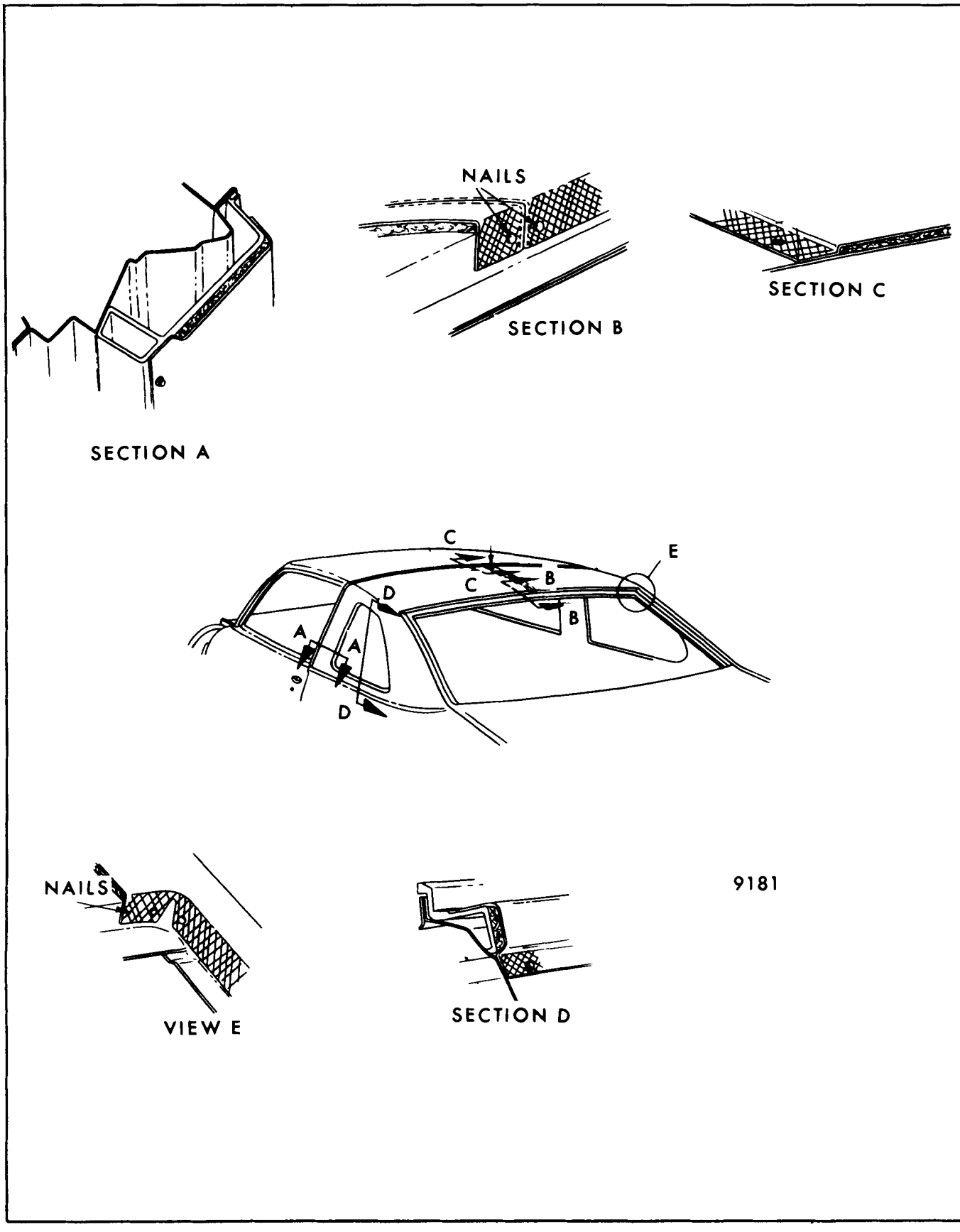


Fig. 8-27-Fabric Roof Cover Installation - "X-27" Styles with Formal Quarter Window - C04 Option

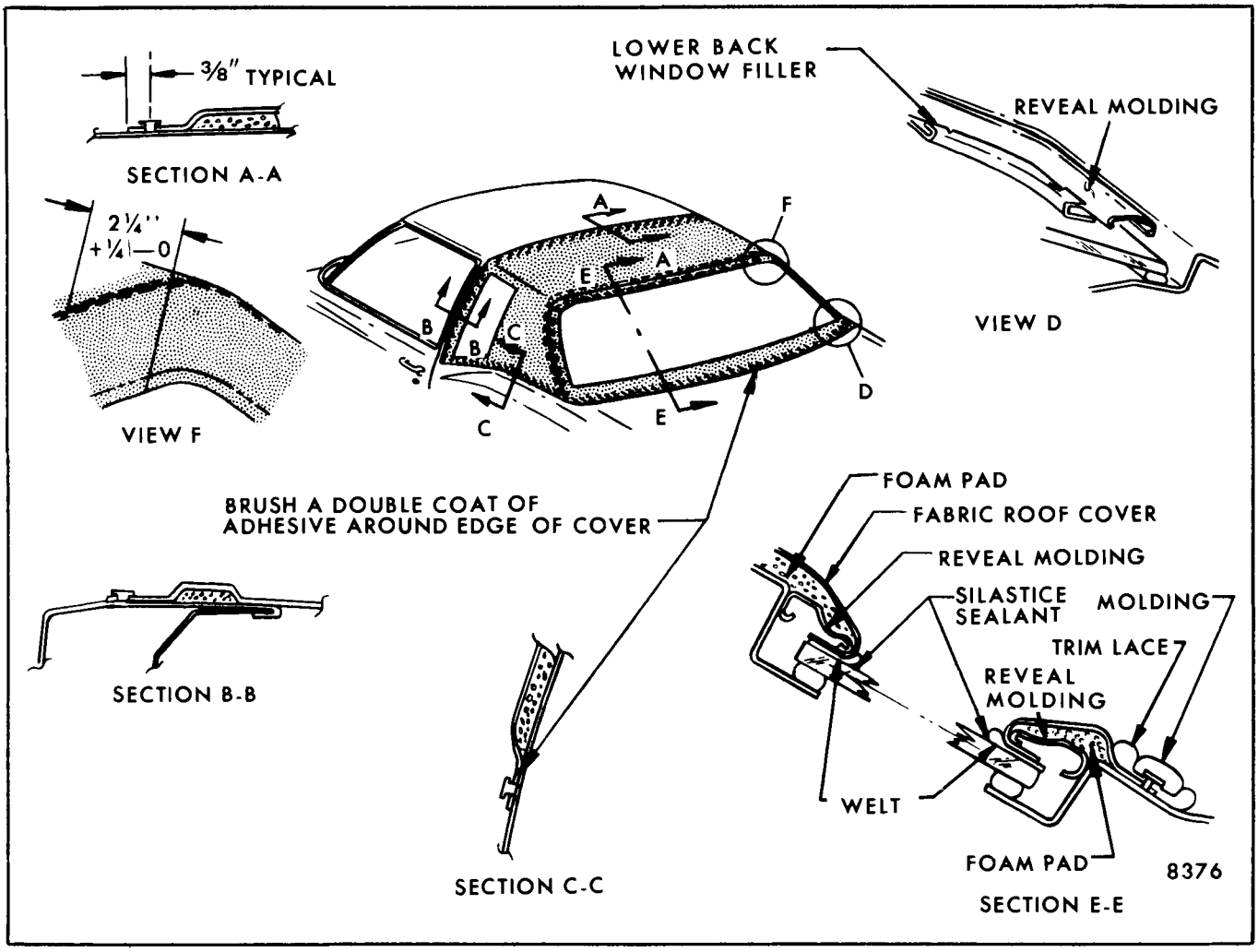


Fig. 8-28-Typical "E" Style CO4 Option (Landau)

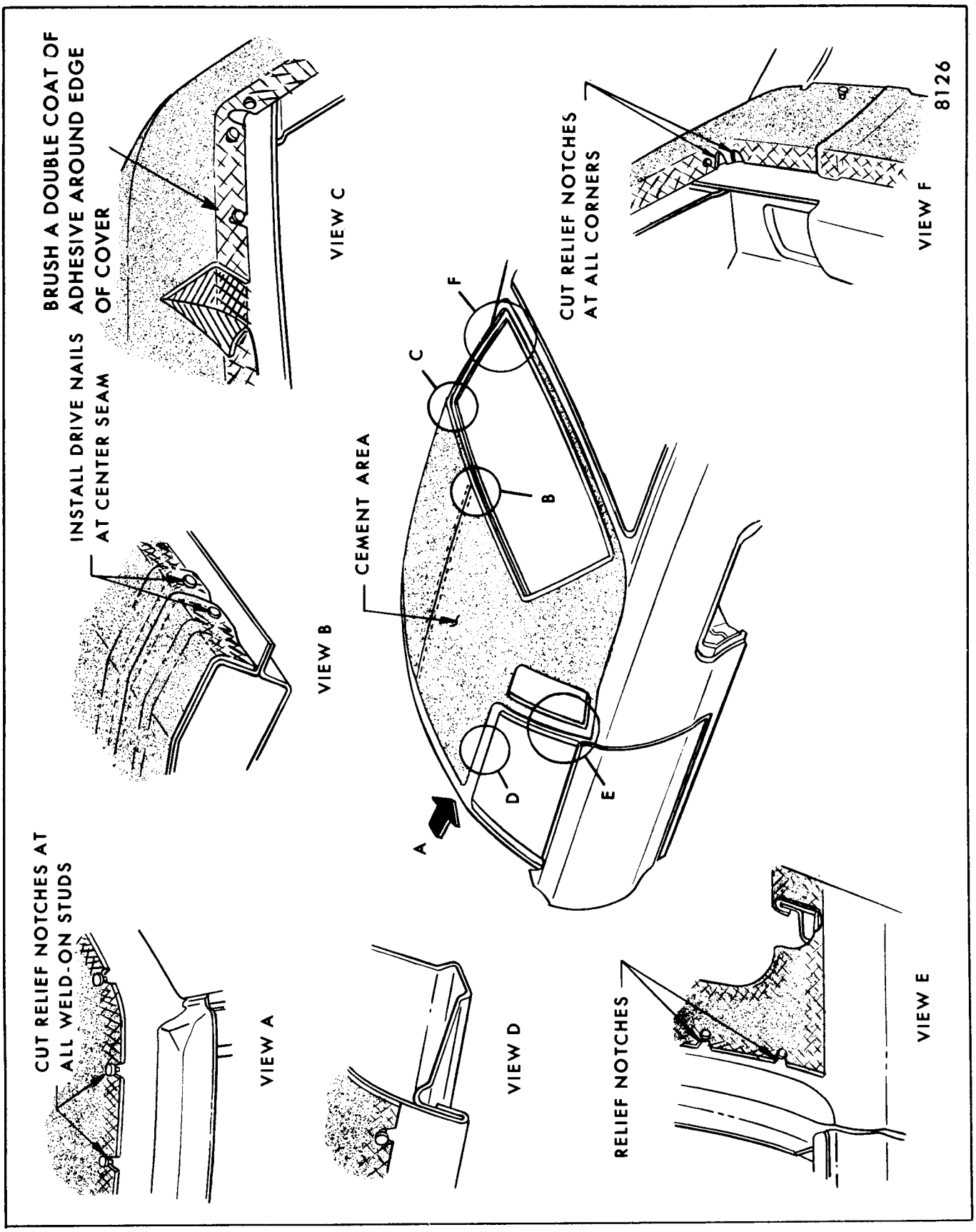


Fig. 8-29-Typical "E" Body with Halo Moldings - CB6 Option

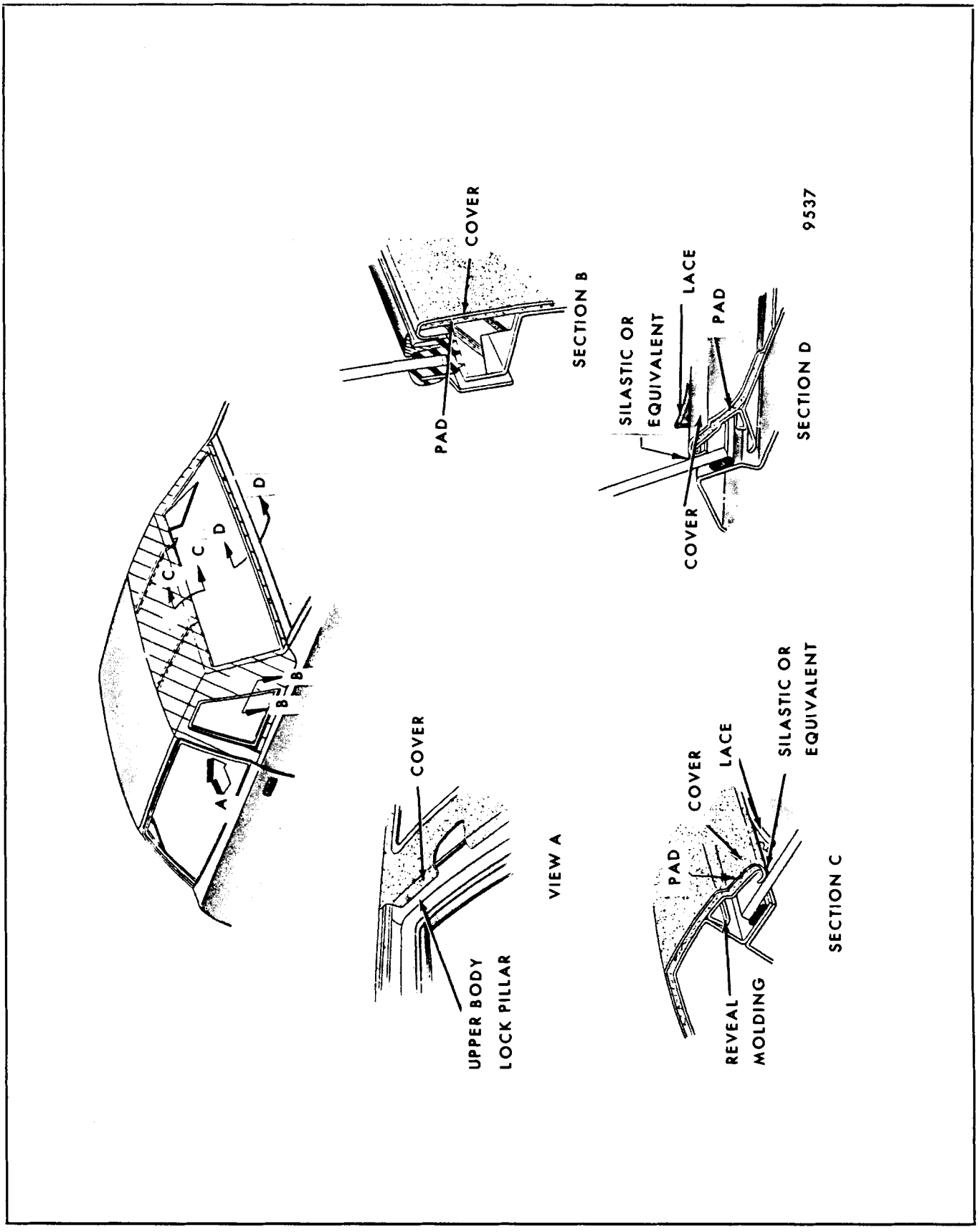


Fig. 8-30 - Typical "B and C-37" Style CO4 Option (Landau)

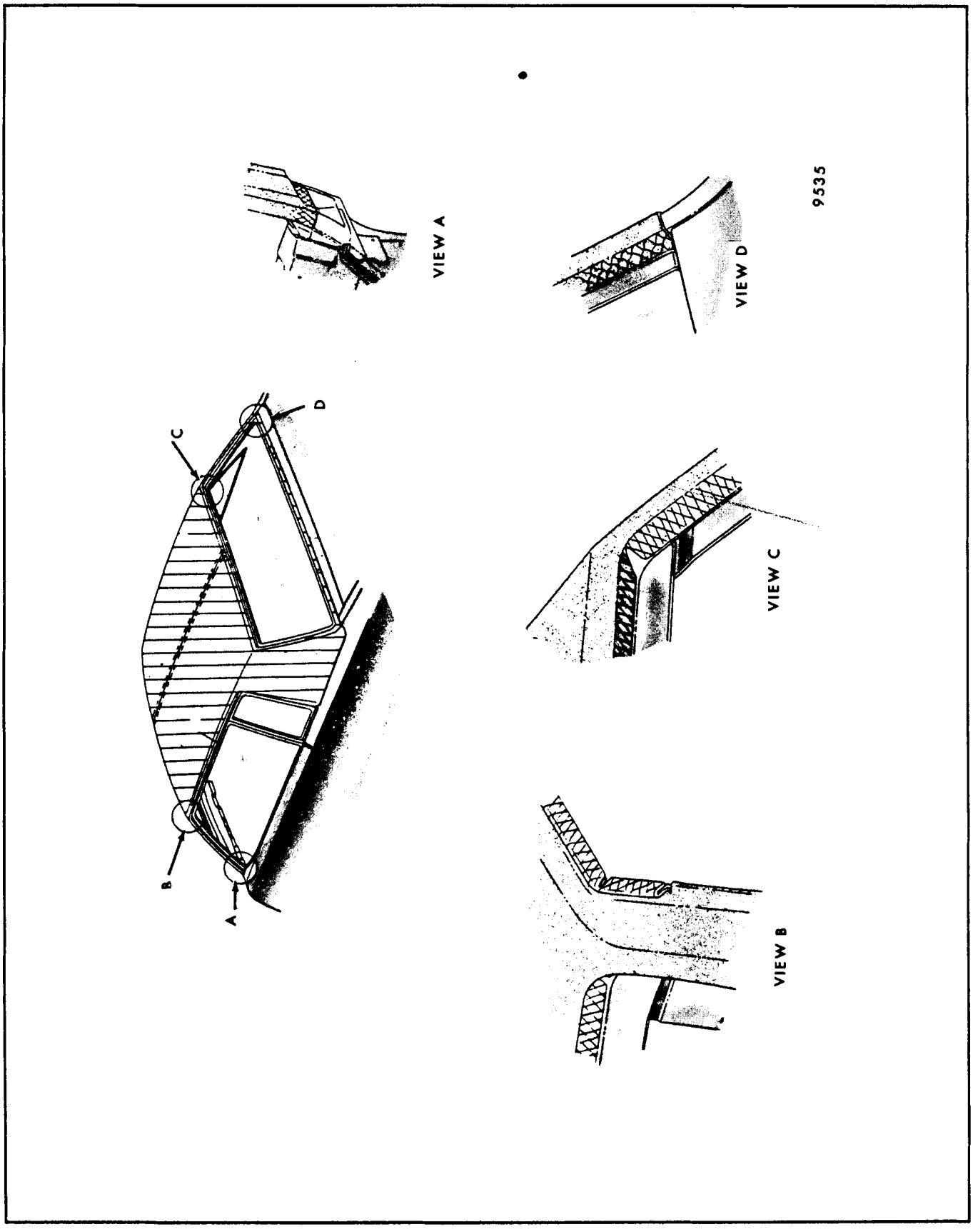


Fig. 8-31 - Typical "B and C-37" Style CO9 Option (Full Cover)

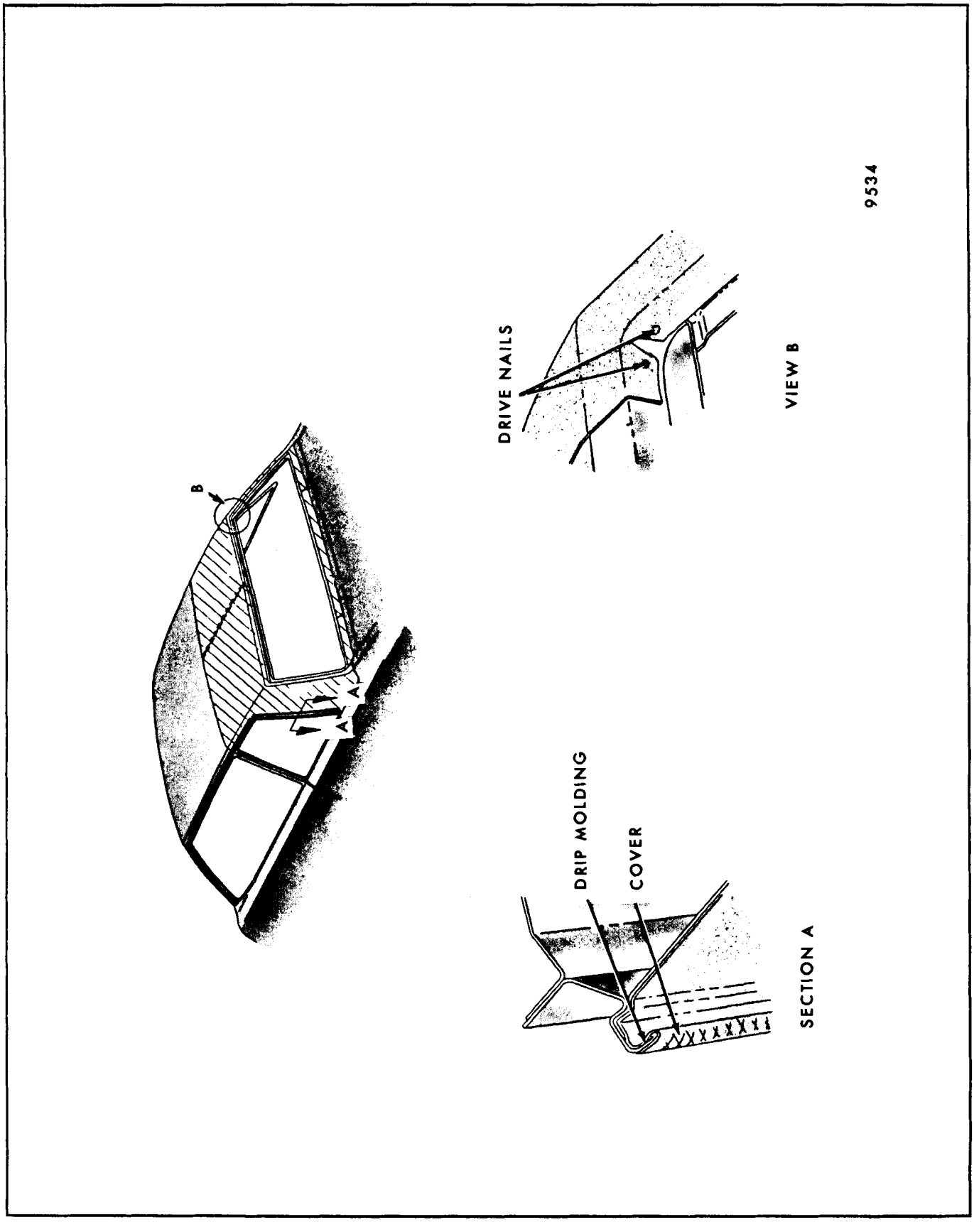


Fig. 8-32 - Typical "B and C-37" Style CB4 Option (Landau)

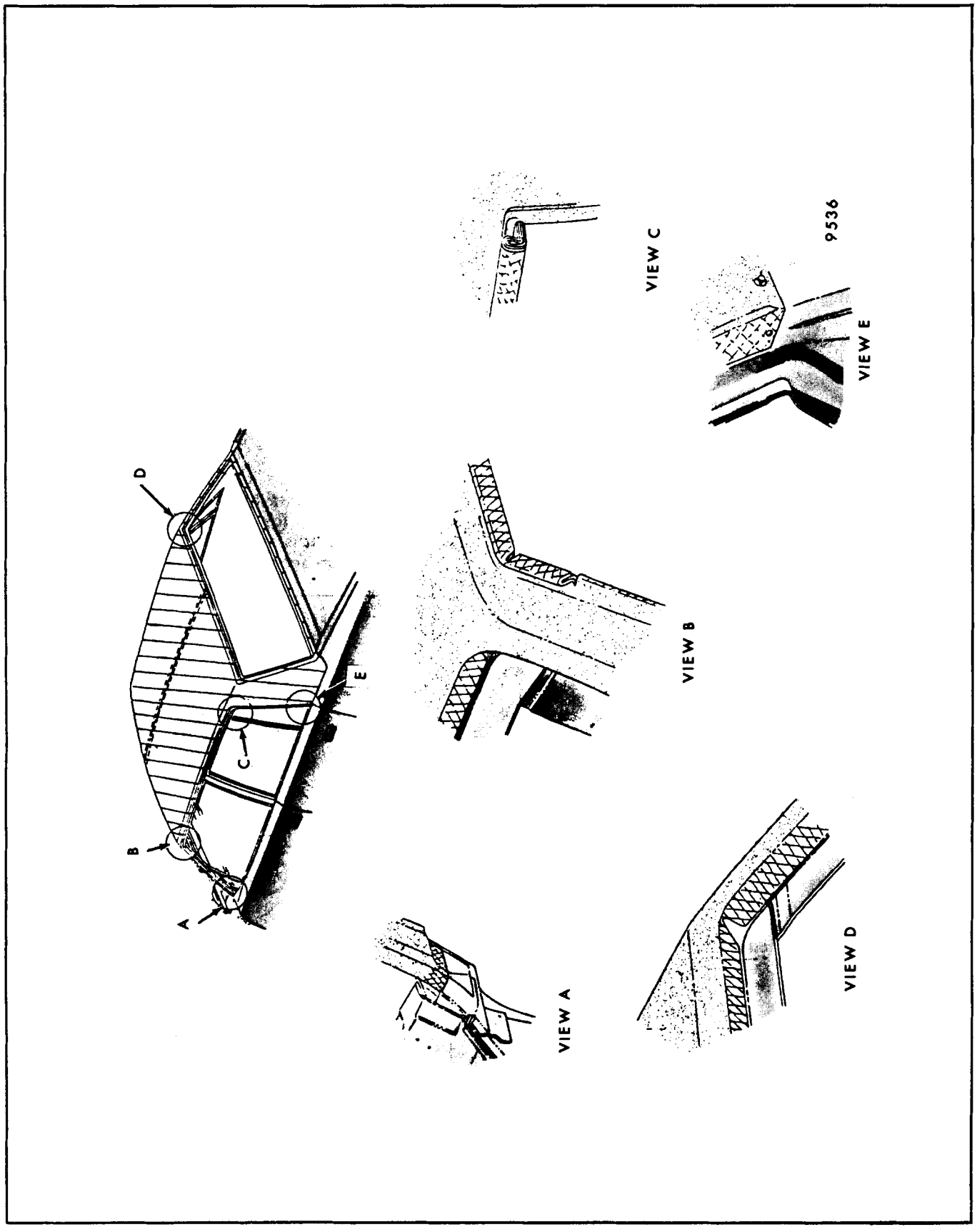


Fig. 8-33 - Typical "B and C-69" Style CO9 Option

FABRIC ROOF COVER REMOVAL - ALL OPTIONS EXCEPT C04 AND CB5

1. Remove all drive nails that are present in windshield and back window opening. On styles that do not have back window and/or quarter glass reveal moldings, carefully work cover from under covered retainer in those areas using a suitable tool such as reveal molding tool J-21549 or equivalent. Be certain that any tabs that may be present on retainers around back window opening securing cover are not damaged.

   CAUTION: *When removing drive nails, the edge of glass must be protected. Two to three layers of cloth body tape should provide the necessary protection.*

   NOTE: Drive nails can best be removed by first driving a screwdriver or suitable tool under the nail heads to loosen them. Diagonal cutters or similar tool can then be used to grasp nails and twist them out. Unnecessary enlargement of holes in roof panel should be avoided.

2. Completely mask off areas of roof panel which are not covered by fabric cover. Mask upper windshield or reveal moldings, windshield glass, back window, roof opening on sun roof option, all doors and flat painted surfaces (hood, rear compartment lid, etc.).

3. Apply heat to edges of roof cover to aid loosening and removal of cover. Heat can be applied with a hot air gun (Fig. 8-49) held approximately 1" from the cover and rotated in a circular motion. Heat lamps can also be utilized if held a minimum of 18" from the cover.

   CAUTION: *Excessive heat (over 200 degrees F) may cause the roof cover to lose its grain, blister or become shiny.*

4. Loosen all cemented edges of roof cover, then carefully remove cover from remaining cemented area of roof panel.

5. Check all cementing surfaces on body to insure a smooth cementing surface. Hand-wire brush areas where excessive padding from cover backing and/or adhesive build-up is evident. Trim excess material at windshield and back window opening. In the event any metal finishing is performed on roof panel, repaired area must be painted.

   NOTE: It is not necessary to clean off all old cement or padding, however, enough should be removed to prevent highlighting through roof cover. A xylol solvent, such as 3M Adhesive Cleaner or equivalent, should be used to remove or smooth out excess old cement. Apply solvent and allow to soak before rubbing.

   CAUTION: *Be certain to follow manufacturer's directions when using cleaner.*

Installation - All Except C04 and CB5 Option

NOTE: When spraying, rolling or brushing cement during installation of vinyl roof cover, a nitrile nonstaining adhesive is to be used such as Hughes HC 4183, 3M 8064 or equivalent.

1. Where possible, install new cover at room temperature (approximately 72 degrees) to permit easier fitting and removing of wrinkles from new cover assembly. Fabric roof cover pliers (Fig. 8-34) will aid in removing wrinkles.

   NOTE: Certain types of fabric roof cover materials cannot be pulled to a great extent to compensate for a misaligned condition. Therefore, it is extremely important that before installation (cementing) the cover be properly

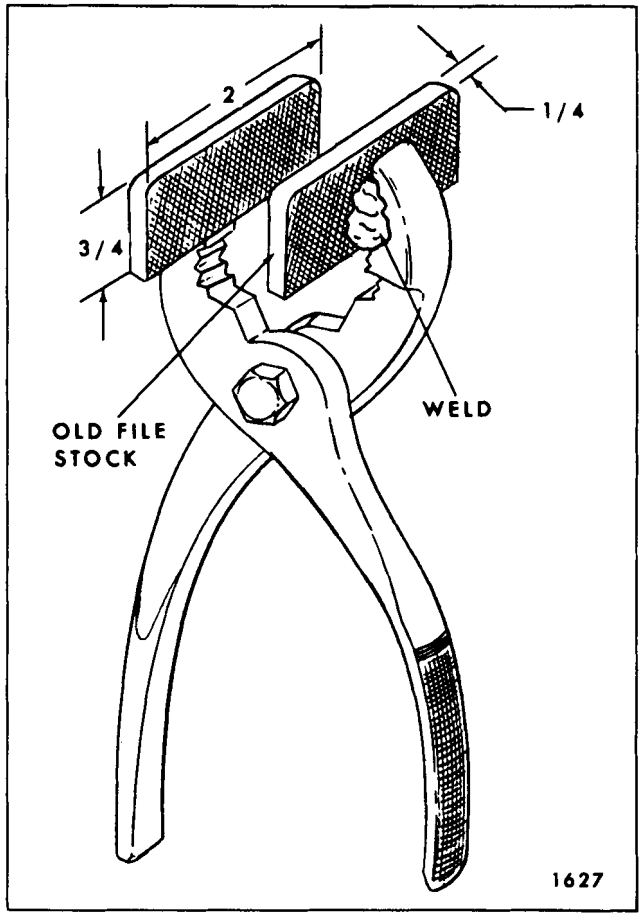


Fig. 8-34-Fabric Roof Cover Pliers

positioned on the roof, then reference marked for centering and fore and aft positioning.

2. If the old roof cover was properly aligned and when removed its seam imprint can be clearly defined on the roof panel, the imprint may be used as reference when installing new roof cover.

3. Determine centerline of roof panel by marking center points on windshield or on roof panel (landau installation) and back window with tape or equivalent.

4. To locate and mark the center of roof cover without a center seam, position cover on roof panel and fold cover lengthwise at center location. Mark center at front and rear of cover. On "29" styles, mark center location on right and left body lock pillar.

5. Fold cover lengthwise and brush an even application of adhesive along center of cover and to corresponding surface on roof panel. Allow adhesive 3 to 5 minutes to become tacky and cement center area to roof panel. Excessive adhesive will trap solvents under the cover and may cause blistering due to delamination of vinyl from pad.

   NOTE: Make certain cover is free of wrinkles and properly aligned; however, do not pull too hard on material as backing could separate causing wrinkles and/or highlights. Fabric roof cover pliers or an equivalent tool may be used in aiding removal of wrinkles.

6. To install remainder of roof cover, apply adhesive to back of one side of cover and to roof panel. Do not include quarter upper area.

7. Starting along center, gradually "slick" one side of the roof cover to the roof panel with the aid

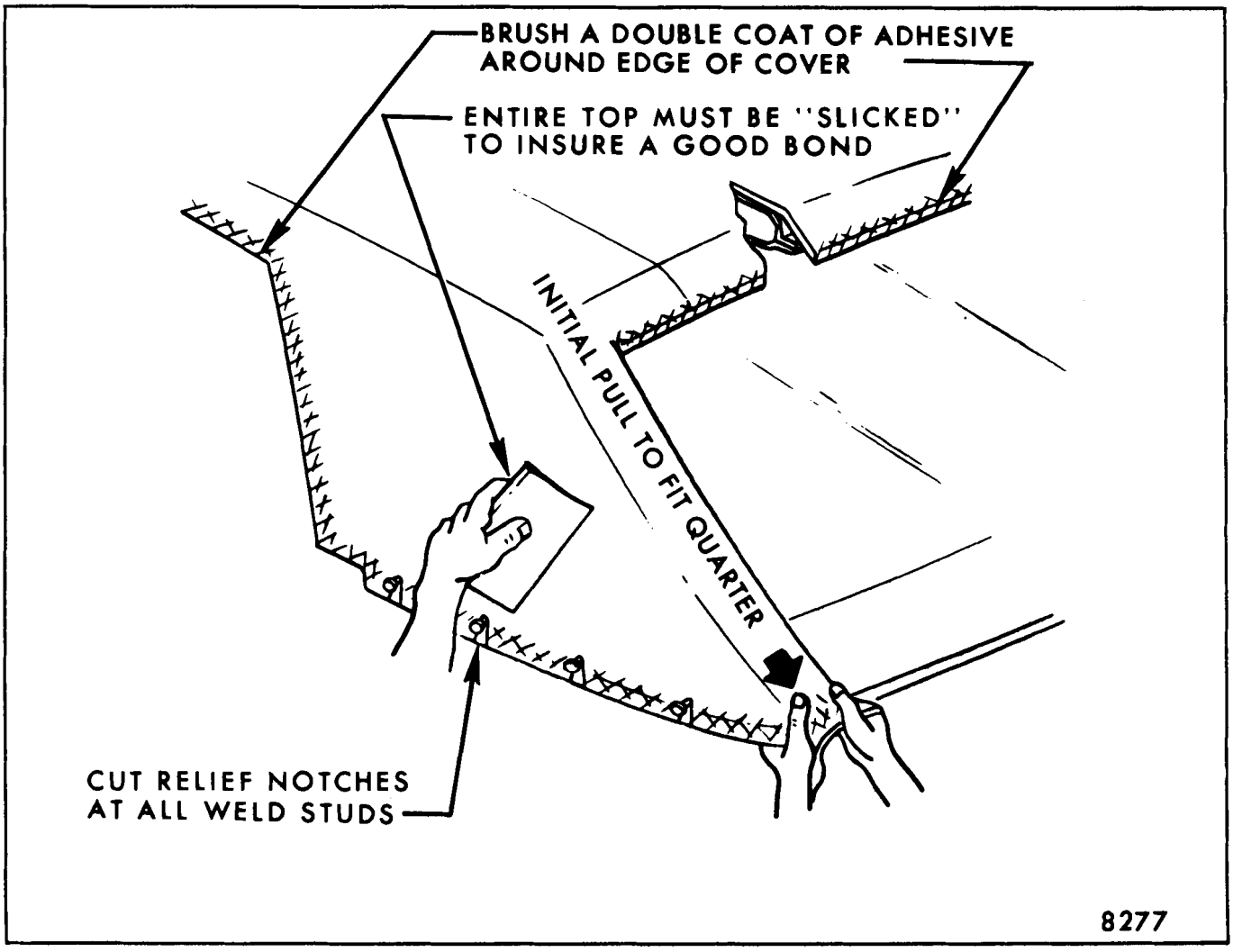


Fig. 8-35-Cementing Cover to Quarter Upper

of a helper pulling and holding the cover away from the roof panel. Make certain cover is free of wrinkles.

NOTE: In the event a given style is equipped with a multiple piece "plastic cap" on roof panel, make certain cover seams align with "plastic cap" horizontal seams.

8. Repeat operation to remaining half of roof.

9. On "29" styles, cement cover down the center pillar.

10. Apply adhesive to quarter upper areas and below back window opening on styles where cover extends below back window.

11. On all styles, cement cover to quarter upper area by pulling cover down and rearward. When operation is completed, cover should be free of all wrinkles and draws in this area (Fig. 8-35).

12. On styles where cover extends below back window opening, cement cover as required.

13. On styles with exposed quarter window reveal or finishing moldings, cement cover around quarter window pinchweld flange.

14. On styles with exposed windshield and back reveal moldings, perform the following:

    a. Cut relief notches in cover at all weld-on studs and angle cuts as required in corners of window openings. Apply adhesive to window openings and cement cover in openings. In the event a reveal molding clip cannot be removed, trim cover around clip and cement cover down behind clip.

    NOTE: Make certain a continuous and positive bond exists when cementing cover in front and back window openings.

    b. Brush a double coat of adhesive around edges of roof cover.

    c. Install one drive nail at seam area in windshield (full roof cover) and back window opening (full or landau cover).

    NOTE: Protect the edge of glass when installing drive nails in window openings. Drive nails installed at seams should be located as low in window opening as possible. Use an awl or similar tool to initiate a hole where drive nail is to be installed.

15. On styles that do not have back window and/or quarter window reveal moldings, perform the following:

    a. Brush a double coat of adhesive around edges of trim ring around quarter and back window opening or plastic retainer at quarter and back window opening.

    b. Using a flat-bladed tool carefully insert cover behind trim ring or plastic retainer making certain cover is free of wrinkles.

    NOTE: On certain styles, cover must engage metal tabs or plastic retainer around back window opening.

16. On styles where roof panel cover extends down windshield pillar, cement roof cover to windshield pillar.

17. On styles equipped with roof panel moldings, trim cover in a line slightly outboard of weld-on studs on roof panel. DO NOT DAMAGE PAINT FINISH. On styles with halo moldings, at front corners, raise cemented edge of cover and using scissors or sharp knife cut radius so roof panel moldings cover cut edge. Recement cover to roof panel. Remove masking tape from roof panel (Fig. 8- 29).

18. Trim cover slightly outboard of weld-on studs at quarter and at rear end belt area. If it is

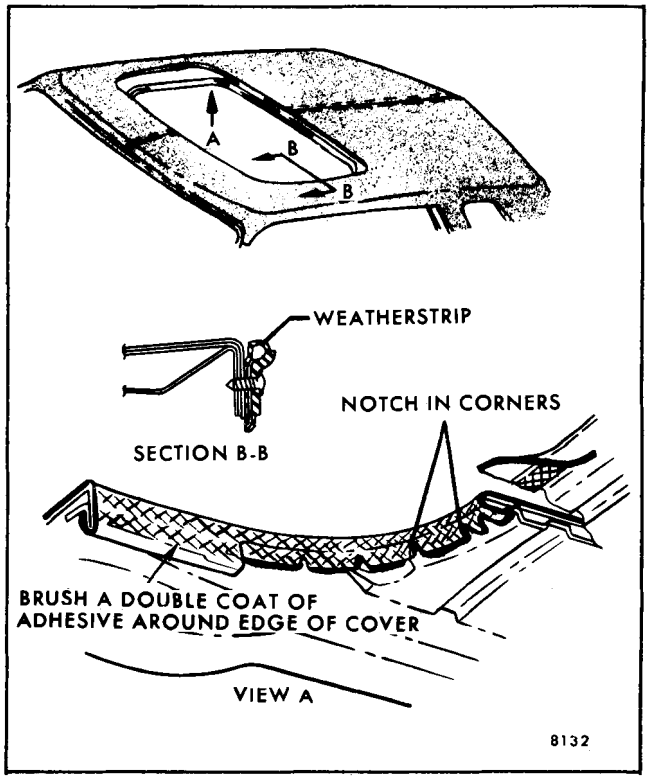


Fig. 8-36-Fabric Roof Cover Installation - Sun Roof Option

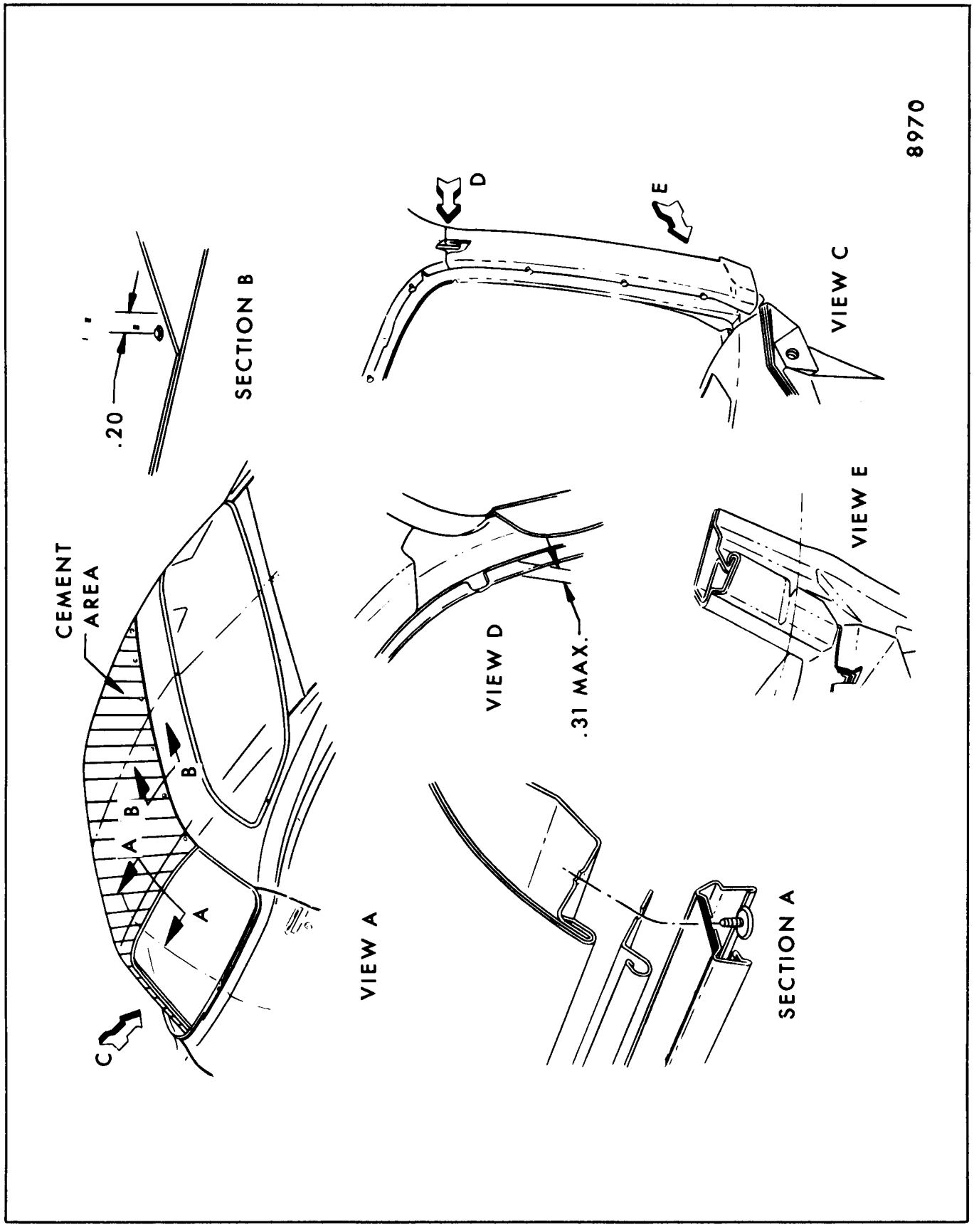


Fig. 8-37-Typical Fabric Roof Cover Installation - "F" Styles - CB7 Option

necessary to trim material from outer edge of cover around windshield or back window opening, raise cemented edge and cut as required.

19. On sun roof (Fig. 8-36) or vista vent option, trim and cement cover in roof opening. Also, on sun roof option, replace previously removed tape along rear of opening.

20. Along side rail, perform the following:

    a. On "A, E, and F" styles, cement cover around and to the underside of roof panel flange and trim cover as shown in Figure 8-22, View "B".

    b. On "B and C" styles, cement cover into and around roof drip molding and around windshield pillar flange. In addition, on "69" styles, cement cover around rear vertical roof panel flange (upper back body lock pillar).

    c. On "H and X" styles, cement cover around roof panel flange and trim as shown in Figure 8-26, View "D".

    CAUTION: *Make certain painted surfaces are not fractured during trimming of cover.*

21. On styles outlined in step 20, install drip scalp moldings or weatherstrip retainer and finishing moldings. These moldings aid in retaining the roof cover.

22. Remove all previously installed protective covering from windshield, back glass and body.

23. Install all previously removed moldings and assemblies.

FABRIC ROOF COVER WITH FOAM PAD - C04 and CB5 OPTION

Removal

1. Remove those items necessary to permit roof cover removal such as reveal moldings, weatherstrip, scripts, emblems, etc.

2. Carefully cut silastic sealant between back glass and finishing lace (if so equipped) with a sharp instrument such as a razor blade.

3. On styles where cover extends into windshield opening, remove all drive nails present being certain glass is protected.

4. Completely mask off areas of roof panel which are not covered by roof cover. Mask upper windshield or reveal moldings, windshield glass, back window, all doors and flat painted surfaces (hood, rear compartment lid, etc.).

5. Apply heat to edge of roof cover and along cemented center area to aid loosening. Heat can be applied with a hot air gun (Fig. 8- 49) held approximately 1" from the roof cover and rotated in a circular motion. Heat lamps can also be used if held a minimum of 18" from the cover.

6. Loosen all cemented edges of roof cover, then carefully loosen and remove the roof cover from the foam pad.

7. If foam pad must be removed, work it off by inserting a putty knife or similar flat-bladed tool between the roof panel and foam pad.

Installation - Foam Pad(s)

1. Check roof panel for excessive pad material and adhesive. In the event any metal finishing is performed on roof panel, repair area must be painted.

    NOTE: It is not necessary to remove all old pad material and adhesive. However, enough should be removed to prevent highlighting through the roof cover assembly.

2. On all styles except "K" body, determine centerline of roof panel by marking center points on windshield (roof panel on landau options) and back window opening with tape or equivalent. Also, when one-piece pad is to be installed, determine centerline of pad by folding pad lengthwise and mark centerline at front and rear of pad.

3. Align pad or pads on roof to determine proper positioning and amount of overhang. On "K" body, align beveled edge of pads flush with roof feature line.

    NOTE: On "K" body there are no pads in center of roof.

4. Brush an approximate 2" wide application of adhesive along center of pad (one-piece pad) or along inside edge of pad (multiple pads) and to corresponding cementing surface on roof panel.

5. Make certain pad is properly aligned, then cement pad to roof while adhesive is tacky.

    CAUTION: *To correct a misaligned or wrinkled condition may result in damage to pad and cause considerable time to cut out old foam and patch in new.*

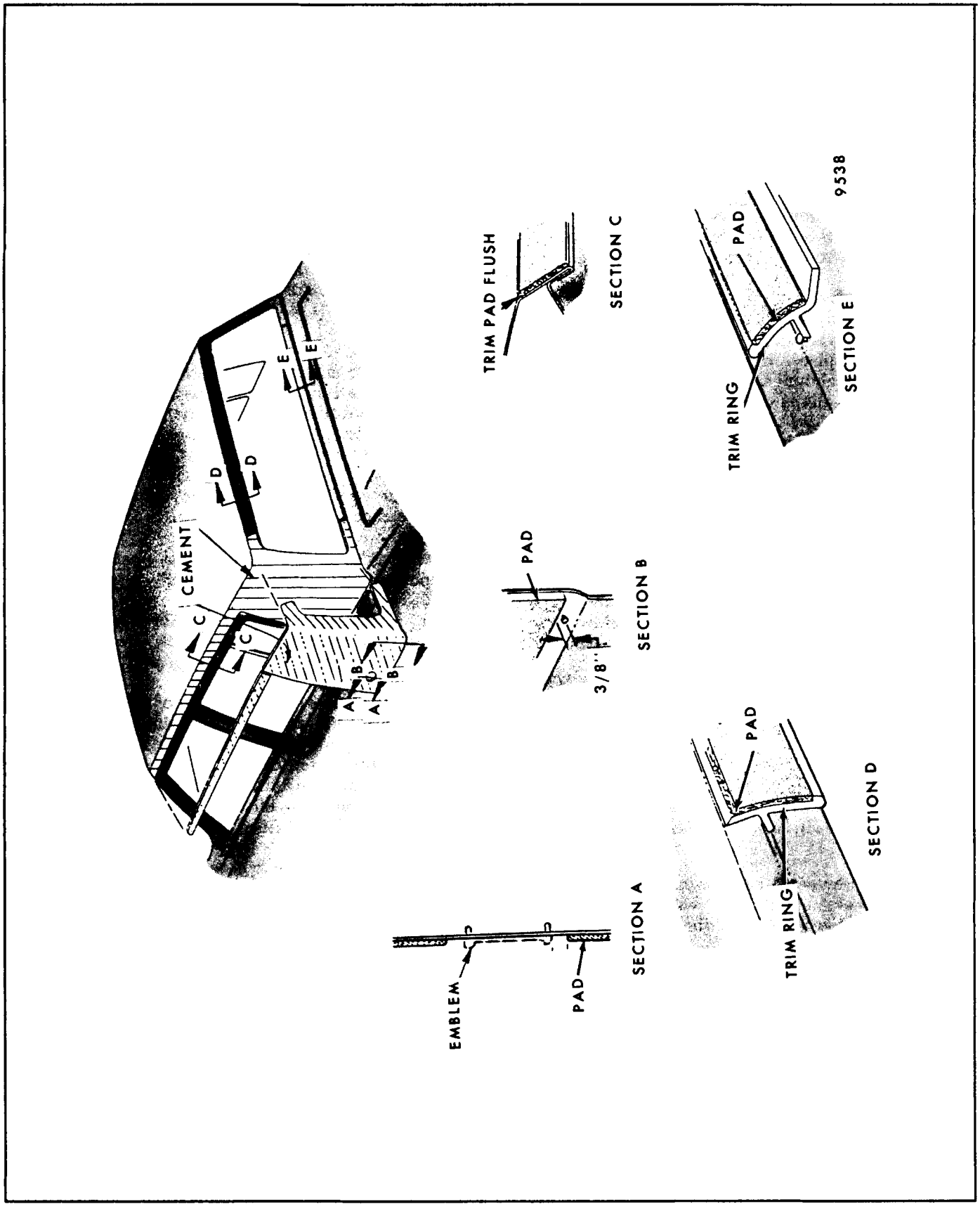


Fig. 8-38 - "K" Body Foam Pad Installation

6. Fold pad along cemented center area, apply adhesive to pad and to corresponding roof panel surface.

7. Starting along cemented edge and working toward drip moldings, cement pad to roof while adhesive is tacky. As pad is being unfolded and cemented, it should be thoroughly "slicked" down to avoid wrinkles and air bubbles.

8. Repeat operation to other half of roof. Where multiple pads are installed, make certain edges of pad butt together.

9. Apply adhesive to valance strip and corresponding surface below back window, butt one edge of valance against roof pad and "slick" valance in place. In addition, on "K" body, cement pad above back window opening making certain pad aligns with roof feature line.

10. Trim excessive pad material as follows:

    a. Slightly inboard of weld-on studs on roof panel (landau style) and at quarter belt and rear end beltline in such a manner as to allow edge of moldings to nest evenly next to pad after top is installed.

    b. In front and/or rear door opening flush with edge of roof (on styles without welded drip molding), center pillar and quarter panel.

    c. On styles with welded drip molding, ON ROOF PANEL, in a line with outboard top of drip molding.

    d. Flush with windshield opening at breakline (full roof cover).

    e. Around back window as follows:

        1. Flush with back window opening at breakline on styles with exposed back window reveal moldings.

        2. Flush with inner edge of reveal moldings on styles with covered reveal moldings.

        3. Flush with inner edge of plastic trim ring on styles that do not have reveal moldings.

        NOTE: Be certain pad is cemented along all edges that have been trimmed.

    f. Cut away pad at quarter window opening, name plate and opera light on styles so equipped.

Installation - All Fabric Roof Covers Over Foam Pad (CO4 and CB5)

NOTE: Certain types of fabric roof cover material cannot be pulled to a great extent to compensate for a misaligned condition. Therefore, it is extremely important that before installing (cementing) the cover it be properly positioned on the roof, then reference marked for centering and fore and aft positioning.

1. On landau styles that have a back window feature seam on roof cover, reference mark location of feature seam on pad 57 mm (2-1/4") plus 6 mm (1/4") minus 0 outside of window opening.

2. To locate and mark the center of a roof cover without a center seam or back window feature seam, position cover on roof panel and fold lengthwise at center location. Mark center at front and rear of cover.

3. Align roof cover to previously determined reference marks.

4. On styles with back window feature seam, perform the following.

    a. Fold rear portion of cover forward to expose back window feature seam and corresponding reference on pad.

    b. Brush an even application of adhesive along horizontal portion of feature seam and to corresponding surface on pad. Do not include vertical side seams. Excessive adhesives will trap solvents under the cover and may cause blistering due to delamination of vinyl from fiber backing.

    c. Allow adhesive to become tacky and with the aid of a helper align and "slick" cover in place, eliminating all wrinkles.

    d. Expose vertical portion of feature seam, brush adhesive along cover seam and to reference on pad.

    e. Align cover seam to reference and "slick" cover in place, eliminating all wrinkles. Repeat operation on opposite side.

    f. Apply adhesive to lower valance on cover and corresponding surface on pad, align and slick in place.

    g. Fold cover rearward, brush an application of adhesive approximately 6" wide adjacent to cemented horizontal feature seam.

h. Starting at outboard corner and covering a small area at a time, pull cover taut and "slick" cover in place. Apply adhesive to cover and balance of forward portion of pad. Allow adhesive to become tacky and "slick" cover to forward portion of pad.

NOTE: Make certain cover is properly aligned and free of wrinkles. Fabric roof cover pliers or an equivalent tool may be used in aiding removal of wrinkles; however, do not pull too hard on material as padding could separate causing wrinkles and highlights.

5. On styles that do not have back window feature seam on cover, perform the following:

a. Center cover on roof using previous centerline mark on roof and fold cover lengthwise to expose approximately a 4" wide area along center of roof.

b. Brush an even application of adhesive along center of cover and to corresponding surface on pad (roof panel on "K" body). Allow adhesive 3 to 5 minutes to become tacky and cement center area. Excessive adhesive will trap solvents under the cover and may cause blistering due to delamination of vinyl from pad.

NOTE: Make certain cover is free of wrinkles and properly aligned; however, do not pull too hard on material as padding could separate causing wrinkles and/or highlights. Fabric roof cover pliers or an equivalent tool may be used in aiding removal of wrinkles.

c. To install remainder of roof cover, apply adhesive to back of cover and to pad. Do not include quarter upper area.

d. Starting along center, gradually slick one side of the roof cover to the pad (roof panel and pad on "K" body) with the aid of a helper pulling and holding the cover away from the pad. Make certain cover is free of wrinkles.

e. Repeat operation to remaining half of roof.

6. On all styles, apply adhesive to cover and on quarter upper areas and below back window on styles where cover extends below back window. (Omit area below back window on cover with back window feature seam as this was previously done in step 4f).

7. Cement cover to quarter upper area by pulling cover down and rearward. When operation is completed, cover should be free of all wrinkles and draws in this area.

8. Cement cover below back window area (previously done on cover with back window feature seam).

9. Cement cover to windshield pillar on styles where cover extends down windshield pillar.

10. Install one drive nail at seam area in windshield (full roof cover) and back window opening (except styles that have trim ring or back window feature seam).

NOTE: Protect the edge of glass when installing drive nails in window openings. Drive nails installed at seams should be located as low in window opening as possible. Use an awl or similar tool to initiate a hole where drive nail is to be installed.

11. Cut relief notches in cover at all weld-on studs in windshield openings (full roof cover) and back window openings on styles with exposed back window reveal moldings. In the event a reveal molding clip cannot be removed, trim cover around clip.

12. Apply adhesive to roof cover and to corresponding cementing surface on center pillar on 6CB69 style and cement cover.

13. Cement cover into and around drip molding (on styles with welded drip molding) and around roof panel flange, also rear vertical roof panel flange and center pillar flange on 6CB69 styles.

14. Brush a double coat of adhesive around edges of cover.

15. Cement cover around quarter window opening flange.

NOTE: On styles where foam pad covers quarter window reveal moldings, wrap cover over pad and with putty knife or similar flat-bladed tool insert cover in back of reveal molding.

16. Trim excess roof material at quarter and rear end beltline using tape and weld studs as a cutting reference.

17. On styles equipped with roof panel moldings (landau), trim fabric cover in a line slightly outboard of weld-on studs on roof panel.

CAUTION: *Do not damage paint finish during trimming operation.*

18. Trim cover slightly above the outside lower edge of drip molding and/or at underside of roof panel flange.

19. Trim cover in windshield (full roof cover) and back window opening on styles equipped with exposed back window reveal moldings.

20. On styles where pad was cemented to back window reveal moldings or trim ring around back window opening, wrap roof cover over foam pad and with a putty knife or similar flat-bladed tool insert vinyl in back of reveal molding or trim ring. Roof cover must be free of wrinkles and puckers.

21. Install finishing lace (on styles so equipped) between roof cover and back glass and/or roof cover and quarter glass.

22. Apply a thin continuous bead of silicone sealant such as Dow Corning Automotive, General Electric RVP Sealant or equivalent between back glass and finishing lace.

23. Remove all previously installed protective covering from windshield, back glass and body.

24. Install all previously removed moldings and assemblies.

FABRIC COVER - SUN ROOF SLIDING PANEL - CA1 and CO3 OPTION

Removal

1. Remove the following prior to removing fabric cover from sliding sun roof panel (see Fig. 8-39).
   a. Sliding sun roof panel
   b. Weatherstrip
   c. Retainer
   d. Water deflector

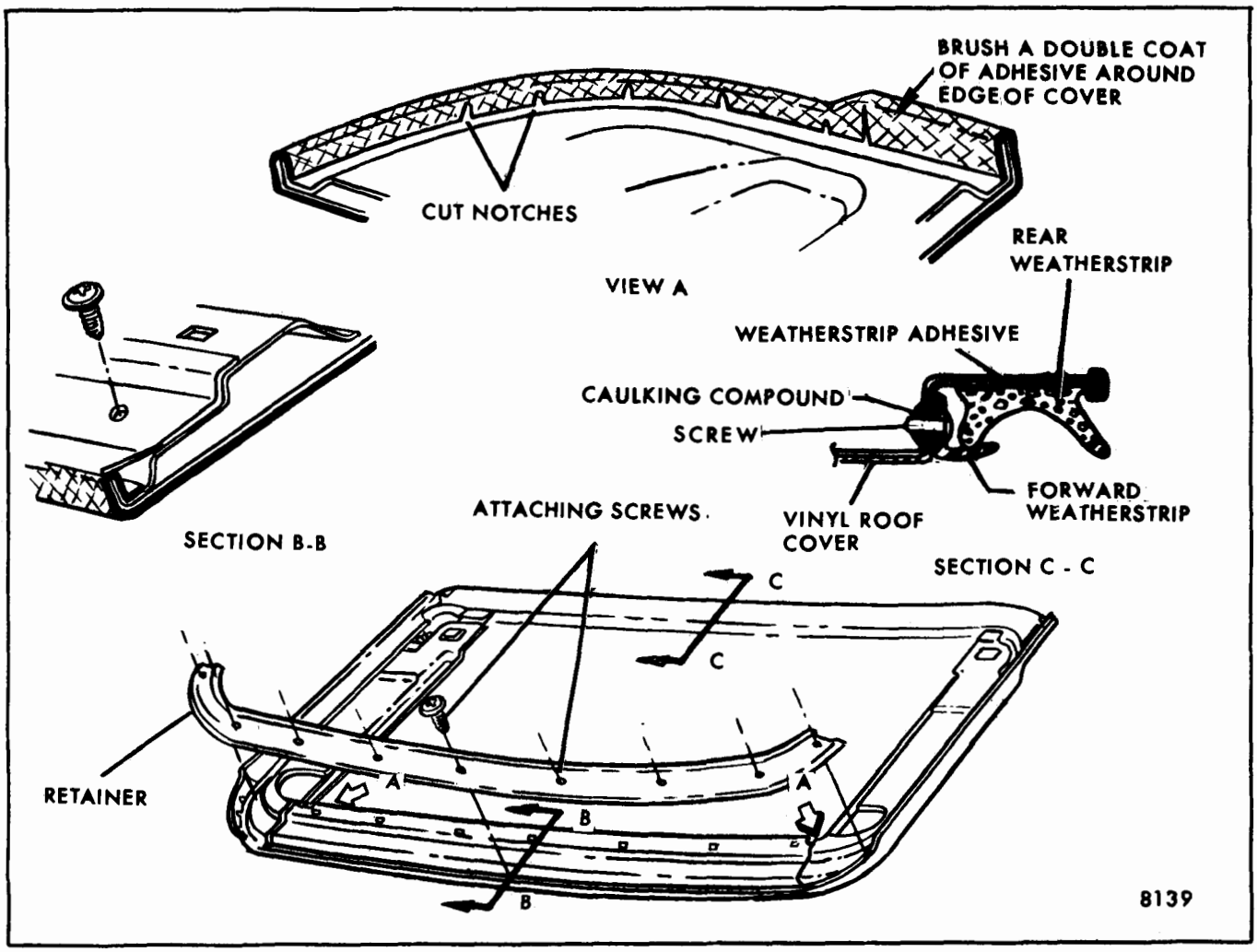


Fig. 8-39-Fabric Roof Cover Installation on Sliding Sun Roof Panel (CA1 or CO3 Option)

2. Prior to removing fabric cover, apply heat to edges of cover to aid loosening.

   NOTE: Apply heat as previously outlined for fabric roof cover removal.

3. Loosen all cemented edges of cover, then carefully remove cover from remaining area of sliding panel.

Installation

1. Check all cementing areas on sliding panel to insure a smooth surface. Cementing surface must be smooth to prevent "highlighting" of excessive adhesive and/or padding material. In the event any metal finishing is performed on the sliding sun roof panel, repair area must be painted.

2. Hand-wire brush sliding panel to remove excessive adhesive and/or padding material.

   NOTE: It is not necessary to clean off all old adhesive or padding, however, enough should be removed to prevent highlighting through fabric cover.

3. Install cover at room temperature (approximately 72 degrees, when possible). This will permit easier fitting and removal of wrinkles from new cover assembly.

   NOTE: Certain types of fabric cover materials cannot be pulled to a great extent to compensate for a misaligned condition. Therefore, it is extremely important that before installation the cover be properly positioned on the sliding panel, then reference marked for centering and fore and aft positioning.

4. Center cover on sliding panel.

5. Fold one half of cover back at center and apply adhesive to exposed half of sliding panel and cover. The type of adhesive and method of applying same is covered at the front of fabric roof cover section. Starting at center and working outward, cement cover to panel while adhesive is tacky. As cover is being unfolded, it should be thoroughly "slicked" down to avoid wrinkles and bubbles.

6. Repeat step 5 on opposite side of panel.

   NOTE: Fabric roof cover pliers or an equivalent tool may be used in aiding removal of wrinkles.

7. Notch cover at corners.

8. Brush a double coat of adhesive to inside of flange area and "slick" cover in place.

9. Trim excessive material as required.

10. Install forward weatherstrip.

11. Apply adhesive to rear weatherstrip and contacting surface at rear of panel, then install weatherstrip, retainer and water deflector (Fig. 8-39).

12. Install sliding sun roof panel in roof opening.

REMOVING WRINKLES FROM FABRIC ROOF COVER - ALL OPTIONS

Fabric roof cover wrinkles that do not recover of their own accord after a relatively short exposure to sunlight (several days) can be corrected as described in the following procedure.

As most wrinkles can be ironed out using a household type iron, it is recommended that this method be used first. If ironing does not correct the condition, it will be necessary to loosen the fabric cover from the roof panel to pull out the wrinkles.

1. Apply a clean dampened shop cloth over wrinkled area.

2. Using a household type flat iron with heat control set for medium heat (cotton or lower), iron wrinkled area (Fig. 8-40).

   CAUTION: *Keep iron in motion. Do not allow cloth to become dry as excessive heat will damage the vinyl material.*

Fig. 8-40-Removing Wrinkles with a Dampened Cloth and Home Type Iron

3. Continue ironing operation until wrinkles are removed or it becomes apparent that ironing alone will not correct the condition.

   If wrinkles remain, proceed with next step.

4. Remove moldings adjacent to wrinkled area.

5. Apply heat to edges of cover to aid loosening. Heat can be applied with a hot air gun held approximately 1" from the cover and moved in a circular motion (Fig. 8-41). Heat lamps can also be used if held a minimum of 18" from the cover.

   CAUTION: *Excessive heat over 200 degrees may cause the roof cover to lose its grain, blister or become shiny.*

6. Using a pair of pliers carefully loosen edges of roof cover as shown in Figure 8-41.

7. Separate the wrinkled area from the roof panel by either applying heat with a hot air gun while simultaneously pulling on the roof cover (Fig. 8-42), or by carefully separating the cover from the roof panel with a flat-bladed tool such as a putty knife (Fig. 8-43).

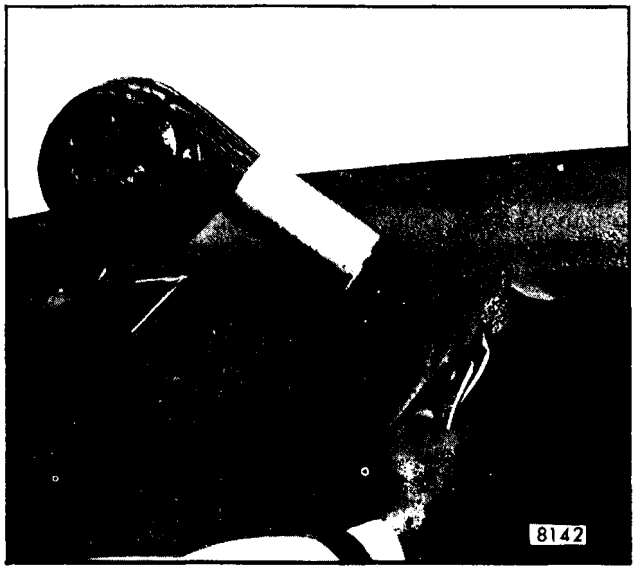


Fig. 8-41-Loosening Edge of Fabric Roof Cover

Fig. 8-42-Separating Wrinkled Area from Roof Panel - Heat Application

Fig. 8-43-Separating Wrinkled Area from Roof Panel - Flat-Bladed Tool Application

Fig. 8-44-Applying Adhesive to Roof Panel

8. Make certain bonding surfaces are free of sealer and other foreign material around stationary glass and door openings prior to applying adhesive in step 9.

9. Brush an application of a nonstaining vinyl trim adhesive such as Hughes HC-4183, 3M 8064 or equivalent to padded side of cover and to contacting metal surfaces (Fig. 8-44).

10. Allow adhesive to become tacky; then hand stretch and "slick" cover in place. Fabric roof cover pliers or an equivalent tool may be used in aiding removal of wrinkles as shown in Figure 8-45.

11. Replace moldings and clean soiled areas.

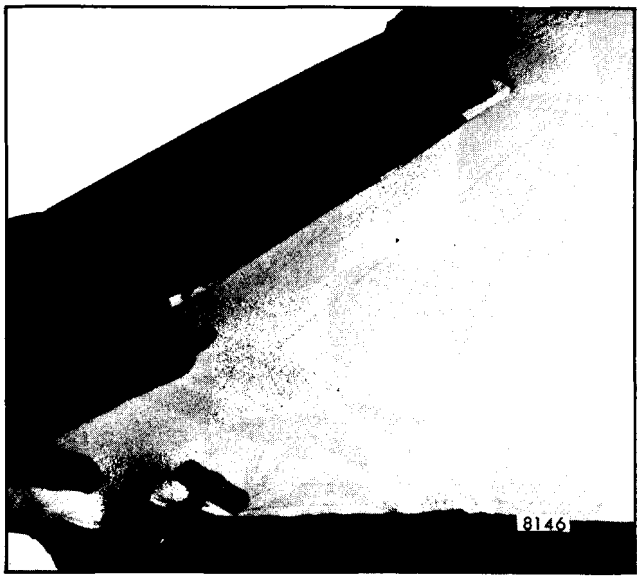


Fig. 8-45-Cementing Fabric Roof Cover to Roof Panel

FABRIC ROOF COVER REPAIR

DESCRIPTION

The roof cover material is a vinyl coated fabric which exhibits a grain pattern in the exterior vinyl surface. In the event the vinyl surface becomes damaged (cut, scuffed, gouged or torn), it is possible in most cases to make repairs without removing the cover assembly from the roof panel (see Figs. 8-46 and 8-47).

The repair procedures which follow describe two separate methods of repairing nonpadded fabric roof cover, two methods of repairing integral padded fabric roof cover and one method of repairing integral padded roof cover installed over foam pad.

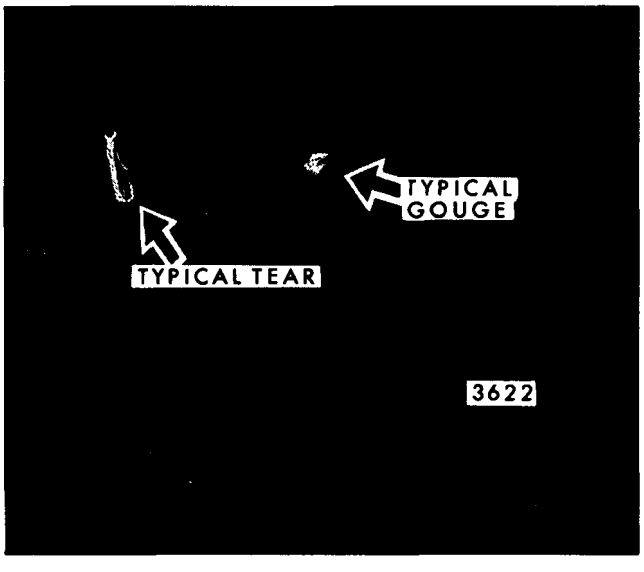


Fig. 8-46-Typical Fabric Roof Cover Discrepancy

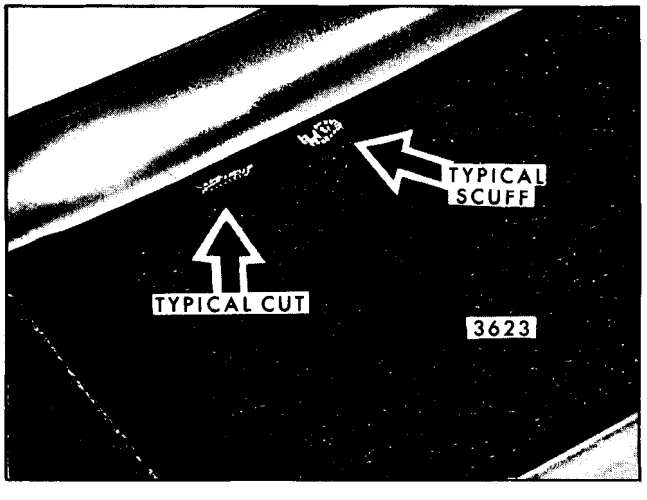


Fig. 8-47-Typical Fabric Roof Cover Discrepancy

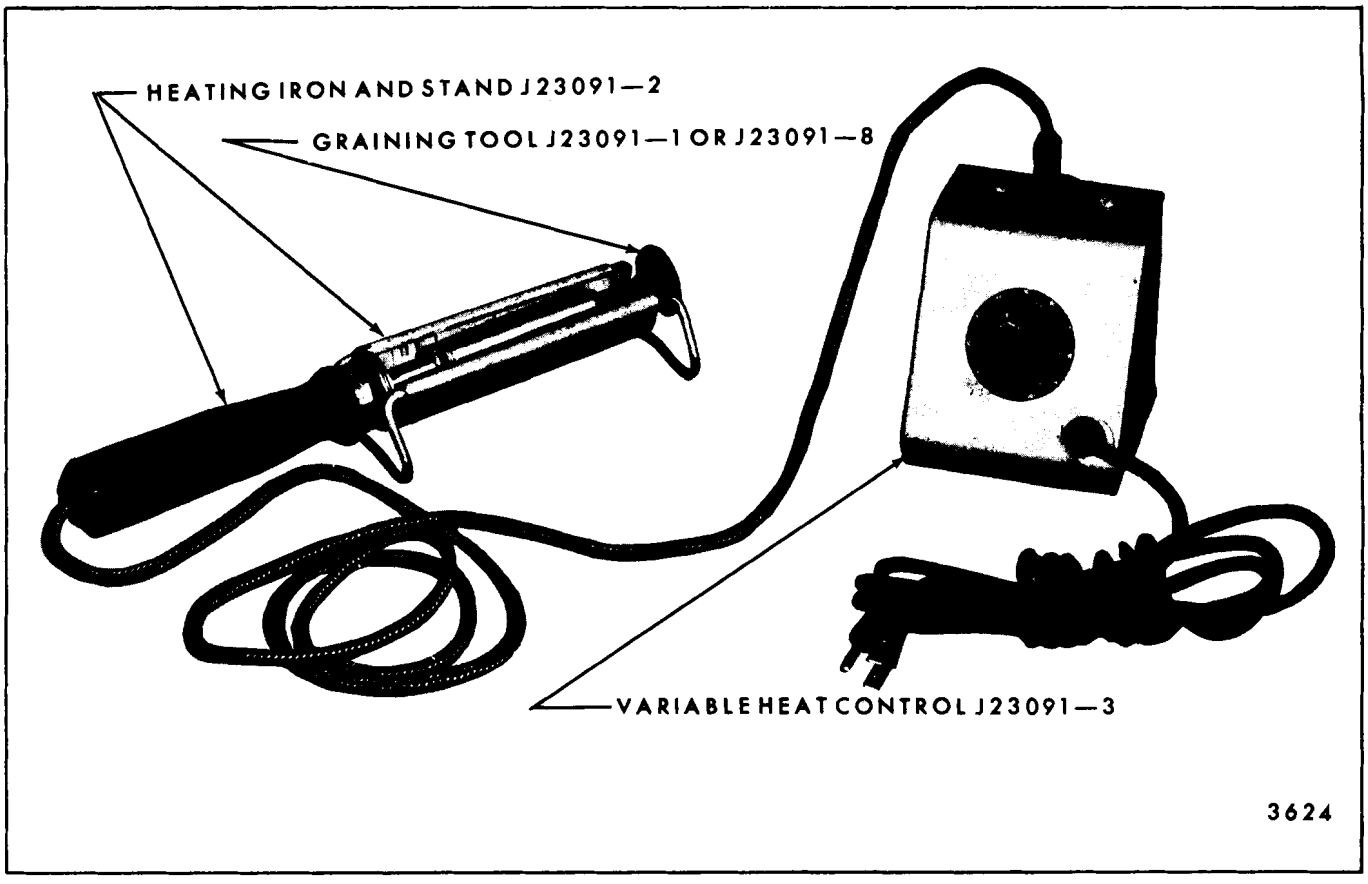


Fig. 8-48-Fabric Roof Cover Repair Tool

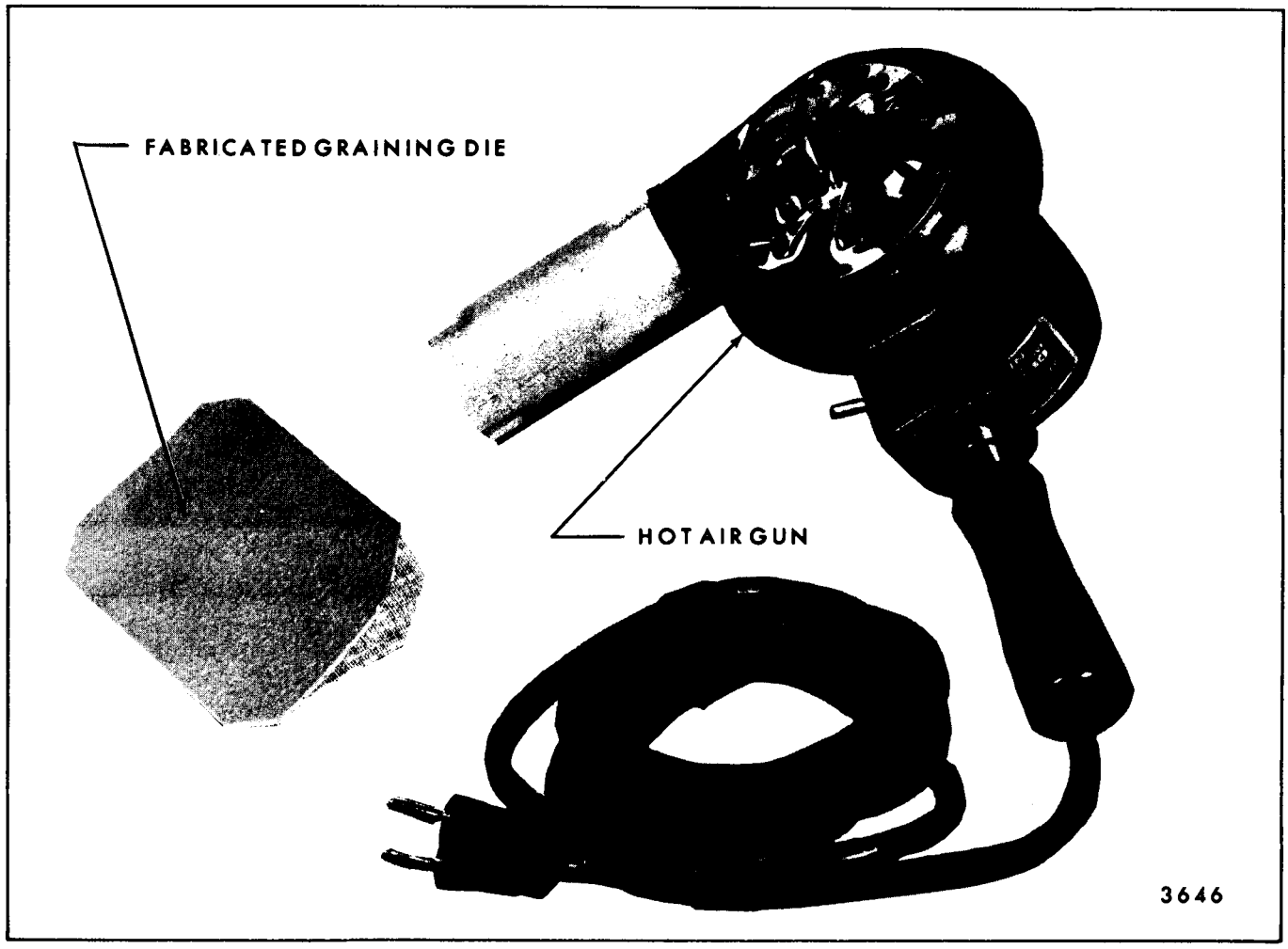


Fig. 8-49-Fabric Roof Cover Repair Die and Hot Air Gun

REPAIR PROCEDURE UITILIZING TEFLON COATED GRAINING TOOL

Equipment and Material Requirements

1. Repair tool kits for graining and curing vinyl repair patching compound are available as follows:

   Kit J-23091 or equivalent includes graining tool J-23091-1 or equivalent, heating iron and stand tool J-23091-2 or equivalent and variable heat control tool J-23091-3 or equivalent and is applicable for certain 1977 models and most prior model year fabric roof cover materials which match the grain of tool J-23091 or equivalent (Fig. 8-48).

   NOTE: Each component part of Kit J-23091 or equivalent is serviced individually.

2. Pallet knife - a small trowel used for applying vinyl repair patching compound (Fig. 8-50).

3. Razor or sharp knife - to be used for removing frayed edges from damaged area prior to application of vinyl patching compound (Fig. 8-50).

4. Vinyl cleaner (detergent type) - all purpose cleaner for removal of surface dirt, grease, dust, etc., from extremely dirty roof covers.

5. Vinyl cleaner (solvent type) - for removal of wax, silicone, oil, etc., from repair area prior to paint application (Fig. 8- 50).

6. Vinyl repair patching compound - a heat curing, milky colored, heavy bodied plastisol for repairing cut, torn, scuffed or gouged vinyl roof cover material (Fig. 8-50).

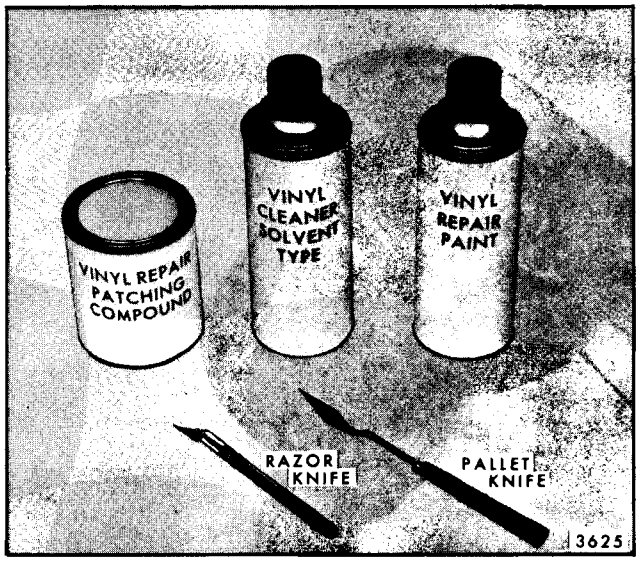


Fig. 8-50-Fabric Roof Cover Repair Materials and Tools

7. Vinyl repair paint - an approved, durable, waterproof, weather- resistant and pliable vinyl coating for refinishing vinyl coated fabrics.

8. Scissors - used for trimming loose fibers from damaged area.

9. Electric wood burning tool with screw-on tips (or equivalent) - used for smooth cuts, scuffs or gouges (Fig. 8-51).

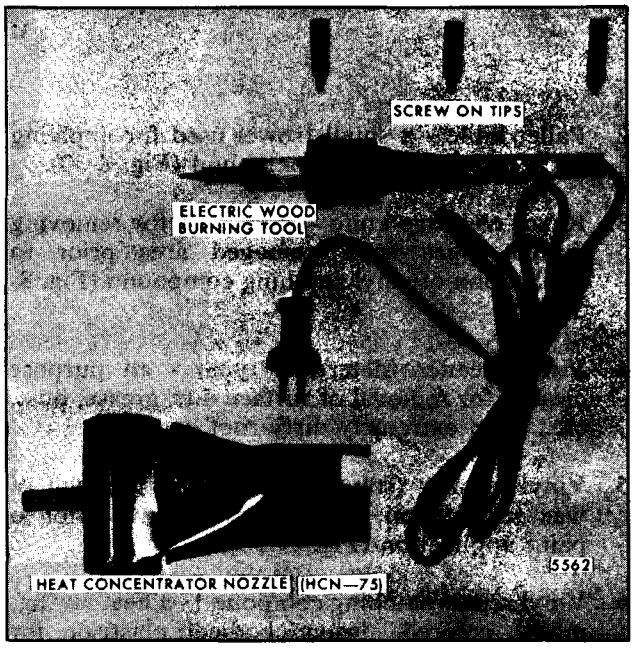


Fig. 8-51-Wood Burning Tool and Heat Concentrator Tool

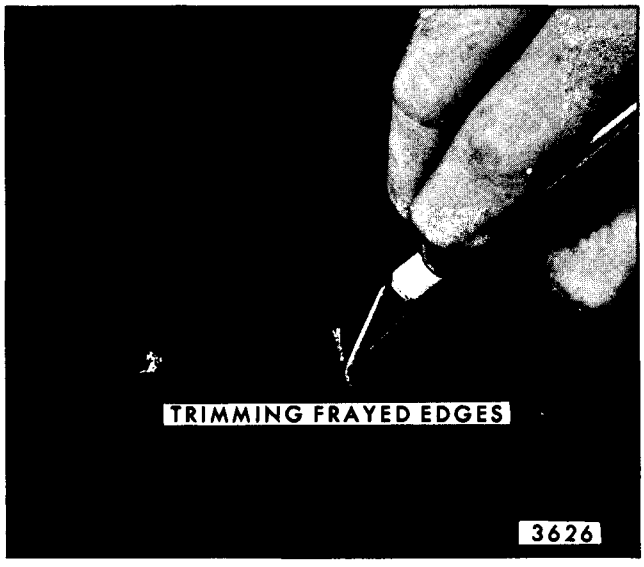


Fig. 8-52-Fabric Roof Cover Repair Trimming

Repair Procedure

1. Preheat graining tool (if grain in tool matches grain in roof cover) at 60 setting, plus or minus 2, on variable heat control (J-23091-3 or equivalent) for a minimum of 15 minutes or until the temperature has reached 300 degrees.

2. Prepare surface as follows:

   a. If cover has an over-all soilage, clean repair area with detergent type all purpose vinyl cleaner.

   b. Mask-off areas adjacent to repair area (body panels, moldings, glass, etc.).

   c. Using a razor knife, trim the damaged area to remove all frayed or damaged edges (Fig. 8-52).

   NOTE: Trimming of vinyl and fabric backing at damaged area should be kept to a minimum. On cuts, scuffs or gouges with clean unfrayed edges, no trimming is necessary.

3. On damaged areas where no trimming was necessary, apply vinyl patching compound to edges of area as shown in Figure 8-53. Where trimming was required, apply compound to area being repaired and trowel flush with adjacent surface as shown in Figure 8-54. Remove any excess material (compound) with clean cloth.

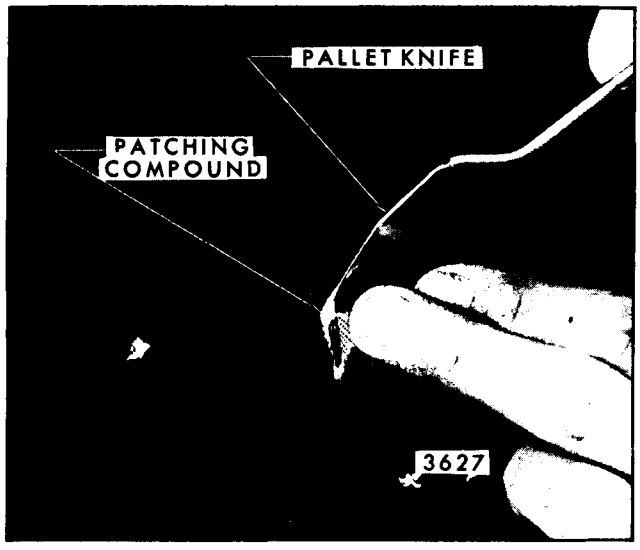


Fig. 8-53-Vinyl Repair Patching Compound Application

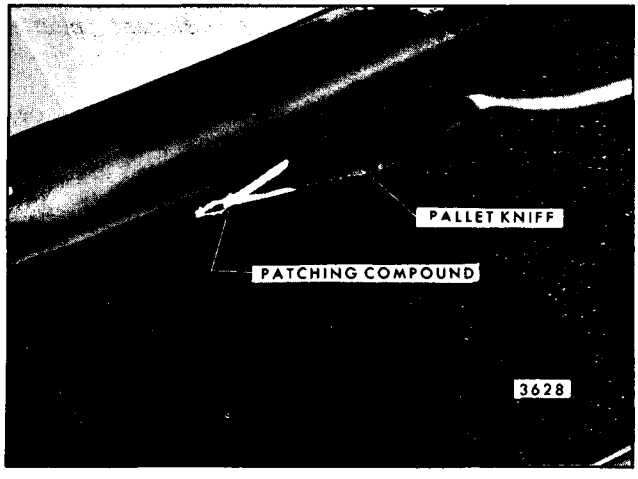


Fig. 8-54-Vinyl Repair Patching Compound Application

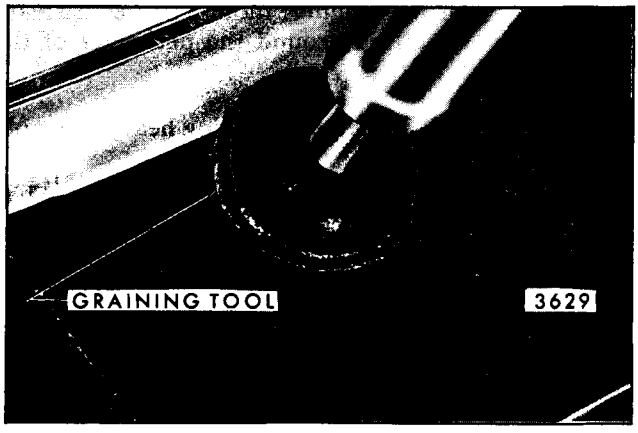


Fig. 8-55-Vinyl Patching Compound Curing and Graining

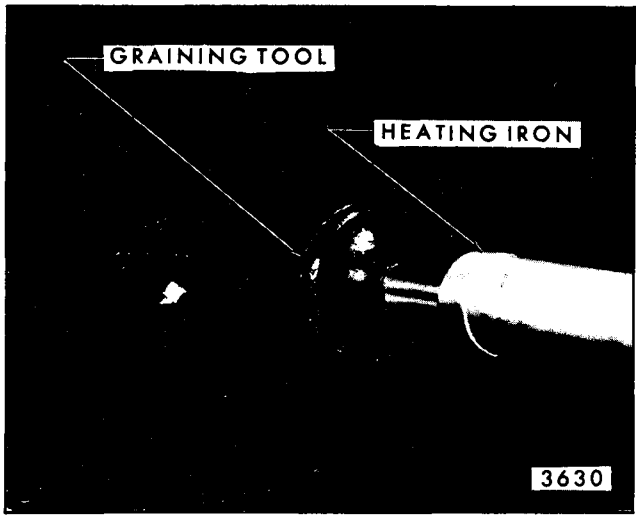


Fig. 8-56-Vinyl Patching Compound Curing and Graining

4. Graining operation is performed by exerting light hand pressure and applying preheated graining iron over damaged compound filled area for approximately one and one-half minutes (see Figs. 8-55 and 8-56). Curing and graining time can be increased slightly depending on size of repair.

   NOTE: During graining operation, it is important that the iron be held in a stable, perpendicular position. The use of the tool must be compatible to the repair area surface (round edge in drip rail areas, tapered edge adjacent to reveal moldings, crown surface for flat areas). For large repairs, repeat curing and graining using an overlapping technique.

   After graining operation is completed, clean the graining tool with solvent type vinyl cleaner and apply a small amount of silicone to prevent adhesion of vinyl paint during future usage of tool.

5. Apply vinyl paint (solid colors) as follows:

   a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner to remove any wax, silicone, oil, etc., that may be present.

   b. Thoroughly mix the vinyl color according to instructions on the container. If an aerosol type container is used, pretest spray pattern on a piece of paper; then apply vinyl color to repair area with two or three light passes.

Use a "fanning" motion to create a feathering condition around the perimeter of the spot repair.

NOTE: Avoid applying heavy coats of paint.

REPAIR PROCEDURE UTILIZING FABRICATED PLASTIC GRAINING DIE

Equipment and Material Requirements

The following describes the materials and equipment required to repair minor cuts, scuffs, gouges or tears on vinyl coated fabric roof covers:

1. Plastic body filler and hardener - a two-part material for fabricating a graining die with an impression of the grain present in the vinyl surface of the fabric roof cover (see Fig. 8-49).
2. Liquid detergent cleaner - all purpose cleaner for removal of surface dirt, grease, dust, etc.
3. Vinyl cleaner (solvent type) - for removal of wax, silicone, oil, etc., from repair area (see Fig. 8-50).
4. Vinyl repair patching compound - a heat curing, milky colored, heavy-bodied plastisol for repairing damaged area (see Fig. 8- 50).
5. Vinyl repair paint - an approved, durable, waterproof, weather-resistant, pliable vinyl paint for final color refinishing (see Fig. 8-50).
6. Pallet knife - a small trowel for applying patching compound to repair area (see Fig. 8-50).
7. Hot air gun and heat control nozzle - used to cure vinyl patching compound, preferably 500 to 700 degrees heat range (Figs. 8-49 and 8-51).

Repair Procedure

1. To fabricate a graining die, select a scrap piece of roof cover material of the same grain design as area being repaired. Clean grain surface using a detergent type cleaner and allow the surface to dry completely while molding compound is being mixed.
2. Using a nonporous mixing surface, mix the plastic body filler as instructed on container label as follows:

   NOTE: A porous mixing surface, such as cardboard, will absorb the hardening agent. This will cause improper curing of hardener.

   a. With a thin-bladed tool, spread the mold compound on previously prepared grain surface. Maintain a 1/8" thick application, approximately 2" wide and 6" long. Spread material from the center toward outer edges. Immediately after application of mold material, place a scrap piece of vinyl material, cloth side down over mold and apply light finger pressure. The mold will cure in 10 to 15 minutes. Heat may be applied to accelerate curing process.

   b. After curing, the entire mold can be removed from roof cover. Trim excess vinyl backing and any area that is unsatisfactory in grain pattern (outer edges of mold).

3. Prepare surface as follows:

   a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner. Allow area to dry completely.

   CAUTION: *Protect adjacent painted surfaces.*

   b. Utilizing a razor knife, scalpel or other suitable tool, trim any frayed edges from damaged area. The damaged area should be trimmed to a minimum of 1/8" in width. This will permit easier filling process. A slight tapering angle of the repair surface walls provides greater surface for filler adhesion.

4. The vinyl patching compound is applied (using a pallet knife) in a succession of thin layers to the repair area. Cure material thoroughly after each layer with hot air gun. Continue to apply patching compound until the top layer is flat to the surrounding surface level.
5. Thorough curing of patching compound is necessary for proper adhesion of each layer and can be accomplished with use of a heat gun. The filler is a milky substance which becomes almost transparent when properly cured. Heat should be directed to the repair area until the compound becomes transparent.

   CAUTION: *Too much heat can result in loss of grain texture. To avoid overheating, attention should be given to the vinyl being exposed to heat. As heat is applied, the adjacent vinyl areas will begin to show a glossy appearance. When this occurs, the vinyl has reached working temperature. Further heating will result in loss of grain.*

6. Perform graining operation as follows:

a. After the last layer of filler material has been cured, the graining operation is performed. This operation must be performed prior to cooling of filler material. Using hot air gun, apply heat directly on repair area. Continue heat application until vinyl begins to become glossy. At this temperature, successful graining can be achieved.

b. After heat has been applied, press the graining die into the soft vinyl. If possible, graining should be accomplished on the first attempt. To minimize loss of pattern uniformity, apply steady, even pressure to the back of graining die to provide an even impression.

7. When graining has been completed, the repair area is ready for application of vinyl paint (solid colors) as follows:

a. Using a soft lint-free cloth, wipe the repair area with solvent type vinyl cleaner to remove any wax, silicone, oil, etc., which may be present.

b. Thoroughly mix the vinyl color according to instructions on the container. If an aerosol type container is used, pretest spray pattern on a piece of paper; then apply vinyl color to repair area with two or three light passes. Use a "fanning" motion to create a feathering condition around the perimeter of the spot repair.

NOTE: Avoid applying heavy coats of paint.

REPAIR - INTEGRAL PADDED TYPE FABRIC ROOF COVER

The procedures for repairing padded fabric roof cover on 1977 styles are basically the same as previously described for repairing nonpadded vinyl roof cover. However, due to different characteristics of the padded fabric roof cover, some changes are required to repair this type of roof cover.

As the padded roof cover is more difficult to repair, it is recommended that repairs be limited to cuts or tears no longer than 1/2" and other types of damage no larger than 1/4" in diameter. In addition, damage area should be confined to edge of cover such as adjacent to roof drip and reveal moldings.

Patching Repair Procedure - Where Vinyl Material is Missing - Other than Cuts or Tears

1. Using a soft lint-free cloth, wipe the repair area with liquid detergent for removal of surface dirt, grease, etc., or a solvent type cleaner for removal of wax silicone, etc.

CAUTION: *Protect adjacent painted surfaces.*

2. Trim the repair area. Any padded back fibers that protrude through the damaged area can be worked back under the vinyl with a pallet knife. Any additional fibers can be trimmed with a razor, knife or scissors.

NOTE: Trimming should be held to a minimum.

3. Apply patching compound to damaged area with pallet knife.

NOTE: Alternately applying patching compound and curing is recommended; usually three applications are adequate.

4. Wipe off excessive patching compound around damaged area before curing.

5. Remove excessive amounts of compound from damaged area with the edge of a pallet knife while compound is hot. This will aid in keeping repair area level.

6. Apply heat to damaged area using a hot air gun with heat control nozzle attached (Fig. 8-51).

7. Hold hot air gun approximately 1" from the damaged area rotating gun in a circular direction. Curing takes place in about twenty seconds or when the patching compound turns from white to grey.

CAUTION: *To avoid overheating, attention should be given to the vinyl roof cover adjacent to repair area. As heat is being applied, the adjacent vinyl will display a glossy appearance. When this occurs, vinyl has reached working temperature and further heat will result in loss of grain.*

8. After heat has been applied, press the graining die into the soft compound filled damaged area. If possible, graining should be done on the first attempt. A steady even pressure on the back of the graining die minimizes the loss of grain.

9. If necessary, graining may be improved by carefully going over the damaged area with an electric wood burning tool matching the existing grain.

Variable heat control tool J-23091-3 (or equivalent) may be used to control heat of electric wood burning tool. Set heat control unit at 75 on the dial indicator (approximately 375 degrees).

Test this setting on a piece of scrap vinyl. Adjust heat control unit as required. The electric wood burning tool tip should be kept clean and lubricated with a small amount of silicone.

NOTE: If repair is too high, sand down high spots with 200 grit open coat paper, then regrain and respray, or cut out undesirable area and repeat repair procedure.

10. When graining has been completed, the repair area is ready for application of vinyl paint (solid colors) as follows:

    a. Using a soft lint-free cloth, wipe the repair area with a solvent type vinyl cleaner to remove any wax, silicone, oil, etc., which may be present.

    b. Thoroughly mix the vinyl color according to instructions on container. If an aerosol type container is used, pretest spray pattern on a piece of paper; then apply color to repair area with two or three light passes. Use a "fanning" motion to feather material around the perimeter of repair.

    NOTE: Avoid applying heavy coats of paint.

Fusing Repair Procedure - For Cuts, Scuffs, Gouges

1. Clean area to be repaired as described in step 1 under Patching Repair Procedure.

   CAUTION: *Protect adjacent painted surfaces.*

2. Trim repair area. Any pad fibers that protrude above the damaged area can be worked back under the vinyl with a pallet knife. Any additional loose fibers should be trimmed off.

   NOTE: Trimming should be kept to a minimum. A small amount of nitrile vinyl trim adhesive can be applied to the damaged area to hold it in place.

3. Fuse damaged area using an electric wood burning tool. In some cases, vinyl must be added to damaged area. Using wood burning tool, scrape vinyl material from a scrap piece of vinyl roof cover and fuse into the damaged area.

4. Restore grain to the damaged area by one of the following methods:

   a. Using wood burning tool, grain the damaged area to the original grain in the cover.

   b. Using a hot air gun with heat control nozzle attached, apply heat to the damaged area. Hold hot air gun approximately 1" from the damaged area, rotating gun in a circular direction.

   CAUTION: *Overheating should be avoided as previously noted under Patching Repair Procedure.*

   c. After heat has been applied, press the graining die into the soft vinyl. If possible, graining should be done on the first attempt. A steady even pressure on the back of the graining die will minimize the loss of grain.

   d. If necessary, graining can be improved by carefully going over the damaged area with a wood burning tool, matching the existing grain (see step 9, Patching Repair Procedure).

5. When graining has been completed, the repair area is ready for painting as previously described in step 10 of Patching Repair Procedure.

REPAIR - FABRIC ROOF COVER WITH FOAM PAD - CO4 or CB5 Option

It is recommended that repairs be limited to cuts or tears no longer than 1/2" and other types of damage no larger than 1/4" in diameter. In addition, damage should be confined to edge of cover such as adjacent to roof drip and reveal moldings.

Repair Procedure

The repair procedure for repairing a vinyl roof cover with a foam pad is the same as specified for integral padded top material except the repair area must be backed up with a hard surface such as a metal panel.

1. Remove moldings.

2. Mask off area adjacent to damage.

3. Using pliers or similar tool, carefully loosen edge of roof cover up to roof break line (Fig. 8-57).

4. Pull cover up to expose edge of foam pad. Using a very sharp knife or razor blade, carefully cut cement bond between fabric roof cover and foam pad (Fig. 8-58).

   CAUTION: *Steps 3 and 4 should be performed with extreme care to prevent damage to roof cover. Tearing of foam pad during this operation may require considerable extra time to cut out old foam and patch in new foam to provide a smooth appearance along edge.*

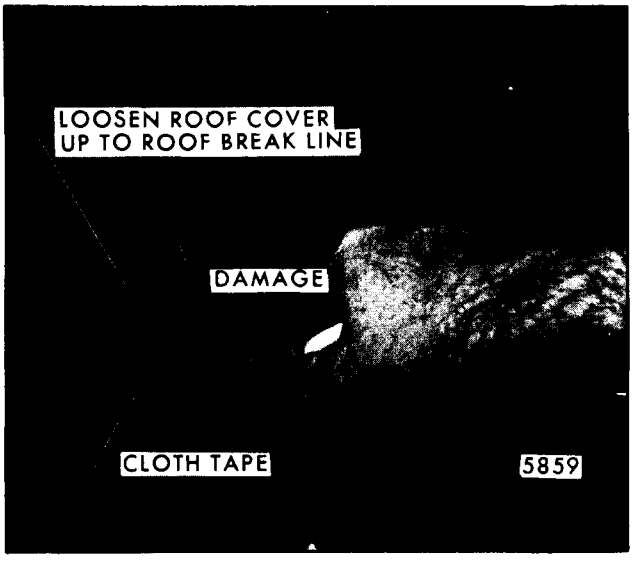


Fig. 8-57-Loosening Edge of Roof Cover

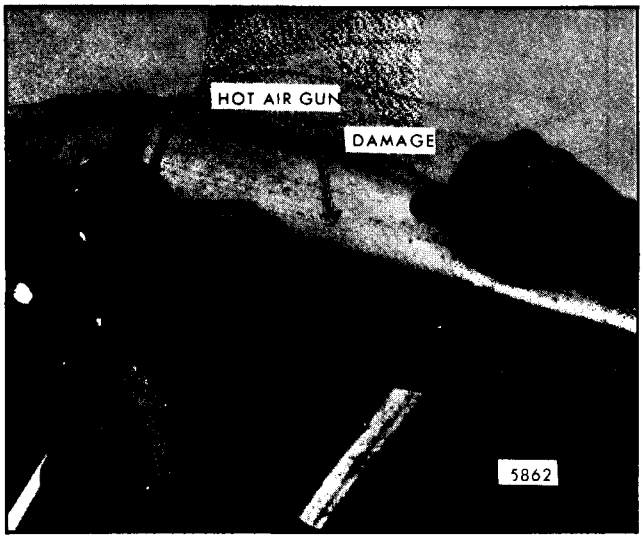


Fig. 8-59-Separating Roof Cover from Foam Pad - Heat Application

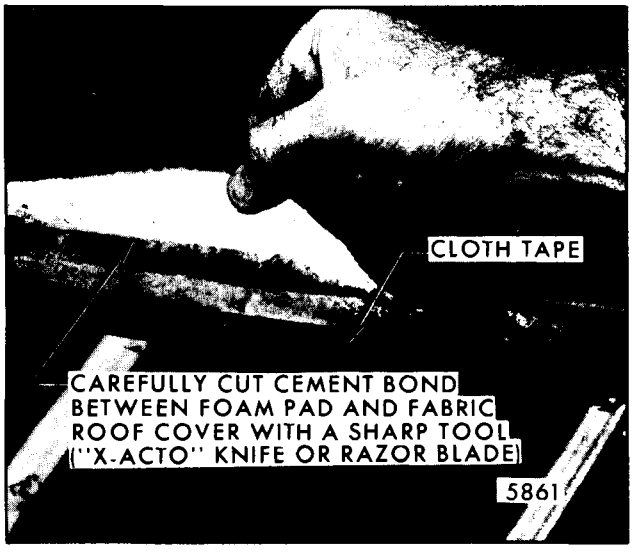


Fig. 8-58-Cutting Cement Bond Between Roof Cover and Foam Pad

5. Apply heat sparingly between roof cover and pad to permit easier separation of cement bond (Fig. 8-59).

6. Tape back of damage using black waterproof tape.

7. Back up damage with a hard surface such as a metal plate, then make repair as previously described in Integral Padded Roof Cover - Repair procedure.

8. Brush an even application of a nonstaining adhesive, such as Hughes HC-4183, 3M 8064 or equivalent to roof cover and foam pad. Allow adhesive to become tacky, then pull cover taut and cement cover in place. Excessive adhesive will trap solvents under the roof cover and may cause blistering due to delamination of vinyl from felt backing.

   NOTE: Make certain cover is free of wrinkles. Do not pull too hard on material as wrinkles or highlighting could result. Vinyl roof cover pliers or an equivalent tool may be used in removing wrinkles.

SUN ROOF

DESCRIPTION

Two metal sliding sun roofs are available (painted or vinyl covered) as an option on "A-37 and 57" styles for Pontiac and Buick and "A-57" styles for Chevrolet. The sun roof feature permits opening of a sliding section of roof panel to admit sunshine and outside air into the passenger compartment (Fig. 8-60).

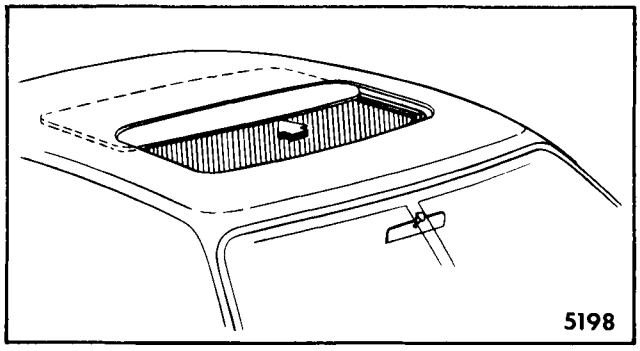


Fig. 8-60-Exterior View (Sun Roof Partially Open)

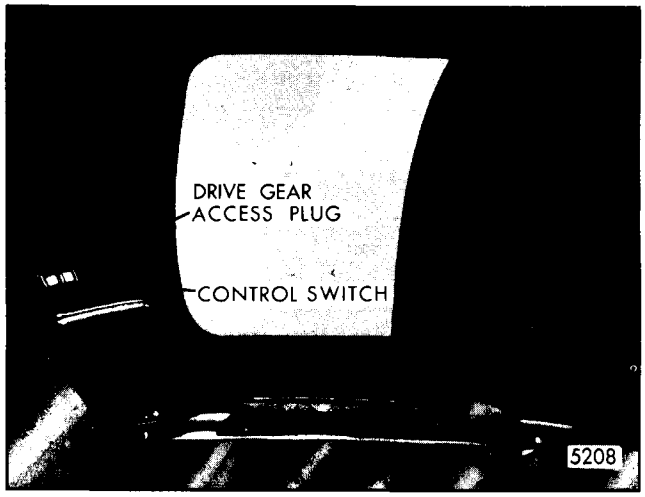


Fig. 8-61-Control Switch and Drive Gear Access Plug

The sun roof is controlled by a two-position switch mounted in the windshield header safety pad area (Fig. 8-61).

During the opening cycle, the sun roof panel retracts down and rearward on guide rails into a storage space between the headlining and the roof. During the closing cycle, the sun roof moves forward and as it nears the end of forward travel, the rear portion initially moves upward on two ramps (Fig. 8-62); the lifter then places the panel flush with the roof surface and seals it within the roof opening. The sun roof may be left partially open in either direction of travel.

The sun roof can be closed manually in the event of electrical malfunction. To do this, remove the small round plug located in the center of the headlining near the front edge of the roof opening to gain access to the driving gear. Remove the plug by grasping with fingers and pulling downward (Fig. 8-61). Using the hex head auxiliary crank tool provided with the sun roof option, turn crank handle clockwise to close the sun roof. Remove the crank handle. Then replace the round plug.

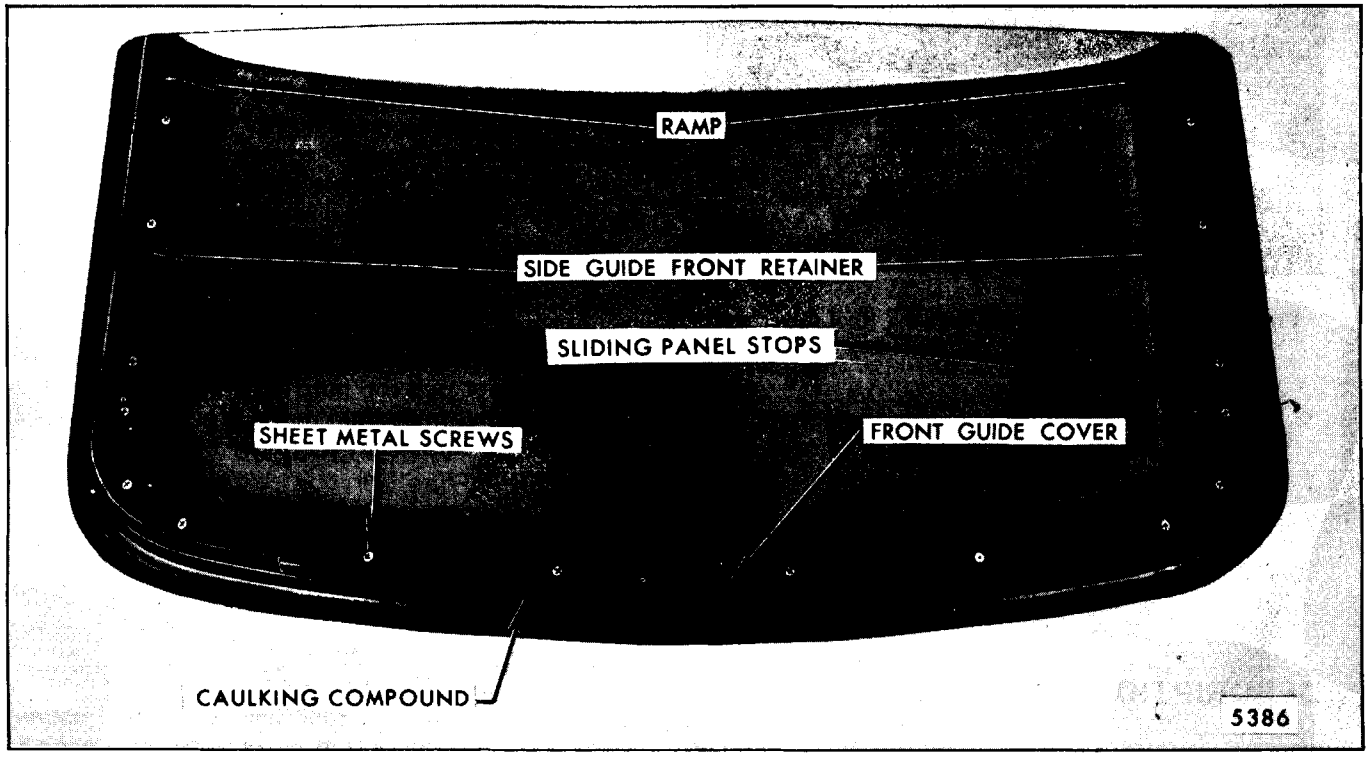


Fig. 8-62-Front and Side Guide Rail Covers

The sun roof is driven by a 12-volt reversible motor with an integral gear drive mechanism. The drive gear assembly is mounted near the center of the windshield header forward of the sun roof opening The drive assembly drives two flexible cables that are attached to the sun roof sliding panel and control its movement.

For information on electrical circuitry, refer to Power Operated Sun Roof in the Electrical Section.

DRAIN HOSES

Four plastic drain hoses, one at each corner of the sun roof housing, are incorporated to drain water that may bypass the weatherstrip seal around the roof opening. The two forward hoses (Fig. 8-66) are routed through the right and left windshield pillars, and out through grommets located at the bottom of the front body hinge pillar lower panels. The rear drain hoses are routed into the rear quarter panel forward of the rear wheel housings allowing water to drain through the rocker panel drain piercings.

During regular maintenance, check the two drain holes at the front corners of the sun roof housing to make certain they are open and free of foreign material. If drain holes or hoses are plugged, they can be cleaned with an air hose or flexible wire.

To clean rear drain hoses, use air pressure or flexible wire from the bottom of the tubes. The rear drain hose may be detached from its retaining clip through the rear compartment on "37" styles or by removing the quarter upper trim panel on "57" styles. Then pull the drain hose lower end through the quarter inner panel access hole ("57" styles) or rearward over the wheelhouse ("37" styles) for access to the lower end of the hose.

SUN ROOF DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Sun roof panel fails to rise or close completely	1. Panel misaligned.	a. Align panel.
	2. Cable guides misaligned.	a. Align front cable guide to side guide rail (shim if necessary).
	3. Guide shoe jammed on guide.	a. Adjust guide shoe.
	4. Lifter link misaligned vertically or damaged beyond repair.	a. Align lifter link vertically and adjust or -
		b. Replace both drive cable assemblies.
	5. Damaged drive cable(s).	a. Replace both drive cable assemblies.
	6. Side reinforcement cover damaged or missing.	a. Replace side reinforcement cover.
	7. Metal lifter tab bent and/or missing plastic cover.	a. Straignten metal tab vertically to sliding panel and/or replace plastic cover.
	8. Motor torque insufficient.	a. Replace motor.
2. Sun roof motor inoperative (ignition switch on).	1. Short or open within sun roof circuitry.	a. Refer to checking procedure in Electrical Section.

SUN ROOF ADJUSTMENTS

NOTE: For access to adjustment provisions, detach headlining panel and slide it rearward into the sun roof housing for stowage.

Vertical Adjustment at the Front of the Panel

1. To obtain a flush fit with the roof, loosen two bolts on the front guide shoes (Fig. 8-63).
2. Turn front guide adjusting nut clockwise to lower roof panel and counterclockwise to lift panel (Fig. 8-63).
3. After proper alignment is obtained, tighten bolts to 14 to 22 in-lb torque.
4. Adjust opposite front guide in same manner if required.

Vertical Adjustment at the Rear of the Panel

1. To obtain a flush fit with the roof, loosen attaching nut on lifter link (View "A", Fig. 8-63).
2. Raise or lower panel to desired height using serrations provided on lifter link (View "A", Fig. 8-63).
3. After proper alignment is obtained, tighten lifter link nut (20 in-lb torque). Link must be vertical.
4. Adjust opposite rear lifter link in same manner, if required.

Alignment of a Panel That Does Not Run True

1. Close roof panel to determine which side of panel jams.
2. With roof panel closed, remove motor and drive gear assembly.
3. Align panel within opening to desired position assuring constant margins.
4. Reinstall drive assembly.

Cable Guide Alignment

1. If roof panel jams during its travel, check alignment of front cable guide to side guide rail.
2. If necessary, shim front cable guide for alignment with adjacent side guide rail.
3. If panel fails to rise, check for low battery or check for bent lifter tabs or missing tab covers (Fig. 8-63).

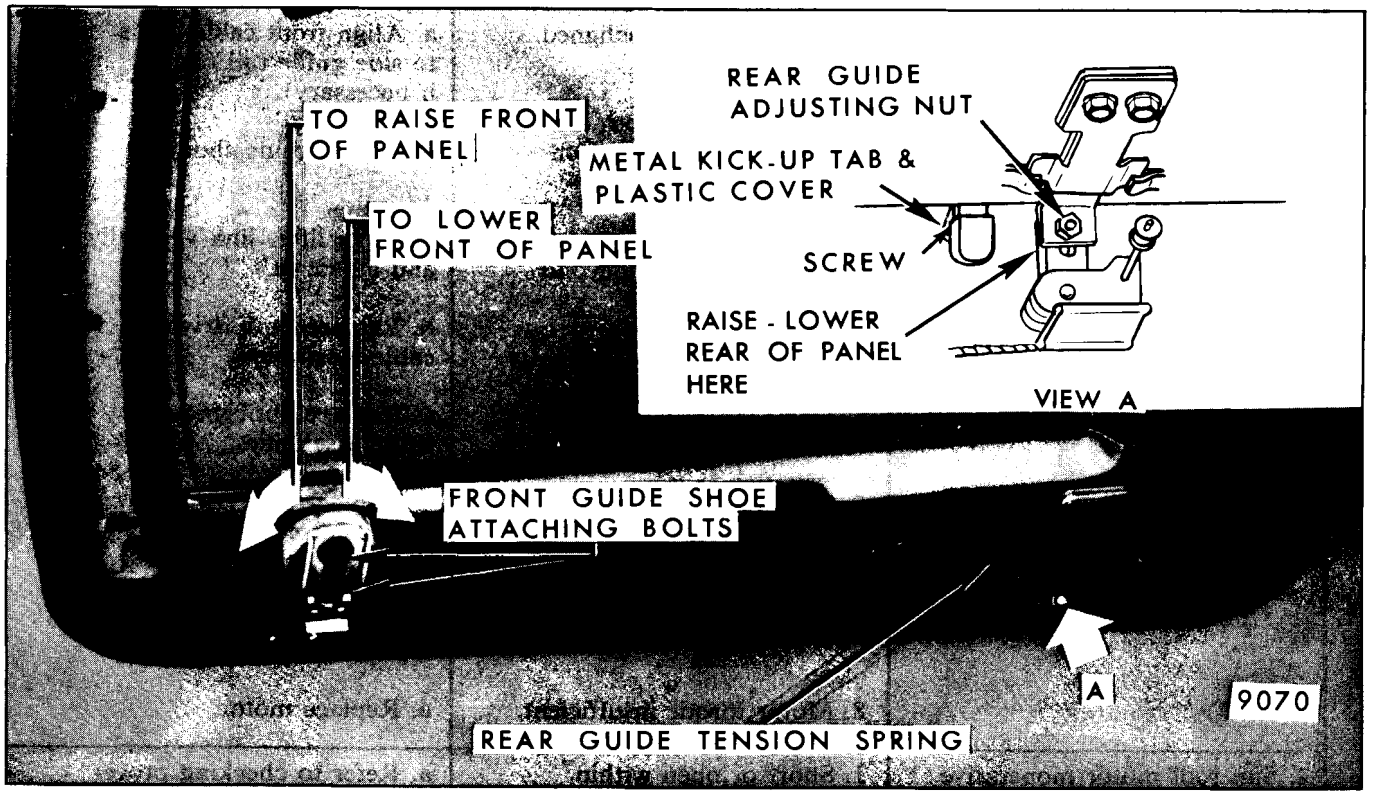


Fig. 8-63-Sun Roof Panel Vertical Adjustment Provisions

NOTE: Metal kick-up tab is retained by one screw.

MOTOR AND DRIVE GEAR ASSEMBLY

Description

The motor is protected against any stall force imposed upon it by a slip clutch contained within the gear box assembly.

Removal

1. Open sun roof panel.
2. Detach headlining trim lace across front of sun roof opening and remove windshield upper and side garnish moldings.
3. Remove drive pinion cover button and access hole trim at center of windshield header.
4. Remove operating switch (refer to Control Switch - Removal).
5. Carefully detach headlining across front of sun roof opening and windshield header.
6. Remove front cable guide cover screws and safety header pad.
7. Disconnect electrical connectors from motor.
8. Remove motor and drive gear assembly (two attaching bolts).
9. Remove motor from sun roof housing.

Installation

NOTE: Before proceeding with the installation, align sun roof panel within the roof opening (refer to Sun Roof Adjustments).

1. Install motor and drive gear assembly to sun roof housing and drive three attaching bolts.
2. Connect electrical leads to motor. Check operation of sun roof. Adjust if necessary.
3. Install safety header pad and front cable guide attaching screws.
4. Attach headlining and all previously removed parts.

CONTROL SWITCH

Removal

1. Carefully grip switch toggle bezel with fingers and pull switch out from retainer in headlining.
2. Pull electrical connector through opening and disconnect wires.

Installation

1. Install connector wires on color coded switch.
2. Install switch through front of headlining by pressing switch in until retaining clip engages.
3. Test switch for proper function.

HEADLINING PANEL

Removal

1. Open roof panel approximately 8".
2. Snap headlining panel out by extracting retaining clips from roof panel front edge (clips remain in headlining assembly).
3. Retract roof panel to full open position.

Installation

1. Retract roof panel to full open position.
2. Align headlining panel with side guide rail lower channels and move rearward into sun roof housing (Fig. 8-64).
3. Close roof panel part way, leaving it open approximately 3".
4. Slide headlining panel forward and secure it to sun roof panel with retaining clips.

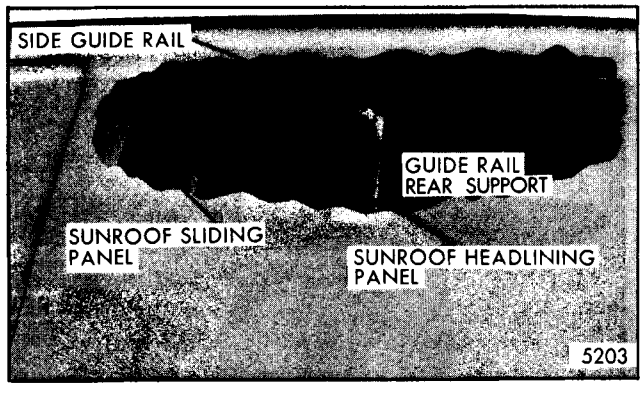


Fig. 8-64-Sun Roof Panel Headlining Engagement in Side Guide Rail

SUN ROOF PANEL

Removal (Refer to Fig. 8-65)

1. Open sun roof approximately 8".
2. Remove headlining panel and slide rearward into sun roof housing for stowage. Close sun roof panel.
3. Remove outboard and inboard screws from each front guide shoe assembly.
4. Remove attaching bolts from rear guide retainer plate to sun roof panel. Remove retainer plates.
5. Disengage rear slide tension springs from their respective rollers and pivot springs inboard.
6. Lift roof panel at front edge and pull panel out of roof opening.

Installation

1. With headlining panel in full rearward position, install roof panel into roof opening.
2. Slide front guide shoe assembly along rail and engage with sliding panel.

NOTE: Front guide shoe is installed as a component of the rail assembly.

3. Install screws and tighten both screws on each front guide (14 to 22 in-lb torque), Figure 8-65.

NOTE: Guide should not bottom against side guide rail.

4. Push roof panel to full forward position by hand.
5. Lift rear of roof panel upward and actuate control switch to position cable assembly at rear guide attaching plate into alignment with attaching holes on roof panel (Fig. 8-65).
6. Install rear guide attaching plate retainer over rear attaching plate and install attaching bolts (14 to 22 in-lb torque). Rotate rear slide tension spring outboard and place on underside of roller (Fig. 8-63).

NOTE: Be sure end of retainer plate is inserted under tabs provided in sun roof inner panel.

7. Check operation of roof panel and note fit of panel to roof. If any adjustments are necessary, refer to Sun Roof Adjustments.
8. Install headlining on sun roof panel.

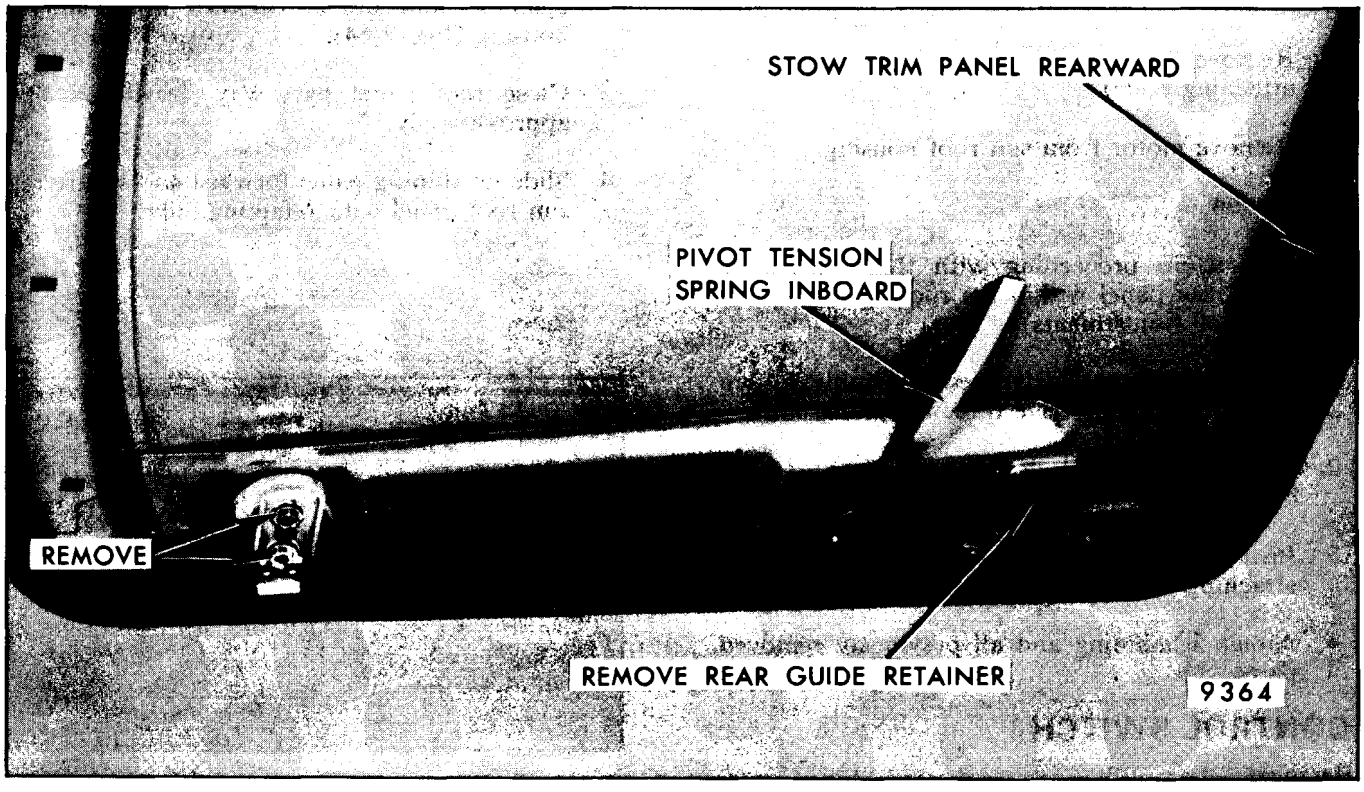


Fig. 8-65-Sun Roof Panel Removal

REAR GUIDE AND CABLE ASSEMBLY

Removal

NOTE: If one cable assembly is defective, replace both to assure parallel travel of sun roof.

1. Remove roof sliding panel, motor and drive gear assembly as previously explained.
2. Detach trim lace and headlining at sides of sun roof opening.
3. Working at the top edge of the sun roof opening, remove screws that secure each side guide rail, front stop and front guide cover (Fig. 8-62).

   NOTE: No. 8 screws are used at all positions along the side guide rail retainers and front cable cover. No. 10 screws are used at the sliding panel stop location.
4. Remove cable center guide (two bolts) and screws that secure cable front guide.
5. Disengage side guide rail to front rail and pull rear guide and cable assembly forward out of side guide rail.

   NOTE: If removal of side guide rail is desired, pull same forward for disengagement from guide rail rear support (Fig. 8-64).

Installation

1. Lubricate cables and cable channels at cable front guide location with Lubriplate No. 70 or equivalent.
2. Insert guide and cable assembly into proper channel of side guide rail and move guide rearward beyond location of side guide rail retainer.

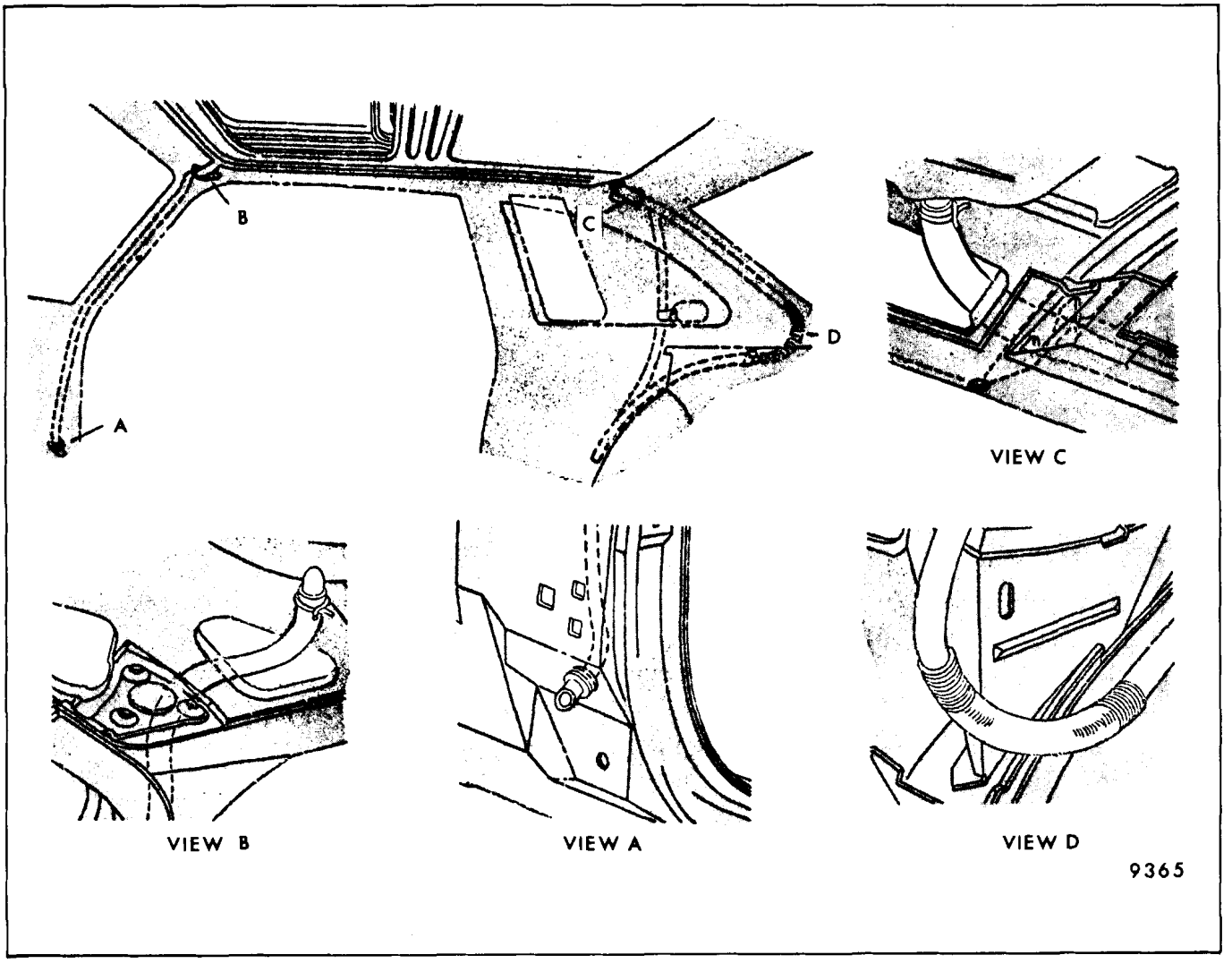


Fig. 8-66-Sun Roof Drain Hose Routing

NOTE: Insert left cable into inboard channel of left guide rail and right cable assembly into outboard channel of right guide rail.

3. Engage front guide with side guide rail and install guide attaching screws.
4. Install side guide rail retainer with screws.
5. Place cable in proper channel of front guide and pull both right and left guide and cable assemblies against respective ramps (rear edge) of side guide rail retainers.
6. Install cable center guide.
7. Install the drive assembly after making sure that both right and left rear slide and cable assemblies are positioned identically (refer step 5).

   CAUTION: *This operation is critical to assure roof panel alignment and prevent cable damage.*

8. Install sun roof panel as previously explained and cycle panel to check alignment within roof opening. Install cable front guide cover and sliding panel front stop with screws.
9. Install all remaining hardware and trim components.

SUN ROOF HOUSING DRAIN HOSE REPLACEMENT

Removal and Installation - Front

1. Remove windshield and roof side trim moldings in the affected area and detach headlining sufficiently to gain access to top of either drain hose (Fig. 8-66).
2. Remove shroud side trim panel.
3. Relieve hose clamp and remove hose from drain tube at top and from grommet in front body hinge pillar lower panel.
4. Tape or tie new hose to lower end of old hose and pull new hose into position while removing old hose.
5. Secure new hose to drain tube outlet with hose clamp. Rotate ends of hose clamp to face outboard.
6. Insert lower end of hose through grommet in front body hinge pillar lower panel.
7. Install headlining and all previously removed parts.

Removal and Installation - Rear

1. Remove quarter and back window trim moldings, quarter upper trim panel and detach headlining sufficiently to gain access to top of either drain hose (Fig. 8-66).
2. Loosen hose clamp and remove hose from drain tube at top.
3. Tape or tie a piece of wire to the upper end of old hose.
4. Detach hose from clip at quarter inner panel on "57" styles or wheelhouse pinchweld flange on "37" styles (Fig. 8-66). Without disturbing upper end of hose, pull lower (free end) of hose rearward over wheelhouse on "37" styles or through access hole in quarter inner panel on "57" styles.
5. Tape or tie end of new hose with angle cut to lower end of old hose ("57" styles) and pull new hose into position while removing old hose. On "37" styles pull hose with wire attached rearward and tape or tie new hose to wire and pull new hose into position.

   NOTE: When installing new hose, be certain hose is same type as removed.

6. Secure new hose to drain tube with hose clamp. Rotate ends of hose clamp to face outboard.
7. Pull hose rearward from the rear compartment area ("37" styles) and downward through sail access hole ("57" styles) to remove possible kinking at the drain tube attachment.
8. Route hose as specified and insert in clip at original location (Fig. 8-66).
9. Attach headlining and install all previously removed moldings.

SUN ROOF OPENING WEATHERSTRIP

The sun roof opening weatherstrip is fabricated of flock- coated rubber and is retained at the front and sides of the roof opening by attaching screws (Fig. 8-67).

Removal and Installation

1. Retract sun roof to full rearward position.

2. Remove attaching screws holding weatherstrip and supports to roof panel flange, and remove weatherstrip and supports (Fig. 8- 67).

3. To install, reverse the removal procedure.

NOTE: Specific roof opening weatherstrips are to be installed for use with vinyl or painted sliding panels.

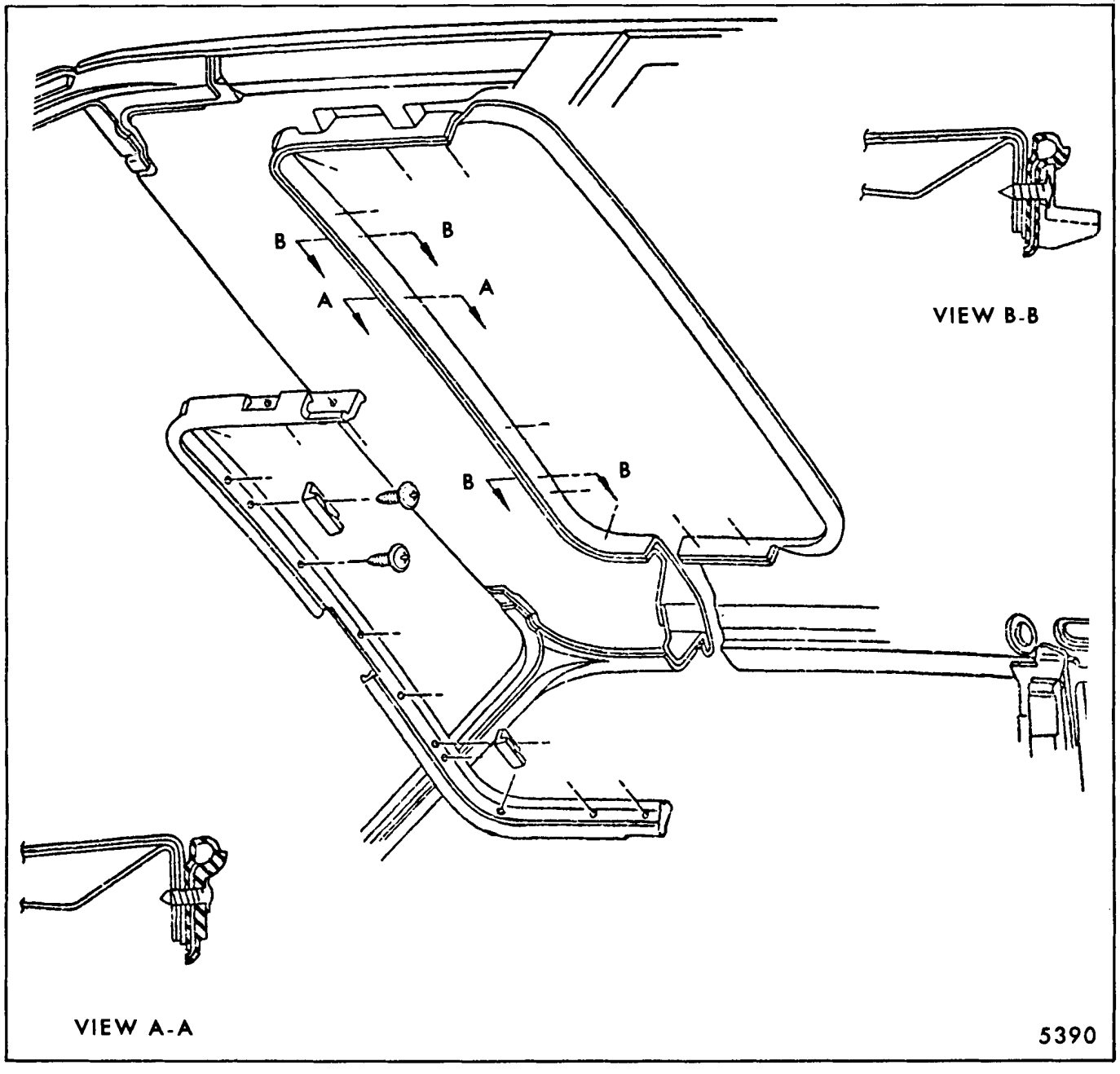


Fig. 8-67-Sun Roof Opening Weatherstrip

SUN ROOF PANEL WEATHERSTRIP

Two weatherstrips and deflectors are used at the rear of the sun roof sliding panel (Fig. 8-68). The deflectors are located at each rear corner of the sliding panel retained by black weatherstrip cement at rear and a plastic drive fastener forward. The forward weatherstrip is positioned on the vertical surface of the rear flange by attaching screws, and the other along the rear horizontal retained by cement and two screws positioned 1/4" from the outboard edge of the panel and engagement over the panel rear vertical flange and deflector.

Removal

1. Remove sun roof panel as previously described.
2. Remove attaching screws to detach forward rear weatherstrip (no. 1).
3. Remove two attaching screws and break weatherstrip cement bond with a flat-bladed tool to detach rear weatherstrip (no. 2).
4. Remove plastic drive fastener with door weatherstrip remover tool J-21104 or equivalent and break deflector cement bond with a flat-bladed tool.

Installation

1. Remove weatherstrip cement remaining on sliding panel rear flange.
2. Position and install deflector at each rear corner of sliding panel with black weatherstrip cement (cement water deflectors to horizontal surface of sliding panel rear flange in order to provide a secure base for ends of rear weatherstrip). Complete forward attachment of deflector with a plastic fastener, part no. 4841194, or equivalent.

   NOTE: Do not over stretch deflector during this operation. Over stretching will cause the deflector to curl inboard, defeating its purpose.
3. Weatherstrip no. 2, clean surface with a suitable cement solvent.
4. Apply weatherstrip cement to weatherstrip and sliding panel rear flange.
5. After cement becomes tacky, position and bond weatherstrip to panel.
6. Weatherstrip no. 1, position weatherstrip to panel and drive attaching screws and seal the screws with caulking compound or similar material as shown in Figure 8-68.
7. Install sun roof panel.

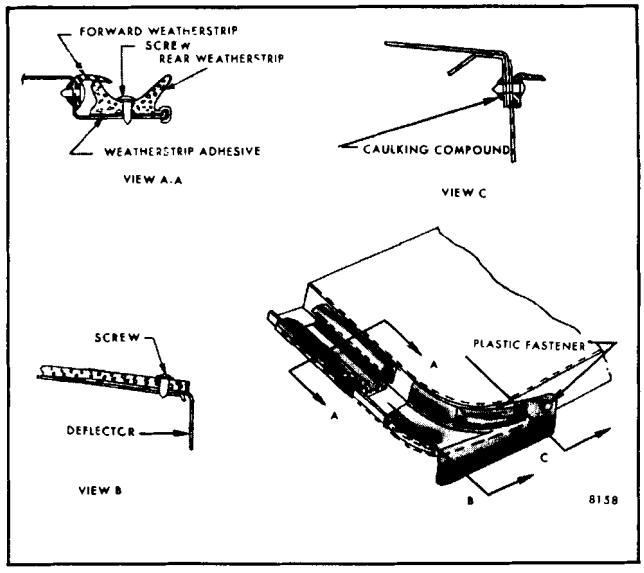


Fig. 8-68-Sun Roof Panel Weatherstrip

SUN ROOF HOUSING ASSEMBLY

The sun roof housing assembly, complete with hardware, may be removed as follows (Fig. 8-69):

Removal

1. Retract the sun roof panel to half-open position.
2. Remove control switch and winding gear access plug.
3. Remove headlining as outlined in headlining section of this manual.
4. Disconnect four drain hoses at the sun roof housing drain tubes (Fig. 8-66).
5. Disconnect motor electrical leads.
6. Support sun roof housing assembly and remove nuts and screws that retain housing to roof inner panel (Fig. 8-69). Lower and remove sun roof housing.

Installation

1. Raise sun roof panel and index with studs of adapter ring of roof inner panel.
2. While supporting housing in position, install screws and drive retaining nuts. Torque nuts to 48 to 72 in-lb.
3. Connect drain hoses to housing drain tubes at each corner. Rotate ends of hose clamps to face

outboard and pull hoses rearward or downward to eliminate kinking of hoses at housing location.

4. Replace all trim and hardware previously removed.

SUN ROOF LUBRICATION

Description

All mechanical components that have relative motion with other parts are lubricated during assembly. If additional lubrication is required, the specified materials or their equivalents as stated here should be used.

Due to the proximity of sun roof hardware parts to soft trim components, observe the following recommendations during regular service:

1. During cable replacement, lubricate cables with No. 70 Lubriplate or equivalent.
2. It is not necessary to lubricate top surface of guide rail covers or guide rail lower channels.
3. Periodically clean off any dirt that may have accumulated on guide rail covers.

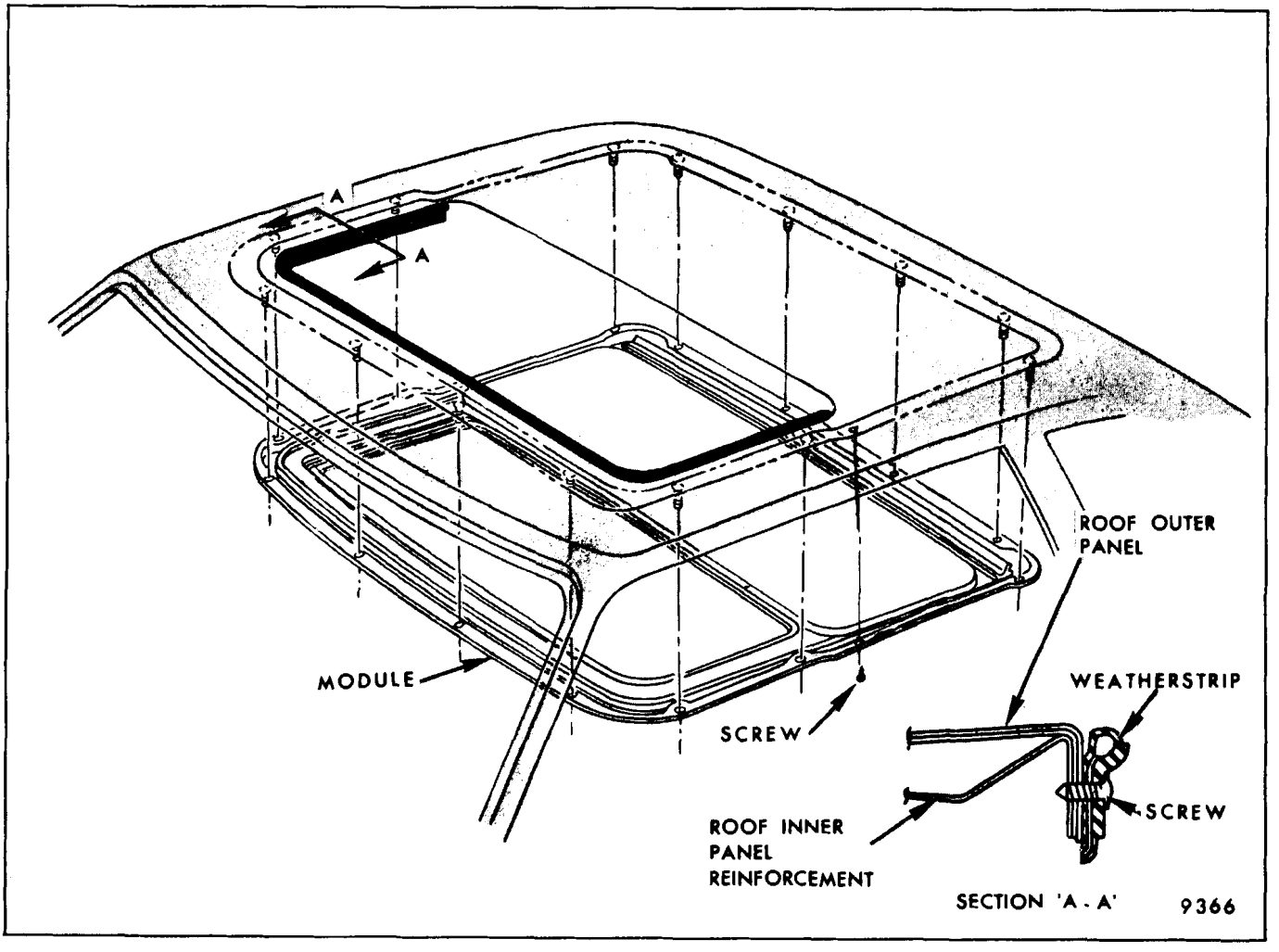


Fig. 8-69-Sun Roof Module (Complete Installation)

VISTA VENT

DESCRIPTION

The optional roof-mounted vista vent assembly is manually operated and consists of a weatherstrip, vent glass, two hinges, two hinge supports, lace assembly, escutcheon and one latch mechanism. The rear edge of the glass raises approximately 1-1/2" above the roof panel in the full-open position (see Fig. 8-70). The vent glass is curved to match flush with roof panel contour when fully closed and is fabricated of two pieces of strengthened glass separated by a tinted plastic interlayer. The two-piece detachable vent latch assembly operates on the over-center principle and doubles as a hold-open device. The latch assembly is attached to the glass with screws which pass through the glass and into special shoulder nuts. The screws and nuts are

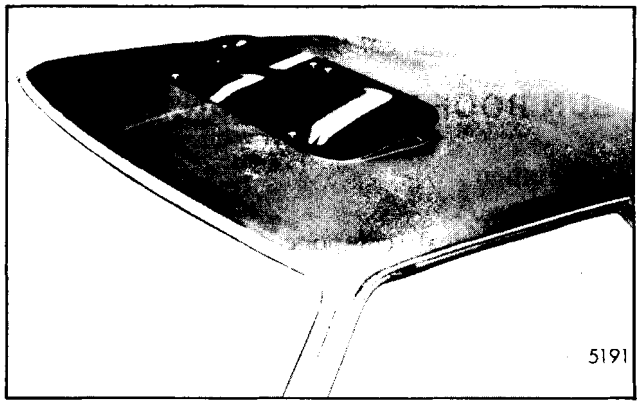


Fig. 8-70 - Open Vista Vent, Exterior View

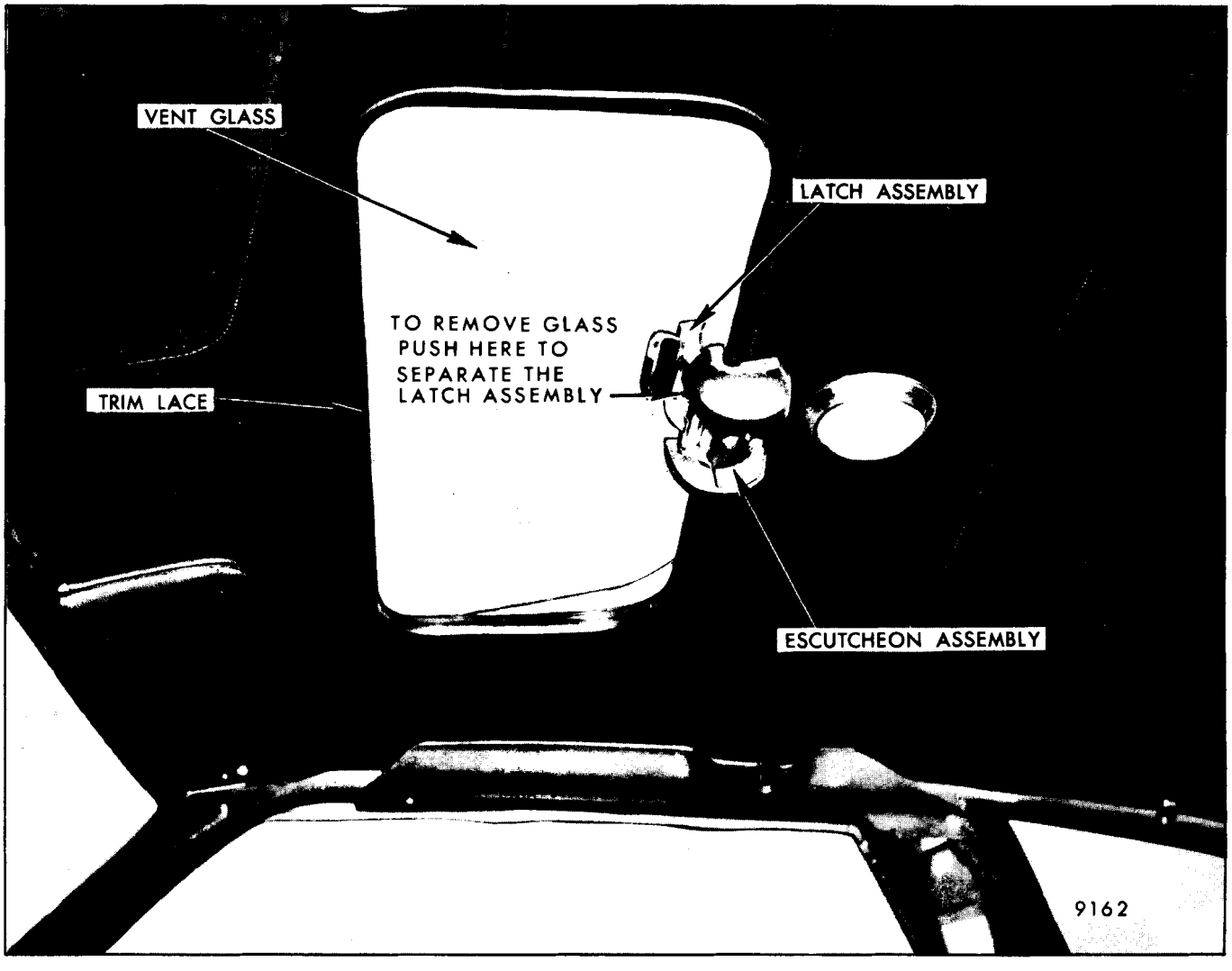


Fig. 8-71 - Open Vista Vent, Interior View

insulated from the glass with protective bushings. The hinge supports are screwed to the roof inner panel reinforcement (see Fig. 8-72). The vent glass closes against a one-piece weatherstrip which is cemented and sealed within the gutter of the roof opening (see (Fig. 8-75). The lace assembly is positioned over the hard headlining and roof reinforcement flange (see Fig. 8-73).

Removal and Installation (Fig. 8-71)

The vista vent glass can be removed and stored in a protective storage bag assembly located in the rear compartment area as follows:

1. Open vista vent partially and release detachable latch from base plate.
2. Pivot entire glass upward to disengage hinges from supports.
3. Store glass in protective storage bag assembly.
4. To install, reverse removal procedure.

VISTA VENT GLASS INSTALLATION

If new vista vent glass is being installed, transfer upper portion of latch assembly and all special nuts and bushings (upper and lower) from original glass to new glass and add new gaskets (see Fig. 8-72) as a bench operation. Torque latch-to-glass and hinge-to-glass attaching screws to 14 to 24 in-lb.

VENT GLASS HINGE

Removal and Installation

1. Remove glass assembly from body.

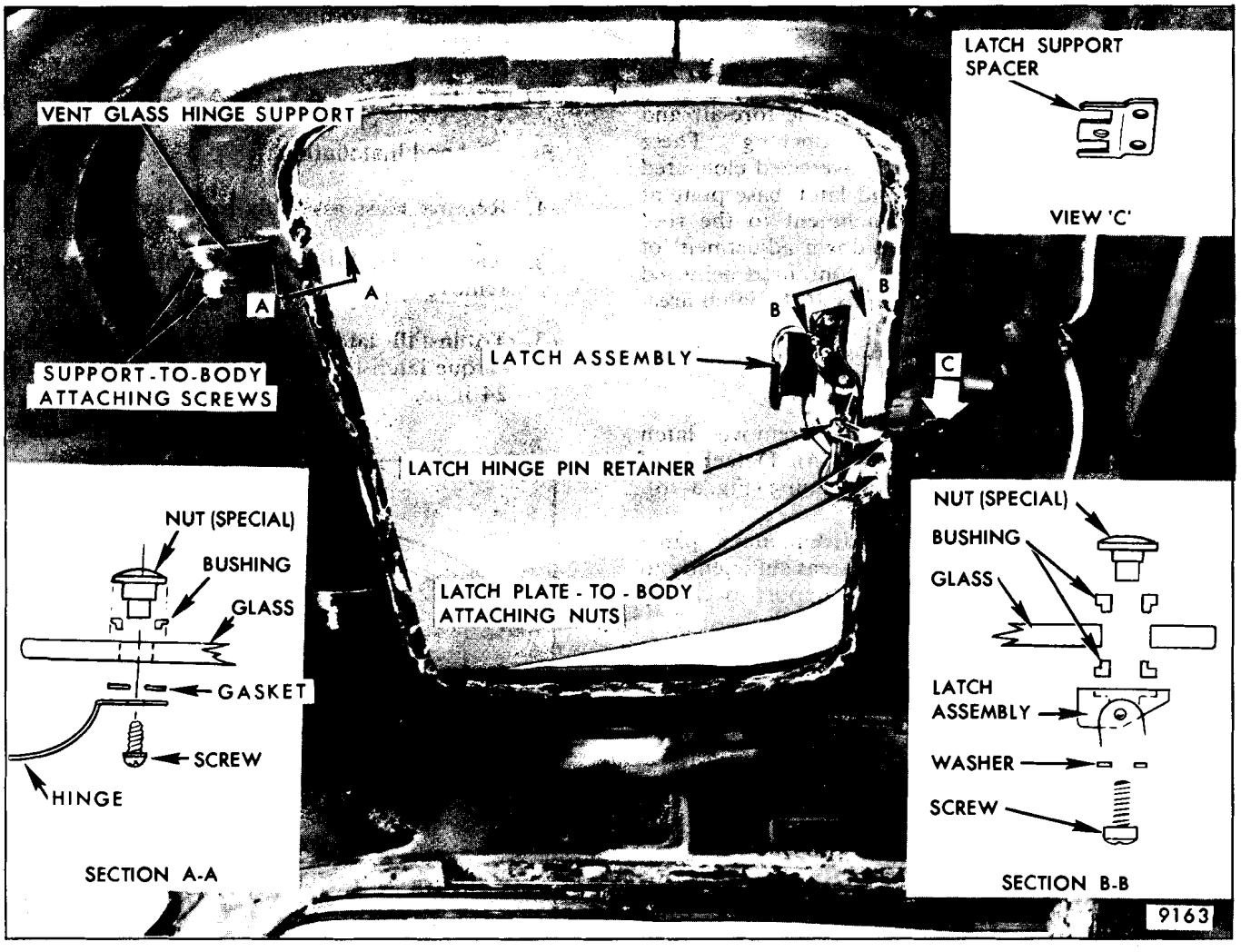


Fig. 8-72 - Vista Vent Hardware (Headlining Removed for Illustrative Purposes Only)

2. Remove hinge-to-glass attaching screws and remove hinge (Section A-A, Fig. 8-72).

3. To install hinge, reverse removal procedure, torque hinge-to- glass attaching screws to 14 to 24 in-lb.

VISTA VENT GLASS LACE ASSEMBLY (Fig. 8-73)

Removal and Installation

1. Remove vista vent as previously described and remove escutcheon assembly as shown in Figure 8-74.

2. Carefully remove lace assembly from roof opening.

3. To install, position cutout in rear edge of lace assembly to latch mounting plate and drive lace assembly onto edge of hard headlining and flange of roof inner panel with rubber mallet.

Adjustments

The vista vent assembly is adjustable fore-aft and cross-body within the roof opening. These adjustments are allowed by the oversized elongated holes in the hinge supports and latch base plate at their respective points of attachment to the roof inner reinforcement panel. Up-down adjustment of the glass for flush fit with roof contour is achieved with addition or removal of shims at the latch area.

To align the vent glass fore-aft or cross-body, proceed as follows:

1. Open vista vent fully and remove latch escutcheon assembly (Fig. 8-74). Detach roof trim lace along front edge of opening (Fig. 8-73).

2. Remove hard headlining from inner panel reinforcement at glass hinge areas sufficiently to provide access to hinge support-to- body attaching screws (Fig. 8-72).

3. Loosen hinge support-to-body and latch-to-body attachments, align glass and tighten attachments.

4. Replace previously removed trim parts.

To raise or lower trailing edge of vent glass, proceed as follows:

1. Remove vista vent glass completely from opening.

2. Remove latch escutcheon assembly and loosen latch to reinforcement attaching nuts.

3. Add spacer (part no. 9660357 or equivalent) to lower glass or remove existing spacer to raise glass (View "C", Fig. 8-72).

4. Tighten latch plate attaching nuts, reposition headlining and replace latch escutcheon assembly.

VENT GLASS HINGE SUPPORT

Removal and Installation

1. Disengage glass assembly from hinge supports and detach roof trim lace along front edge of opening (Fig. 8-73).

2. Remove hard headlining from roof inner panel reinforcement at hinge support area(s) sufficiently to provide access to attaching screws and remove screws (Fig. 8-74).

3. To install hinge supports, reverse removal procedure. Torque support-to-body attaching screws to 26 to 38 in-lb.

VENT GLASS LATCH ASSEMBLY

Removal and Installation

1. Remove glass assembly from body.

2. Remove latch-to-glass attaching screws and remove latch assembly (Section B-B, Fig. 8-72).

3. To install latch, reverse removal procedure, torque latch-to- glass attaching screws to 14 to 24 in-lb.

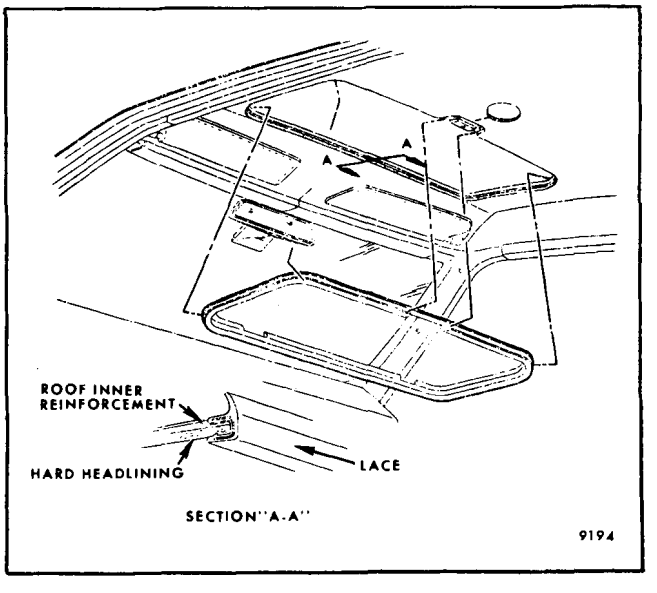


Fig. 8-73 - Vista Vent Lace Assembly Installation

VENT GLASS WEATHERSTRIP (Fig. 8-75)

The vent glass weatherstrip is formed in a continuous loop and is retained within the roof opening gutter by weatherstrip adhesive.

Removal

1. Remove the vent assembly as previously explained.
2. Break adhesive bond between weatherstrip and gutter around perimeter of opening and remove weatherstrip.

   NOTE: Careful application of heat (as with a heat gun) applied to weatherstrip gutter speeds weatherstrip removal.

Installation

1. Remove most of original adhesive remaining in the weatherstrip gutter with an adhesive solvent.
2. Apply a coat of black adhesive to weatherstrip gutter. Be sure lap joints in gutter are sealed with adhesive.
3. Apply a coat of adhesive to bonding surface of weatherstrip. When cement becomes tacky, insert weatherstrip into gutter for final bond.
4. Using a nozzle-type application, apply a bead of black weatherstrip adhesive between outboard periphery of weatherstrip and body opening.

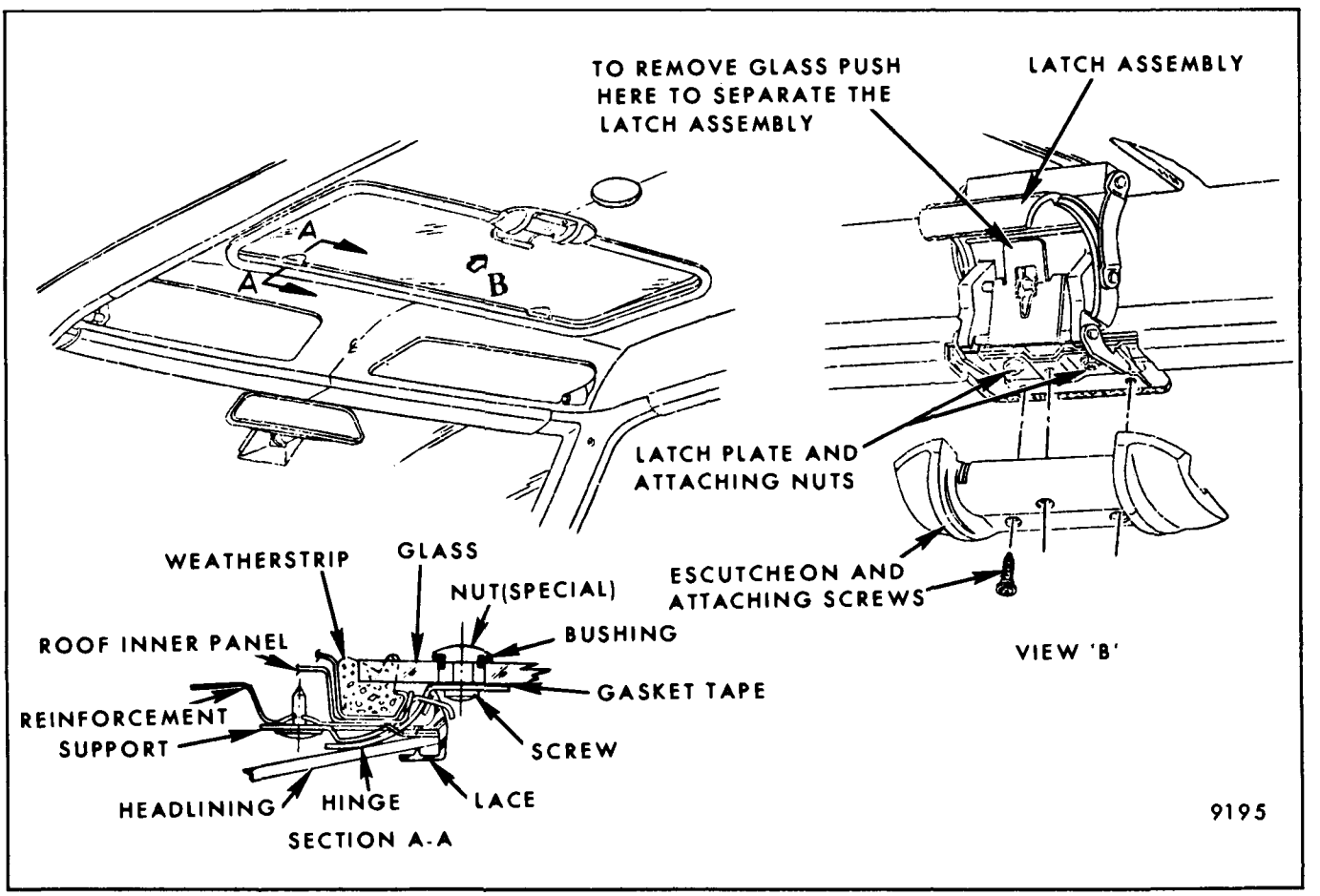


Fig. 8-74 - Vista Vent Escutcheon, Latch and Hinge Installation

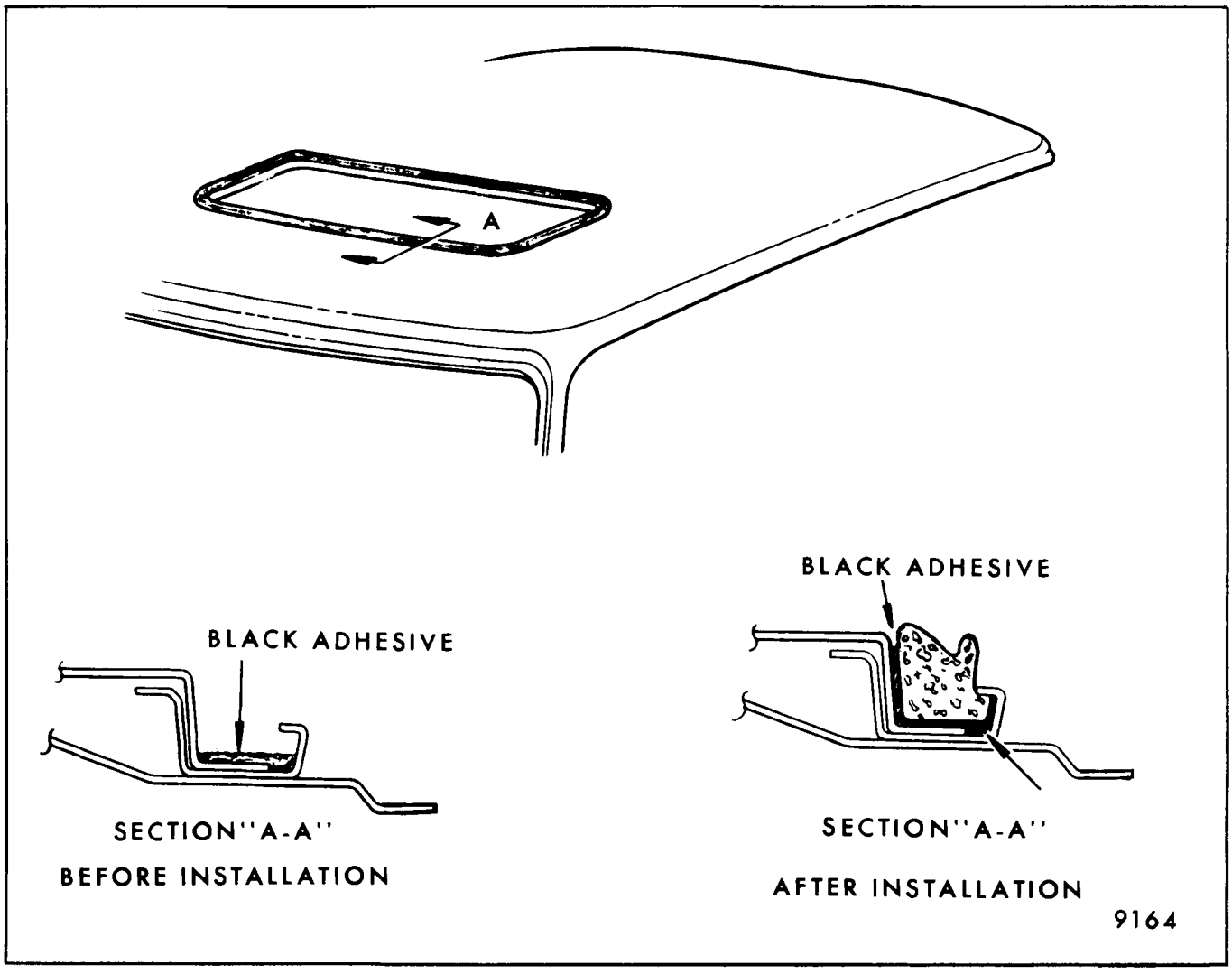


Fig. 8-75 - Vista Vent Weatherstrip Installation

SECTION 9

SEATS

TABLE OF CONTENTS

SUBJECT	PAGE
Front Seats	
Full Width, 60-40, 45-55 and 50-50 Front Seats	9-2
Bucket Seats	9-5
Swivel Bucket Seat	9-5
Reclining Back Bucket Seats	9-5
Seat Torque	9-5
Manual Seat - Diagnosis Chart	9-6
Power Six-Way - Diagnosis Chart	9-7
Power Seat Back - Diagnosis Chart	9-8
Front Seat Relocation - "B and C" Styles	9-8
Front Seat Relocation - "A" Body	9-13
Locking Wire Adjustment - Manual	9-15
Six-Way Horizontal Actuator	9-15
Manual Control Arm Knob	9-15
Front Seat Assembly	9-16
Shoulder Belt Guide Loop	9-17
Seat Assembly Servicing	9-17
Seat Adjuster - Manual and Power	9-21
Swivel Shell Bucket Seat	9-28
Two-Way Seat Adjuster Components	9-29
Six-Way Seat Adjuster Components	9-32
Front Seat Head Restraint	9-35
Front Seat Head Restraint Lock and Escutcheon	9-36
Front Seat Back	9-36
Seat Back Assist Straps	9-37
Seat Back Inertia Lock	9-39
Front Seat Reclining Back	9-43
Front Seat Manually Operated Reclining Back	9-43
Seat Back Reclining Unit	9-44
Front Seat Power Reclining Seat Back	9-44
Seat Back Power Reclining Actuator	9-45
Seat Back - Standard Bucket Seats	9-49
Custom Bucket Seat	9-50
Adjustable Front Seat Back	9-52
Seat Back Lock Striker and Stop	9-54
Electric Seat Back Lock Diagnosis Chart	9-56
Seat Back Manual or Electric Lock	9-57
Seat Back Lock Solenoid	9-59
Head Restraint Guide Tube	9-60
Front Seat Center Armrest	9-60
Footrest Assembly	9-65
Rear Seats	
Rear Seat Cushion	9-66
Rear Seat Back	9-69
Rear Seat Back Center Armrest	9-69
Auxiliary Seat	9-74
Folding Seat and Load Floor - "H and X"	9-75
Rear Seat Cushion - "H" Styles	9-75
Luggage Compartment Panel - "X" Style	9-76
Rear Seat Back Lock	9-76
Rear Speakers	9-76
Back Window Garnish Molding	9-79
Seat to Back Window Panel Trim	9-80
Station Wagon Folding Rear Seats and Load Floor Panels	9-85
Rear Floor Side Filler Panel - "A" Styles	9-86
Luggage Compartment Panel	9-88
Folding Third Seat Cushion - "A" Body	9-88
Folding Third Seat Back - "A" Body	9-88
Compartment Floor Panel - "A" Body	9-91
Second Seat Back Filler Panel - "A"	9-91
Second Seat Cushion - "A" Body	9-92
Second Seat Back - "A" Body	9-93
Luggage Compartment Lock	9-93
Folding Second Seat Back Lock - All "A" Styles	9-94
Folding Seats and Load Floor Panels - "B" Body Station Wagons	9-94
Second Seat Cushion - "B" Body	9-94
Second Seat Back - "B" Body	9-95
Luggage Compartment Panel - "B" Body	9-95

Second Seat Back Lock - "B" Wagon 9-95
Luggage Compartment and Folding
Third Seat Module - "B" Wagons..... 9-97
Third Seat Side or Rear Rails 9-99
Folding Third Seat Back..... 9-99
Third Seat Cushion - "B" Wagons..... 9-99
Folding Second Seat to Load Floor
Rail Cable - "B" Wagons..... 9-102
Lap and Shoulder Belts 9-102
Servicing Lap and Shoulder Belts 9-102
Lap Belts and Shoulder Belts 9-103
Front Seat Belt Warning System..... 9-133
Front Seat Belt Warning and
Electric Retractor System 9-138
Electric Retractor Diagnosis Chart..... 9-139

FRONT SEATS

FRONT SEATS - INTRODUCTION

Figures 9-1 and 9-2 illustrate the various types of seats used in the 1977 models.

NOTE: In some portions of the Seat Section, removal and installation figure references for the various types of seats will be shown under the procedure title. Refer to the illustration(s) for the type of seat being serviced.

FULL WIDTH, 60-40, 45-55 AND 50-50 FRONT SEATS

All front seats except bucket seats (Fig. 9-1) incorporate front seat back head restraints on the driver's and passenger's seat back. The head restraints are designed so they cannot be removed from the seat back without first inserting a flat tool inside the head restraint support tube to release the lock clip; however, the head restraints can be raised or lowered for proper positioning.

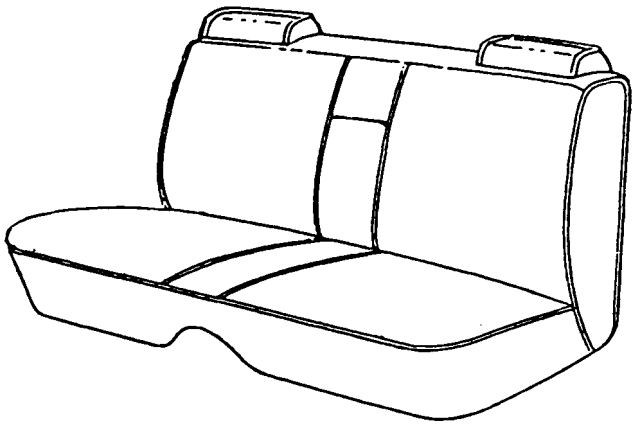
All two-door style front seats and folding second and third seats are equipped with positive acting seat back locks. The different type seat back locks are as follows:

1. All "B and C" bodies are equipped with a new inertia type front seat back lock system. This system allows the seat back to move freely without requiring the occupant to release a lock lever for access to the rear seat area. On a sudden stop, deceleration, or the front of the car is declined 20 degrees or more, the seat back inertia locking system locks the front seat backs in an upright position. A manual seat back lock(s) release lever located at the lower rear of the lock is provided to allow manual release of the inertia lock when the front of the car is declined 20 degrees or more.
2. All "A, F, H and X" two-door styles are equipped with manually operated seat back locks which can be unlocked by raising the control lever located at the rear outboard corner of the seat back.
3. All "E" bodies are equipped with either manually or electrically operated front seat back locks. The manually operated seat back lock can be unlocked by actuating the control lever (located on the outboard side of the seat back) rearward. The electric seat back locks automatically unlock when either door is opened and lock when both doors are closed.

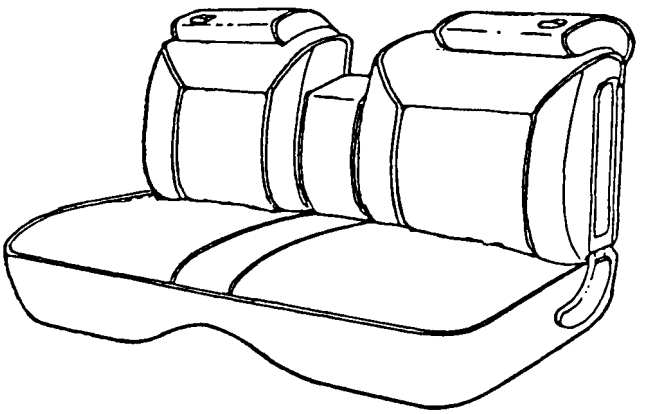
All front and rear seat cushions and backs incorporate formed foam pads, formed to fit the contours of the full panel seat back frame assembly and also the designed contour of the seat cushion frame. The new "B and C" body 45-55 front seat consists of an individually controlled passenger seat (55 percent of front seat width) and an individually controlled driver seat (45 percent of front seat width).

The 50-50 front seats consist of a split front seat with both the driver and passenger seat individually controlled with either manual or power seat adjusters. The passenger seat can be equipped with a reclining seat back which can be reclined rearward approximately 20 degrees by lifting the front of the control lever located at the outboard side of the seat cushion. When the control lever is actuated upward, the spring loaded reclining unit located in the right side of the cushion is released allowing the seat back to be pushed rearward or allowing the spring loaded reclining unit to bring the seat back forward.

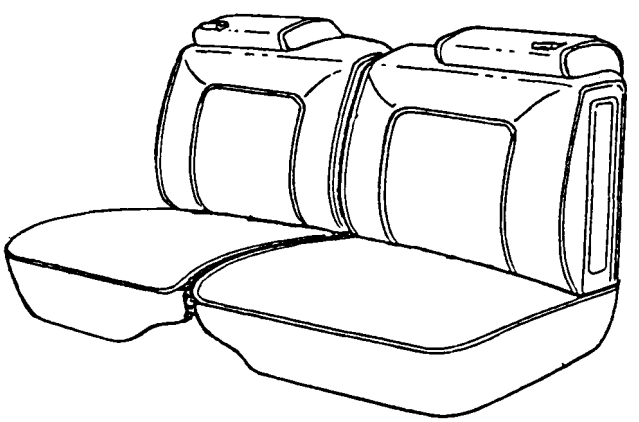
An optional new power-operated reclining front seat back is available on some "B and C" body style front seats. The power- operated reclining seat back is operated by its own motor and is controlled by a fore and aft toggle switch in the seat cushion outer side panel.



FULL WIDTH BENCH SEAT WITH BUILT-IN CENTER ARMREST OR WITH SPLIT BACK ON TWO DOOR STYLES (A52)

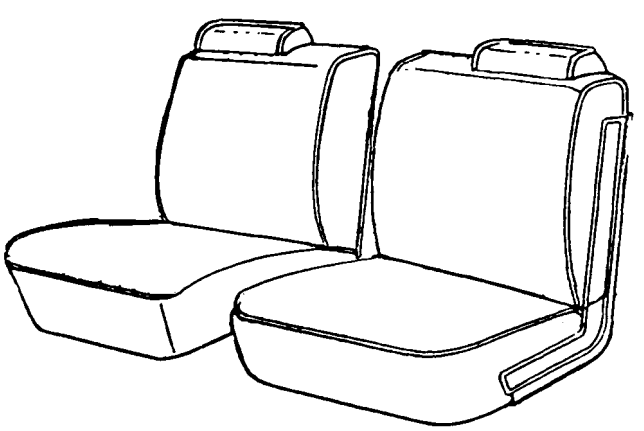


FULL WIDTH NOTCH-DOWN BENCH SEAT (A65)

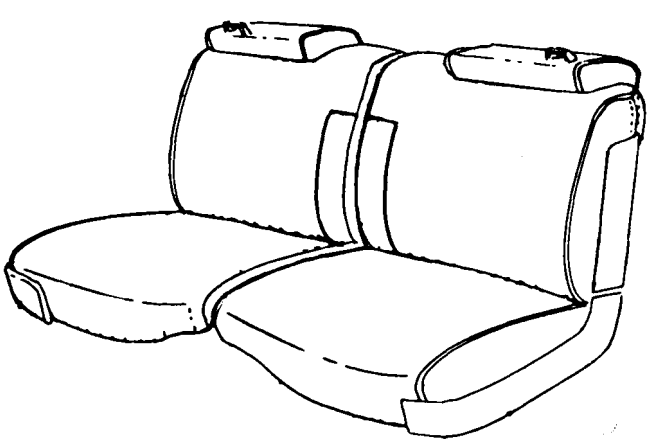


50—50 SEAT (AT8) WITH RECLINING PASSENGER SEAT BACK (AV7)

60—40 SEAT "A" BODY ONLY (AM6)
45—55 SEAT "B&C" BODY (AM6)



45—45 SEAT (AS7)



50—50 SEAT WITH CENTER ARMREST (AT8)

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Fig. 9-1-Types of Front Seat (All Except Bucket Seats)

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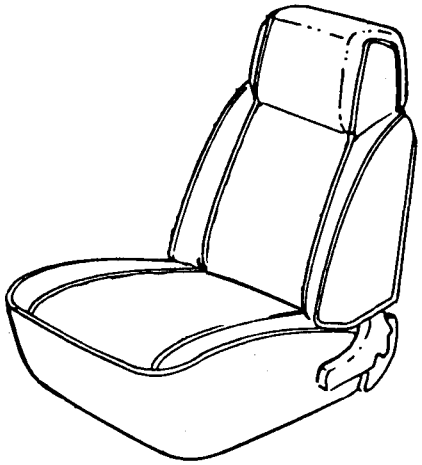
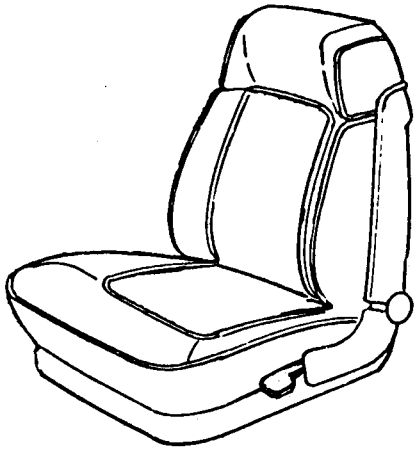
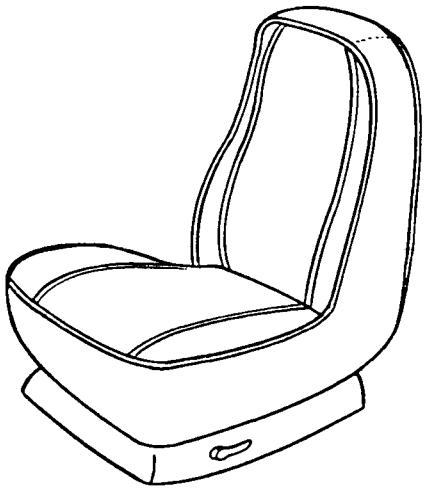


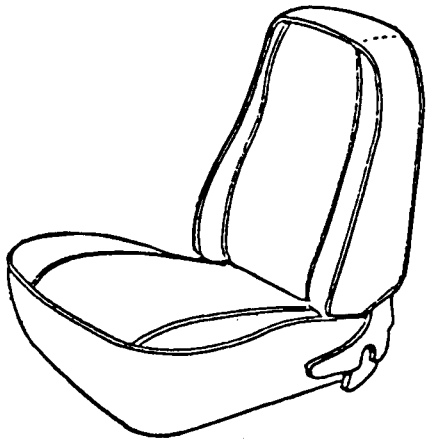
CUSTOM BUCKET SEAT (A51)



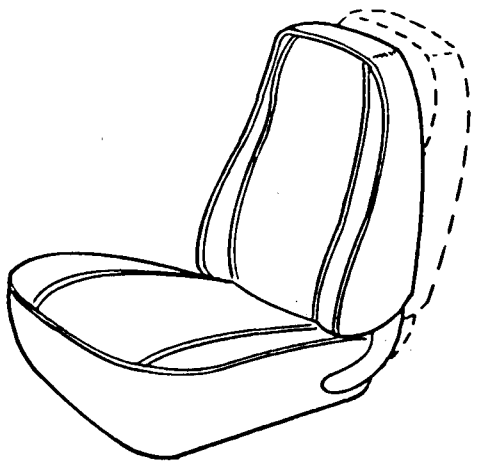
CUSTOM BUCKET SEAT—WITH RECLINING BACK (DRIVERS & PASSENGERS AR9) (PASSENGERS ONLY AQ9)



SWIVEL SHELL BUCKET SEAT (AN7)



STANDARD BUCKET SEAT A51)



BUCKET SEAT WITH ADJUSTABLE BACK (DRIVERS ONLY A51 & AN6) (DRIVERS TWO POSITION & PASSENGERS FULL RECLINER AR5)

9471

Fig. 9-2-Types of Bucket Seats

NOTE: On Cadillac styles equipped with automatic door locks, the driver's seat is equipped with a waffle type seat sensor switch located under the trim cover assembly in a depression in the foam pad.

BUCKET SEATS

All bucket seats shown in Figure 9-2 are the high seat back with integral head restraint type and incorporate formed seat cushion and back foam pads.

Two-door style bucket seats (except swivel bucket seats) incorporate positive acting seat back locks. The locks are located at the rear, lower outboard corner of the seat back and are unlocked by lifting the lock handle.

SWIVEL BUCKET SEAT

Shell swivel bucket seats are available for both the driver and passenger seat on some styles. The shell bucket swivels approximately ninety degrees towards the door opening to provide easier entrance and exit from the body. The control lever for the swivel mechanism is located at the outboard side of the seat. When the lever is pushed downward the swivel mechanism unlocks and the seat can be turned towards the door opening. When the control lever is released, the swivel mechanism will lock when the seat is returned to the forward position.

RECLINING BACK BUCKET SEATS

Bucket seats with adjustable reclining seat back are available on the passenger seat on some styles and on both the passenger and driver's seat on other styles. The reclining seat backs can be reclined approximately 20 degrees rearward of normal position by lifting the control lever at the outboard side of the seat cushion and exerting rearward pressure on the seat back to tilt rearward, or with no pressure on the seat back allow seat back to return forward.

SEAT TORQUE SPECIFICATIONS

The following torque specifications should be used when servicing seat assemblies:

BOLT OR NUT LOCATION AND TORQUE - FOOT-POUNDS

NOTE: Many service replacement assemblies such as seat cushion and back frame assemblies and rear compartment pan assembly may have unthreaded nuts for attachment of seat adjusters, seat back and lap belts. Threads must be formed in these unthreaded nuts with either the original or a new proper size thread forming bolt (metric bolts and nuts are color coded blue). Apply 15 to 20 pounds of straight-in pressure to start thread forming action of bolt into an unthreaded nut.

1. Seat adjuster-to-floor pan, adjuster-to-seat frame and folding seat back-to-floor pan bolts or nuts - 16 to 24 N·m (12 to 18 ft-lb).
2. Front seat back-to-cushion frame lockout bolts - 16 to 24 N·m (12 to 18 ft-lb).
3. Seat back frame-to-cushion frame bolts ("A and X" body four- door styles) 22 to 30 N·m (16 to 22 ft-lb).
4. Seat back hinge bolts - 19 to 24 N·m (14 to 18 ft-lb).
5. Seat back lock attaching screws - 19 to 30 N·m (14 to 22 ft- lb).
6. Seat back lock striker and inner side bar stop - 30 to 46 N·m (22 to 34 ft-lb).
7. Seat motor and transmission support attaching bolts or nuts - 9 to 15 N·m (7 to 11 ft-lb).
8. Reclining seat back actuator assembly to cushion frame and/or back frame bolts - 27 to 34 N·m (20 to 25 ft-lb).
9. Lap belt-to-floor pan anchor bolts - 41 to 61 N·m (30 to 45 ft- lb).
10. Folding second seat back link assembly to seat back - 14 to 22 N·m (10 to 16 ft-lb).

CAUTION: *Seat attaching parts such as seat adjuster-to-floor pan bolts or nuts, seat adjuster-to-seat frame bolts, seat cushion frame-to- seat back frame bolts, seat back lock bolts, seat back lock striker, etc., are important attaching parts in that they could affect the performance of vital components and systems. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

MANUALLY OPERATED SEAT ADJUSTER - DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Adjuster will not lock.	1. Locking wire too tight.	1. Loosen locking wire tension sufficiently to provide full engagement of lock bar in locking slots of adjuster lower channel. See Locking Wire Tension Adjustment (Figs. 9-7 and 9-13).
	2. Adjuster lock bar spring disconnected or broken.	2. Connect spring or install new spring (Figs. 9-13 and 9-18).
	3. Adjuster lock bar sticking or binding.	3. (a) Lubricate lock bar pivot. (b)If bar is binding, eliminate cause of binding or replace adjuster.
2. Adjuster will not unlock.	1. Locking wire too loose or disconnected.	1. Tighten locking wire sufficiently to allow lock bar to disengage from locking slots in adjuster lower channel when lock control lever is activated. See Locking Wire Tension Adjustment.
	2. Adjuster lock bar sticking or binding.	2. (a) Lubricate lock bar pivot. (b)If bar is binding, eliminate cause of binding or replace adjuster.
3. When left adjuster locks, right adjuster is between lock positions.	1. Right adjuster either rearward or forward of left adjuster.	1. Loosen adjuster to floor pan bolts or nuts - move one adjuster forward or rearward as far as possible and the other adjuster the opposite direction.
4. Seat hard to move forward or rearward.	1. Adjuster(s) improperly lubricated.	1. Lubricate adjuster channels with Lubriplate AAW or equivalent.
	2. Adjuster(s) binding due to bent or damaged channels.	2. Replace adjuster.
	3. Adjusters not in parallel alignment with each other.	3. Loosen floor pan attaching bolts or nuts, align adjusters parallel on floor pan and retighten bolts or nuts.

POWER OPERATED SIX-WAY SEAT ADJUSTER MECHANICAL DIAGNOSIS CHART

NOTE: If it is apparent or suspected that the trouble is in the electrical system refer to Electrical Section - Power Seats - Diagnosis Chart.

CONDITION	APPARENT CAUSE	CORRECTION
1. Horizontal operation of seat not smooth (jerky) - apparent hard operation	1. Improper lubrication of adjuster shoes and channels. 2. Adjuster horizontal actuator gear too tight to rack gear. 3. Adjuster shoes too tight in upper channel.	1. Lubricate adjuster upper channel and plastic shoes. 2. See Horizontal Actuator Adjustment. 3. Install new shoes on adjuster lower channel.
2. Horizontal chuck or looseness	1. Horizontal actuator improperly adjusted to rack gear.	1. See Horizontal Actuator Adjustment.
3. One adjuster will not operate horizontally.	1. Horizontal drive cable disconnected or damaged. 2. Horizontal actuator inoperative.	1. Check horizontal drive cables, replace if damaged. 2. Replace horizontal actuator assembly.
4. One adjuster will not operate vertically.	1. Vertical drive cable disconnected or damaged. 2. Vertical gear nut inoperative.	1. Check vertical drive cables, replace if damaged. 2. Replace vertical actuator assembly.
5. Both adjusters will not operate horizontally and/or vertically.	1. Inoperative horizontal and/or vertical solenoid in transmission. 2. Damaged, broken or inoperable solenoid plunger, shaft, dog, dog spring, gear or drive gear (Fig. 9-26)	1. See Electrical Section - Checking Solenoids. 2. Replace damaged, broken or inoperable solenoid part with new part.
6. Vertical chuck or looseness.	1. Excessive clearance at vertical gearnut tension spring.	1. Grind down top of vertical gearnut shoulder nut 1/64" to 3/64" maximum.

POWER OPERATED DRIVER OR PASSENGER RECLINING SEAT BACK MECHANICAL DIAGNOSIS CHART - "B, C, E, K" CARS

NOTE: If it is apparent or suspected that the trouble is in the electrical system, refer to Electrical Section - Power Operated Reclining Seat Back - Diagnosis Chart.

CONDITION	APPARENT CAUSE	CORRECTION
1. Motor operates but seat back does not move.	1. Drive cable disconnected or broken. 2. Damaged, broken or inoperable reclining actuator gearnut. 3. Reclining actuator disconnected from seat back hinge arm. 4. Jackscrew stop nut came off.	1. Check drive cable and connect, replace if broken. 2. Check reclining actuator gearnut, replace if damaged. 3. Check reclining actuator. 4. Install and tighten stop nut securely.
2. Operation not smooth-jerky.	1. Kink in drive cable or damaged cable. 2. Bind in reclining hinge arms. 3. Damaged or bent jackscrew. 4. Damaged actuator gearnut. 5. Jackscrew not lubricated. 6. Jackscrew stop nut loose.	1. Check items described; where required, eliminate binds and lubricate. Replace any damaged parts.

FRONT SEAT DEALER REARWARD RELOCATION PROVISIONS - All "B and C" Styles

All 1977 "B and C" style seats have 25 mm (1") rearward dealer relocation provisions for additional front seat leg room, where required. Dealer front seat relocation kits for 1977 "B and C" styles are available under part no. 9632839 or equivalent.

CAUTION: *The studs, anchor nuts and mounting plates referred to in the following seat relocation procedures are important attaching parts in that they could affect vital components and systems and/or could result in major repair expense. They must be replaced with parts of the same part number or with equivalent parts if replacement becomes necessary.*

To relocate the "B or C" style front seat assembly rearward 25 mm (1") refer to appropriate illustration (Fig. 9-3, 9-4 and 9-5) for the style body being worked on and type seat being relocated. Follow instructions shown in illustration.

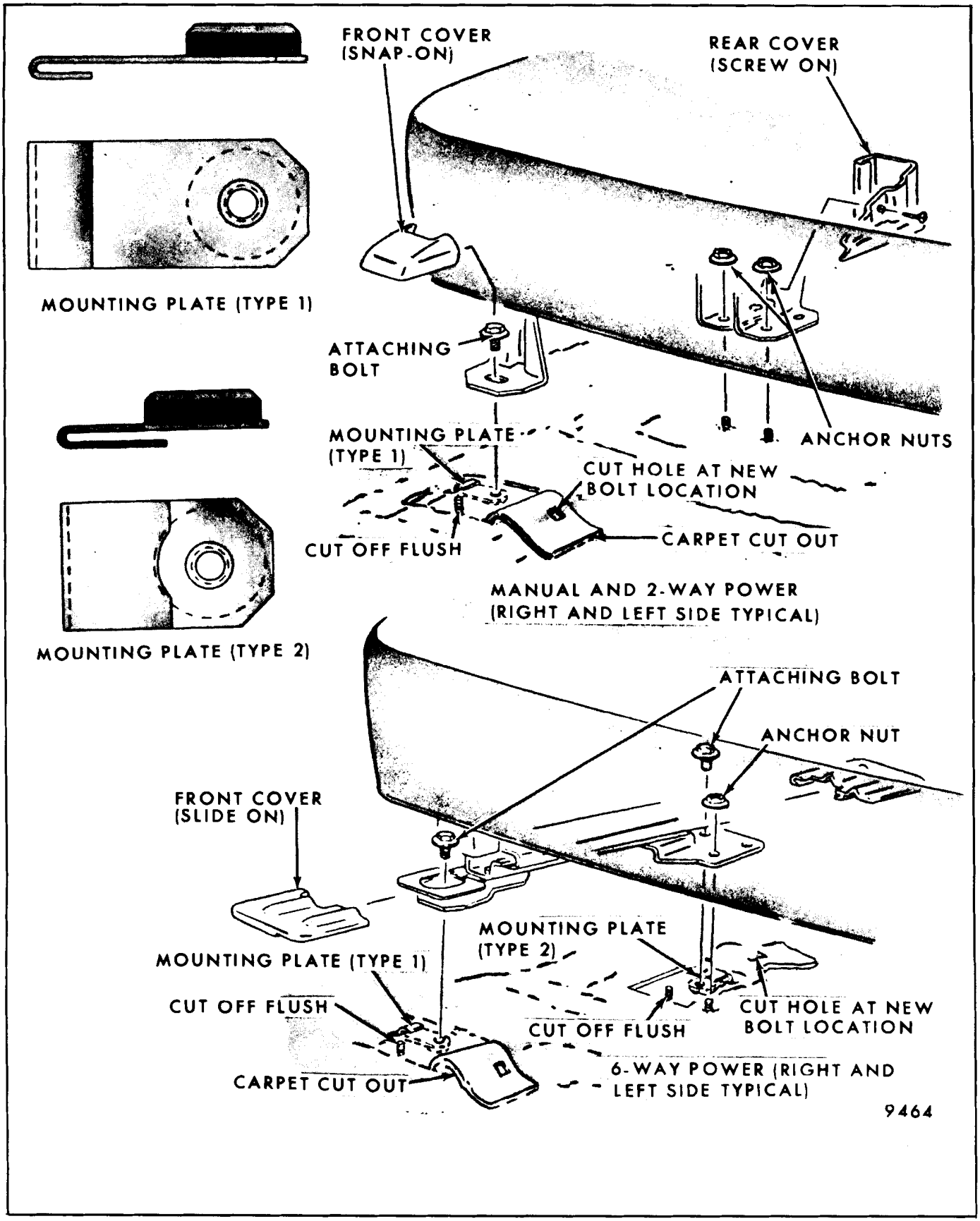


Fig. 9-3 - Front Seat Dealer Relocation Instructions - Full Width Bench Seat (Manual and Power Operated)

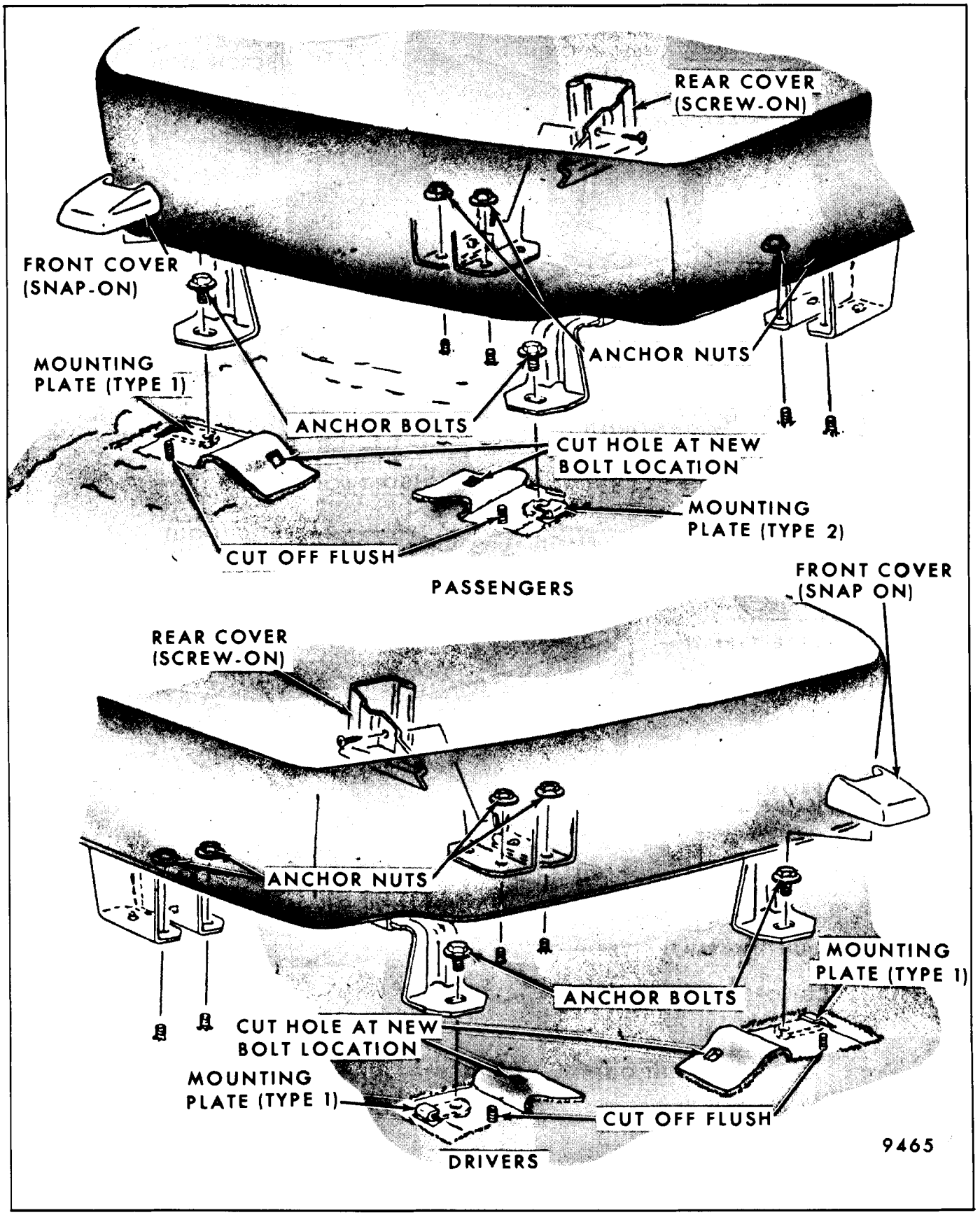


Fig. 9-4 - Front Seat Dealer Relocation Instructions - Split 45-55 and 50-50 Front Seat (Manual and Two-Way Power Operated)

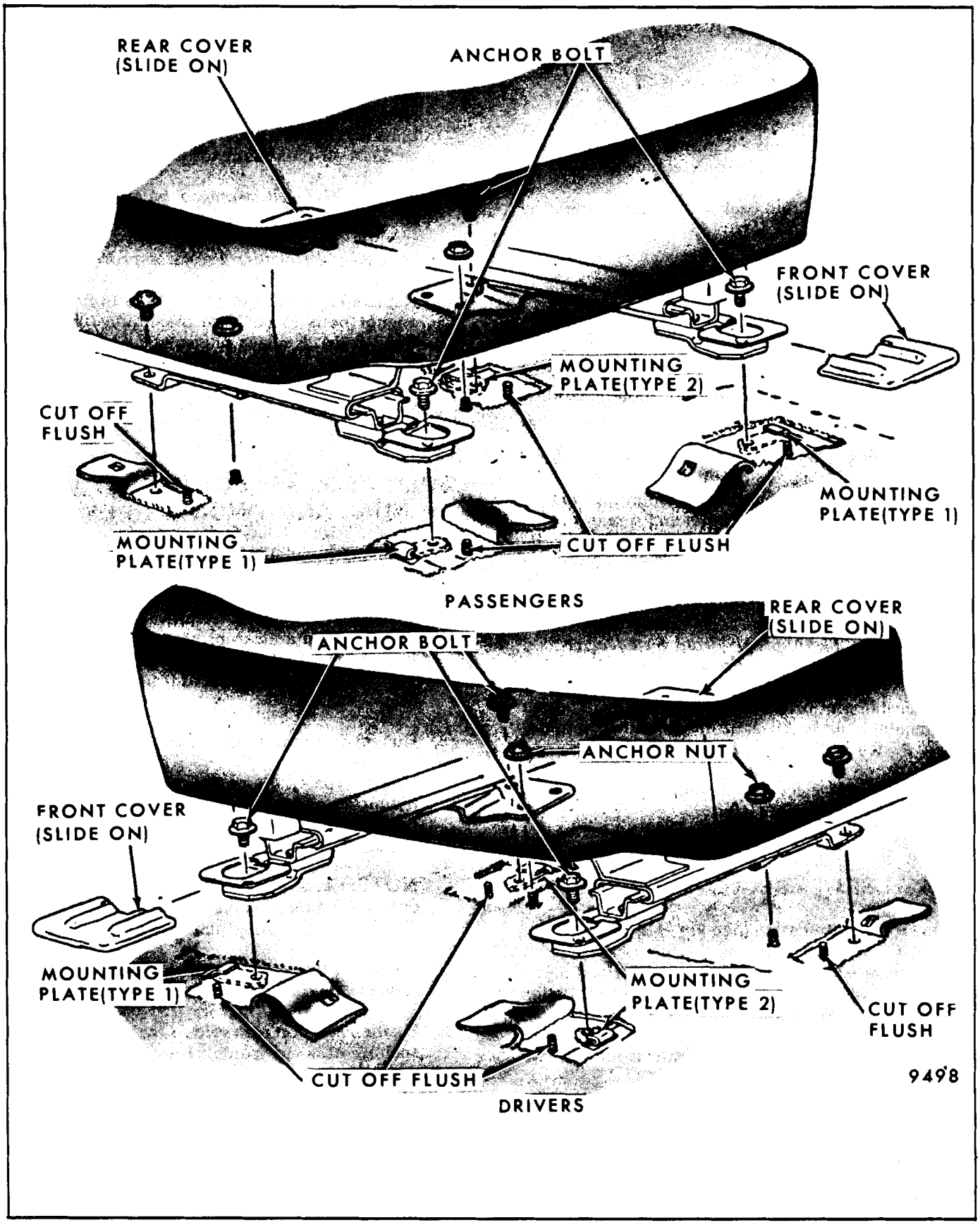


Fig. 9-5 - Front Seat Dealer Relocation Instructions - Split 45-55 and 50-50 Front Seat (Six-Way Power Operated)

BENCH SEAT MANUAL AND TWO-WAY POWER

Removal and Installation (See Fig. 9-3)

1. Remove front seat assembly as described under Front Seat Assembly - Removal and Installation and place on a clean protected surface.
2. Cut carpet and fold back at two front mounting areas as shown.
3. Cut off two front studs as indicated.
4. Insert mounting plates (type 1) through existing slots in floor pan. Align holes in mounting plates to holes in floor pan.
5. Cut holes in carpet at new bolt hole locations. Replace carpet.
6. Position seat on rear studs as shown and install anchor nuts to studs. Install anchor bolts through front supports to mounting plates. Tighten 2 front anchor bolts and 4 rear anchor nuts to 23 N·m maximum torque (12 to 18 ft-lb).

   CAUTION: *All damaged bolts, nuts or mounting plates must be replaced. See caution at beginning of Front Seat Dealer Rearward Relocation Provision procedure.*
7. Reinstall seat belts to original position. Tighten anchor bolts to 60 N·m maximum torque (20 to 45 ft-lb). Replace plugs.
8. Connect all electrical connectors, covers and shoulder belt to belt guide.

BENCH SEAT - SIX-WAY POWER

Removal and Installation (See Fig. 9-3)

1. Remove front seat assembly as described under Front Seat Assembly - Removal and Installation and place on a clean protected surface.
2. Cut carpet and fold back at two front and two rear mounting areas as shown.
3. Cut off two front and two rear studs as indicated.
4. Insert type 1 mounting plates and type 2 mounting plates through existing slots in floor pan where indicated. Align holes in mounting plates to holes in floor pan.
5. Cut holes in carpet at new bolt hole locations. Replace carpet.
6. Position seat on rear studs as shown and install anchor nuts to studs. Install front and rear anchor bolts as shown. Tighten 2 front anchor bolts, 2 rear anchor bolts and 2 rear anchor nuts to 23 N·m maximum torque (12 to 18 ft-lbs).

   CAUTION: *All damaged bolts, nuts or mounting plates must be replaced. See caution at beginning of Front Seat Dealer Rearward Relocation Provision procedure.*
7. Reinstall seat belts to original position. Tighten anchor bolts to 60 N·m maximum torque (20 to 45 ft-lb). Replace plugs.
8. Connect all electrical connectors, covers and shoulder belt to belt guide.

SPLIT 45-55 and 50-50 SEAT - MANUAL AND TWO-WAY POWER

Removal and Installation (See Fig. 9-4)

1. Remove front seat assembly as described under Front Seat Assembly - Removal and Installation and place on a clean protected surface.
2. Cut carpet and fold back at front mounting area as shown.
3. Cut off front studs as indicated.
4. Insert type 1 mounting plates and type 2 mounting plates through existing slots in floor pan where indicated. Align holes in mounting plates to holes in floor pan.

   NOTE: Passenger's seat requires one type 1 and one type 2 mounting plate. Driver's seat requires two type 1 mounting plates.
5. Cut holes in carpet at new bolt hole locations. Replace carpet.
6. Position seats on rear studs as shown and install anchor nuts to studs. Install anchor bolts through front supports to mounting plates. Tighten 4 front anchor bolts and 8 rear anchor nuts to 23 N·m maximum torque (12 to 18 ft-lb).

   CAUTION: *All damaged bolts, nuts or mounting plates must be replaced. See caution at beginning of Front Seat Dealer Rearward Relocation Provision procedure.*

7. Reinstall seat belts to original position. Tighten anchor bolts to 60 N·m maximum torque (20 to 45 ft-lb). Replace plugs.

8. Connect all electrical connectors, covers and shoulder belt to belt guide.

SPLIT 45-55 and 50-50 SEAT - SIX-WAY POWER

Removal and Installation (See Fig. 9-5)

1. Remove front seat assembly as described under Front Seat Assembly - Removal and Installation and place on a clean protected surface.

2. Cut carpet and fold back at front and rear mounting areas as shown.

3. Cut off front and rear studs as indicated.

4. Insert type 1 mounting plates and type 2 mounting plates through existing slots in floor pan where indicated. Align holes in mounting plates to holes in floor pan.

   NOTE: Passenger's seat requires one type 1 and two type 2 mounting plates. Driver's seat requires two type 1 and one type 2 mounting plates.

5. Cut holes in carpet at new bolt hole locations. Replace carpet.

6. Position seats on rear studs as shown and install anchor nuts to studs. Install front and rear anchor bolts as shown. Tighten 4 front anchor bolts, 4 rear anchor bolts and 4 rear anchor nuts to 23 N·m maximum torque (12 to 18 ft-lb).

   CAUTION: *All damaged bolts, nuts or mounting plates must be replaced. See caution at beginning of Front Seat Dealer Rearward Relocation Provision procedure.*

7. Reinstall seat belts to original position. Tighten anchor bolts to 60 N·m maximum torque (20 to 45 ft-lb). Replace plugs.

8. Connect all electrical connectors, covers and shoulder belt to belt guide.

FRONT SEAT DEALER FORWARD RELOCATION PROVISION - "A" Body Styles Only with Manually Operated Seat Adjusters

On the Chevrolet, Pontiac, Oldsmobile and Buick "A" body styles with full width bench manual seat adjusters and 60-40 manual seat adjusters, the horizontal travel of the adjusters can be relocated approximately 3/4" forward as described and illustrated below. When this relocation is performed there will be 3/4" less rearward travel.

1. Remove seat assembly from body as described under Front Seat Assembly - Removal and Installation; then remove both seat adjusters from seat.

2. Remove assist spring from both seat adjusters; then perform the following rework on both right and left seat adjuster.

   a. With adjuster in full forward position, drill an 11/64" hole in upper channel of adjuster 1-19/32" rearward of center of adjuster-to-seat frame front attaching hole (see Fig. 9-6). Install screw, part no. 9721847 or equivalent (10-32 x 3/8" tapping), from underside of adjuster upper channel.

   b. With adjuster in full rearward position, drill an 11/64" hole in upper channel of adjuster 1-3/8" forward of center of adjuster- to-seat frame rear attaching hole (see Fig. 9-6). Install screw, part no. 9721847 or equivalent (10-32 x 3/8" tapping), from underside of adjuster upper channel so that head of screw is on inside of upper channel.

   c. With adjuster in full rearward position, drill out front dimple in upper channel - use 5/16" drill.

3. Check forward travel of both adjusters. Upper channel should move forward sufficiently so that lock bar will engage in the last locking notch.

   NOTE: It may be necessary to place rear leg of adjuster in vise and with adjuster in full forward position, tap rear of adjuster upper channel with hammer and block to slide over roller until lock bar will engage in last locking notch.

4. Install assist spring on both right and left adjuster, install adjusters to seat frame and install seat assembly in body as described under Front Seat Assembly - Removal and Installation.

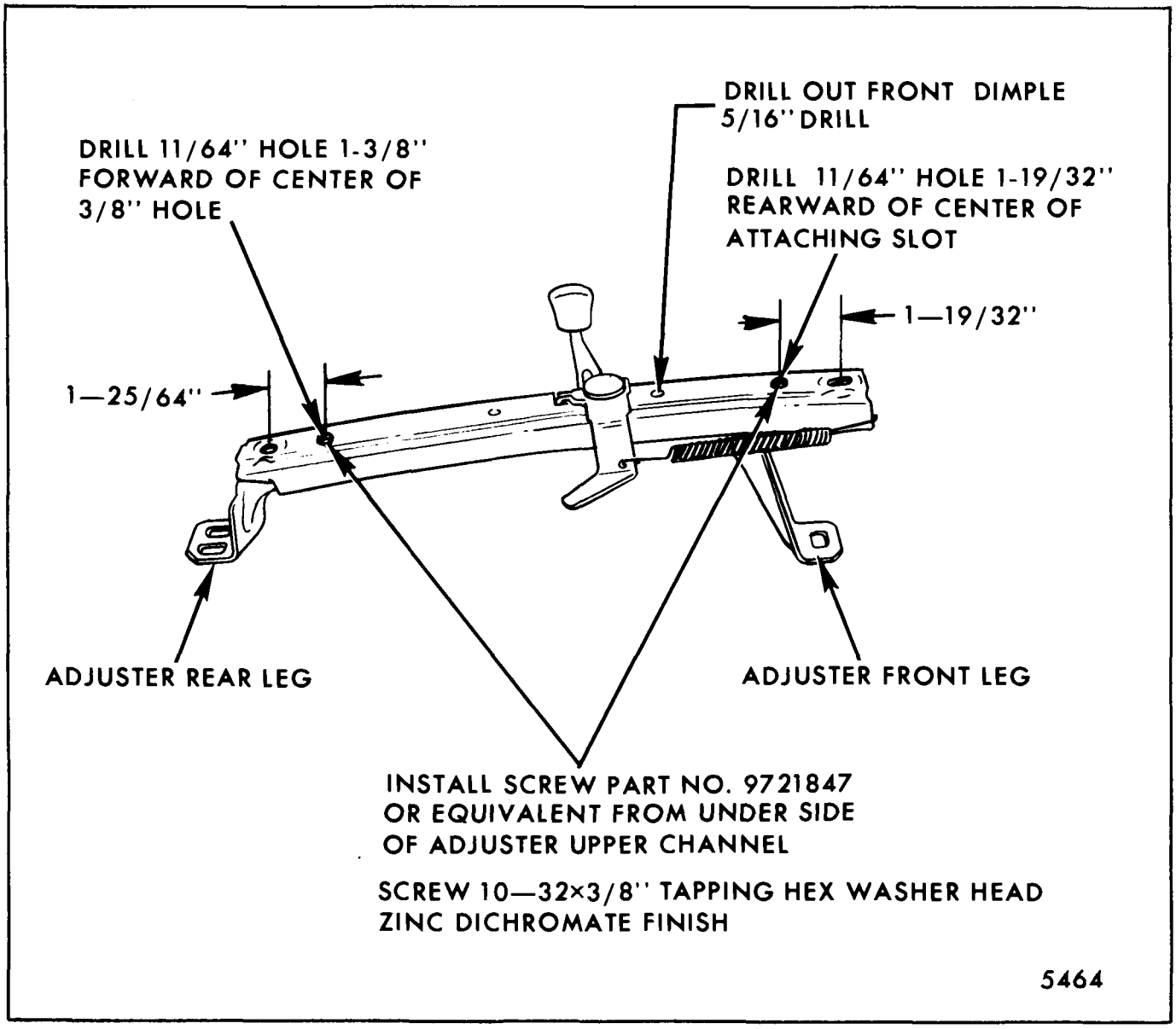


Fig. 9-6-Dealer Relocation Provision for Moving Adjuster Travel 3/4" Forward - "A" Body Styles ONLY Equipped with Full Width Bench Seat Manual Adjusters or 60-40 Seat Manual Adjusters

NOTE: With the exception of the dealer front seat relocation provision previously described for those specific body styles and seat adjusters, there are NO OTHER front seat dealer relocation provisions. On any other body styles or seat adjusters DO NOT attempt to change the designed seat position by altering the designed seat adjuster-to-floor pan anchor provisions or seat adjuster-to-seat frame anchor provisions as it could affect the performance of the seat system.

FRONT SEAT ADJUSTMENTS - At Floor Pan Attachment

On seats which do not have dealer relocation provisions, a small amount of fore and aft or side adjustment is available at the seat adjuster-to-floor pan attaching bolts which can be utilized towards alignment of the seat assembly or alignment of the seat adjusters with each other.

This adjustment can be used to help correct the following conditions:

1. Hard or slow operation due to adjusters not being parallel with each other.

2. Passenger side of manually operated seat must be moved forward or rearward slightly to engage in locked position due to one adjuster being forward or rearward of the other.

3. Seat assembly slightly too far to right or left.

Adjuster Locking Wire Adjustment - Full Width Manually Operated Seats

The tension of the locking wire extending between manually operated adjusters can be adjusted to provide proper locking action of both adjusters, particularly the right (passenger side) adjuster. To tighten or loosen the locking wire on "A and X" style full width seats with manual adjusters, disengage locking wire tension hook from hole in seat frame and relocate hook in one of adjacent holes (see Fig. 9-13). To tighten or loosen the locking wire on "B and C" styles with manual seat adjusters use a pick or small awl inserted in coil end of locking wire to disengage locking wire from retainer at control arm of left adjuster (see Fig. 9-7). This adjustment can be used to correct the following conditions:

1. Right (passenger side) adjuster does not lock or lock bar is not fully engaged in lock position due to locking wire being too tight. To correct, loosen tension on locking wire.

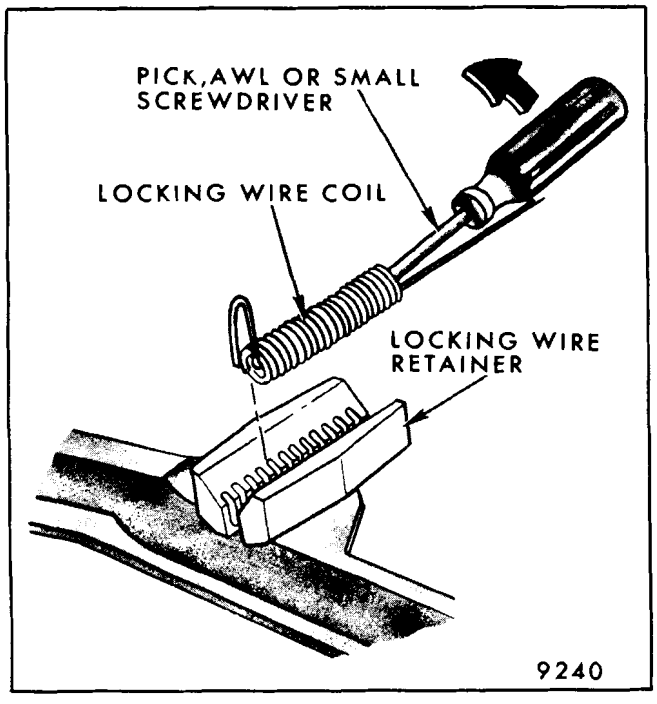


Fig. 9-7 - Manually Operated Front Seat Locking Wire Adjustment - "B and C" Styles

2. Right (passenger side) adjuster does not unlock due to locking wire too loose. To correct, tighten tension on locking wire.

Power Six-Way Seat Adjuster Horizontal Actuator Adjustment

With seat adjuster assembly installed on seat or seat assembly installed in body, horizontal movement (chucking) can be corrected by adjusting the horizontal actuator and pinion gear in tight to the adjuster lower track rack gear as follows:

1. Operate seat full-up position and approximately 3/4 full forward position.

2. Loosen horizontal actuator attaching screws. Using a large screwdriver, inserted as shown in Figure 9-8, apply outward pressure on horizontal actuator (sufficient to equal 15 to 25 pounds on horizontal actuator) and at the same time energize horizontal switch to move seat fore and aft slightly; this helps seat the horizontal actuator pinion gear teeth tight to the lower track rack gear teeth and eliminate any free play between gear teeth. While maintaining outward pressure against horizontal actuator, tighten actuator attaching screws.

MANUALLY OPERATED SEAT ADJUSTER CONTROL ARM KNOB - All Styles with Manually Operated Seat Adjusters

Manually operated seat adjuster control arm knobs are a press fit on the adjuster control arm. The knobs

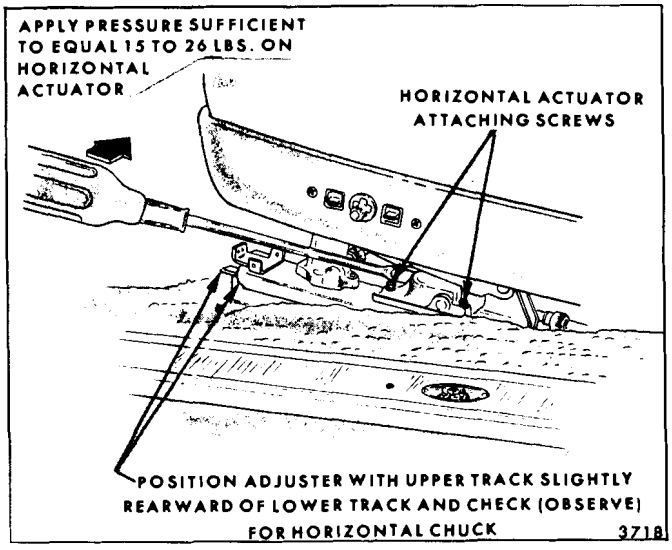


Fig. 9-8-Horizontal Actuator Adjustment - Power Six-Way Seat

can generally be removed and reinstalled several times without losing adequate retention. If removing or installing a control knob on a trimmed seat assembly, place a protective cover over trim material in area of knob (see Fig. 9-9).

Removal

Using a heavy body spoon, a long drift pin and a piece of wood as a fulcrum as shown in Figure 9-9, carefully remove knob from adjuster control arm. Place a support under control arm to prevent bending arm.

Installation Equipment

The following equipment is required to install seat adjuster control knob.

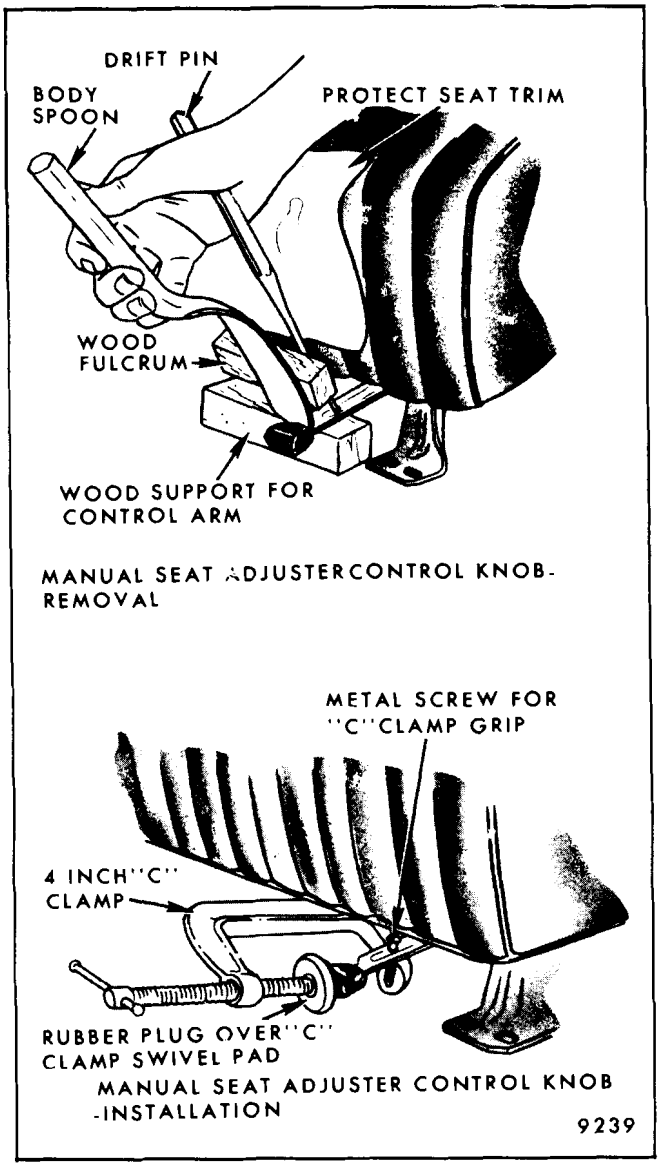


Fig. 9-9-Front Seat Adjuster Control Arm Knob - Removal and Installation

1. One 4" "C" clamp.

   NOTE: Swivel pad of "C" clamp should rotate freely. Where necessary add a drop or two of oil in swivel pad.

2. One round rubber plug (part no. 4802102 or equivalent) to fit over "C" clamp swivel pad to help prevent swivel pad from slipping off control knob or damaging control knob.

3. One 1/8" diameter sheet metal screw approximately one inch long or a drift pin.

Installation Procedure

1. Place pencil mark on seat adjuster control arm one inch from end of arm as a guide for determining when knob is fully installed.

2. Place seat adjuster control knob in position on control arm and start knob on by hand pressure making certain knob is started on straight.

   NOTE: Install knob so that gate mark (on one face of knob) is not visible. On seats with the control arm at the front of the seat, install knob so that gate mark is facing down.

3. Insert sheet metal screw or drift pin in hole provided in adjuster control arm and place "C" clamp in position as shown in Figure 9-9. Use round rubber plug (part no. 4802102 or equivalent) over swivel pad of "C" clamp to prevent damage to knob and to prevent "C" clamp swivel pad from slipping off knob.

4. Carefully press knob on control arm with "C" clamp until bottom edge of knob is down to mark (one inch below edge of arm).

FRONT SEAT ASSEMBLY - Manual and Power Operated Seats

Description

All seat assemblies are secured to the floor pan by either nuts installed on floor pan anchor plate studs, or bolts installed into anchor nuts or plates in the floor pan. The "H" body seat adjusters, except the passenger's inboard adjuster, incorporate studs which extend through the floor pan with attaching nuts on the underside of the floor pan.

Cadillac styles equipped with automatic door lock system use a waffle-type pressure sensitive switch located under the trim cover on the driver's seat position.

NOTE: All electrically operated seats and seats equipped with cigarette lighter, courtesy lamps etc., have a ground wire secured to the seat frame and under one of the seat adjuster to floor pan attaching bolts or nuts.

The manually operated front seat assemblies incorporate manually operated seat adjusters to provide fore and aft movement of the seat. When the control lever located at the front of the seat is actuated to the left, the seat adjusters unlock, permitting horizontal travel of the seat. When the seat is in the desired position and the locking lever is released, the seat is locked.

The power operated two-way and six-way seat adjusters are actuated by a 12 volt, reversible, shunt wound motor with a built-in circuit breaker. The motor is energized by a toggle-type control switch installed in the seat side panel or in the door armrest on the Cadillac Seville.

On six-way power operated seats the seat operating mechanism has a transmission assembly which incorporates three solenoids and six drive cables to the seat adjusters. One solenoid controls the vertical movement of the front of the seat, the second solenoid controls the horizontal movement of the seat and the third solenoid controls the vertical movement of the rear of the seat. When the control switch is actuated, a double contact in the switch first energizes the correct solenoid which engages the solenoid plunger with the driving gear dog, then energizes the motor. The driving gear rotates the drive cables and operates both adjusters. When the adjusters reach their limit of travel, the drive cables stop their rotating action and torque is absorbed by the rubber coupler connecting the motor and transmission. When the control switch is released, a return spring returns the solenoid plunger to its original position disengaging it from the driving gear dog.

"B and C" styles which have 50-50 front seats and power operated reclining seat back(s) are equipped with a small permanent magnet type motor located under the seat cushion frame. The motor drives a reclining actuator on the right side of the seat cushion frame by means of a drive cable.

SHOULDER BELT GUIDE LOOP - All Front Seats ("B and C" Four- Door Styles Do Not Have Guide Loops)

Two types of front seat shoulder belt guide loops are used on 1977 styles. "B and C" body four-door styles do not have front seat shoulder belt guide loops. "B and C" body two-door styles are equipped with large screw-on type guide loops. The "A, X and F" body front seats incorporate snap-on type shoulder strap guide loops on which the following removal and installation procedures may be used.

Removal and Installation - "A, F and X" Styles

1. Using Weatherstrip Removal Tool J-21104 or equivalent, carefully pry out plastic guide fastener where present from center of guide loop (see "1" in Fig. 9-10).

2. Detach the belt guide from guide escutcheon on head restraint or seat as follows:

   a. From the front side of the guide escutcheon carefully insert a flat-bladed screwdriver between guide and escutcheon on one side of the split in the guide as shown at "2" in Figure 9- 10.

   b. Push hard on side of guide where screwdriver is inserted as indicated at "3" in Figure 9-10.

   c. Carefully turn screwdriver as indicated at "4" in Figure 9-10 to snap guide from escutcheon.

3. To install guide, position guide retaining prongs in hole in escutcheon and push on base of guide until prongs snap into installed position. Reinstall plastic guide fastener (see "1" in Fig. 9-10). If fastener was damaged during removal, install new fastener.

Removal and Installation - "B and C" Styles

1. On "B and C" body two-door styles, remove 2 guide loop attaching screws (see Fig. 9-10) and remove loop.

2. To install guide loop, reverse removal procedure.

SEAT ASSEMBLY SERVICING - All Styles

Refer to appropriate illustration below for the type of seat being serviced.

1. Figure 9-11 - "B and C" Body Manually Operated Seats

2. Figure 9-12 - "B and C" Body Power Operated Seats

3. Figure 9-13 - "A" Body Manually Operated Full Width Seat

4. Figure 9-14 - "A and X" Body Manually Operated Bucket Seats

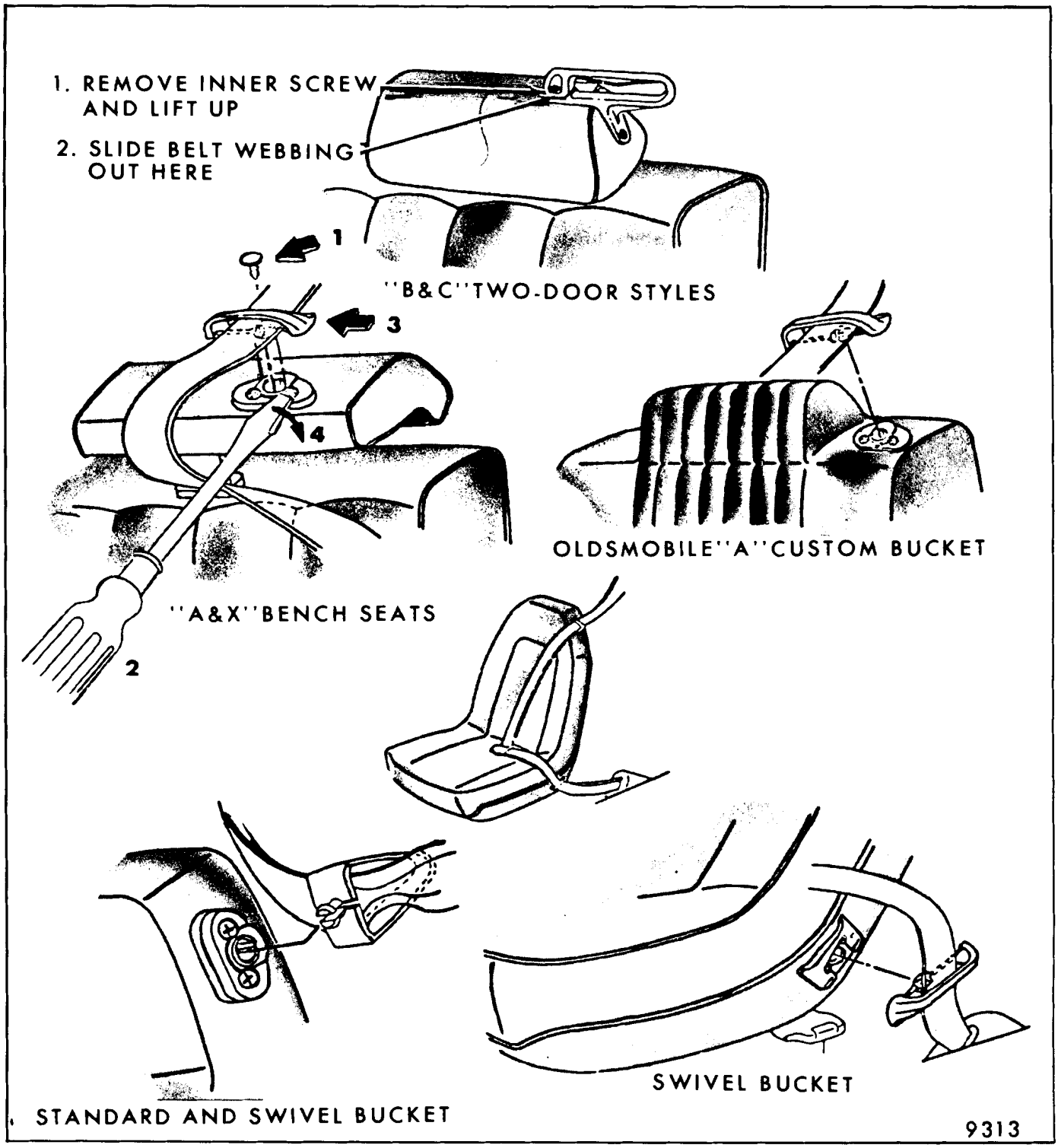


Fig. 9-10-Shoulder Belt Guide Loop - Removal

5. Figure 9-15 - "A and X" Body Power Operated Bucket Seats
6. Figure 9-16 - Swivel Bucket Seats
7. Figure 9-17 "H" Body Bucket Seats

Removal and Installation

1. On "A, F, E and X" body styles, detach the shoulder strap guide from guide escutcheon on head restraint or seat back as previously described under Shoulder Belt Guide Loop -

Removal and Installation (refer to Fig. 9-10).

On "B and C" two-door styles, remove shoulder belt guide loop inner attaching screw; then carefully lift upper portion of guide loop sufficiently to slide shoulder strap webbing out of loop (Fig. 9-10).

2. Operate seat to full forward position. If six-way power seat is operable, operate seat to full forward and up positions. Where necessary to gain access to adjuster-to-floor pan attaching bolts or nuts, remove adjuster foot covers and/or carpet retainers; remove door sill plates and turn back floor mat or carpeting where required. On "H" body styles, all the adjuster-to-floor pan attaching nuts, except at the passenger inner adjuster, are located on underside of floor pan.

3. On full width seats where the front inner seat belts go through the seat assembly, remove the inner seat belt-to-floor pan anchor plate attaching bolts. Use door lock striker lap belt anchor bolt removal tool J-23457 or equivalent.

4. At rear of adjusters, remove adjuster foot covers where present; then remove adjuster-to-floor pan rear attaching nuts or bolts. Operate seat to full rearward position. Remove adjuster- to-floor pan front attaching nuts or bolts.

   On seats incorporating any electrical equipment such as power adjusters, power reclining seat back, electric locks, cigar lighter, etc., tilt seat rearward and disconnect feed wire connector.

5. With aid of a helper, remove seat assembly from car.

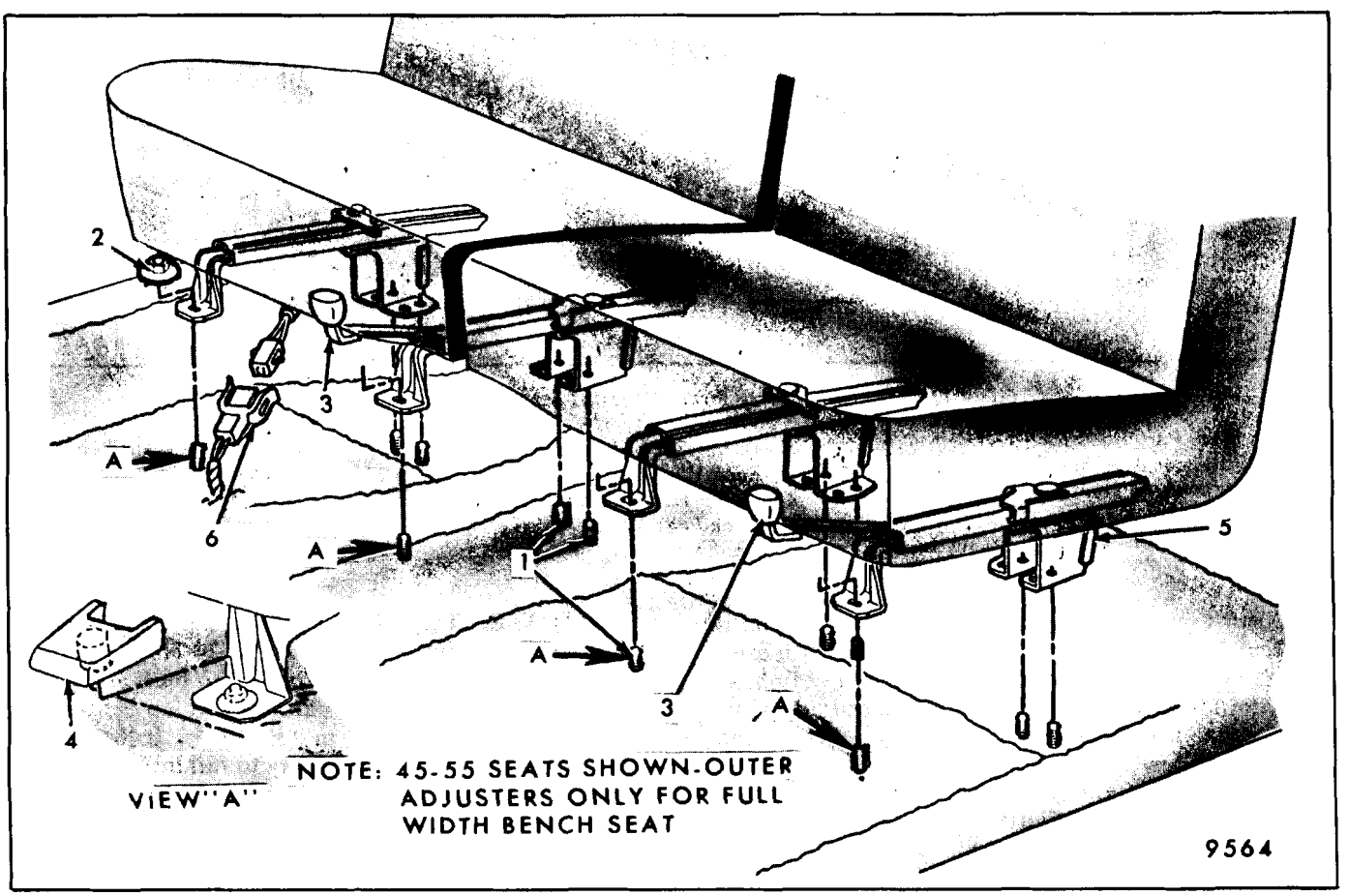


Fig. 9-11 - "B and C" Body Manually Operated Seats - 45-55 Seat Shown - See Note for Full Width Seat

1. Floor Pan Studs for Adjuster Attachment
2. Adjuster-to-Floor Pan Nuts
3. Adjuster Control Lever and Knob
4. Adjuster Front Attaching Nut Covers
5. Adjuster Rear Finishing Cover
6. Front Seat Passenger Power Reclining Back Feed Wire Connector

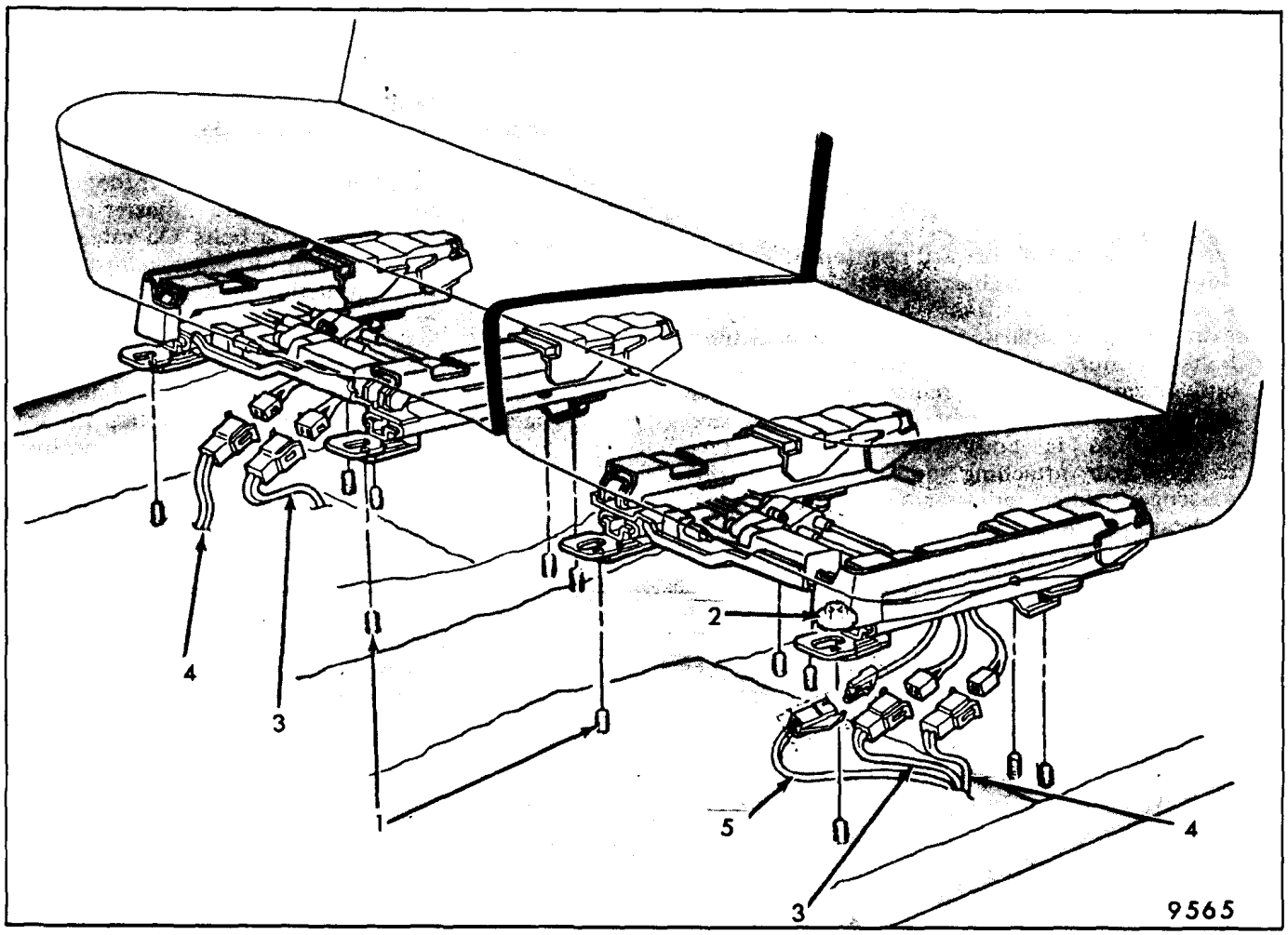


Fig. 9-12 - "B and C" Body Power Operated Seats - 45-55 Seat Shown

1. Floor Pan Studs for Adjuster Attachment
2. Adjuster-to-Floor Pan Attaching Nuts
3. Power Seat Adjuster Feed Wire Connector
4. Power Reclining Seat Back Feed Wire Connector
5. Theft Deterent Seat Sensor Wire Connector - Cadillac Only

6. Prior to installing seat assembly, check that both seat adjusters are parallel and in phase with each other. In the event the adjusters are out of phase (one adjuster reaches its maximum horizontal or vertical travel in a given direction before the other adjuster), phase adjusters as described in step 5 under Front Seat Adjuster Assembly - Removal and Installation.

7. To install seat assembly, reverse removal procedure.

NOTE: Tighten seat adjuster to floor pan attaching bolts or nuts 16 to 24 N·m (12 to 18 ft-lb). On seats where inner lap belts have been detached from floor pan, tighten lap belt anchor bolts 41 to 61 N·m (30 to 45 ft-lb). Check operation of seat assembly to full limits of travel. On two-door styles equipped with electric seat back locks, check operation of both seat back locks.

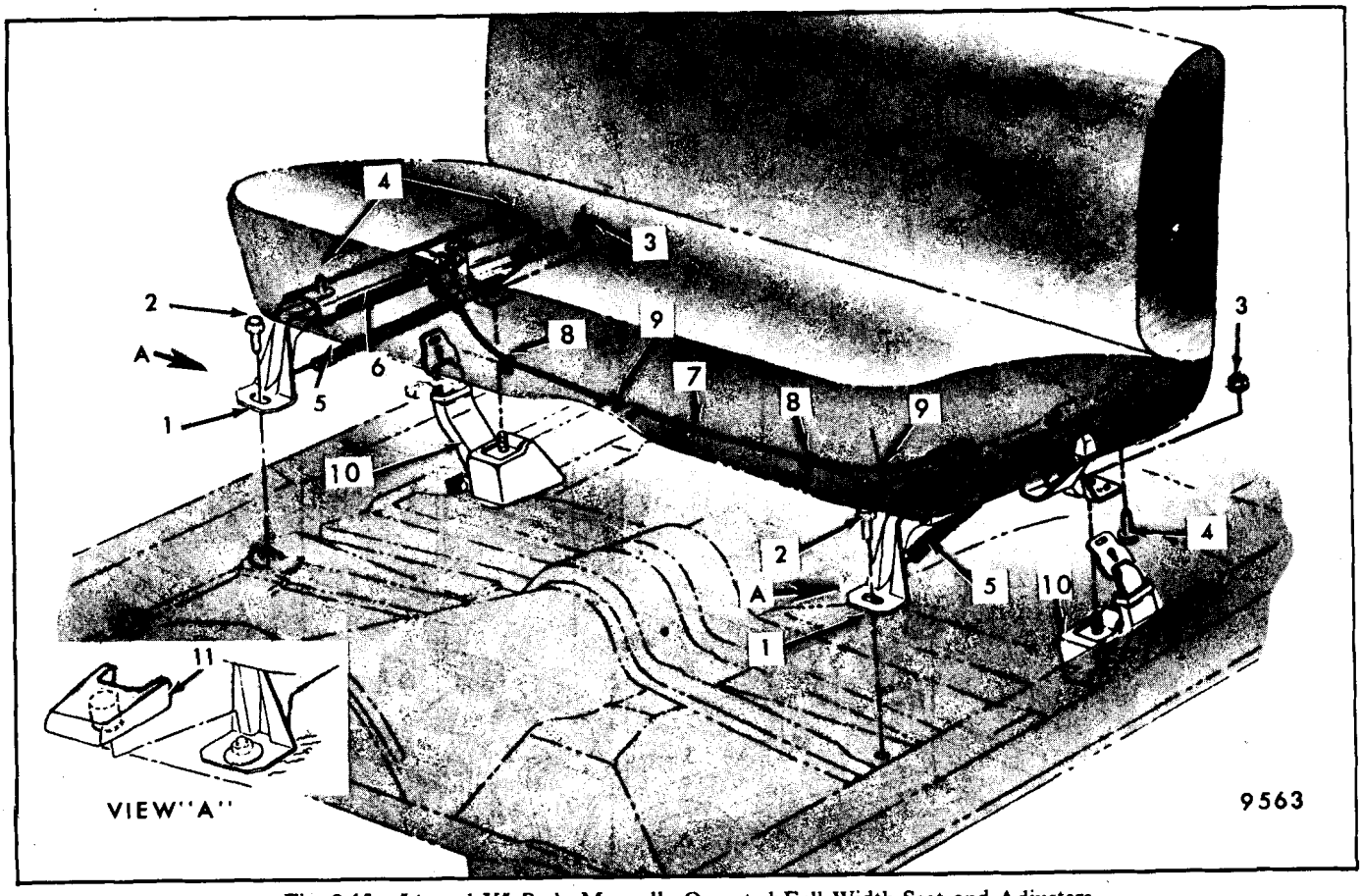


Fig. 9-13 - "A and X" Body Manually Operated Full Width Seat and Adjusters

1. Adjuster Assembly
2. Adjuster-to-Floor Pan Front Bolts
3. Adjuster-to-Lap Belt Retractor Nuts
4. Adjuster-to-Seat Frame Bolts
5. Adjuster Assist Spring
6. Adjuster Lock Bar Spring
7. Adjuster Locking Wire
8. Locking Wire-to-Seat Frame Hog-Ring Loops
9. Locking Wire-to-Seat Frame Retainer
10. Lap Belt Retractor
11. Adjuster-to-Floor Pan Bolt Covers - Front Only

FRONT SEAT ADJUSTER ASSEMBLY - Manual and Power Operated - All Styles (Except Swivel Bucket)

Refer to appropriate illustrations below for the type of seat being serviced.

1. Figure 9-18 - "B and C" Body Manually Operated Seat Adjusters - Full Width Seat
2. Figure 9-19 - "B and C" Body Manually Operated Seat Adjusters - 45-55 Seat
3. Figure 9-20 - "B and C" Body Power Operated Six-Way Seat Adjusters
4. Figure 9-13 - "A and X" Body Manually Operated Full Width Seat and Adjusters
5. Figure 9-14 - "A and X" Body Manually Operated Bucket Seats
6. Figure 9-15 - "A and X" Body Power Operated Bucket Seat and Adjuster
7. Figure 9-21 - Power Operated Six-Way Adjusters - All 45-55, 50- 50 and 60-40 Seats

Removal and Installation

1. Remove front seat assembly with adjusters attached as previously described and place upside-down on a clean protected surface.
2. On manually operated seat adjusters, remove seat adjuster assist spring from adjuster being removed. If removing right adjuster, squeeze hooked end of seat adjuster locking wire

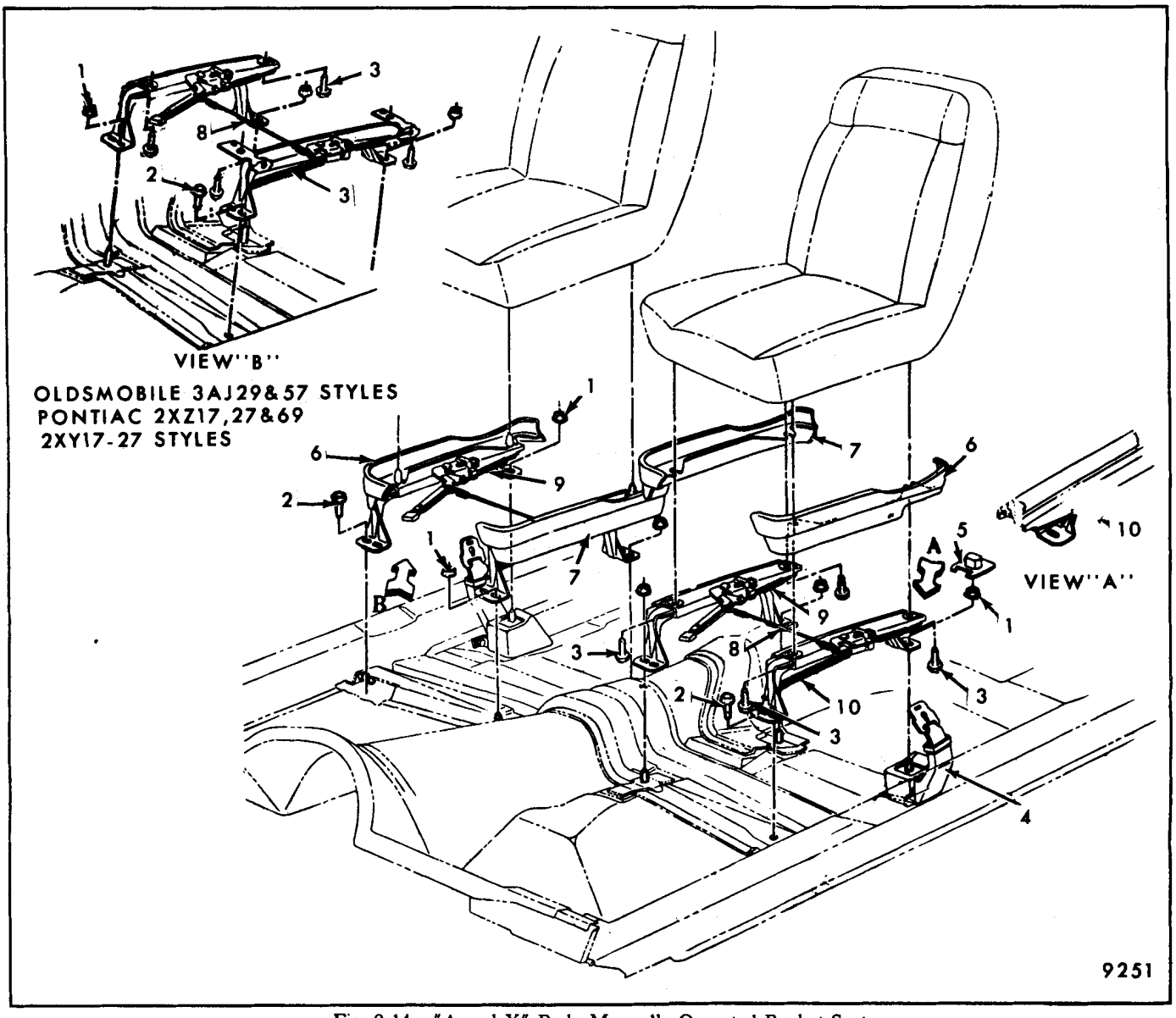


Fig. 9-14 - "A and X" Body Manually Operated Bucket Seats

1. Seat Adjuster-to-Floor Pan Stud Nuts
2. Seat Adjuster-to-Floor Pan Bolts
3. Seat Adjuster-to-Seat Frame Bolts
4. Lap Belt Retractor
5. Outer Adjuster Rear Attaching Nut Finishing Cover
6. Outer Adjuster Track Cover
7. Inner Adjuster Track Cover (not used on some styles)
8. Adjuster Locking Wire
9. Adjuster Lock Bar Spring
10. Adjuster Assist Spring

together and slide retaining spring back over hump in locking wire and remove locking wire from adjuster. If removing left adjuster on "B and C" styles, note or mark position of locking wire coil in locking wire retainer; then disengage locking wire coil from adjuster as shown in Figure 9-7.

3. On power operated full width seats, disonnect drive cables at adjuster being removed, squeeze oblong connector to detach. On power operated 60-40, 50-50, 45-55 or bucket seats remove bolt securing motor and transmission support to adjuster being removed (see Fig. 9-21).

4. Remove adjuster-to-seat bottom frame front and rear attaching bolts and remove seat adjuster from seat.

NOTE: On some seats, spacers are installed between the seat adjusters and seat frame. Note location of spacers for reinstallation purposes.

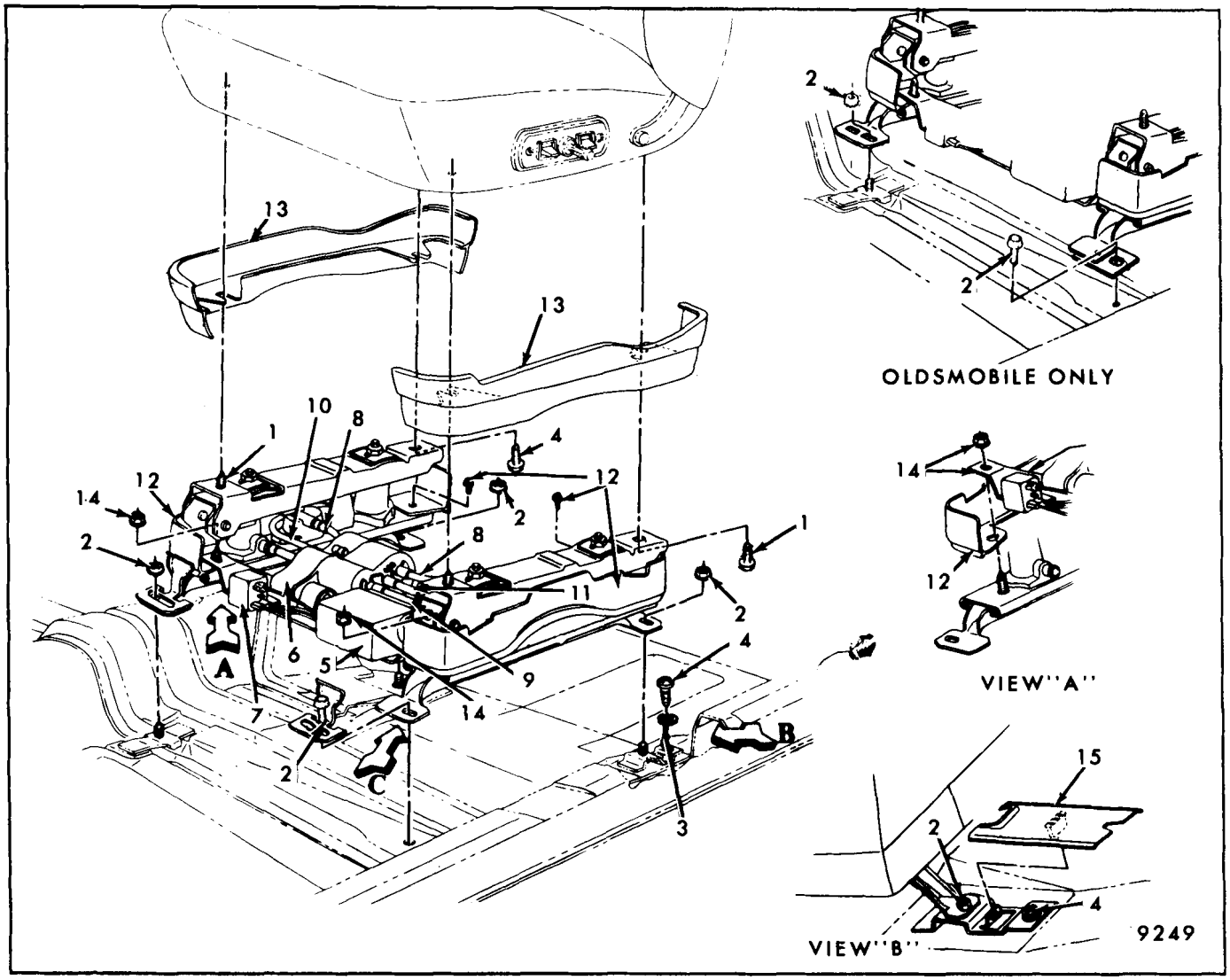


Fig. 9-15 - "A and X" Body Six-Way Power Operated Bucket Seat and Adjusters

1. Adjuster-to-Seat Frame Bolts
2. Adjuster-to-Floor Pan Stud Nuts
3. Adjuster Rear Outer Anchor Plate and Stud
4. Bolt Used for Sealing Lap Belt Anchor Bolt Hole
5. Motor Assembly
6. Transmission Assembly
7. Motor Relay
8. Horizontal Drive Cables (Black)
9. Front Vertical Drive Cable - Left Side (Black)
10. Rear Vertical Drive Cable - Right Side (Blue)
11. Rear Vertical Drive Cable - Left Side (Green)
12. Adjuster Track Lower Cover and Rear Attaching Screw
13. Adjuster Track Upper Cover
14. Motor and Transmission Support and Attaching Nuts
15. Adjuster Rear Outer Anchor Plate Finishing Cover

5. To install, reverse removal procedure. If a manual adjuster with control arm is being replaced, install new adjuster control knob as described under Manually Operated Seat Adjuster Control Arm Knob.

NOTE: The attached weld nuts on a new "B or C" body seat frame are unthreaded - use the original thread forming adjuster attaching bolts or new thread forming attaching bolts when installing adjusters.

NOTE: When installing manually operated seat adjusters, the right and left seat adjuster sliding mechanism should be in same relative position when attaching adjuster to seat bottom frame. Where spacers were previously installed between seat adjusters and seat frame, reinstall spacers. Tighten seat adjuster-to-seat frame attaching bolts 16 to 24 N·m (12 to 18 ft-lb).

After installing manual adjusters to seat frame, check operation of adjusters. If on full width seats

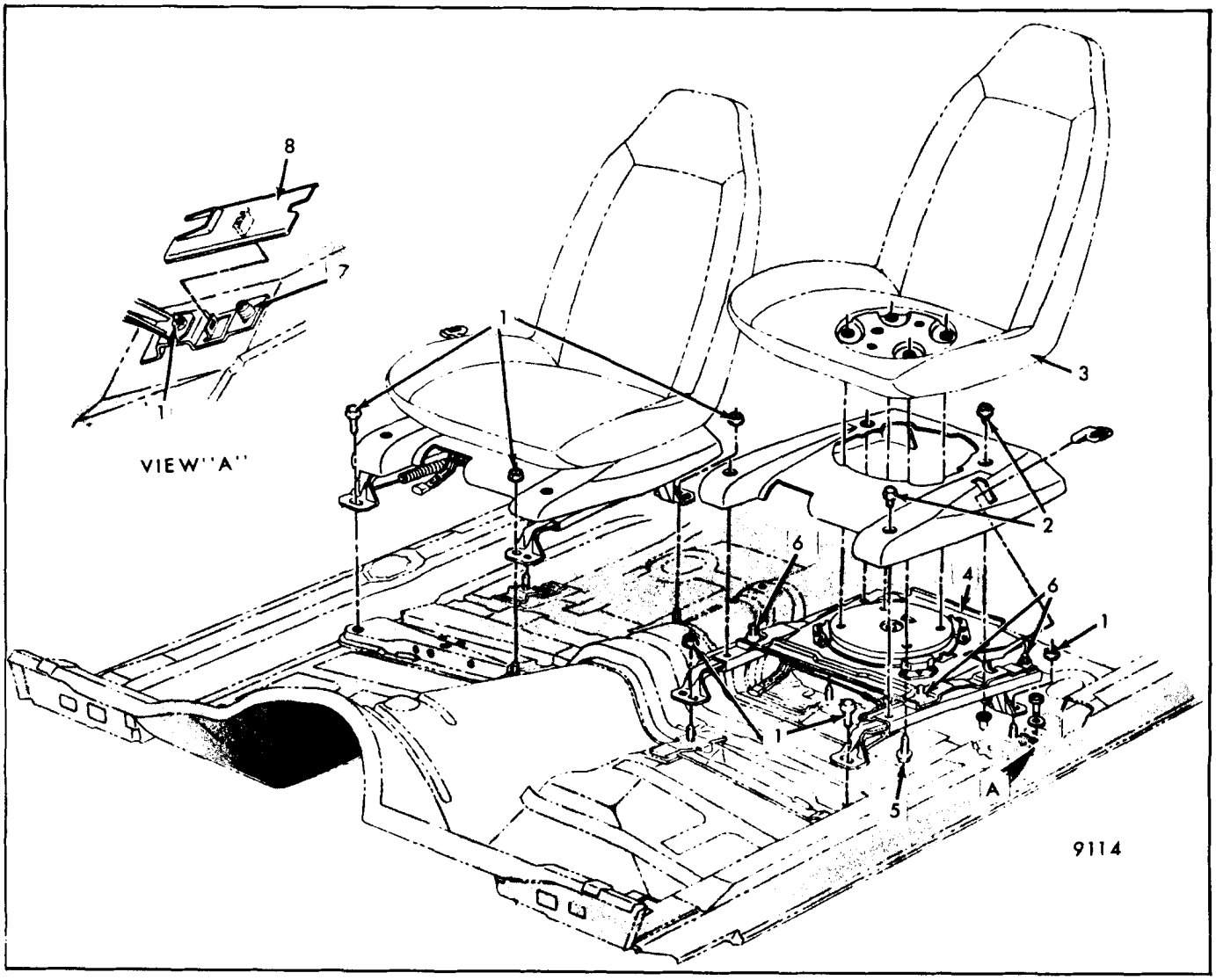


Fig. 9-16-Swivel Bucket Seat and Adjusters

1. Adjuster and Swivel Assembly-to-Floor Pan Bolts and Nuts
2. Swivel and Adjuster Cover Screws
3. Bucket Seat Shell
4. Swivel Assembly
5. Bucket Seat Shell-to-Swivel Assembly Bolts
6. Swivel Assembly-to-Adjuster Nuts
7. Outer Adjuster Rear Anchor Plate Bolt and Washer
8. Carpet Cut out Cover at Outer Adjuster Rear Anchor Plate

the adjusters do not lock or unlock satisfactorily when control handle is operated, adjust locking wire as described under Adjuster Locking Wire Adjustments (see Figs. 9-7 and 9-13).

When installing power operated seat adjusters, check that both adjusters are parallel and in phase with each other. In the event the adjusters are out of phase (one adjuster reaches its maximum horizontal or vertical travel in a given direction before the other adjuster), phase adjusters as follows:

1. Horizontal travel - operate seat control switch until one adjuster reaches full forward position. Detach horizontal drive cable from adjuster which has reached full forward position. Operate seat forward until other adjuster reaches full forward position; then connect horizontal drive cable and check horizontal travel of seat.

2. Front or rear vertical travel - operate seat control switch until one adjuster has reached fully raised position at both front and rear vertical travel limits. Disconnect both front and rear vertical drive cables from adjuster which has reached the fully raised position. Operate seat control switch until other adjuster reaches the fully raised position at both front and rear vertical travel limits; then connect previously

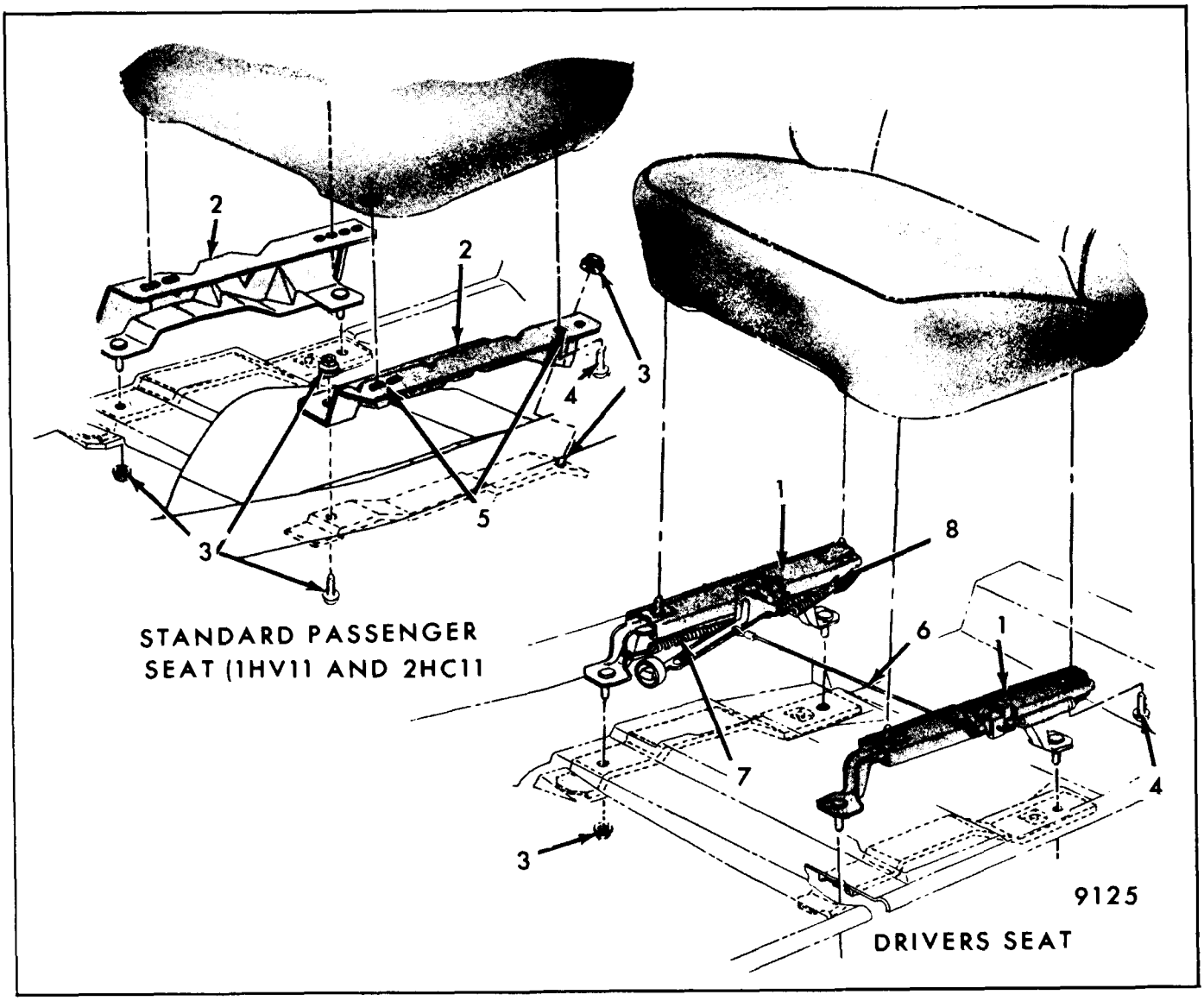


Fig. 9-17 "H" Body "11" Series Bucket Seats and Adjusters

1. Seat Adjusters - Driver's Side
2. Seat Supports - Passenger Side (Adjusters Optional on "11" Styles - Adjusters Standard on All Except "11" Styles)
3. Adjuster-to-Floor Pan Nuts - Located under Floor Pan Except for Passenger Seat Inner Adjuster
4. Adjuster on Support-to-Seat Frame Bolts
5. Holes for Dealer Relocation of Passenger Seat on Supports
6. Driver's Seat Adjuster Locking Wire
7. Driver's Seat Adjuster Assist Spring
8. Driver's Seat Adjuster Lock Bar Spring

removed front and rear vertical drive cables. Check vertical travel by operating adjusters through one or two complete cycles. The above operation may be repeated on an as-required basis if adjusters do not appear to be in phase after test cycle.

CAUTION: *The seat adjuster-to-seat frame attaching bolts are important attaching parts in that it/they could affect the performance of vital components and systems. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.*

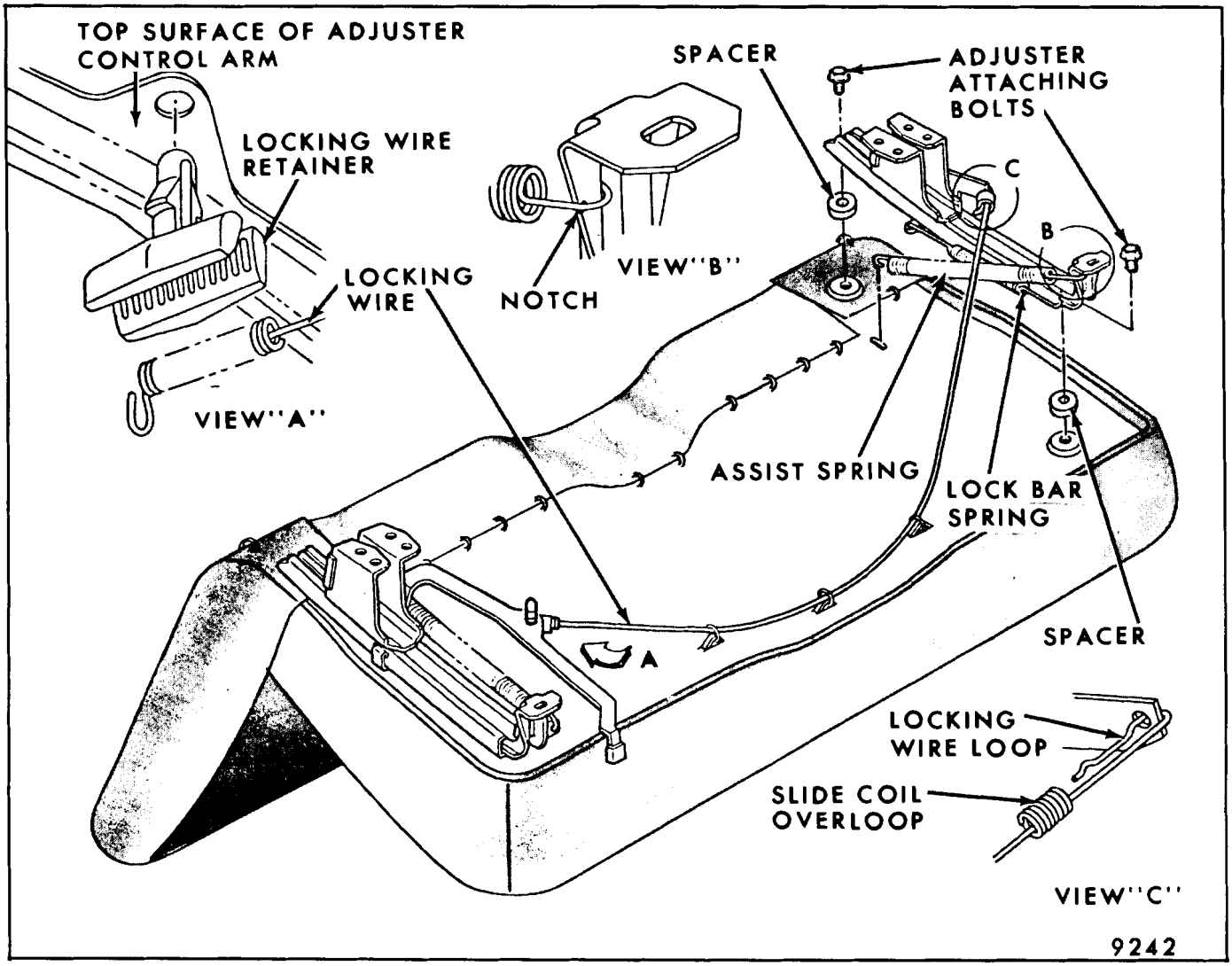


Fig. 9-18 - "B and C" Body Manually Operated Seat Adjusters - Full Width Seat

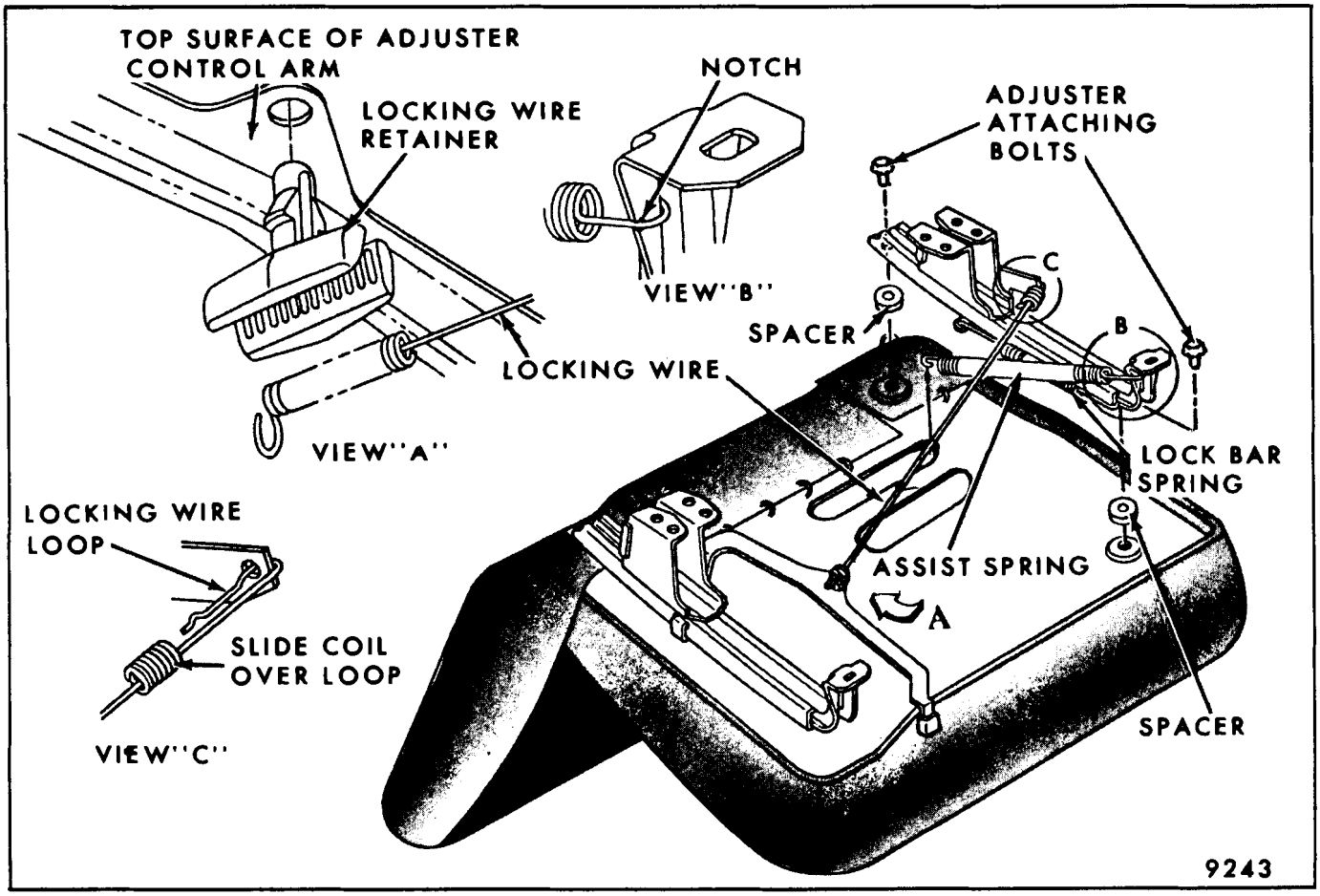


Fig. 9-19 - "B and C" Body Manually Operated Seat Adjusters - 45-55 Seat

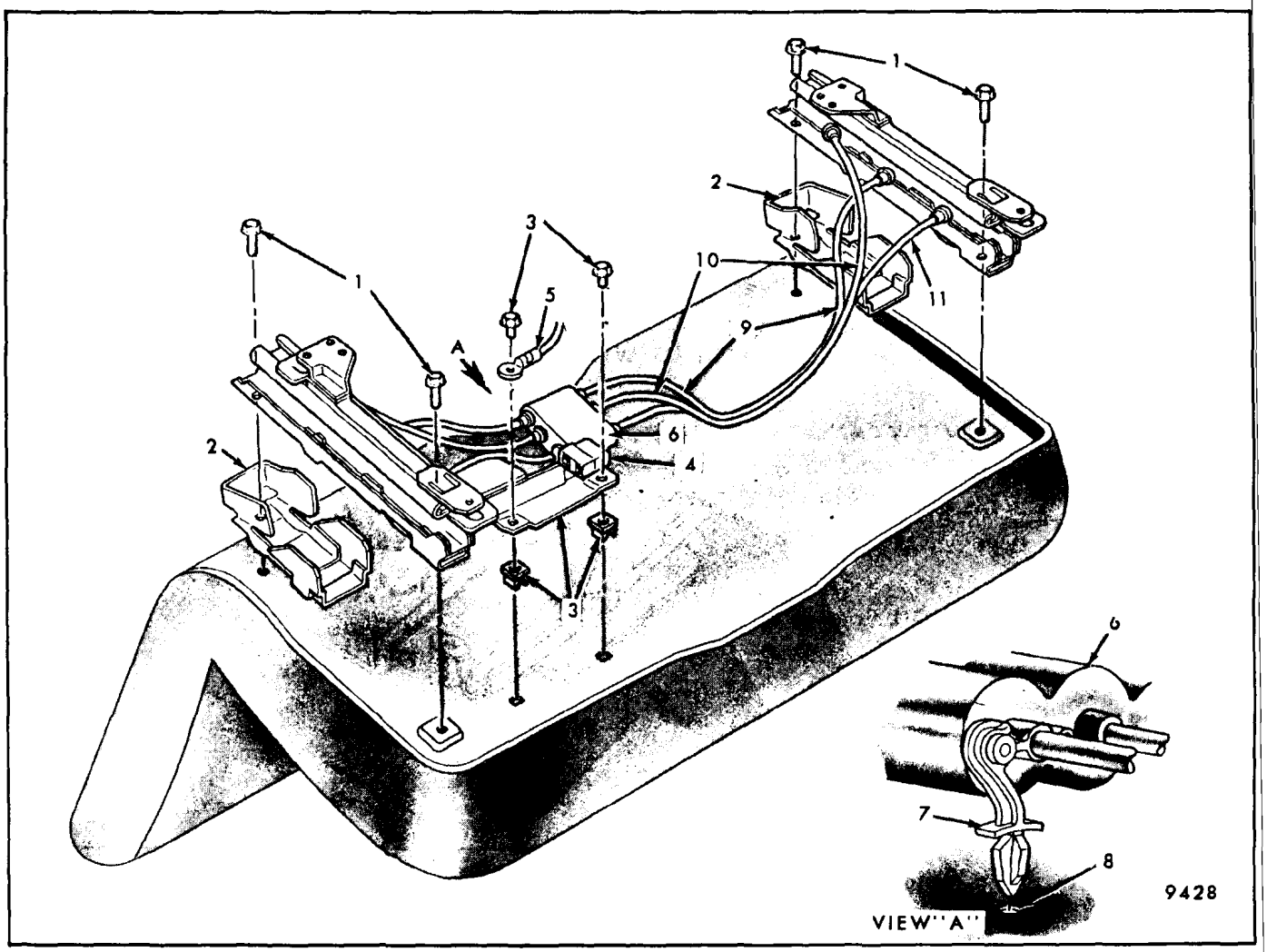


Fig. 9-20 - "B and C" Body Power Operated Six-Way Seat Adjusters - Full Width Seat

1. Adjuster-to-Seat Frame Attaching Bolts
2. Adjuster Track Rear Covers
3. Transmission and Motor Support Attaching Screws and Push-In Nuts
4. Motor Relay
5. Ground Wire
6. Transmission Assembly
7. Transmission Stabilizer Support
8. Hole in Seat Frame for Stabilizer Support
9. Horizontal Drive Cable (Black)
10. Rear Vertical Drive Cable (Blue)
11. Front Vertical Drive Cable (Red)

SWIVEL SHELL BUCKET SEAT, ADJUSTER PLASTIC COVER, SWIVEL ASSEMBLY AND SEAT ADJUSTER

Both the driver and passenger swivel shell bucket seat assembly consists of a formed high impact plastic shell bucket seat mounted on a swivel mechanism which can be turned approximately ninety degrees towards the door opening for easier entrance and exit from the body. The swivel mechanism is mounted on standard manually operated bucket seat adjusters both of which are covered by a one piece formed plastic cover installed between the shell bucket and swivel mechanism.

To remove and install one or more of these assemblies, proceed in the following sequence.

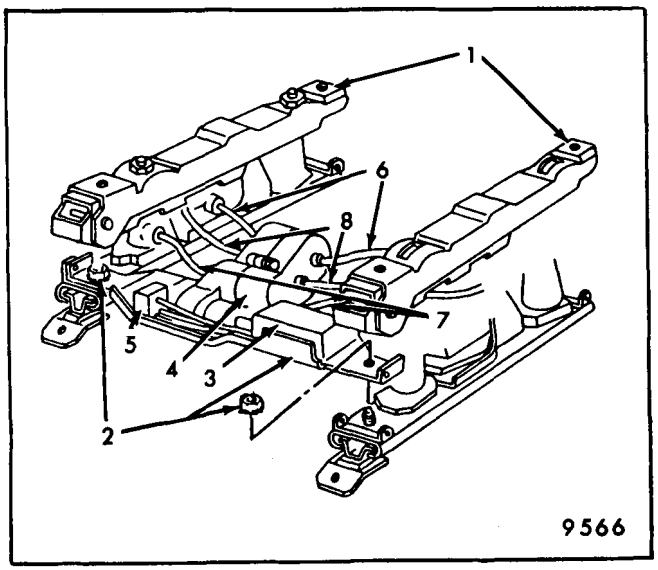


Fig. 9-21 - Power Operated Six-Way Seat Adjusters - All 45-55, 50-50 and 60-40 Seats

1. Front Seat Power 6-Way Adjusters - 45-55 Seat
2. Motor, Transmission and Relay Support and Attaching Nuts
3. Motor
4. Transmission Assembly
5. Motor Relay
6. Horizontal Drive Cables (Black)
7. Front Vertical Drive Cables (Blue)
8. Rear Vertical Drive Cables (Yellow)

Removal and Installation (Refer to Fig. 9-22)

1. Remove front seat assembly as described under Front Seat Assembly - Removal and Installation and place upside-down on a clean protected surface.

2. With swivel mechanism in forward position remove four bolts, through access holes in bottom of swivel assembly (Item 4), securing seat to swivel assembly; then remove seat from swivel.

3. Remove swivel and adjuster plastic cover attaching screws (Item 1).

4. Raise inboard side of cover up sufficiently to start slot in cover over base of swivel control knob; then rotate cover rearward sufficiently (approximately 90 degrees) to pull slot in cover over and off wide portion of control knob (Item 3).

5. Turn swivel and adjuster assembly upside-down.

   a. If removing adjuster assembly from swivel assembly, disengage all springs and control wire from adjuster being removed.

   b. If removing swivel assembly from adjusters, disengage right side adjuster control arm spring and lock bar spring from swivel base plate (Items 5 and 8).

6. Turn swivel and adjuster assembly right side up.

   a. If removing adjuster assembly, remove two swivel-to- adjuster attaching nuts (Item 1) and remove adjuster assembly.

   b. If removing swivel assembly, remove all four swivel-to-adjuster attaching nuts (Item 1) and remove swivel assembly from adjusters.

7. To install adjuster swivel assembly, adjuster plastic cover or shell bucket seat, reverse removal procedure. If adjuster with lock control lever is being replaced, remove control lever knob from original adjuster and install on new adjuster or install a new knob as described under Manually Operated Seat Adjuster Control Arm Knob.

NOTE: The right and left seat adjuster sliding mechanism should be in same relative position when attaching adjuster to seat bottom frame; tighten seat adjuster-to-seat frame attaching bolts 12 to 18 ft-lb.

POWER OPERATED TWO-WAY SEAT ADJUSTER MAJOR COMPONENTS

The following service procedures cover replacement of the major component parts of the power operated two-way seat adjusters.

ELECTRIC MOTOR - Power Operated Two-Way Seat

Removal and Installation

1. If seat is operable, operate seat to a midway position.

2. Remove front seat adjuster-to-floor pan attaching bolts and tilt seat rearward.

3. On full width seat, disconnect both power drive cables from motor. On 60-40 driver's seat, detach one seat adjuster from seat bottom frame; then disengage drive cable from motor on that side.

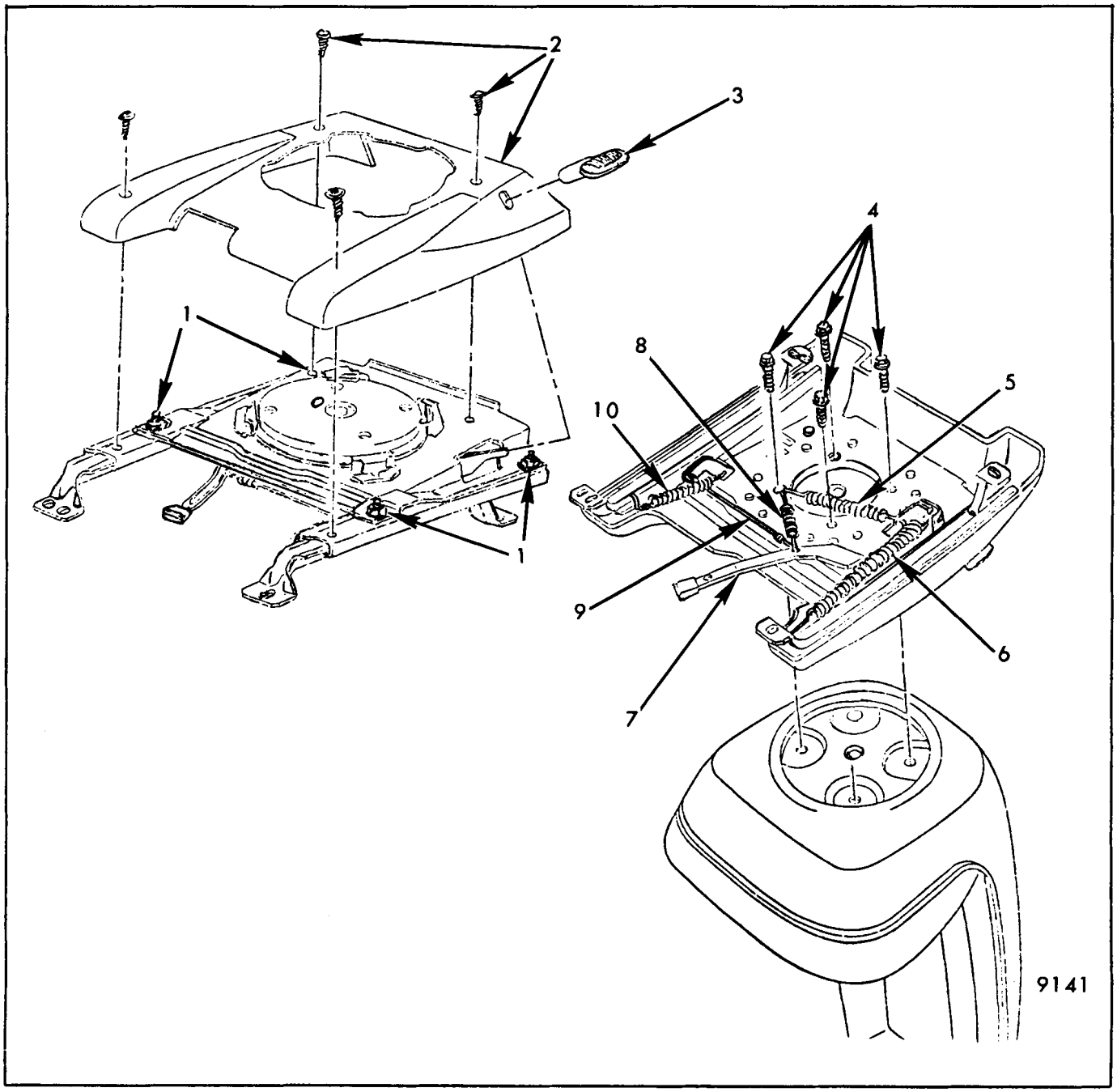


Fig. 9-22-Swivel Shell Bucket Seat, Swivel and Adjuster Cover, Swivel Assembly and Adjuster Assembly

1. Swivel Assembly-to-Adjuster Bolts
2. Swivel Cover and Cover Screws
3. Swivel Control Knob
4. Shell Bucket-to-Swivel Screws
5. Swivel Control Lock Lever Spring
6. Outer Adjuster Assist Spring
7. Adjuster Lock Control Lever
8. Adjuster Lock Control Lever Spring
9. Adjuster Lock Control Wire
10. Inner Adjuster Assist Spring

4. Disconnect feed wire harness from actuator motor.
5. Remove screws that secure motor support to seat bottom frame and remove motor with attached support from seat frame.
6. Remove screws securing motor to motor support bracket and remove motor assembly.
7. To install, reverse removal procedure. Check for proper seat operation to extreme limits of travel.

HORIZONTAL JACKSCREW AND/OR GEARNUT ASSEMBLY - Power Operated Two-Way Seats

Removal and Installation (Refer to Fig. 9-23)

1. Remove front seat assembly with adjusters attached and place upside-down on a clean, protected surface.

   NOTE: Adjusters should be in a rearward position. If adjuster from which jackscrew or gearnut is being removed is not in a rearward position, operate gearnut manually with a small screwdriver to move rearward.

2. Detach power drive cable from gearnut to be removed.

3. Remove retainer securing jackscrew front support crosspin to adjuster front pedestal and remove crosspin.

4. With adjuster upper channel in a rearward position slide upper channel forward until jackscrew front support is out from between adjuster front pedestals; then unscrew jackscrew out of gearnut.

5. As a bench operation, unscrew jackscrew front support locknut; then remove spacers and support from jackscrew.

6. To remove gearnut, remove two shoulder screws (use clutch type screwdriver) securing gearnut to support and remove gearnut from support.

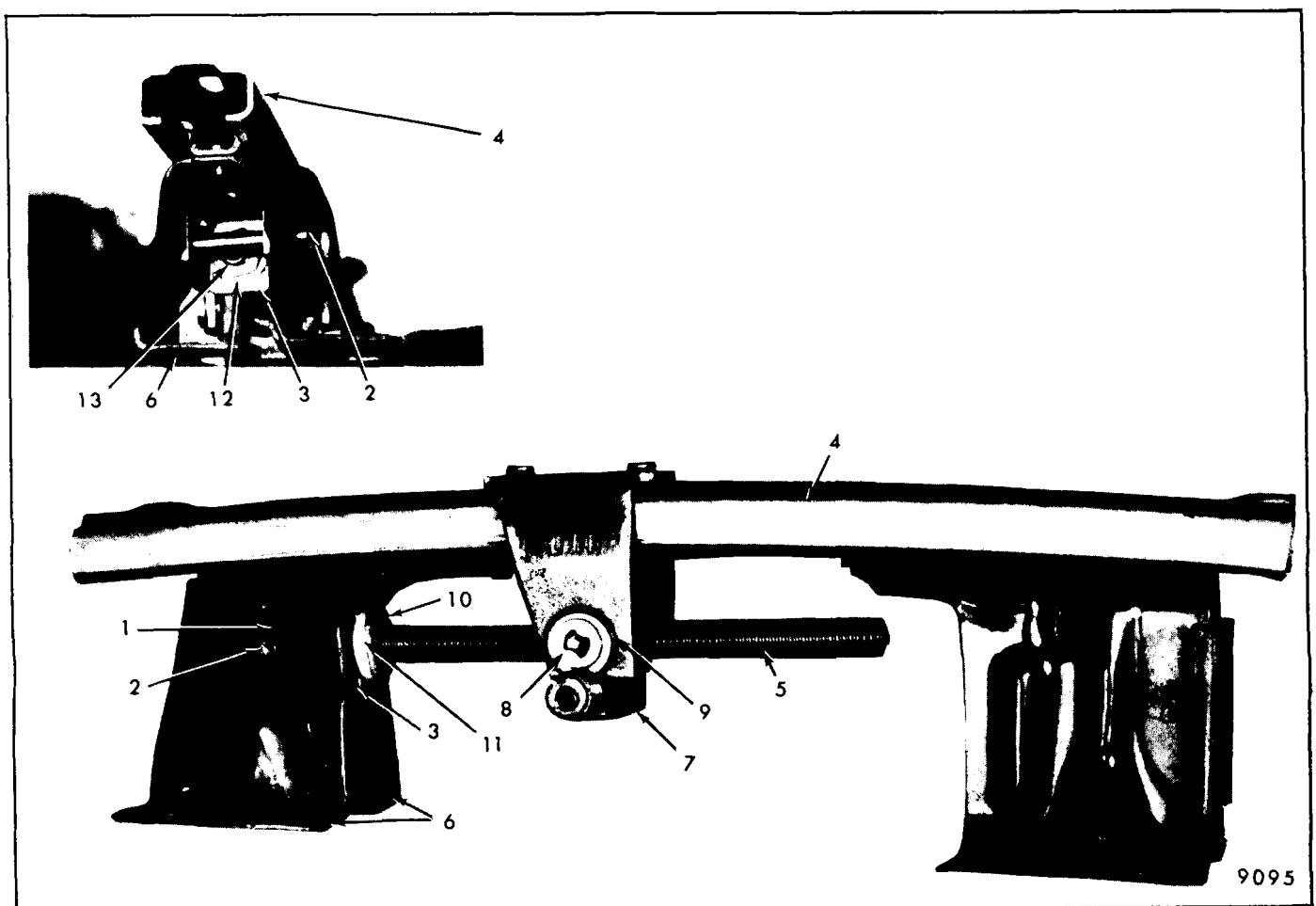


Fig. 9-23-Power Operated Horizontal (Two-Way) Seat Adjuster Components

1. Jackscrew Front Support Cross Pin Retainer
2. Jackscrew Front Support Cross Pin
3. Jackscrew Front Support
4. Adjuster Upper Channel
5. Adjuster Jackscrew
6. Adjuster Lower Channel Front Pedestals
7. Horizontal Gearnut Assembly
8. Gearnut Shoulder Screw (Clutch Type)
9. Gearnut Rubber Mounting Washer
10. Jackscrew Front Washer at Support
11. Jackscrew Spacer at Support
12. Jackscrew Grommet
13. Jackscrew Nut

7. To install, reverse removal procedure. Prior to installing seat assembly in body, be sure adjusters are in phase. see step 5 under Front Seat Assembly - Removal and Installation.

PLASTIC SLIDES - Power Two-Way Seat Adjusters

Removal and Installation

1. Remove front seat adjuster to be serviced from front seat assembly. (See Front Seat Adjuster Assembly - Removal and Installation procedures.)

2. Using a suitable tool (preferably a clutch type screwdriver or equivalent), remove two shoulder screws (clutch type) securing gearnut to upper channel to seat adjuster assembly (Fig. 9-23).

3. Slide lower track and support base portion of seat adjuster, with attached jackscrew and gearnut, forward until it disengages from upper channel assembly. The four plastic slides may now be disengaged from positioning slots on lower track.

4. To install, reverse removal procedure making sure that groove in plastic slide slips onto lower track with thinner section of slide protruding above surface of track.

SIX-WAY SEAT ADJUSTER MAJOR COMPONENTS

The following service procedures cover replacement of the major component parts of the power operated six-way seat adjusters.

ELECTRIC MOTOR

Removal and Installation

1. Remove front seat assembly as previously described and place upside-down on a clean, protected surface.

2. Disconnect motor feed wires from motor control relay.

3. On full width seats remove motor and transmission support-to- seat frame attaching bolts.

4. Remove motor-to-support attaching screws; then move motor assembly outboard (away from transmission) sufficiently to disengage motor from rubber coupling.

5. To install, reverse removal procedure making sure rubber coupling is properly engaged at both motor and transmission. Check that seat harness is properly secured to seat. Check operation of seat to full limits of travel.

HORIZONTAL ACTUATOR - Six-Way Seat Adjusters

Removal and Installation

Refer to Figures 9-24 and 9-25.

1. Remove seat assembly from body as previously described and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat as previously described.

2. At top of adjuster remove front and rear vertical gearnut attaching nut and tension spring.

3. Lift front of adjuster upper channel upward, then remove screws securing horizontal actuator to adjuster upper channel assembly and remove actuator from adjuster.

4. To install, reverse removal procedure. When installing horizontal actuator, be sure actuator drive gear is fully engaged with teeth on lower channel. With actuator attaching screws tight, there should be no free motion between upper and lower adjusting channels. Adjust actuator as required until all free motion between channels has been removed (see Power Six-Way Seat Adjuster Horizontal Actuator Adjustment under Front Seat Adjustments). Be sure seat adjusters are in phase before installing seat assembly into body. See step 5 under Front Seat Adjuster Assembly - Removal and Installation.

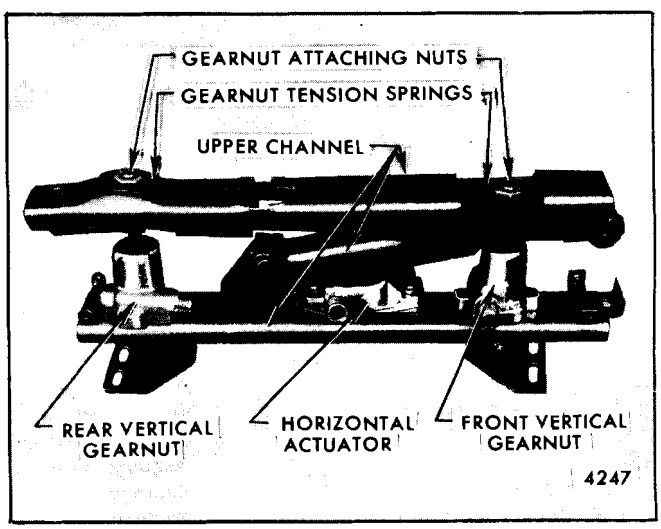


Fig. 9-24-Six-Way Seat Adjuster - "B, C and E" Styles

FRONT AND/OR REAR VERTICAL GEARNUT - Six-Way Seat Adjusters

Removal and Installation

Refer to Figures 9-24 and 9-25.

1. Operate seat to full forward position.
2. Remove front seat assembly from body as previously described and place upside-down on a clean, protected surface. Remove affected adjuster asembly from seat as previously described.
3. At top of adjuster, remove vertical gearnut attaching nut and tension spring.
4. Lay adjuster on its side and remove vertical gearnut attaching screws; then remove gearnut from adjuster.

   NOTE: If seat was not in forward position when removed from car, it may be necessary to manually operate the horizontal actuator to gain access to vertical gearnut attaching screws on bottom of lower channel.
5. If vertical gearnut is being replaced with a new part, transfer gearnut shoulder nut and tension spring to new gearnut assembly.
6. To install, reverse removal procedure. Be sure adjusters are in phase before installing seat assembly into body. See step 5 under Front Seat Assembly - Removal and Installation.

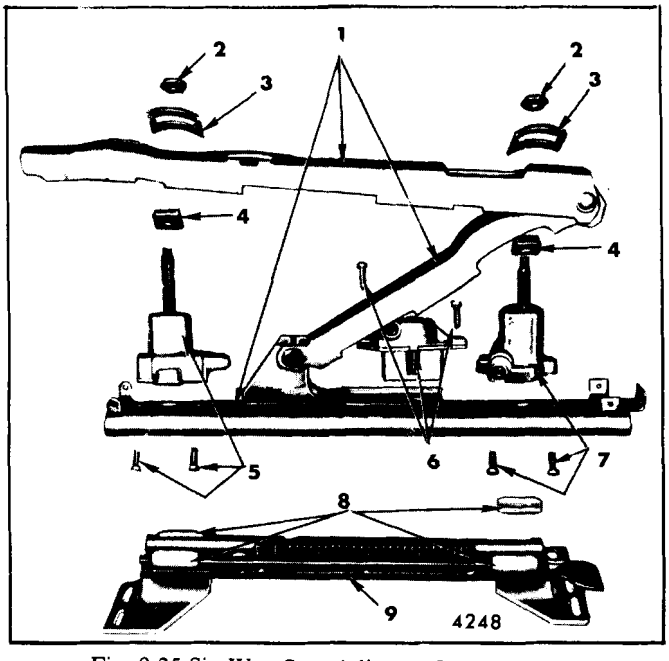


Fig. 9-25-Six-Way Seat Adjuster Components

1. Upper Channel Assembly
2. Upper Channel to Gearnut Nuts
3. Gearnut Tension Springs
4. Gearnut Shoulder Nuts
5. Rear Vertical Gearnut and Screws
6. Horizontal Actuator and Screws
7. Front Vertical Gearnut and Screws
8. Plastic Shoes
9. Lower Channel

LOWER OR UPPER CHANNEL AND PLASTIC SLIDES - Six-Way Seat Adjusters

Removal and Installation

Refer to Figures 9-24 and 9-25.

1. Remove seat assembly from body as previously described and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat as previously described.
2. At top of adjuster, remove vertical gearnut attaching nuts and tension springs. Lift adjuster upper channel upward; then remove horizontal actuator attaching screws and remove horizontal actuator from adjuster.
3. Slide lower channel until it is completely disengaged from upper channel. Plastic slides may be removed from lower channel.
4. To install upper and lower channel, reverse removal procedure.

   a. If replacing lower channel, transfer plastic shoes to new lower channel. Check fit of channels with transferred shoes. If fit is loose, install oversize plastic shoes.

   b. If replacing upper channel, transfer horizontal actuator and vertical gearnuts to new upper channel.

      NOTE: Make sure horizontal rack gear of lower channel and sliding surface of upper channel are properly lubricated with Lubriplate (630AAW) or equivalent.
5. To install, reverse removal procedure. When installing horizontal actuator, be sure actuator drive gear is fully engaged with teeth on lower channel. With actuator attaching screws tight, there should be no free motion between upper and lower adjusting channels. Adjust actuator as required until all free motion between channels has been removed (see Power Six-Way Seat Adjuster Horizontal Actuator Adjustment under Front Seat Adjustments). Be sure seat adjusters are in phase before installing seat assembly into body. See step 5 under Front Seat Adjuster Assembly - Removal and Installation.

   Check operation of seat to limits of both horizontal and vertical travel.

HORIZONTAL AND VERTICAL DRIVE CABLES - Six-Way Seats

Removal and Installation

1. On 60-40, 50-50, 45-55 and bucket seats, remove front seat assembly from body with attached adjusters, motor and transmission and place upside-down on a clean, protected surface.

2. If removing the short front vertical or horizontal cables on the right side of split cushion or bucket seats, remove right seat adjuster. Detach cables from seat adjuster by squeezing oblong plastic connector and pulling cable off adjuster.

3. Remove screws securing horizontal and vertical cable end plate on side of transmission from which cables are being removed and remove cables and end plate from transmission assembly; then disengage cables from end plate.

4. To install horizontal and vertical cables, reverse removal procedure. Install color coded drive cables as shown in Figures 9- 20 and 9-21. Make sure cables are properly engaged with transmission prior to installing transmission end plate. Check operation of seat adjusters to limits of horizontal and vertical travel.

TRANSMISSION - Six-Way Seats

Removal and Installation

1. Remove front seat assembly with attached adjusters, motor and transmission as previously described and place upside-down on a clean, protected surface.

2. On split cushion and bucket seats, remove right seat adjuster (see Seat Adjuster - Removal and Installation). On "B and C" style full width seat, detach transmission stabilizer support from transmission (see Fig. 9-20).

   NOTE: Using long nose pliers, disengage locking tab on harness portion of wire harness connector at transmission; then disengage connector from transmission.

3. Remove transmission to support attaching screws and screws securing cable end plate on both ends of transmission; then disengage transmission from motor drive coupling and cables and remove transmission from seat assembly.

4. To install, reverse removal procedure. Install colored coded drive cables as shown in Figures 9-20 and 9-21. Make sure cables are properly engaged with transmission prior to installing transmission end plates. Check operation of transmission and seat adjusters to limits of horizontal and vertical travel.

DISASSEMBLY AND ASSEMBLY OF TRANSMISSION

1. Remove front seat adjuster transmission from seat assembly.

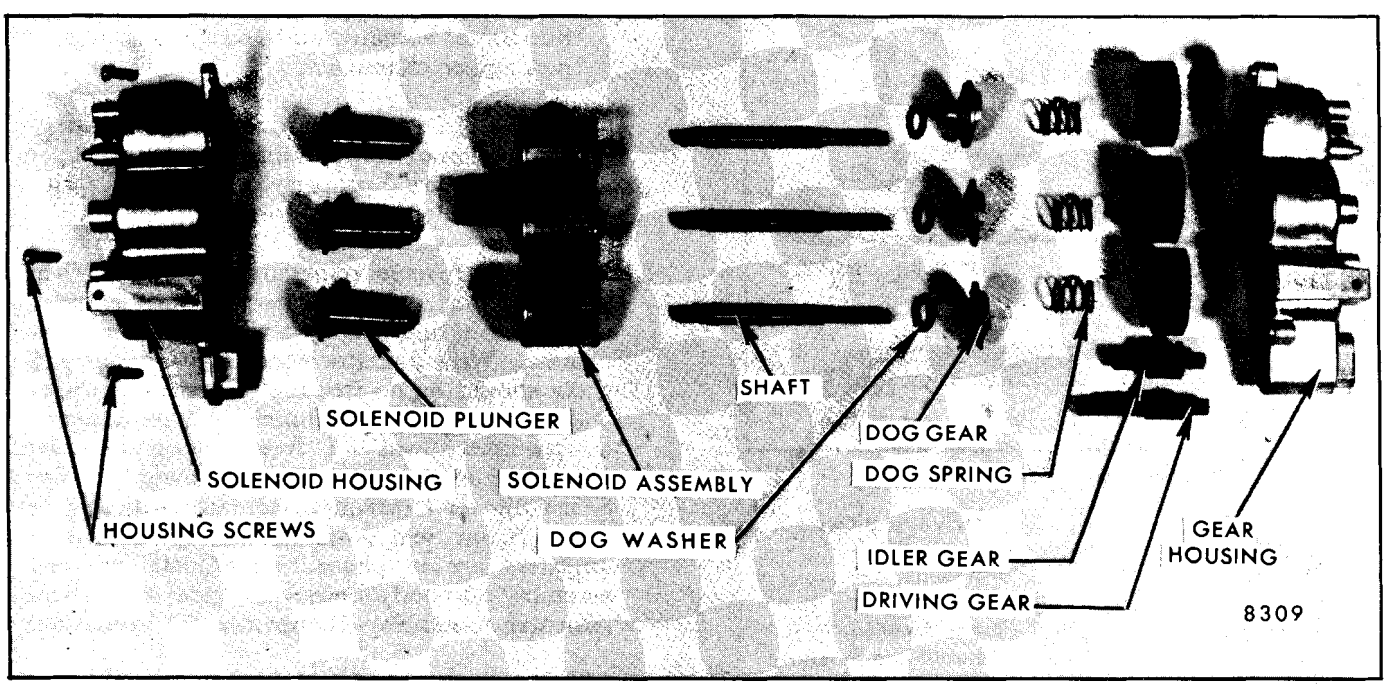


Fig. 9-26-Six-Way Seat Adjuster Transmission Component Parts for 60-40, 50-50, 45-55 and Bucket Seats

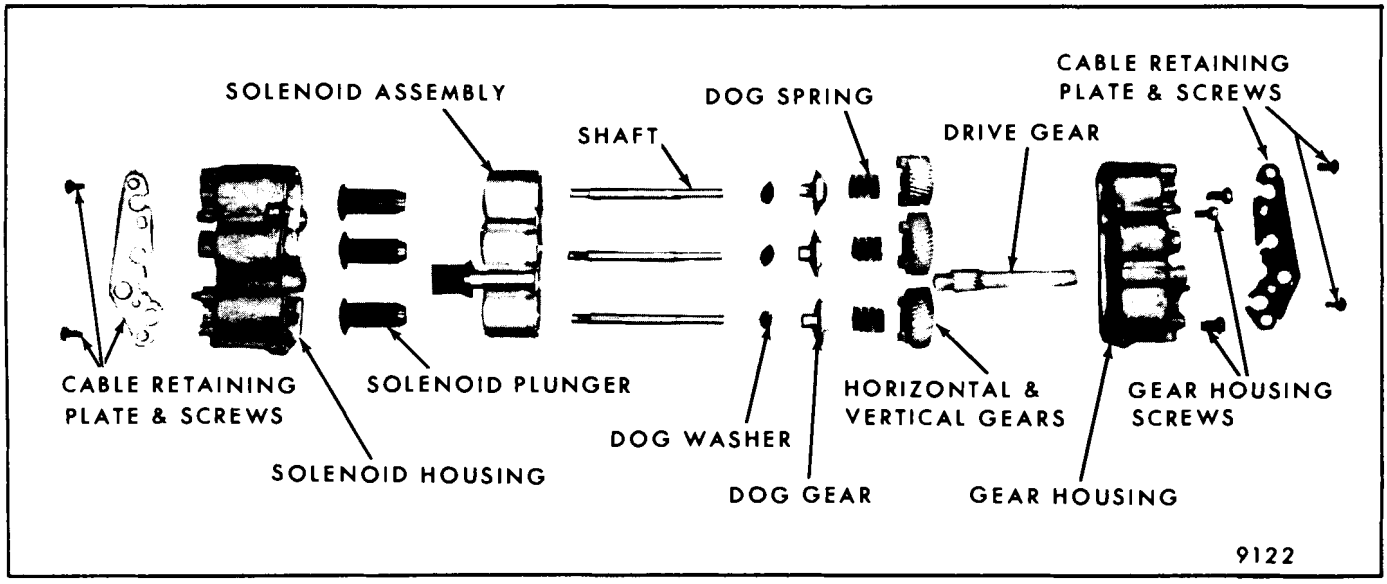


Fig. 9-27-Six-Way Seat Adjuster Transmission Component Parts - Full Width Bench Seat

2. Remove screws securing rear gear housing to the solenoid housing; then carefully separate housings and remove component parts of transmission assembly (Fig. 9-26 or 9-27).

3. To assemble transmission, reverse removal procedure.

NOTE: Prior to or during installation, lubricate frictional surfaces of driving gear, idler gear, large gears, dog washers, gear shafts and solenoid plungers with Lubriplate (630AAW) or equivalent.

FRONT SEAT BACK HEAD RESTRAINT - "B and C" Full Width, 60-40, 50-50 Seat (Driver or Passenger Side)

Description

Head restraints for the standard full width, 60-40, 50-50 or 45-55 seat are single post type, which can be adjusted to two positions (low or high). To remove head restraints it is necessary to follow the procedure described below:

NOTE: A head restraint lock releasing tool, shown in Figure 9-28, can be made from 20 gauge (0.9 mm) steel stock. The edge of this tool will release the spring lock tab on 1975 and 1976 "B, C, E and D" body styles; the flat surface will release the spring lock tab on 1975, 1976 and 1977 "A and X" body styles.

A head restraint lock releasing tool, shown in Figure 9-29 can be made from 0.4 mm (1/64") flexible steel strap. The flat surface of this tool will release the spring lock tab on 1977 "B and C" body styles.

Removal and Installation

1. Detach the shoulder strap loop guide from the guide escutcheon as described under Shoulder Belt Guide - Removal and Installation and illustrated in Figure 9-10).

2. Raise head restraint past full up detent position to antiremoval lock position; then push head restraint downward approximately 3/8".

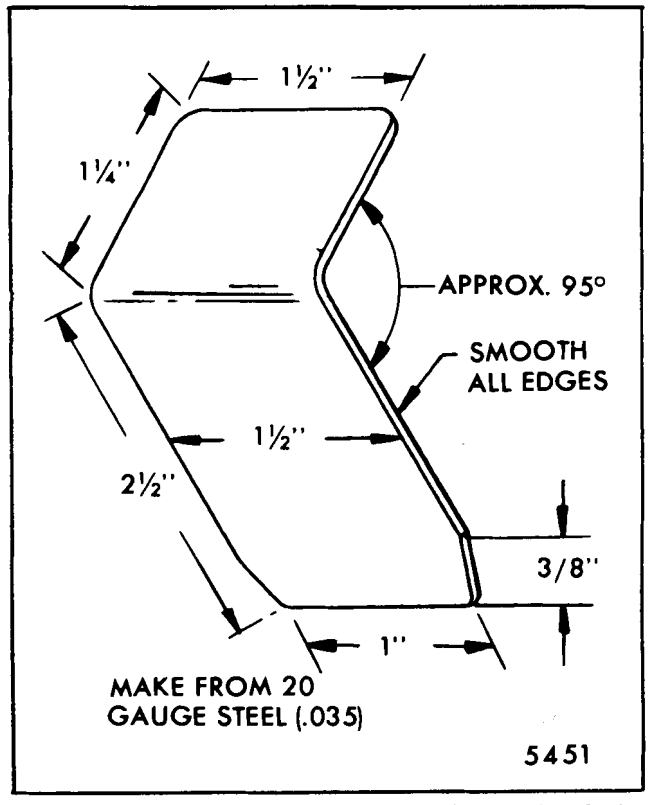


Fig. 9-28-Head Restraint Antiremoval Lock Releasing Tool - 1975, 1976 and 1977 "A, E and X" Styles

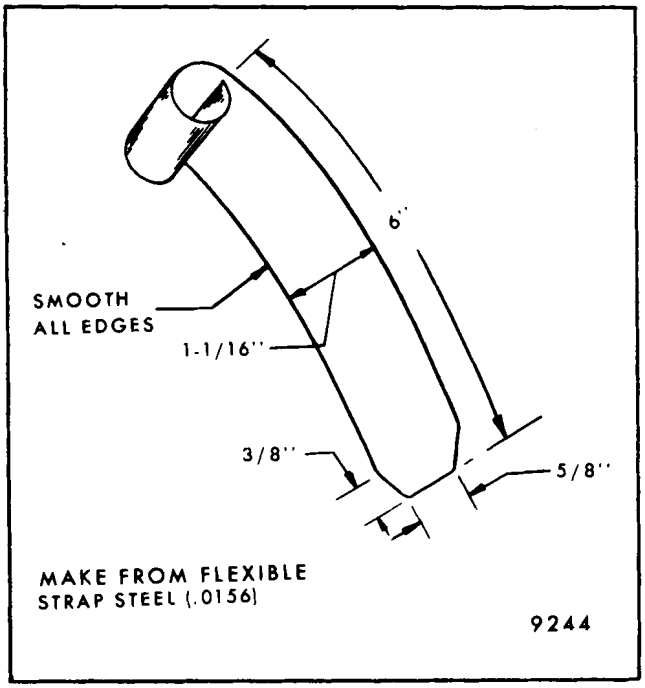


Fig. 9-29 - Head Restraint Antiremoval Lock Releasing Tool - 1977 "B and C" Body Styles

3. On "A, E and X" styles, insert lock release tool (Fig. 9-28) or suitable flat piece of metal 1-9/16" wide down front surface of head restraint post approximately 2-1/2"; then lift head restraint out of guide tube.

   On "B and C" styles, insert a lock release tool (see Fig. 9- 29) down front surface of head restraint post approximately 4- 1/2"; then lift head restraint out of guide tube.

4. To install head restraint, insert post into guide and push down to full down position. Check that lock spring engages and prevents head restraint from being removed.

FRONT SEAT BACK HEAD RESTRAINT LOCK AND ESCUTCHEON ASSEMBLY - "A, E and X" Styles

Removal and Installation

1. Remove head restraint as previously described.

2. Remove lock and escutcheon assembly attaching screws and remove lock and escutcheon (Fig. 9-30).

3. To install, reverse removal procedure. Check operation of head restraint.

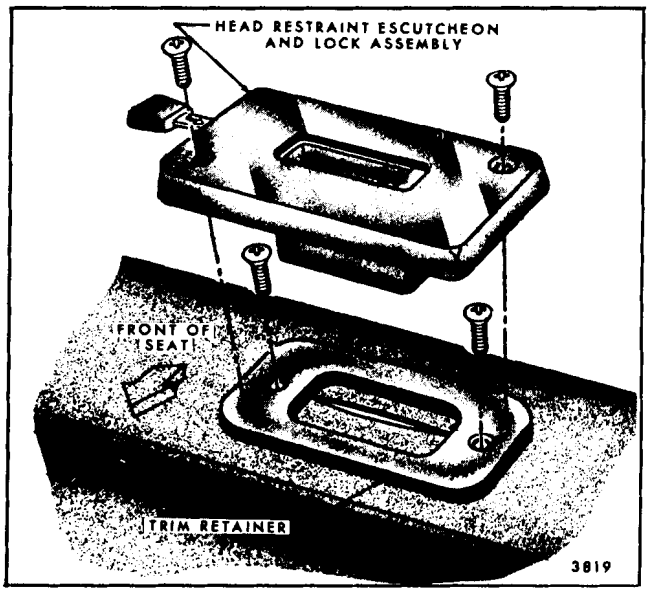


Fig. 9-30-Front Seat Back Head Restraint Retainer, Lock and Escutcheon - "A, E and X" Styles

FRONT SEAT BACK ASSEMBLY - "A and X" Four-Door Styles with Full Width Seat

Removal and Installation (Refer to Fig. 9-31)

1. Remove front seat assembly from body and place upside-down on a clean, protected surface. Remove seat side panels where present. On seats where seat back panel covers seat back frame attaching bolts, detach or remove seat back panel.

2. Remove hog rings securing lower edge of seat back trim facing to seat cushion springs.

3. Raise lower edge of seat back trim, detach fiberboard breakover foundation and bend out tabs on seat back frame securing seat cushion springs. Disengage springs from tabs.

4. At each side of seat, remove hog rings securing lower edge of seat back trim to seat bottom frame. Raise or turn back seat back trim to expose bolts securing seat back frame to seat cushion frame. Where seat back lighter or courtesy light is present, disconnect wire from seat cushion frame.

5. Place seat assembly in upright position. Then with a helper holding seat back assembly, remove seat back attaching bolts on each side of seat and remove seat back assembly.

6. To install seat back assembly, reverse removal procedure.

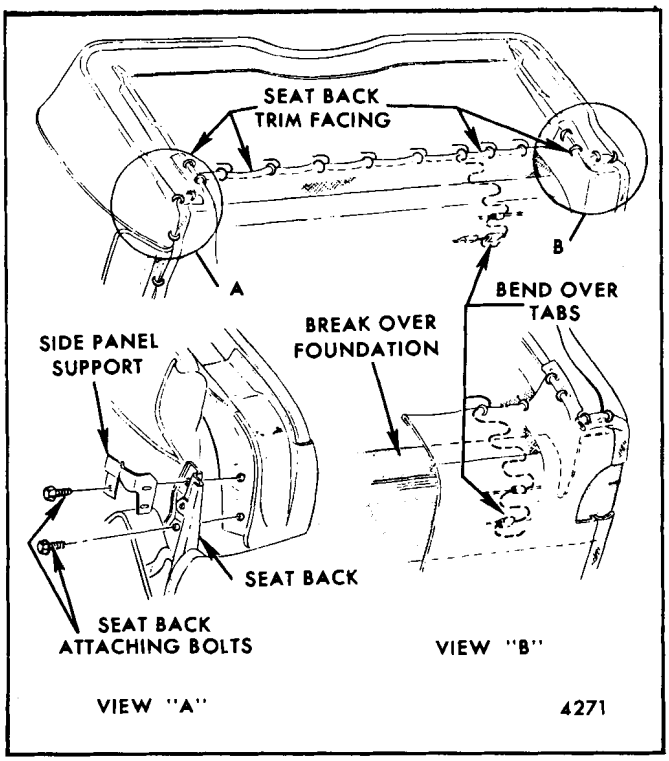


Fig. 9-31-Front Seat Back Attachment - "A and X" Four-Door Styles with Full Width Conventional Seat

FRONT SEAT BACK ASSIST STRAPS - Cadillac, Oldsmobile and Buick Styles

Removal and Installation

1. Carefully pry (snap) off assist strap escutcheon inserts. Apply tape over end of tool to prevent damaging finish on insert or escutcheon.
2. Remove assist strap and escutcheon attaching screws and remove assist straps and escutcheons from seat back.
3. To install assist straps, reverse removal procedure.

FRONT SEAT BACK ASSIST STRAP AND PANEL ASSEMBLY - Cadillac Eldorado

Removal and Installation

To remove and install the front seat back assist strap, front seat back panel or related components, remove components in numerical sequence as shown in Figure 9-32.

NOTE: To remove assist strap side escutcheons, carefully pry escutcheon off retainer with a flat-bladed tool. Apply tape over end of tool to prevent damaging finish on escutcheon or retainer.

FRONT SEAT BACK ASSEMBLY - "A and X" Two-Door and Four-Door Styles with Notch Down Center Armrest or 60-40 Seats

Removal and Installation - Refer to Figures 9-33 and 9-34

1. Remove front seat assembly from body and place upside-down on a clean, protected surface. Remove seat cushion side panels, where present. On 60-40 seats, remove seat cushion and seat back side panels.
2. Remove hog rings securing lower edge of seat cushion trim bottom facing to seat cushion springs and frame.
   a. On four-door style with full width seat (no center armrest), raise lower edge of seat back trim, detach breakover foundation, bend out tabs on seat back frame securing seat cushion springs and disengage springs from tabs (see Figure 9-31).
   b. On styles with folding seat backs, remove retainer securing seat back outer arm to hinge pin and disengage outer arm from hinge pin. Tilt seat back forward and upward to disengage seat back inner hinge pin from inner support (see Fig. 9-34, View "D").
   c. On "A and X" full width seat (no center armrest), remove hog rings securing lower edge of seat back trim to seat bottom frame. Turn up seat back trim side facings sufficiently to expose and remove bolts securing seat back frame to seat cushion frame; then disengage and remove seat back from seat cushion (see Fig. 9-31).
   d. On four-door styles with 60-40 seats, remove bolt securing seat back outboard hinge arm to lock-out bar (see View "A", Fig. 9-34) then tilt seat back forward and upward to disengage seat back inner hinge arm from inner hinge pin (see Fig. 9-34, View "D").
3. To install seat back assembly, reverse removal procedure. Install hinge arm retainer on hinge pin using 5/8" socket. If seat back outer arm retainer is damaged, install new retainer.

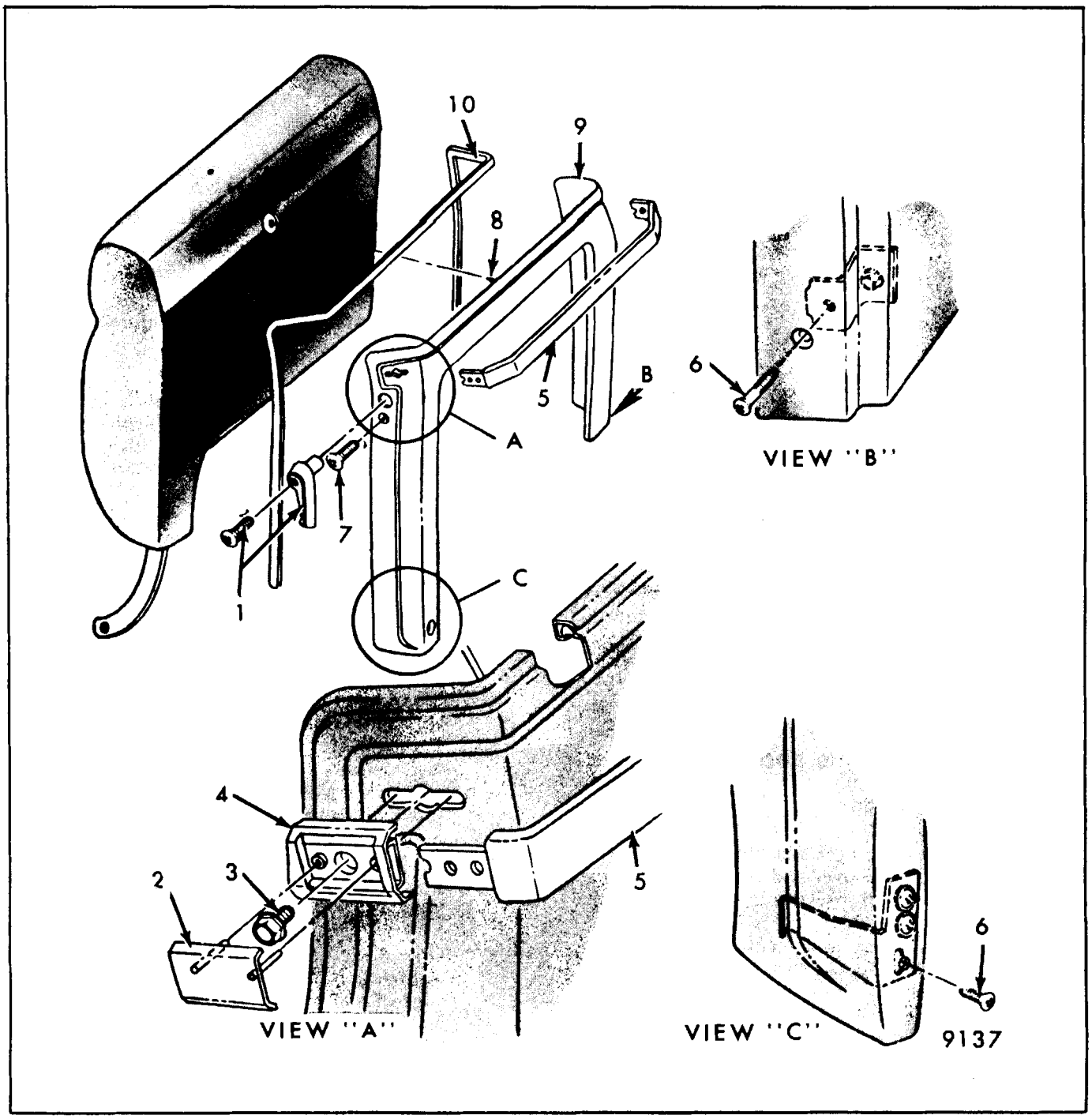


Fig. 9-32-Front Seat Back Assist Strap and Panel Assembly - Cadillac Eldorado

1. Seat Back Lock Handle and Screw
2. Assist Strap Escutcheon
3. Escutcheon and Strap Retainer Screw
4. Escutcheon and Strap Retainer
5. Assist Strap
6. Panel Lower Screws
7. Panel Upper Screws
8. Panel Fastener (Snap-On Type)
9. Seat Back Panel
10. Panel Finishing Molding - Right and Left

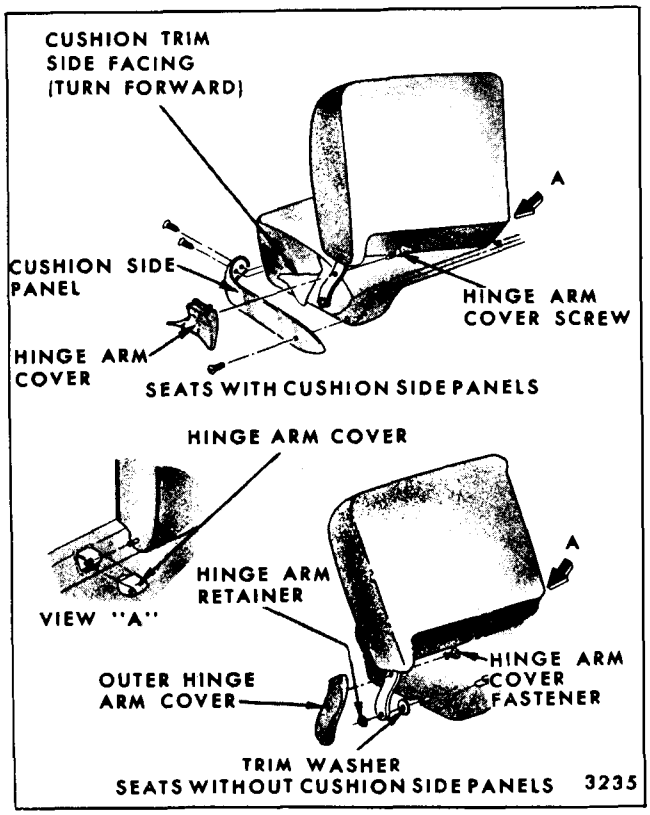


Fig. 9-33-Seat Back Attachment - "A and X" Two-Door Style Full Width Seat

FRONT SEAT BACK INERTIA LOCK ASSEMBLY - "B and C" Two-Door Styles

Two-door style front seats are equipped with a new inertia seat back lock system. This system allows the seat back to be tilted forward for access to the rear seat area without having to release a lock lever. On a sudden stop or if the front of the car is declined approximately 20 degrees or more, the seat back inertia locking system locks the front seat backs in an upright position.

A manually operated seat back inertia lock release lever is provided to allow release of the inertia lock (pendulum) when the front of the car is declined 20 degrees or more.

FRONT SEAT BACK INERTIA LOCK CHECK

Operation of the front seat back inertia lock may be checked as follows:

NOTE: When checking lock in either the IN VEHICLE CHECK or OUT OF VEHICLE CHECK, check lock release control by lifting the release control lever; then releasing lever. Lever must return to full down position with no evidence of binding or interference. Where required, replace lock assembly and repeat check after installation.

In Vehicle Check

1. With driver buckled in restraint system and with aid of an assistant in rear seat also buckled in restraint system holding sides of passenger seat back (near top of seat back) with arms stiff and body relaxed, drive vehicle forward between 10 and 15 mph; then quickly apply brakes to stop car as fast as possible without skidding wheels. Seat back inertia lock should lock at first locking position (top of seat back should not move forward more than 2").

   When performing this operation on driver's seat back, driver should lean slightly forward.

   If either driver or passenger seat back lock does not lock on first locking position, perform the following OUT OF VEHICLE CHECK.

Out of Vehicle Check

1. If seat is equipped with reclining seat backs, position seat backs in normal upright position. Remove seat assembly from car and place right side up on a clean surface.

2. Raise rear of seat until seat back is 6 degrees forward of vertical position (Fig. 9-35) and place blocks under rear of seat to hold seat in this position. Use "angle meter" as shown in Fig. 9-35. Angle meter can be purchased at hardware or department store.

3. Check seat back lock as follows:

   a. Manually apply sufficient rearward pressure to top of seat back until hinge arm firmly hits the rearward position stop, positioning back in normal upright position.

   b. With hand pressure at top of seat back, manually attempt to move seat back forward (seat back should be locked).

   c. With finger pressure lift the emergency release lever (seat back should release and pivot forward) release lever.

   d. Visually check that emergency release lever returns to normal position.

   e. Manually apply sufficient rearward pressure to return seat back against stop in normal upright position and reapply forward pressure checking for relock.

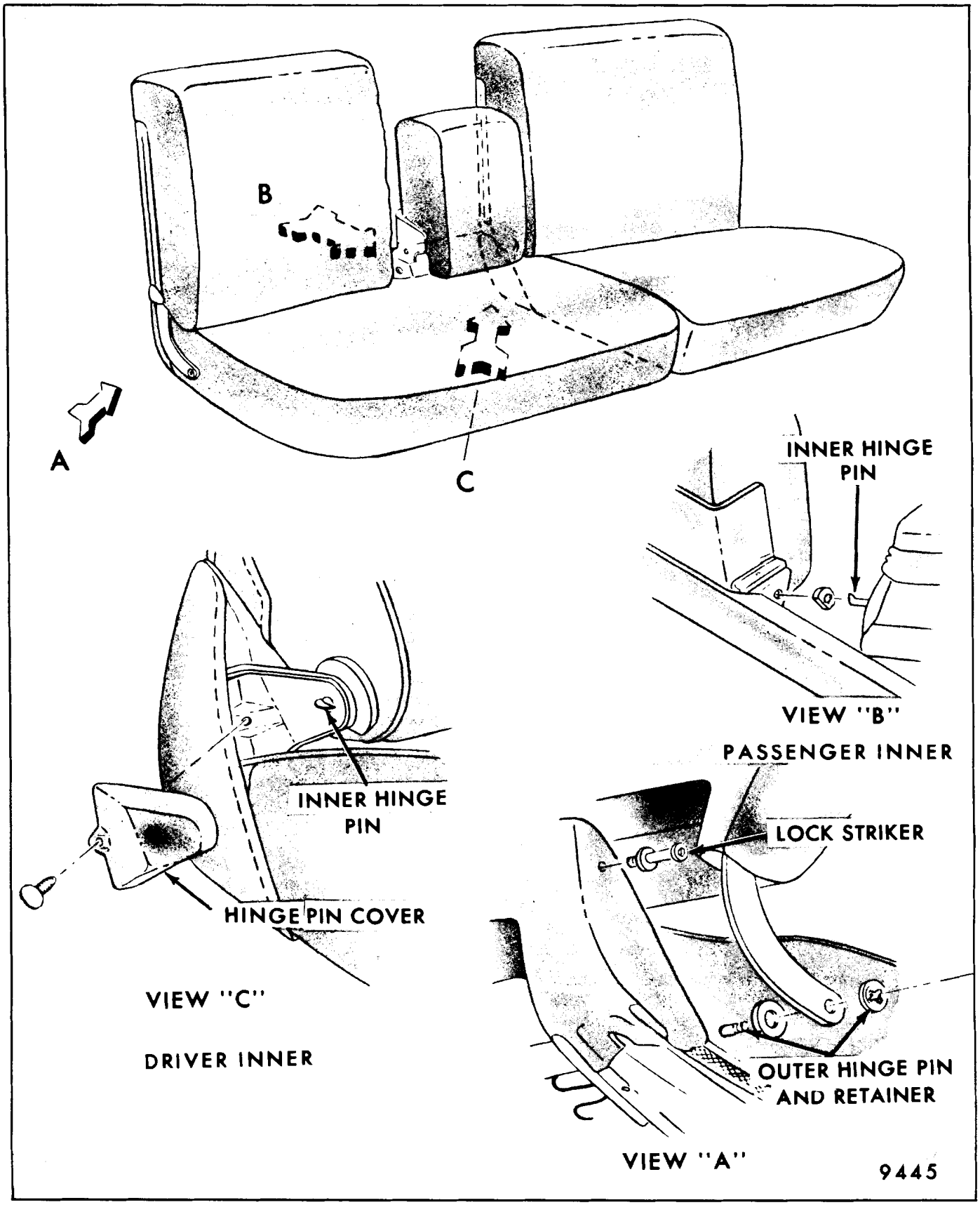


Fig. 9-34-Front Seat Back Attachment (Right or Left) - "A and X" Four-Door Style 60-40 Seat Shown (Typical for Four-Door Full Width Notch Down Center Armrest Seat)

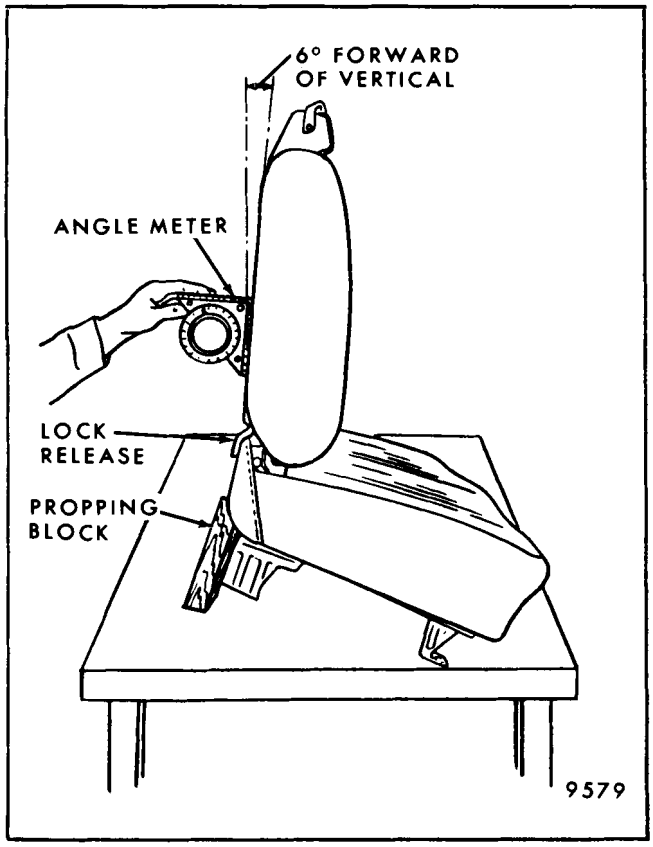


Fig. 9-35 - Front Seat Back Inertia Lock Check - Out of Vehicle

If lock does not lock, or release lever does not release lock, or release lever does not return to normal position, remove lock and install new lock assembly as described and illustrated under FRONT SEAT BACK INERTIA LOCK - Removal and Installation.

4. If installing a new lock, check that lock hook lever inside lock swings freely prior to installation. After installation check lock as described in steps 1 through 3.

Removal and Installation (Refer to Fig. 9-36)

1. Remove front seat assembly from car as described under FRONT SEAT ASSEMBLY - Removal and Installation and place on a clean protected surface.

2. Where present, remove seat cushion and seat back side panels. At seat back outer hinge arm, detach seat back and seat cushion trim sufficiently to gain access to seat back lock attaching bolts. On seats with reclining seat back, remove reclining actuator to seat back hinge pivot arm attaching bolt or spiral roll pin.

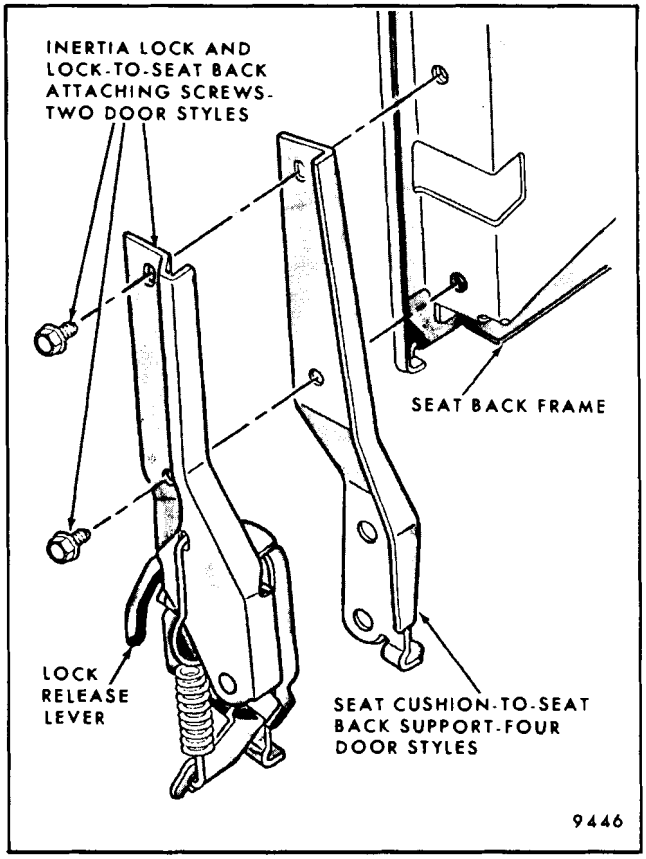


Fig. 9-36 - Front Seat Back Inertia Lock - "B and C" Body Two- Door Styles

3. Remove two bolts securing inertia lock assembly to seat back frame and remove lock assembly.

   NOTE: Care must be taken not to damage the inertia lock mechanism during removal or installation.

4. Prior to installing inertia lock assembly check that lock hook lever (inside lock) swings freely and that when release lever is actuated it returns to original position with no evidence of binding or interference.

5. To install inertia lock assembly, reverse removal procedure.

FRONT SEAT BACK ASSEMBLY (Right or Left) - "B, C and E" Full Width Split Back Seat with Notch Down Center Armrest, 45-55 and 60-40 Seat

Removal and Installation (Refer to Fig. 9-37)

1. On seat with seat cushion side panels, remove

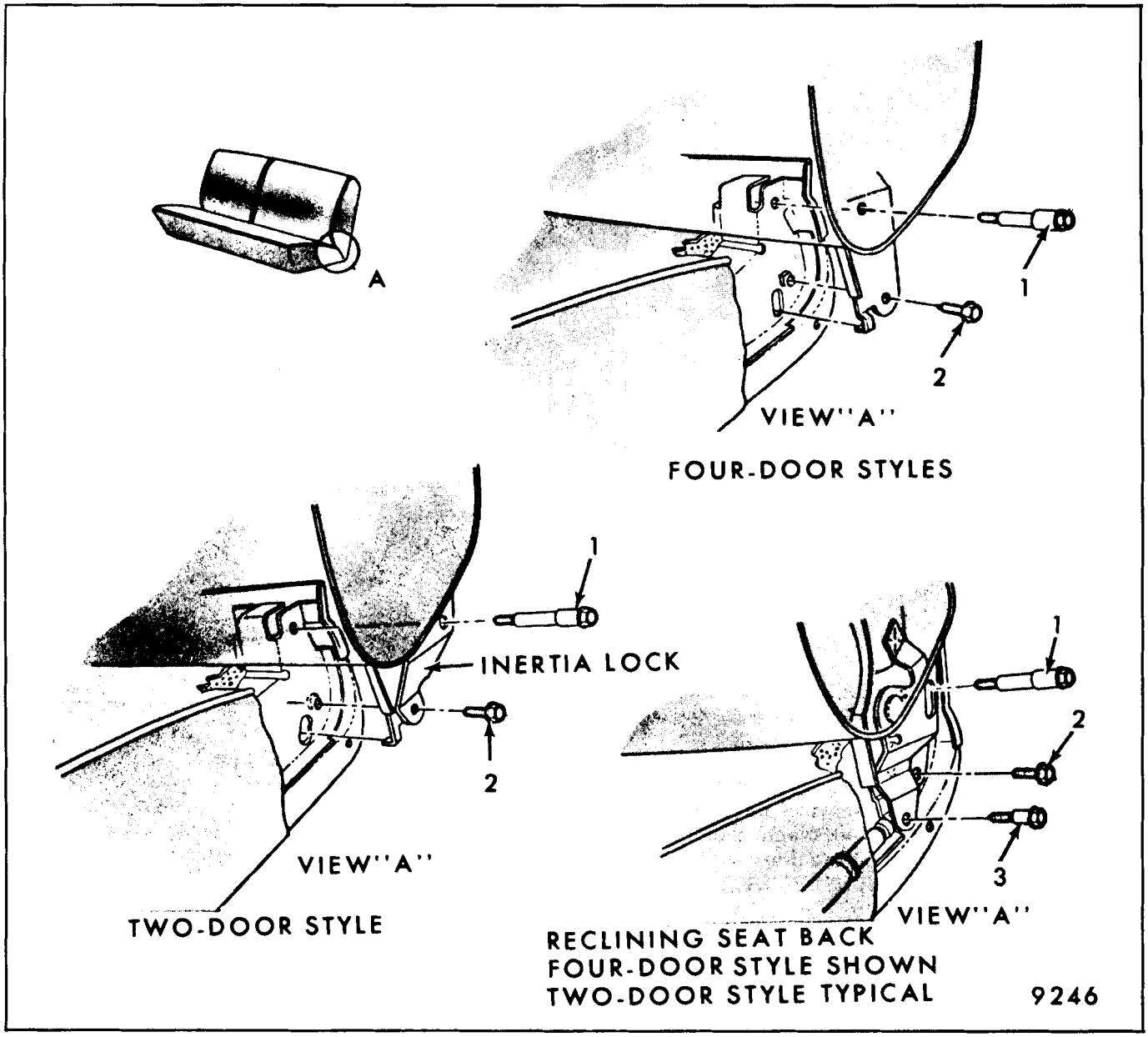


Fig. 9-37-Seat Back Attachment - "B, C and E" Two-Door Style Notch Down Center Armrest Seat and 60-40 Seat

side panels and detach seat cushion trim sufficiently to expose seat back outer hinge attachment.

On seats where seat back side panel covers outer hinge attachment, remove seat back side panel.

On seats with outer hinge arm cover or inner hinge pin cover, remove screw or detach fastener securing cover and remove cover.

2. Remove seat back outer arm or inertia lock attaching bolts. Then on "B and C" seats, tilt seat back forward and upward to disengage seat back inner arm from hinge pin and detach seat back from seat cushion. On Oldsmobile "E" style, move seat back straight inboard sufficiently to disengage seat back inner hinge pin from hole in hinge pin support on cushion frame.

NOTE: On Oldsmobile "E" seats equipped with electric seat back locks, lay seat back on seat cushion. From under front of seat, disconnect lock actuator feed wire from relay jumper wire and detach feed wire clip from strap securing wire to seat spring; then carefully pull feed wire up through seat cushion and remove seat back from body.

3. To install seat back assembly, reverse removal procedure. Torque seat back outer arm or inertia

lock attaching bolts 19 to 30 N·m (14 to 22 ft-lb).

CAUTION: *Check operation of seat back locks. On "B and C" seats equipped with inertia seat back locks, the seat back should remain unlocked except under conditions described under Seat Back Inertia Lock Check. On "E" body seats equipped with electric seat back locks, both seat back locks should lock in the upright position when the doors are closed. If either seat back does not lock, refer to Electric Seat Back Lock Diagnosis Chart.*

FRONT SEAT RECLINING BACK ASSEMBLY - Chevrolet Monte Carlo and Cadillac Seville 50-50 Seat with Manually Operated Reclining Seat Back

The Chevrolet 50-50 passenger reclining seat back can be adjusted approximately 20 degrees rearward of normal position.

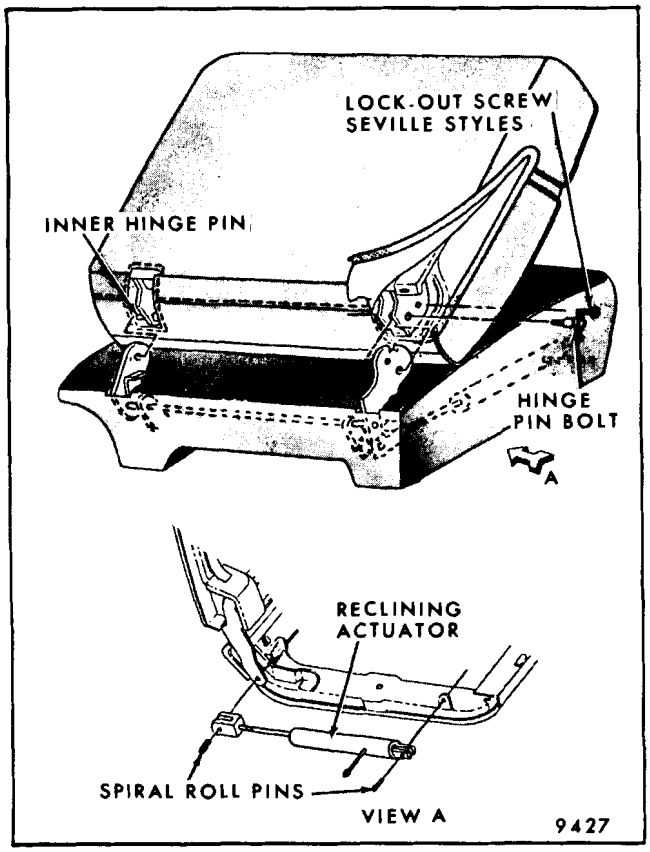


Fig. 9-38 - Front Seat Reclining Back Assembly - Chevrolet Monte Carlo and Cadillac Seville 50-50 Seat with Manually Operated Reclining Seat Back

The reclining unit consists of a spring-loaded friction type cylinder and plunger located in right side of the passenger seat frame. The reclining unit is controlled by a lever type handle at the right side of the seat cushion. When the control handle is raised, the unit is unlocked and with no pressure on the seat back the spring loaded unit will move the seat back forward or the seat back can be tilted rearward by applying rearward pressure on the back. The seat back can be pushed forward to normal position without actuating the control handle.

Removal and Installation (Refer to Fig. 9-38)

1. Remove seat back lock control handle and seat back side outer cover panel secured by four screws.
2. Detach seat back trim at outer side facing sufficiently to remove seat back hinge pin bolt.
3. Move seat back outward sufficiently to disengage inner hinge pin from cushion frame support; then remove seat back from seat cushion.
4. To install seat back assembly, reverse removal procedure.

FRONT SEAT MANUALLY OPERATED RECLINING BACK ASSEMBLY - Cadillac Eldorado 50-50 Seat

Removal and Installation (Refer to Fig. 9-39)

1. Remove passenger seat assembly and place on a clean protected surface.
2. Detach seat back outer trim sufficiently to gain access to seat back hinge attaching bolt.
3. Remove seat back hinge attaching bolt. Lift lock bolt hook to disengage from striker pin; then raise outboard side of seat back sufficiently to disengage hinge attaching pin on inboard side of seat back from hole in seat back support and remove seat back assembly.
4. To install seat back assembly, reverse removal procedure.

FRONT SEAT BACK RECLINING UNIT - Chevrolet Monte Carlo and Cadillac with Manually Operated Reclining Seat Back

Removal and Installation (Refer to Figs. 9-38 and 9-39)

1. Remove front seat assembly as described under Front Seat Assembly - Removal and Installation and place on clean protected surface.

2. Remove reclining control handle. Detach seat trim side facing from right of seat cushion frame and turn back trim sufficiently to gain access to reclining unit front and rear attaching pin retainers.

3. Position seat back in a full reclined position; then with a drift pin remove spiral roll pin securing front of reclining unit to support on cushion frame and rear of unit to seat back reclining pivot arm.

4. To install reclining unit, reverse removal procedure. To facilitate installation of reclining unit, push plunger into cylinder approximately 1/2" to shorten unit. This can be accomplished by placing plunger end of unit on floor and pushing down while actuating control lever; then when plunger has moved into cylinder approximately 1/2", release control lever to lock plunger in position. Check operation of reclining unit to full limits of travel.

FRONT SEAT POWER RECLINING SEAT BACK - "B, C, E, and K" Styles

A new power-operated reclining seat back is available on "B, C, E and K" styles. The power operated reclining seat back is operated by a small permanent magnet reversible electric motor. A drive cable extends from the motor to a reclining actuator which reclines the seat back approximately 20 degrees rearward of normal position. The new power operated reclining seat back is operated by a separate control switch located at the outboard side of the seat cushion and can be used in conjunction with either manual or power operated seat adjusters.

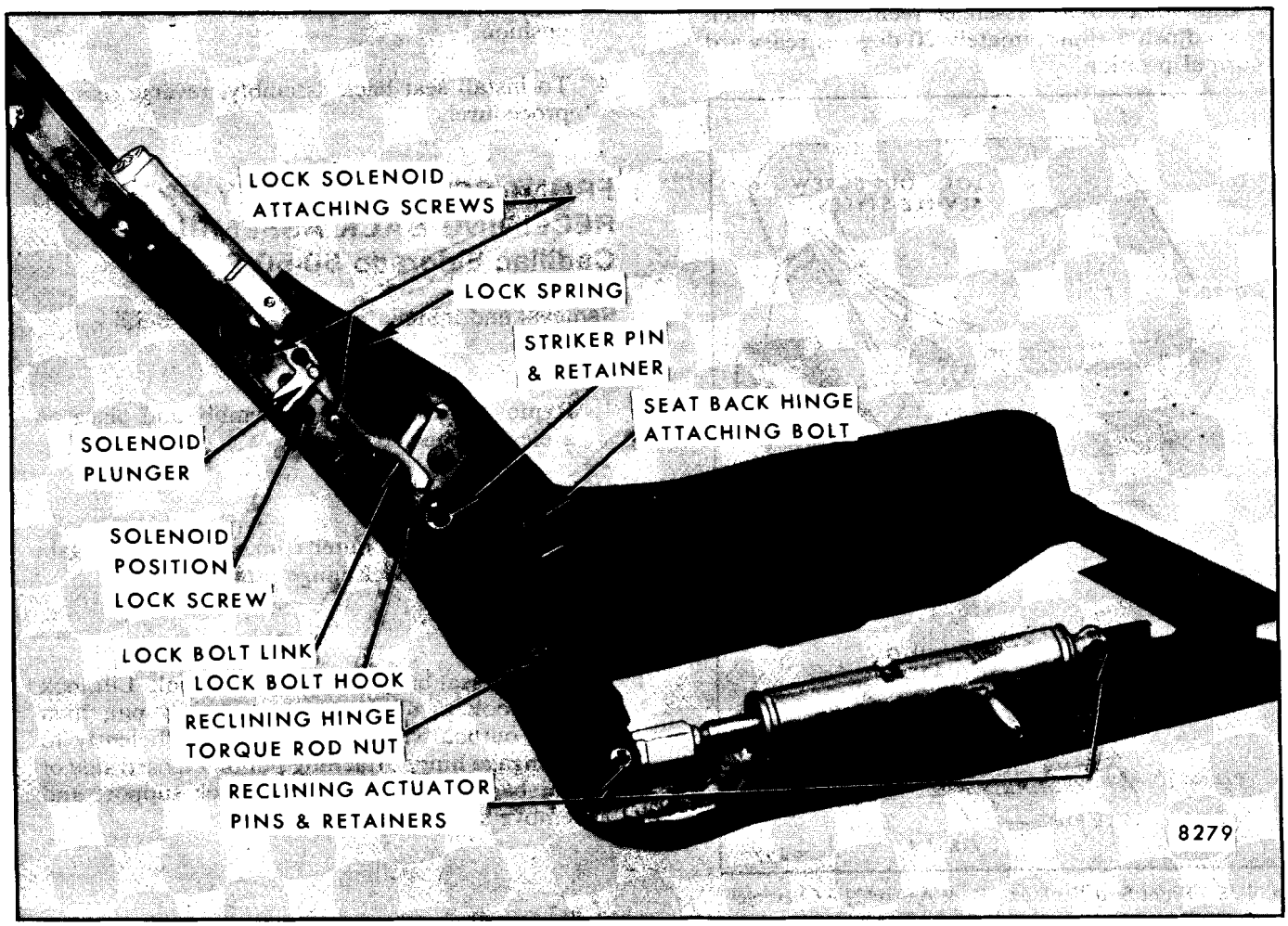


Fig. 9-39 - 50-50 Front Seat Manually Operated Reclining Back, Seat Back Lock and Reclining Actuator - Cadillac Eldorado

FRONT SEAT BACK POWER RECLINING ACTUATOR - Cadillac Eldorado and Seville with Power Actuated Reclining Seat Back

Removal and Installation (Refer to Fig. 9-40)

1. Remove front seat assembly as described under FRONT SEAT ASSEMBLY - Removal and Installation, and place upside-down on a clean protected surface.
2. Detach outboard side of cushion trim sufficiently to gain access to reclining actuator attaching screws and actuator coupling.
3. Unscrew reclining back drive cable from reclining actuator and detach cable from actuator.
4. Using a drift pin, drive out spiral roll pin securing reclining actuator coupling to seat back hinge arm.
5. Remove actuator-to-seat cushion frame attaching bolts and remove actuator assembly from seat.
6. To install actuator assembly, reverse removal procedure. Check operation of power reclining seat back to full limits of travel.

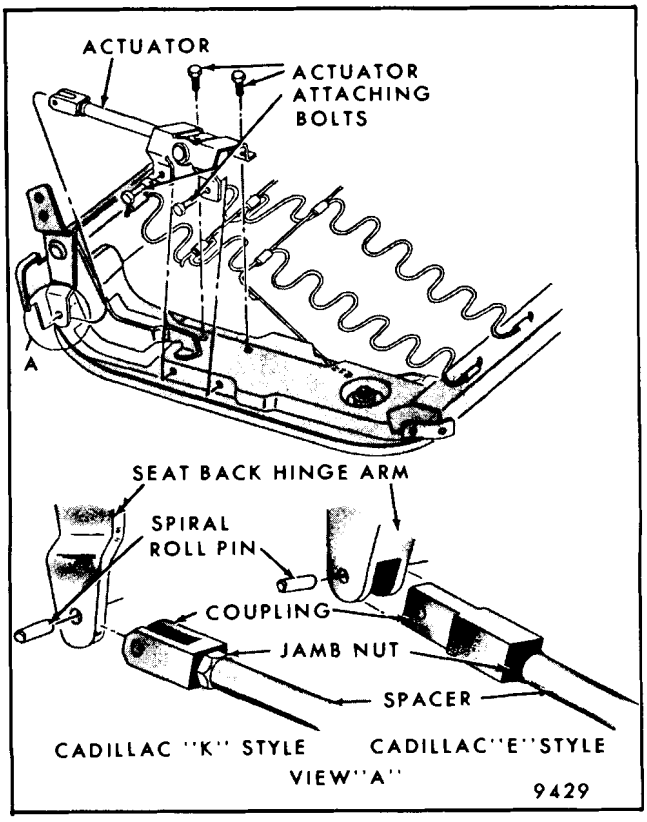


Fig. 9-40-Front Seat Back Power Reclining Actuator - Cadillac Eldorado and Seville

ACTUATOR ASSEMBLY-Disassembly and Assembly (Refer to Fig. 9- 41)

1. Remove actuator assembly from seat as previously described.
2. To remove jackscrew, spacer or coupling, remove jackscrew stop nut; then unscrew jackscrew, spacer and coupling out of gearnut assembly. Loosen coupling jamb nut and remove coupling from jackscrew.
3. To remove gearnut assembly, remove jackscrew, spacer and coupling as described in step 2; then remove clutch head screws securing gearnut assembly to support and remove gearnut.
4. To assemble actuator assembly, reverse disassembly procedure.

   NOTE: Prior to or during installation, lubricate jackscrew.

FRONT SEAT POWER OPERATED RECLINING BACK MOTOR AND RELAY - "B and C" Full Width Bench Seat

Removal and Installation (Refer to Figs. 9-40, 9-42 and 9-43)

1. Remove seat adjuster-to-floor pan attaching bolts and nuts. Tilt seat rearward sufficiently to gain access to reclining back motor and relay assembly.
2. To remove motor, disconnect motor feed wire connector, remove motor attaching screws, detach drive cable-to-motor coupling and remove motor.

   To remove motor relay, disconnect wire harness connector from relay, remove relay support to seat attaching screws and remove relay.
3. To install motor and/or relay, reverse removal procedure.

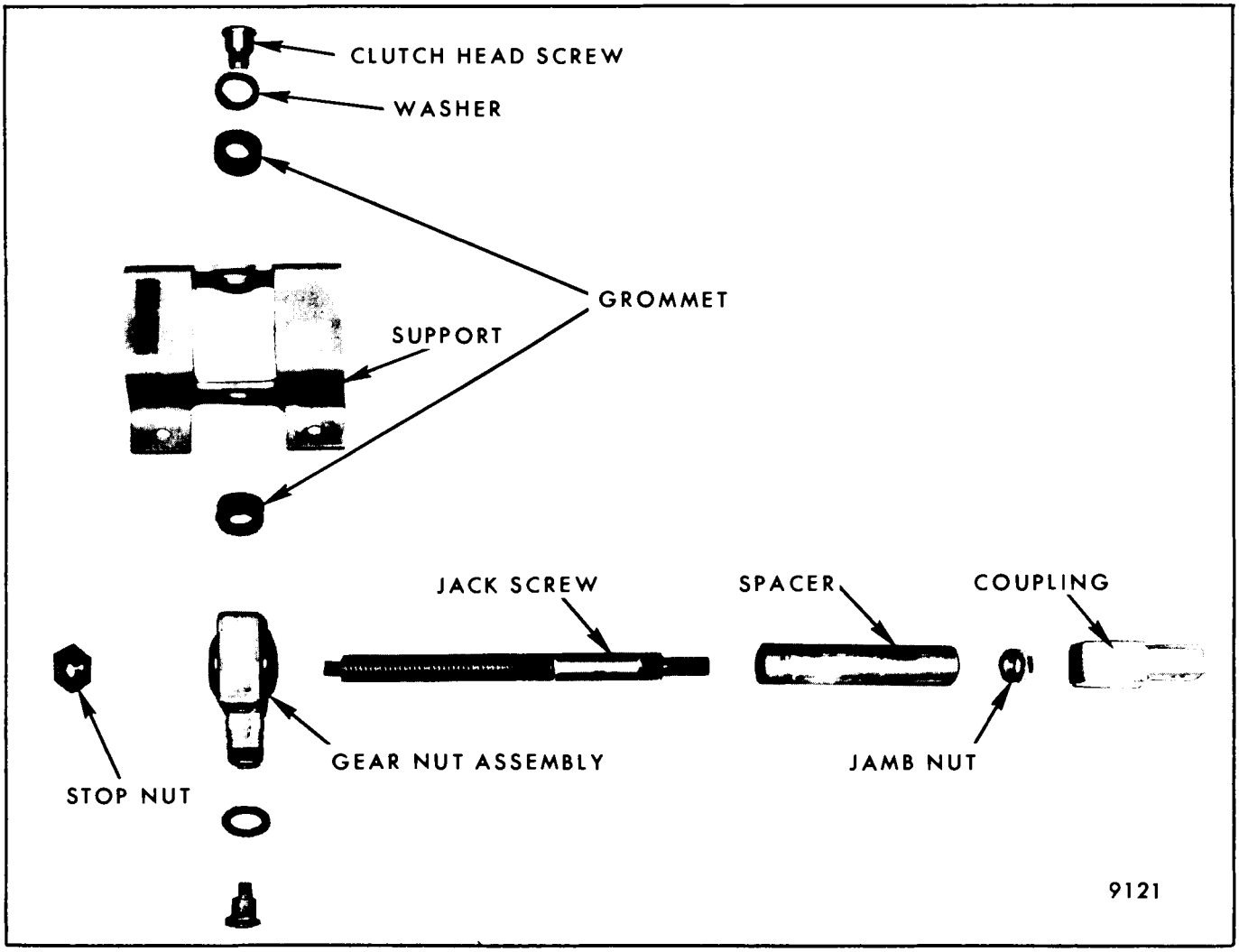


Fig. 9-41-Power Reclining Seat Back Actuator - Disassembly and Assembly

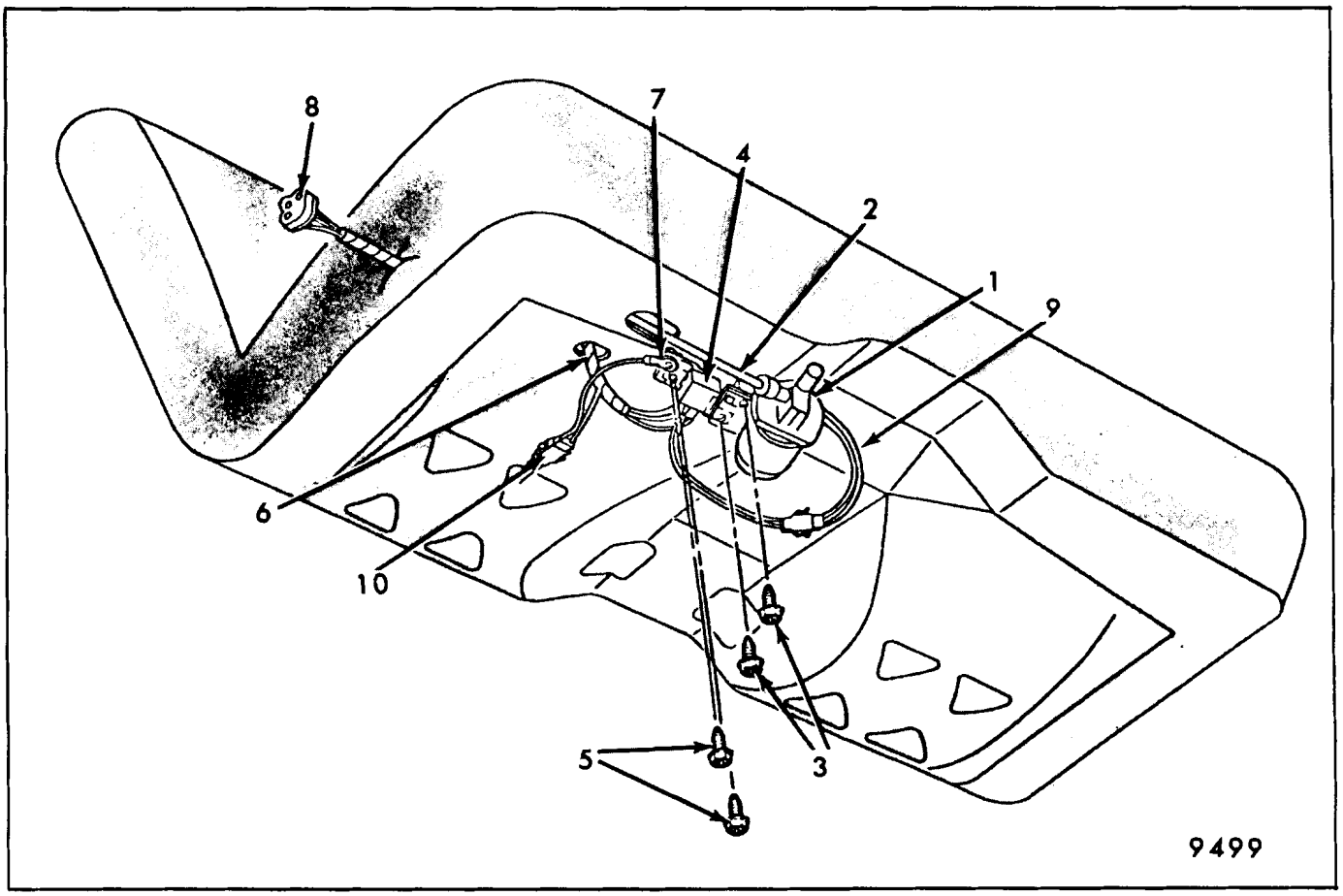


Fig. 9-42 - "B and C" Body Power Operated Reclining Seat Back Motor, Drive Cable, Relay and Wire Harness - Split Back Full Width Seat

1. Motor (PM - Permanent Magnet Type)
2. Motor-to-Reclining Actuator Drive Cable and Cable-to-Motor Coupling
3. Motor Support Attaching Screws
4. Motor Relay
5. Motor Relay and Support Attaching Screws
6. Power Operated Reclining Seat Back Wire Harness
7. Ground Wire
8. Seat Wire Harness Switch Connector
9. Motor-to-Relay Harness and Connector
10. Motor Feed and Ground Wire Connector

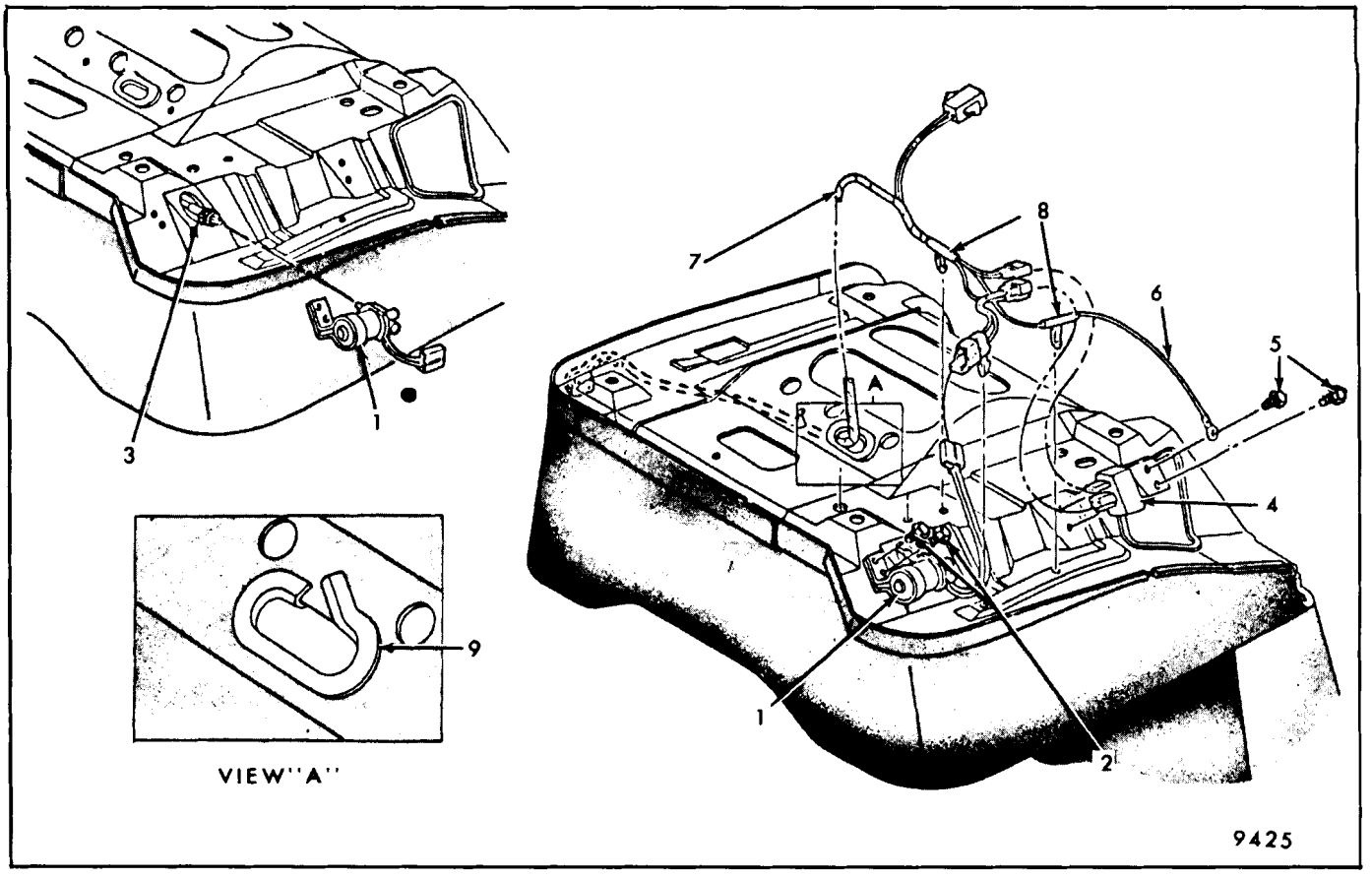


Fig. 9-43 - "B and C" Body Power Operated Reclining Seat Back Motor, Drive Cable, Relay and Wire Harness - 45-55 Seats

1. Reclining Motor (PM - Permanent Magnet Type)
2. Motor and Support Attaching Screws
3. Reclining Actuator Drive Cable
4. Motor Relay
5. Motor Relay Support Attaching Screws
6. Ground Wire
7. Power Reclining Seat Back Wire Harness
8. Wire Harness-to-seat Bottom Retaining Clips
9. Wire Harness Grommet (Plastic) in Seat Bottom Panel

FRONT SEAT BACK MANUAL OR POWER OPERATED RECLINING ACTUATOR - "B and C" with Power or Manually Operated Reclining Seat Back

Removal and Installation (Refer to Figs. 9-44 and 9-45)

1. Remove seat assembly from car and place on a clean protective surface as described under FRONT SEAT ASSEMBLY - Removal and Installation.
2. Detach outboard side of cushion trim cover from cushion frame sufficiently to gain access to reclining actuator front and rear attachments.
3. On power-operated reclining seat backs, detach actuator drive cable coupling from actuator gearnut.
4. Using a suitable size drift pin, carefully drive out spiral roll pins securing rear of power unit and front and rear of manual unit. From bottom of seat frame remove actuator-to-seat frame attaching screws and remove actuator assembly.
5. To install actuator assembly, reverse removal procedure. To disassemble and assemble actuator, refer to following procedure. Prior to attaching cushion trim and installing seat, check operation of power reclining actuator by hooking up with 12 volt power source.

FRONT SEAT POWER OPERATED RECLINING ACTUATOR

Disassembly and Assembly

1. With reclining actuator removed, remove actuator jackscrew nut (Fig. 9-45).

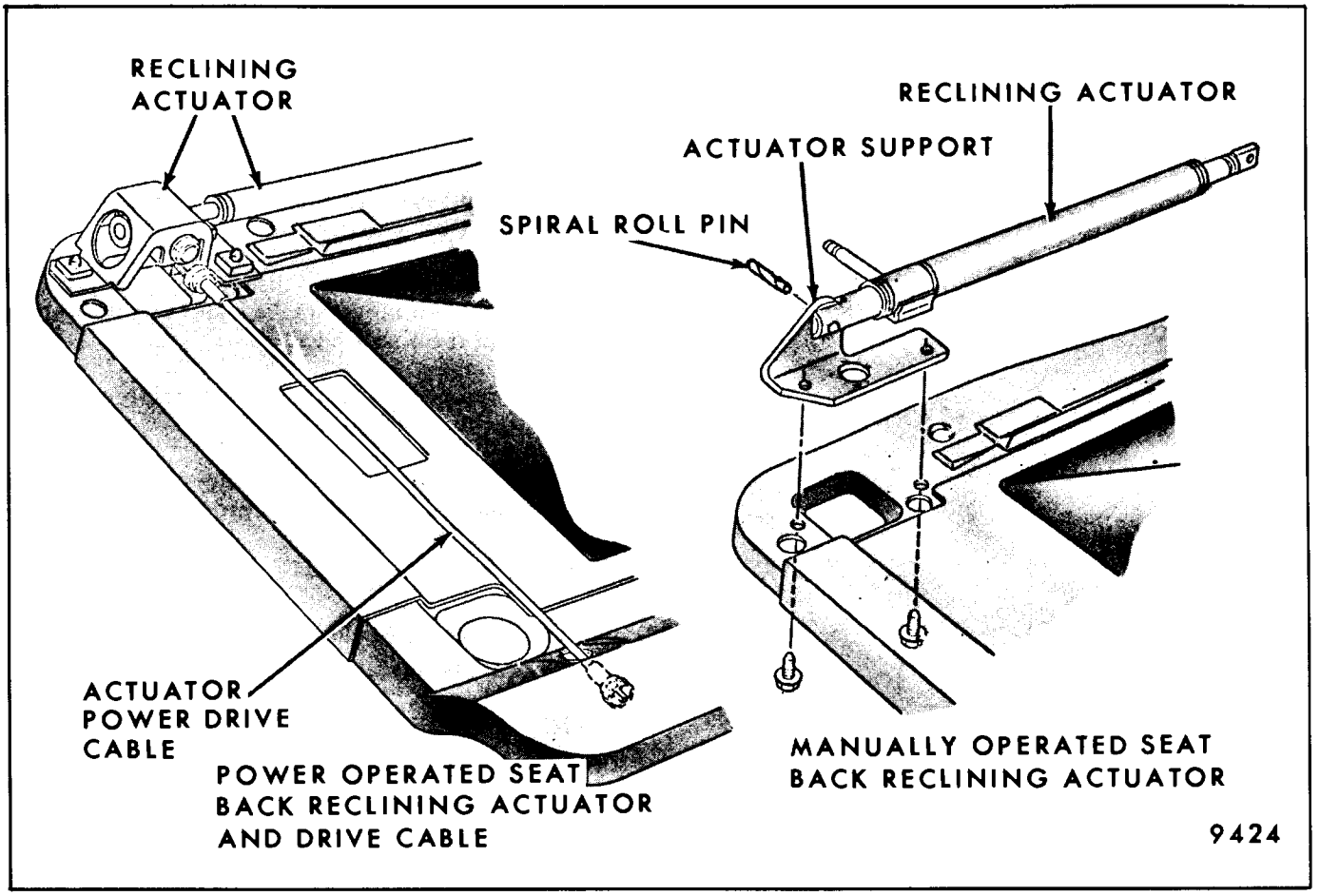


Fig. 9-44 - Front Seat Back Manual or Power Operated Reclining Actuator - "B and C" Styles

2. Unscrew jackscrew out of actuator gearnut.

3. Using a clutch head type screwdriver, remove actuator gearnut attaching screws (Fig. 9-45) and remove actuator assembly.

   With gearnut removed, rubber grommets can be removed from gearnut housing.

4. To assemble actuator assembly, reverse removal procedure.

FRONT SEAT BACK - Standard Bucket Seats

Removal and Installation (Refer to Fig. 9-46)

1. On seats equipped with full seat back panels, remove seat back panel by removing lower attaching screws and lifting panel upward to disengage upper brackets from hangers on seat back frame.

2. On seats equipped with inner hinge arm link, detach link spring from seat back inner arm, remove link upper retainer and disengage link from hinge arm. On four-door style bucket seats, remove bolt securing seat back lock-up support to seat back frame hinge arm and disengage support from hinge arm.

3. At both sides of seat back remove retainer securing hinge arm to hinge arm pin on seat cushion; then disengage hinge arms from pins and remove seat back.

4. To install seat back assembly, reverse removal procedure. Where necessary, replace damaged retainers with new retainers. Install hinge arm pin retainer using a 5/8" socket.

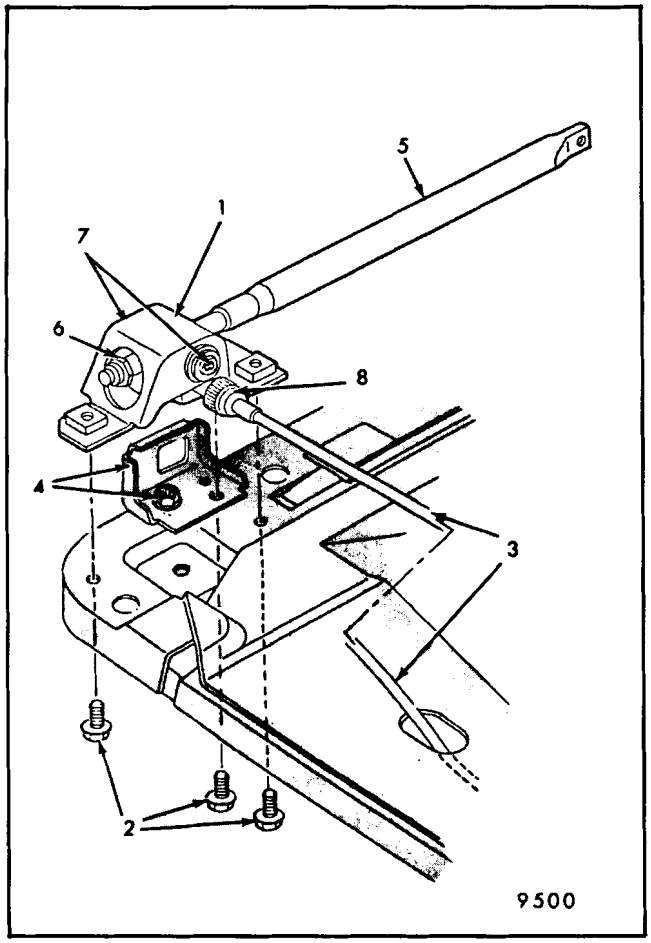


Fig. 9-45 - "B and C" Body Power Operated Reclining Seat Back Actuator - "B and C" Body Full Width Seats

1. Power Reclining Actuator Assembly
2. Actuator Attaching Bolts
3. Power Reclining Switch Support and Attaching Bolt
4. Actuator Drive Cable
5. Actuator Jackscrew
6. Actuator Jackscrew Nut and Rubber Grommets
7. Actuator Gearnut Attaching Screws (Clutch Head Type)
8. Actuator Drive Cable-to-Gearnut Coupling

CUSTOM BUCKET SEAT - "A and X" Styles

Some custom bucket seats incorporate an adjustable reclining seat back, which is operated by a spring-loaded cylinder and plunger, and is located in the outboard side of the seat back frame. When the reclining unit control lever located at the outboard side of the seat cushion is raised, the unit is unlocked by means of a control cable and the seat back can be tilted rearward by applying rearward pressure on the seat back; or with no pressure on the seat back, the spring-loaded reclining unit will return the seat back forward to normal position; however, the seat back can be pushed forward to normal position without actuating the control lever.

Custom Bucket Seat Back Panels - Removal and Installation (Refer to Fig. 9-47)

1. Remove exposed screws securing lower portion of seat back upper panel.
2. Lift panel upward to disengage upper portion of panel from hinge brackets and remove finishing panel from seat back.
3. To remove seat back lower panel, remove panel attaching screws.
4. To install seat back finishing panel or seat side panels, reverse removal procedure.

Custom Bucket Reclining Seat Back Assembly - Removal and Installation

NOTE: The reclining hinge assembly which includes both right and left hinge with a control rod welded to both hinges is an integral welded on component of the seat back frame.

1. On styles with console between bucket seats, remove bucket seat assembly from car as described under Front Seat Assembly - Removal and Installation.
2. Remove seat side lower panel as previously described (see Fig. 9-47).
3. Remove reclining control handle and cable attaching screws (Fig. 9-48) and detach handle from hinge pin.
4. Remove seat back hinge arm retainer (Fig. 9-48) on both sides of seat.
5. On inboard side of seat disengage seat back inboard hinge arm, then disengage outboard hinge arm from hinge pin.

   NOTE: If seat back frame and reclining hinge assembly is being replaced, parts such as reclining actuator, reclining control handle, control cable and supports must be removed and installed on new seat back frame.
6. To install seat back assembly, reverse removal procedure. If hinge arm retainer has been damaged during removal, install new retainer using 5/8" socket. Check operation of reclining seat back to full limits of travel.

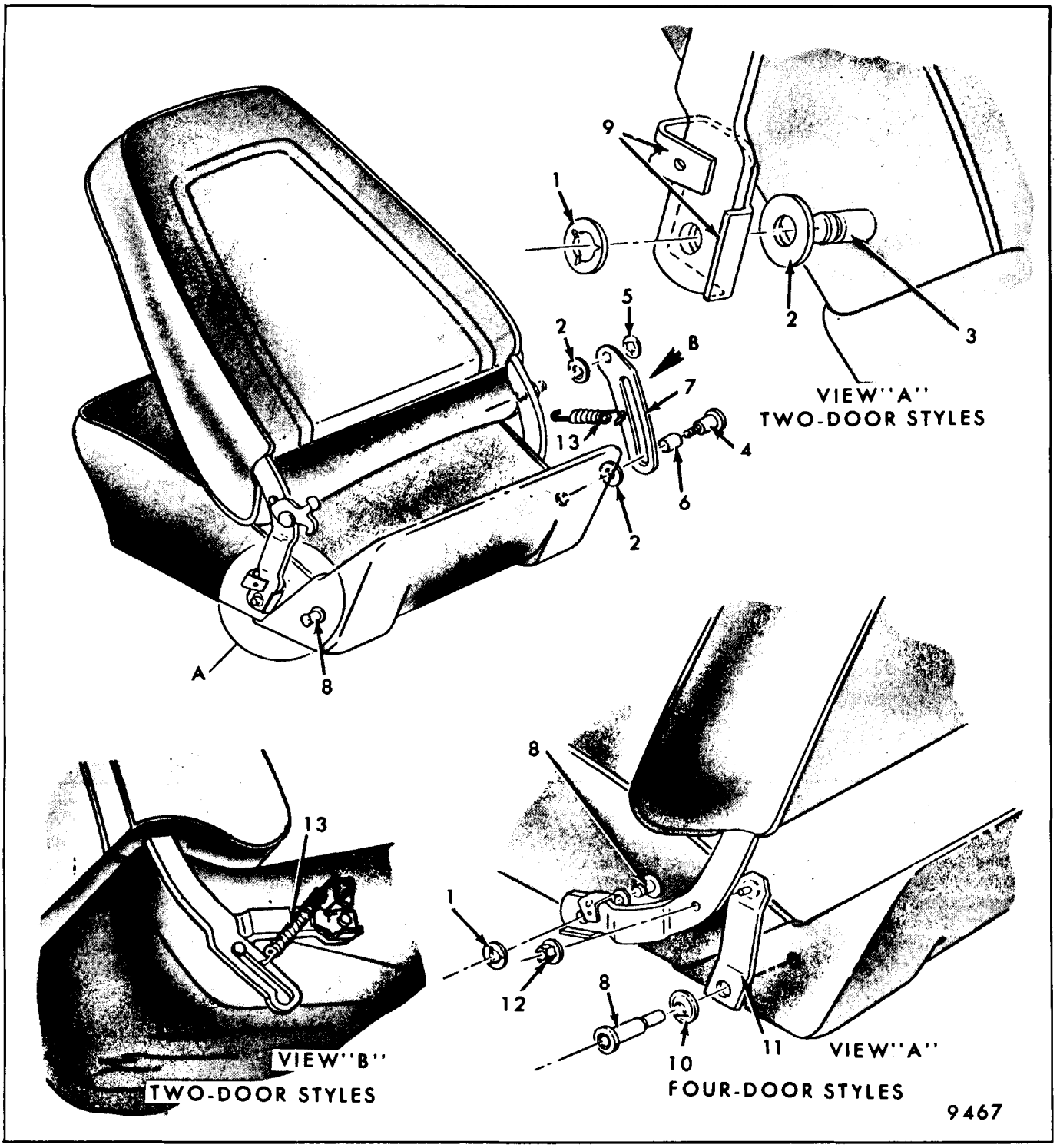


Fig. 9-46-Seat Back Assembly - Standard Bucket Seats

1. Hinge Arm Retainer
2. Trim Protective Washers (Two-Door Style Only)
3. Hinge Arm Pins (On Seat Cushion)
4. Inner Link Lower Shoulder Bolt
5. Inner Link Upper Retainer
6. Inner Link Lower Bolt Sleeve
7. Seat Back Inner Arm Link
8. Seat Back Lock Striker
9. Seat Back Panel Lower Support
10. Striker-to-Support Washer
11. Seat Back Lock-Up Support
12. Lock-Up Support to Seat Back Frame Hinge Arm Nut
13. Inner Arm Link Spring

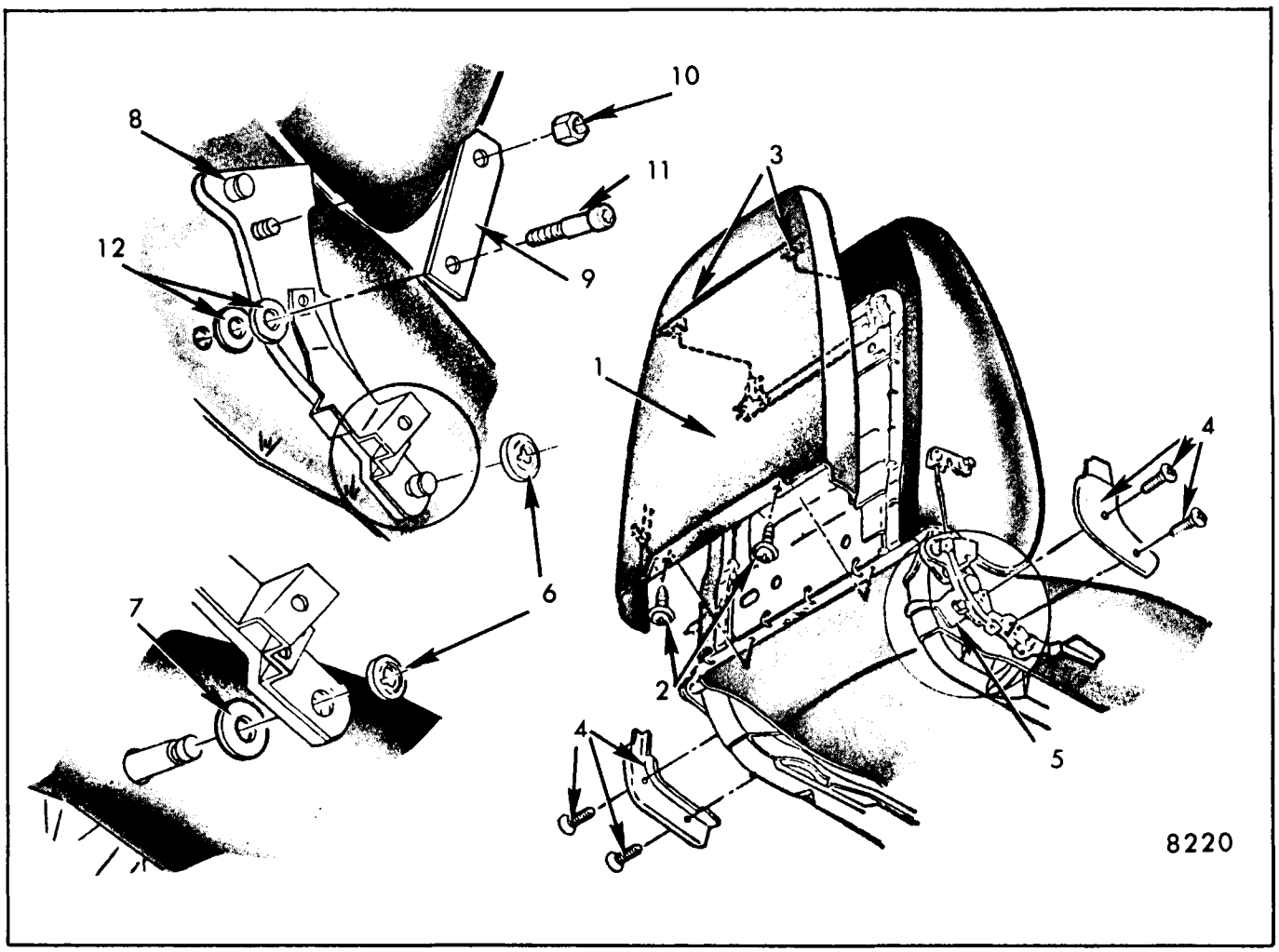


Fig. 9-47-Custom Bucket Seat Back - Passenger Seat Shown

1. Seat Back Upper Panel
2. Back Panel Screws
3. Back Panel Upper Hanger Brackets
4. Seat Side Lower Panels and Screws
5. Seat Back Lock
6. Hinge Retainer
7. Trim Protector Washer
8. Hinge Control Rod (Welded to Hinges)
9. Lock-Out Bar (Four-Door Styles)
10. Lock-Out Bar-to-Hinge Arm Nut (Four-Door Styles)
11. Lock-Out Bar-to-Cushion Frame Bolt (Four-Door Styles)
12. Lock-Out Bar-to-Cushion Frame Bolt Spacers (Four-Door Styles)

Custom Comfort Seat Back Reclining Control Handle and Remote Control Cable - Removal and Installation

1. To remove reclining actuator control handle, remove seat back upper and lower panels (Fig. 9-47). Remove reclining control handle attaching screws (Fig. 9-48), disengage handle from control cable and remove handle.

2. To remove remote control cable, remove seat back upper and lower panels (Fig. 9-47); then remove cable upper support screw and disengage remote cable from reclining actuator arm (Fig. 9- 48). Remove remote cable lower support, disengage cable from control handle (Fig. 9-48) and remove cable from seat.

3. To install seat back reclining control handle or remote control cable, reverse removal procedure.

ADJUSTABLE FRONT SEAT BACK ASSEMBLY (Driver's Side Only) - Chevrolet "F, H and X" Body Style

Description

The optional adjustable front seat back (driver's side) can be adjusted to two positions by means of a

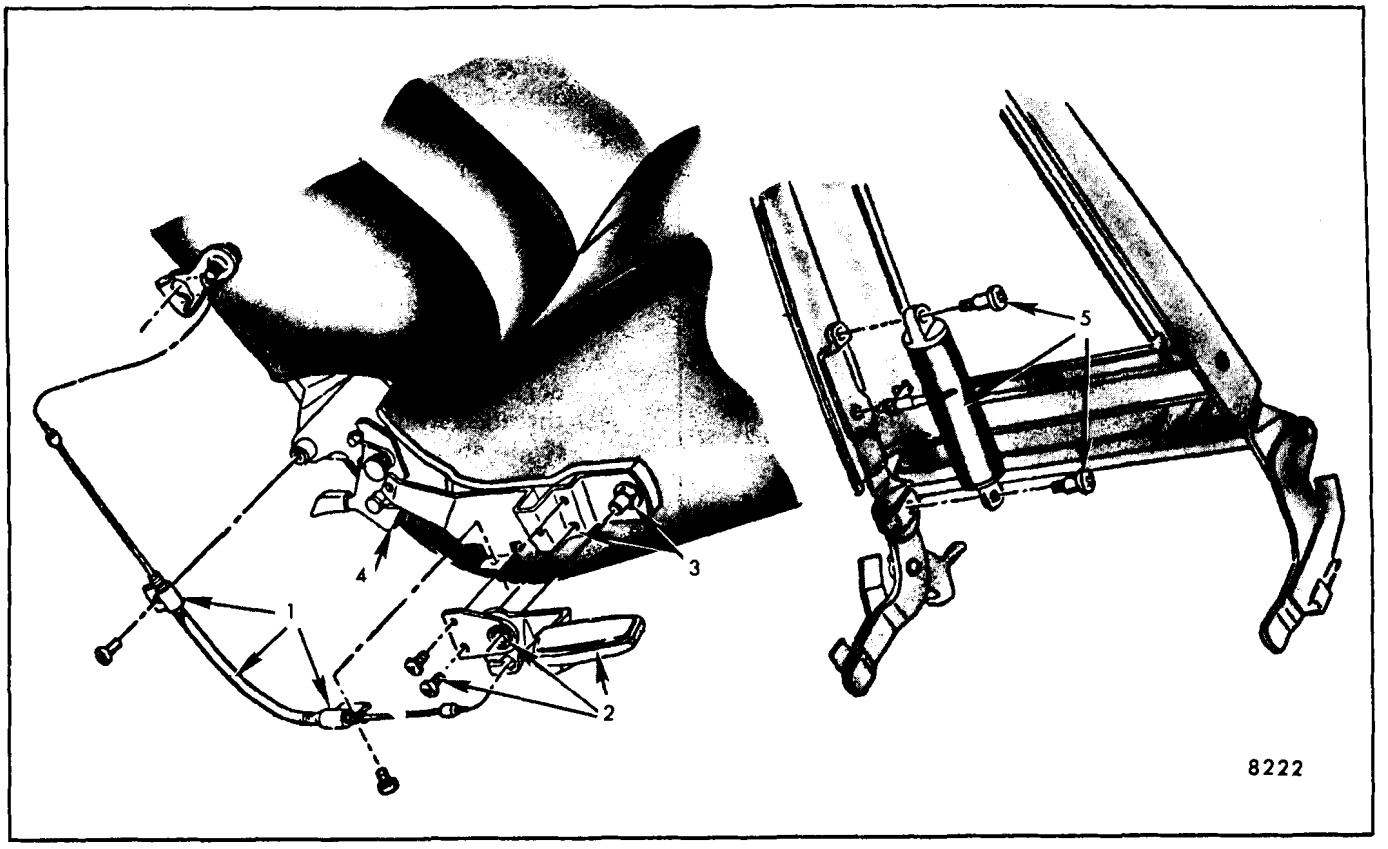


Fig. 9-48-Custom Bucket Seat Back Reclining Actuator Assembly and Remote Control - Passenger Seat

1. Reclining Actuator Remote Control Cable and Supports
2. Reclining Control Handle and Screws
3. Seat Back Outer Hinge Arm Pin, Hinge Arm and Retainer
4. Seat Back Lock
5. Reclining Actuator and Shoulder Screws

control handle located at the right rear of the driver's seat cushion. With the control handle in the full rearward position, the seat back is adjusted to the full rearward position; when the control handle is actuated (rotated) forward, the seat back is adjusted forward to a normal or full forward position.

Removal and Installation - Handle, Cams, Cam Rod, Detent Plate and Spring

Refer to Figure 9-50 for "F and H" styles or Figure 9-51 for "X" styles.

The handle, outer cam, cam rod, detent plate, inner cam and spring are removed in the order stated.

1. At right side of seat, remove handle screws (see Figs. 9-49 and 9-50) and remove handle.
2. At left side of seat, remove nut securing outer cam to cam rod (see Fig. 9-50) and remove cam from rod.
3. To remove cam rod, pull rod out of seat cushion from right side of seat (see Fig. 9-50).

   NOTE: It may be necessary to turn cam rod until keyed end of rod can be pulled through keyway in hole of seat frame. Where required, remove inner cam and spring from cam rod.
4. Remove screw securing inner detent plate and remove detent plate (see Figs. 9-49 and 9-50).
5. To install adjustable seat back cam rod, detent plate, cams, spring and handle, reverse removal procedure. Check adjustable seat back for proper operation. Tighten cam rod nut 18 to 24 in- lb.

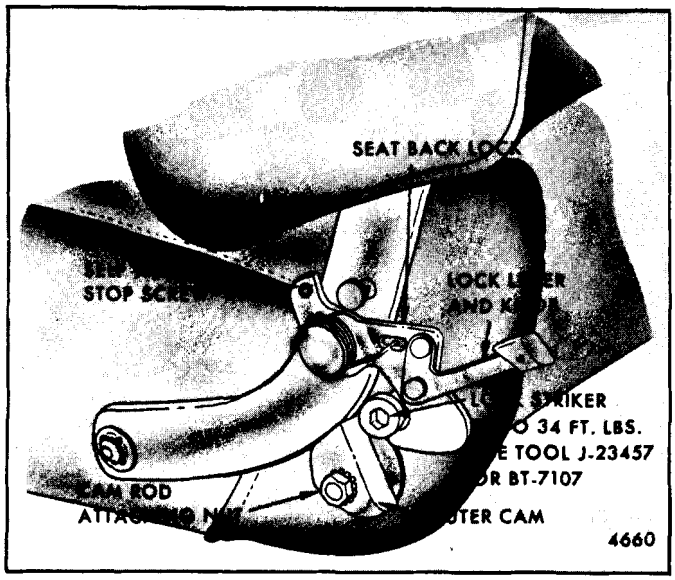


Fig. 9-49-Adjustable Driver's Seat Back - Driver's Side Only - Chevrolet "F and H" Styles

SEAT BACK LOCK STRIKER AND SEAT BACK SIDE INNER BAR STOP - Bucket Seats

Description

Both the seat back lock striker located on the outboard side of the seat cushion and seat back side inner bar stop located on the inboard side of the seat cushion consist of a single metal bolt and washer assembly threaded into a tapped plate located in the seat cushion frame assembly.

Removal and Installation

1. Using door and tail gate striker removal tool J-23457 or BT-7107 or equivalent, remove striker or stop from seat back side arm.

2. To install striker or stop, start thread engagement by hand to assure that bolt is threaded straight, then tighten striker or stop 22 to 34 ft-lb. Use tool J-23457 or BT-7107 or equivalent.

NOTE: On the Chevrolet "F and H" styles with driver's adjustable seat back, two threaded holes are provided in the driver's seat outboard anchor plate for installation of the seat back lock striker. The striker must be installed in the FRONT threaded hole on a driver's seat WITHOUT adjustable seat back. On a driver's seat WITH adjustable seat back the striker must be installed in the REAR threaded hole.

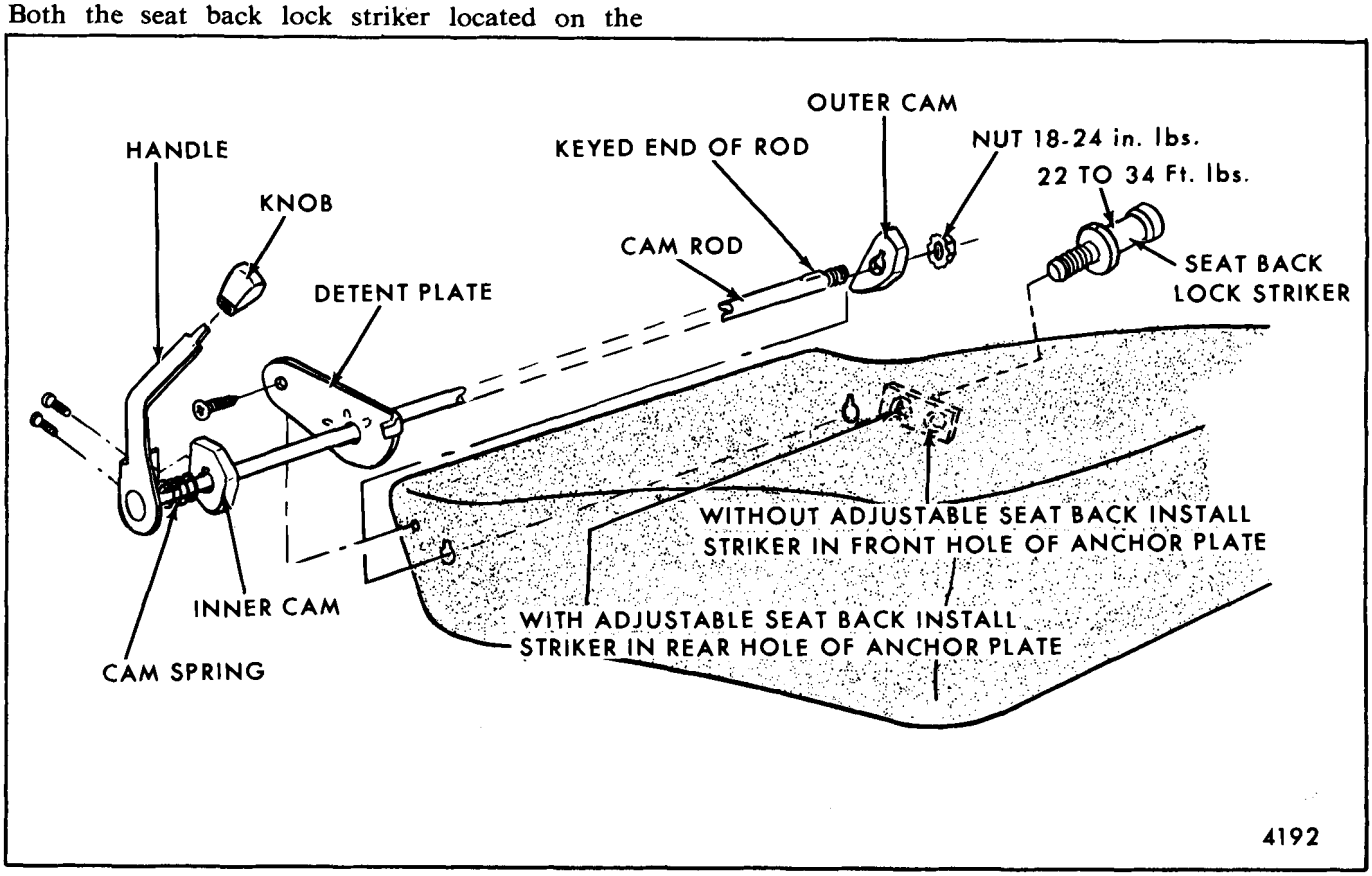


Fig. 9-50-Adjustable Driver's Seat Back Handle, Cams, Cam Rod, Detent Plate and Spring Removal and Installation from Seat Cushion - Chevrolet "F and H" Styles

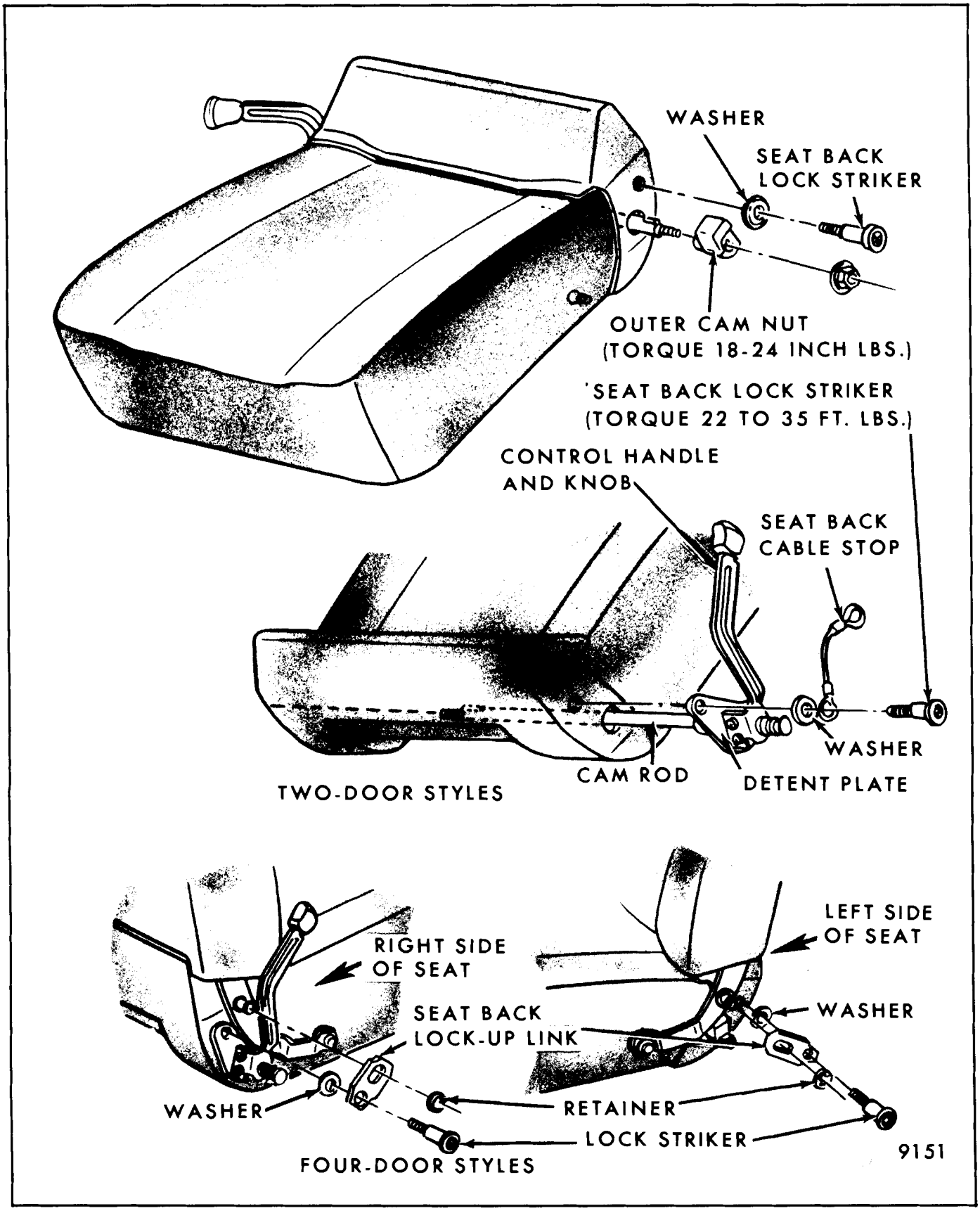


Fig. 9-51-Adjustable Front Seat Back Assembly (Driver's Side Only) - Chevrolet "X" Coupes and Sedans

CAUTION: *The seat back lock striker and seat back side inner bar stop are important attaching parts in that they could affect the performance of vital components and systems. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.*

ELECTRIC SEAT BACK LOCK DIAGNOSIS CHART - TWO-DOOR "E" STYLE FULL WIDTH, 60-40 OR 50-50 SEATS

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat back lock does not lock when doors are closed.	1. Current at actuator solenoid does not cut off-jamb switch remains open.	1. Refer to Electrical Checking Procedure - where required, install new jamb switch.
	2. Seat back relay contacts sticking.	2. Refer to Electrical Checking Procedure - where required, install new relay.
	3. Seat back does not return to upright position far enough to trip lock into locked position. Check for excessive trim build-up; also check inboard bumper clearance.	3. Specified inboard bumper clearance 1/16" - where required install thinner bumper. Locking effort applied rearward at upper outboard corner of seat back is 0-10 lbs. maximum.
2. Seat back lock will not unlock when door(s) are open.	1. No current at actuator solenoid - blown fuse, defective, jamb switch or seat back relay or short in wiring.	1. Refer to Electrical Checking Procedure.
	2. Bind in lock or lock linkage.	2. Locate and eliminate bind or, where required, install new lock assembly.
3. Seat back lock unlocks but solenoid flutters or solenoid circuit breaker cuts in and out.	1. Bind in lock or linkage which does not allow solenoid plunger to completely deactivate pull in coil.	1. Locate bind or interference and eliminate or, where required, install new lock.
	2. Actuator solenoid plunger is not completely deactivating pull in coil with no bind present in lock or linkage. Lock operates okay manually.	2. Check solenoid as described under Electrical Checking Procedure - Check if solenoid is adjusted properly on lock - see Seat Back Electric Lock Solenoid and Support Assembly - step 3 and 4. Where required, replace solenoid assembly.

FRONT SEAT BACK MANUALLY OR ELECTRICALLY OPERATED LOCK (Right or Left) - Two-Door "E" Styles with Full Width or 60-40 Seats

Description

All two-door "E" styles are equipped with either manually operated front seat back locks or optional electrically operated seat back locks. The manually operated seat back locks on "B, C and E" styles are operated by a control handle on the upper outboard side of the seat back. The electrically operated seat back locks are operated by an electrical solenoid attached to the seat back lock frame. When either front door is opened, a jamb switch at the front body hinge pillar energizes the solenoid at both seat back locks which unlocks both seat backs. When both doors are closed, the solenoids are de-energized and return springs in the solenoid return the lock to a locked position.

FRONT SEAT BACK MANUAL OR ELECTRIC OPERATED LOCK - Two-Door "E" Styles with Full Width, 60-40 or 50-50 Seats

Removal and Installation

1. On seats with full seat back panel or detachable seat back trim panel, remove hog rings securing trim along bottom and sides of trim.

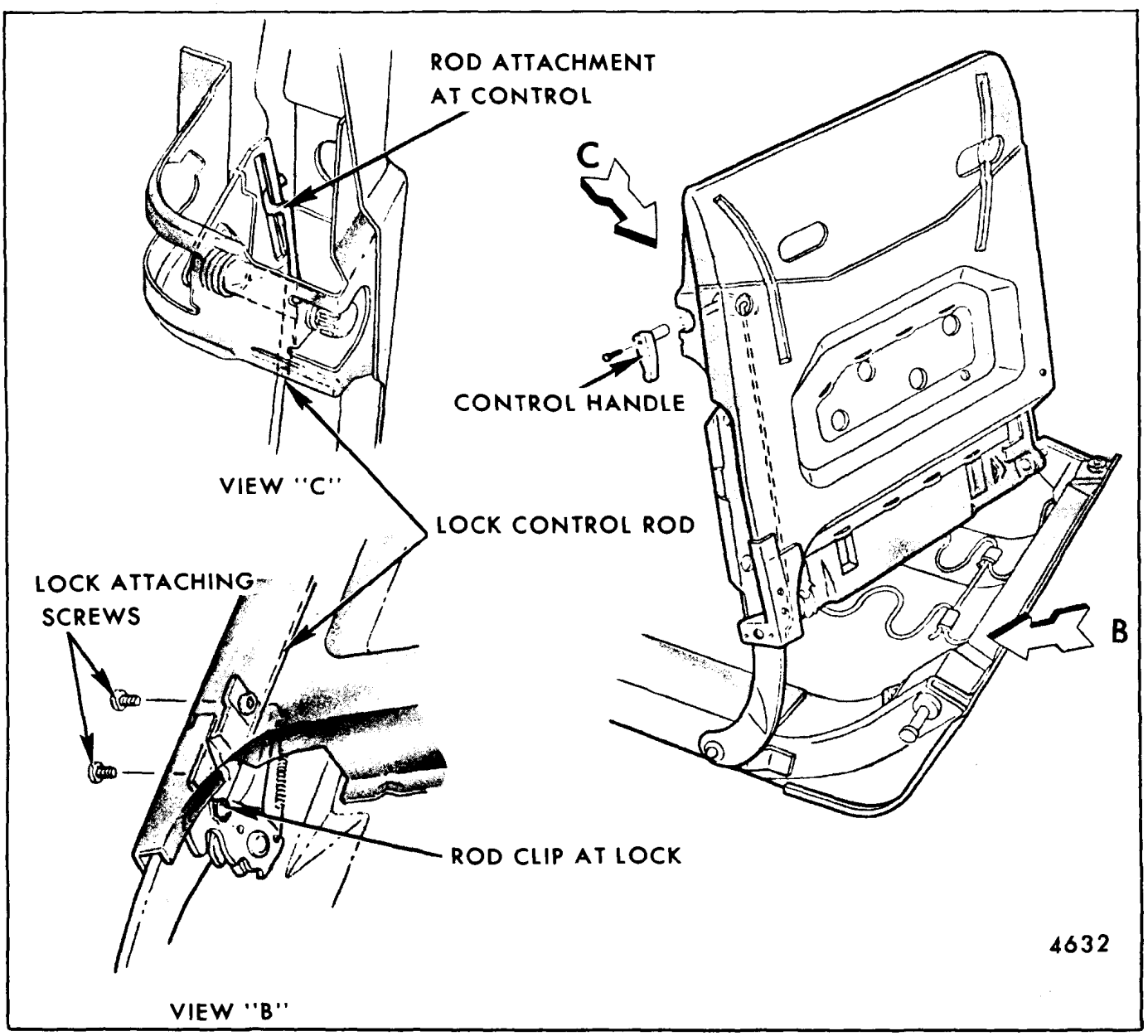


Fig. 9-52-Front Seat Back Manually Operated Lock - Oldsmobile "E" Body Styles with Full Width or 60-40 Seats and Chevrolet Monte Carlo with 50-50 Seats

2. On seats with one piece (envelope type) trim cover, remove front seat back assembly from front seat cushion assembly as previously described.

3. Remove front seat back outer side panel and side panel lower support where present.

4. On seats with electrically operated locks, remove manual override handle and escutcheon.

5. Remove hog rings securing seat back front and rear trim facings and foam pad facing along bottom of seat back; then turn up trim and carefully pull out foam pad sufficiently to gain access to lock attaching bolts (Fig. 9-52 or 9-53).

6. On manually operated seat back lock, disengage lock connecting rod clip (Fig. 9-52) and detach rod from lock. To disengage clip it is usually necessary to damage or break clip. On electrically operated seat back lock, disconnect feed connector from lock solenoid.

7. Remove seat back lock attaching bolts (Fig. 9-52 for manual lock, Fig. 9-53 for electric lock); then remove lock assembly from seat back.

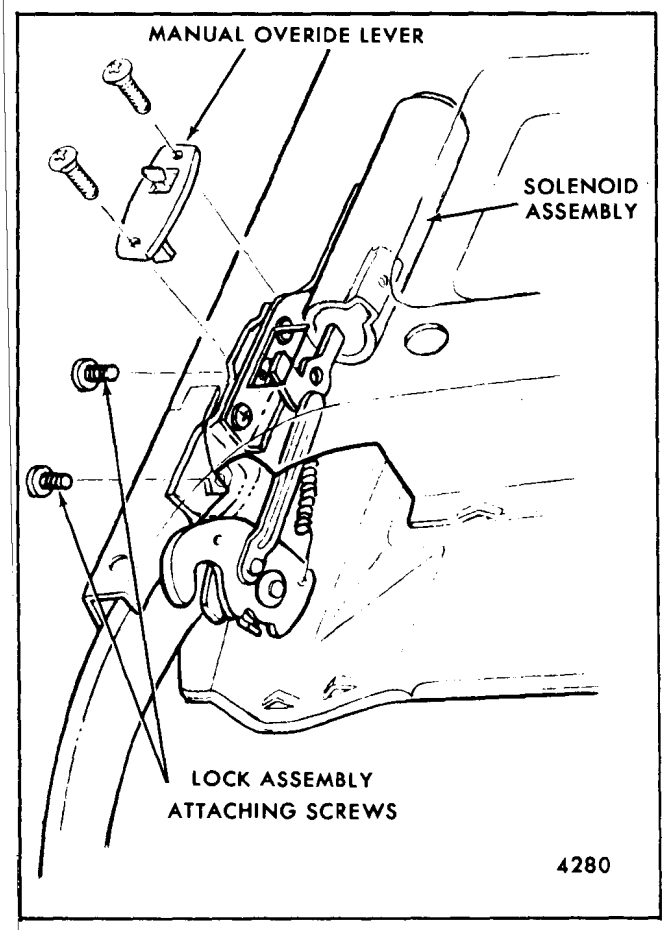


Fig. 9-53-Front Seat Back Electrically Operated Lock - "E" Body Two-Door Styles with Full Width Seat

8. To install, reverse removal procedure. If rod to lock retaining clip is damaged, install new clip. Check for proper operation of seat back lock.

NOTE: The manually operated seat back locks should lock with no more than 10 pounds rearward effort applied at the top outboard corner of the seat back. The electrically operated seat back locks should remain locked after either door is opened, then closed.

FRONT SEAT BACK MANUALLY OPERATED LOCK CONTROL AND LOCK ROD - "E" Two-Door Styles with Full Width or 60-40 Seats and Chevrolet Monte Carlo with 50-50 Seats

Removal and Installation

1. On styles with one piece (envelope type) seat back trim cover, remove front seat back assembly as previously described. Remove seat back side panel where present. Remove hog rings securing trim cover at bottom of seat back and pull trim up sufficiently to gain access to lock and lock control.

2. On styles with full seat back panel, remove lock control handle; then remove seat back panel.

3. On styles with seat back panel or detachable rear trim facing, remove hog rings securing seat back panel or trim facing along bottom and sides of seat. If removing lock, control-to-lock rod on any style or lock control on Cadillac styles, turn back seat trim sufficiently to gain access to lock control. If removing lock control on any style except Cadillac, remove seat back trim cover and foam pad assemblies.

4. To remove seat back lock to control connecting rod, disengage rod clip at lock (Fig. 9-52, View "B"); then rotate rod counterclockwise on driver's seat back or clockwise on passenger's seat back to disengage hooked upper end of rod from slot in control plate and remove connecting rod (see Fig. 9-52).

5. To remove seat back lock control on Cadillac styles, remove control attaching screws and remove control. To remove lock control on all styles except Cadillac, scribe position of control assembly on seat back side bar. Using a spot weld cutter tool J- 8943-01 or equivalent, drill out three spot welds securing lock control and remove control.

6. To install lock control on Cadillac styles, reverse removal procedure. To install lock control on all styles except Cadillac, position and clamp new control assembly to seat back frame side bar in SAME position as original control assembly. Braze new control assembly to seat back frame side bar at the three original weld locations.

7. To install control-to-lock rod, position rod up through seat back frame bar; then insert upper hook end of rod into slot in control plate and rotate rod clockwise on driver's seat back or counterclockwise on passenger's seat back to fully engage hook end of rod in slot of control plate. Engage lower end of rod to lock hook and install retaining clip.

   NOTE: If clip is damaged or does not retain properly, install new clip.

8. After assembly, check for proper operation of seat back lock, the seat backs should lock with no more than 10 pounds of rearward effort applied at the top outboard corner of the seat back.

SEAT BACK ELECTRIC LOCK SOLENOID AND SUPPORT ASSEMBLY - Two- Door "E" Styles with Notch Back Bench 60-40 or 50-50 Seats

Removal and Installation (Refer to Fig. 9-54)

1. Remove front seat back electric lock assembly with attached solenoid and support from seat as previously described.

2. Remove position lock screw and two solenoid support-to-lock attaching screws; then disengage solenoid plunger bar from lock link and remove assembly from lock.

3. Grind or file off raised portion of locking depression from lock frame.

4. To install solenoid and support assembly, engage solenoid plunger bar to lock link; then install loosely two solenoid support-to-lock attaching screws. With lock hook tight against stop tab extend solenoid plunger bar all the way out of solenoid; then adjust solenoid support until the lock link rivet just contacts bottom of slot in solenoid plunger bar and tighten securely solenoid support attaching screws.

   NOTE: Carefully drill a new position lock screw hole (9/64") through both solenoid support and lock frame and install a self-tapping screw to securely lock solenoid in position on lock frame.

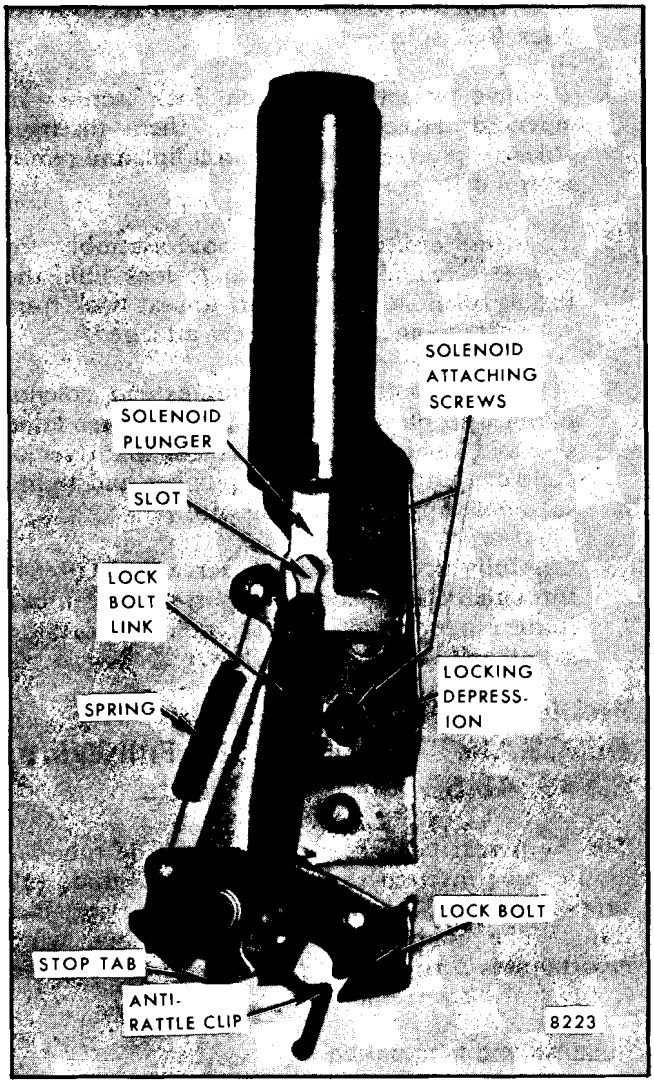


Fig. 9-54-Front Seat Back Electric Lock Solenoid and Support Assembly - All Two-Door Styles with Notch Back Bench, 60-40 or 50- 50 Seats

5. Check operation of both electric actuated seat back locks. If either lock does not lock or unlock properly refer to Electric Seat Back Lock Trouble Diagnosis Chart - Conventional Seats.

   When either door is opened, then closed, both seat back locks should remain locked.

FRONT SEAT BACK ELECTRIC LOCK SOLENOID - Cadillac Eldorado 50- 50 Seat with Passenger Reclining Seat Back

Removal and Installation (Refer to Fig. 9-39)

1. Remove passenger seat outer trim panel and detach outer portion of seat back panel and seat

back trim cover sufficiently to gain access to seat back lock solenoid.

2. Remove solenoid position lock screw and solenoid attaching screws, then disengage solenoid plunger from lock bolt link and remove solenoid from seat back.

3. To install electric lock solenoid assembly, first engage solenoid plunger bar to lock link, then install solenoid and support-to-seat back frame with attaching screws loosely attached.

4. With lock bolt fully down, extend solenoid plunger all the way out of solenoid; then adjust solenoid up or down until the lock link rivet just contacts bottom of slot in plunger and tighten solenoid support attaching screws.

5. Carefully drill a new lock screw hole (9/64") through both solenoid support and seat back frame hinge arm lock and solenoid support; then install self-tapping lock screw.

FRONT SEAT BACK HEAD RESTRAINT GUIDE TUBE - Full Width, 60-40, 45-55 and 50-50 Seats

The front seat back head restraint guide tube is a plastic tube inserted through slots in a guide tube support which is an integral part of the seat back frame. The guide tube support assembly, which incorporates a riveted-on tension spring, is welded to the seat back frame.

Removal and Installation

1. Remove front seat back and head restraint lock and escutcheon assembly as previously described. Remove trim retainer (see Fig. 9-30).

2. On "A, E and X" style seat backs with one piece (envelope type) seat back trim assembly, remove seat back assembly as previously described; then as a bench operation remove hog rings securing trim at bottom of seat back and pull up trim sufficiently to gain access to head restraint support or guide tube. On seat backs with seat back panel or detachable rear trim facing, remove seat back panel and detach back trim sufficiently to gain access to head restraint support or guide tube. Remove screw securing guide tube and slide guide tube out of support (Fig. 9-55).

3. On "B and C" styles, remove seat back trim assembly. Detach upper portion of foam pad sufficiently to gain access to guide tube where it enters seat back frame; then using hard thumb pressure at points "A" shown in Figure 9-56, disengage tabs and lift tube upward to remove from seat back.

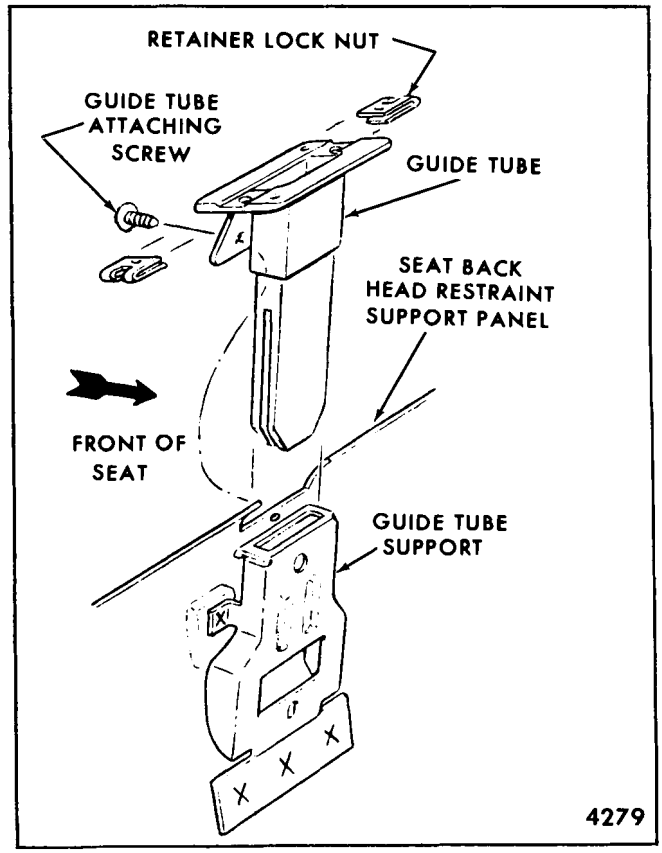


Fig. 9-55-Head Restraint Guide Tube - "A, X and E" Styles

4. To install head restraint guide tube, reverse removal procedure. On "B and C" styles, insert tube as far as locking tabs (see Fig. 9-56); then strike tube downward with hand to lock in position.

FRONT SEAT CENTER ARMREST, CURTAIN AND LINKAGE - Front Seat with Standard Full Width Seat Back - "A and X" Styles

Removal and Installation (Refer to Fig. 9-57)

1. Place center armrest in down position.

2. To remove armrest curtain, pull curtain forward as far as possible; then remove armrest-to-linkage front attaching screw from both sides of armrest. Lift up lower portion of armrest sufficiently to gain access to and remove hog rings securing upper end of curtain; then remove armrest-to-linkage attachments.

3. To remove armrest, less linkage and curtain,

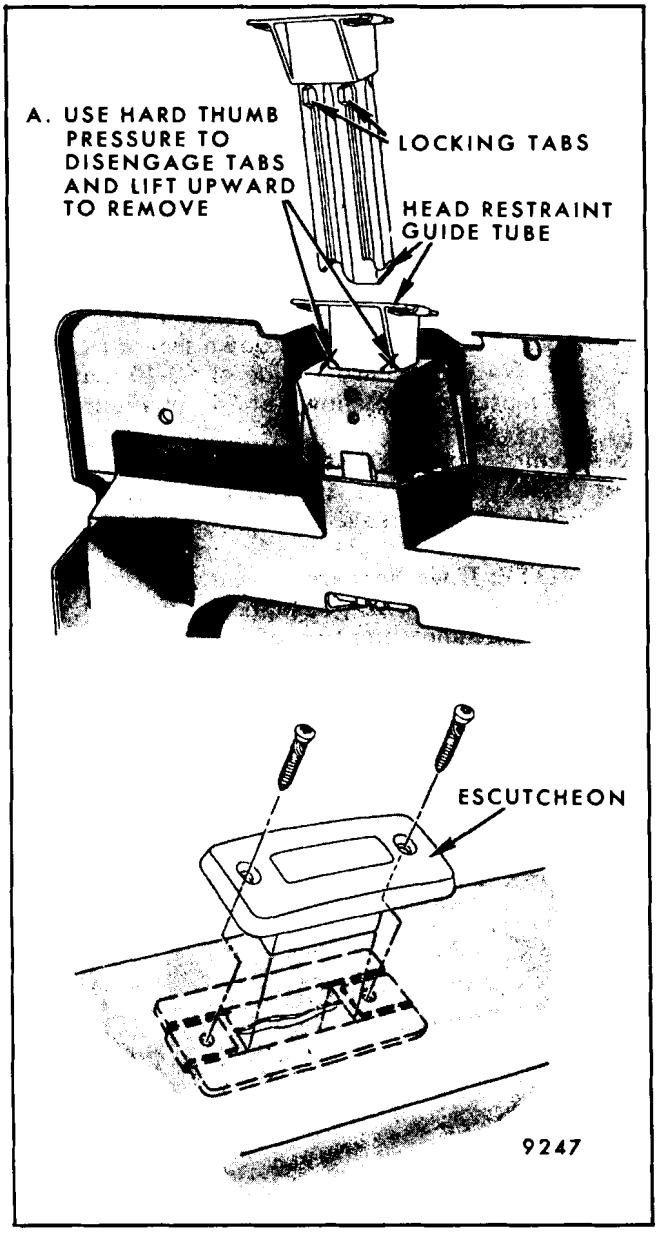


Fig. 9-56 - Head Restraint Guide Tube Removal - "B and C" Styles

pull curtain forward as far as possible; then remove armrest-to-linkage screws from both sides of armrest and remove armrest.

4. To remove armrest and linkage assembly, first detach lower end of curtain from armrest as described in step 1. Remove linkage attaching screws (see "5" in Fig. 9-57); then disengage upper tabs of linkage from armrest support and lift armrest and linkage assembly upward to disengage lower tabs from slots in support and remove assembly from seat.

5. To install front seat center armrest curtain, armrest or linkage, reverse removal procedure.

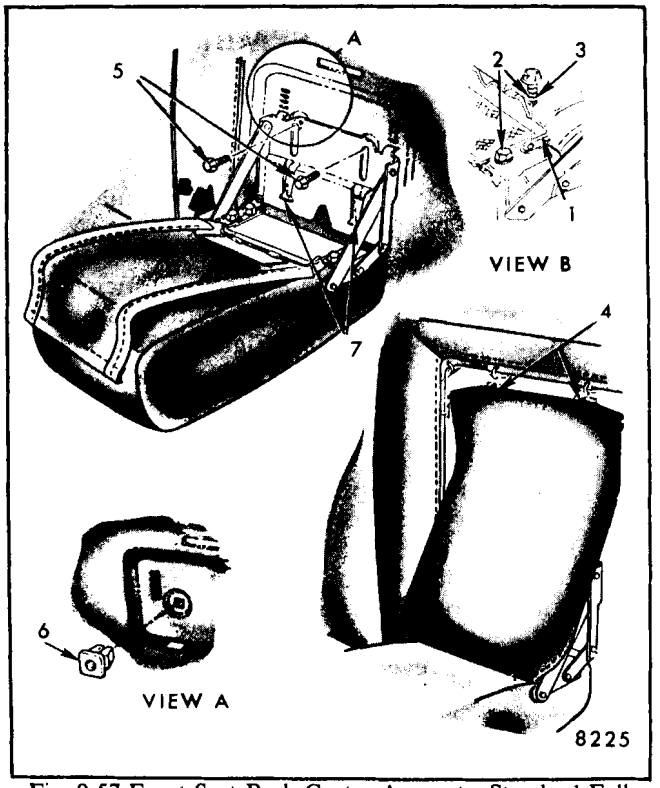


Fig. 9-57-Front Seat Back Center Armrest - Standard Full Width Seat Back - "A and X" Styles

1. Curtain Lower Retaining Wire and Spring
2. Armrest-to-Linkage Screws
3. Armrest-to-Linkage Front Screw
4. Curtain Upper Retaining Hog Rings
5. Armrest Linkage Screws
6. Armrest Linkage Screw Nut
7. Location of Linkage Lower Support Slots

FRONT SEAT CENTER ARMREST, CURTAIN AND LINKAGE - Standard Full Width Seat Back - "B, C and D" Styles

Removal and Installation (Fig. 9-59)

1. Disengage trim retainers from seat back and lower close-out trim flap.

2. Remove two attaching nuts from seat back attaching studs.

3. Pull forward on armrest and remove from body.

4. To install, reverse removal procedure.

FRONT SEAT CENTER ARMREST AND CURTAIN ASSEMBLY - Notch Down Seat Back

Removal and Installation

1. Lower armrest to within approximately two inches of full- down position.
2. Carefully pull curtain back sufficiently to remove screws securing center armrest to linkage, shown at "1" in Figure 9-58, and loosen outer screws securing curtain lower retainer to armrest.
3. Disengage armrest from support linkage and turn armrest upside- down on trim panel finishing cover. Remove staples, indicated at "7" in Figure 9-58, securing armrest curtain upper retainer; then remove armrest and curtain from armrest frame assembly.
4. To install, reverse removal procedure.

FRONT SEAT CENTER ARMREST ASSEMBLY - Notch Down Seat Back and 60-40 Seat - "A and E" Styles

Removal and Installation (Fig. 9-58)

1. Place armrest in up position.
2. Working between armrest and seat back, use a flat-bladed tool to carefully pry out serrated fastener, shown at "2" in Figure 9- 58, at both sides of armrest on notch down seat or right side on 60-40 seat. On left side of 60-40 seat, snap off plastic cover, shown at "4" in Figure 9-58.
3. Remove armrest assembly attaching screws, shown at "3" in Figure 9-58, then remove armrest and linkage assembly from seat.

NOTE: If washers are present between armrest linkage and linkage supports on seat, note location and number of washers used and reinstall in same position. Washer(s) are used to align armrest to front seat back(s).

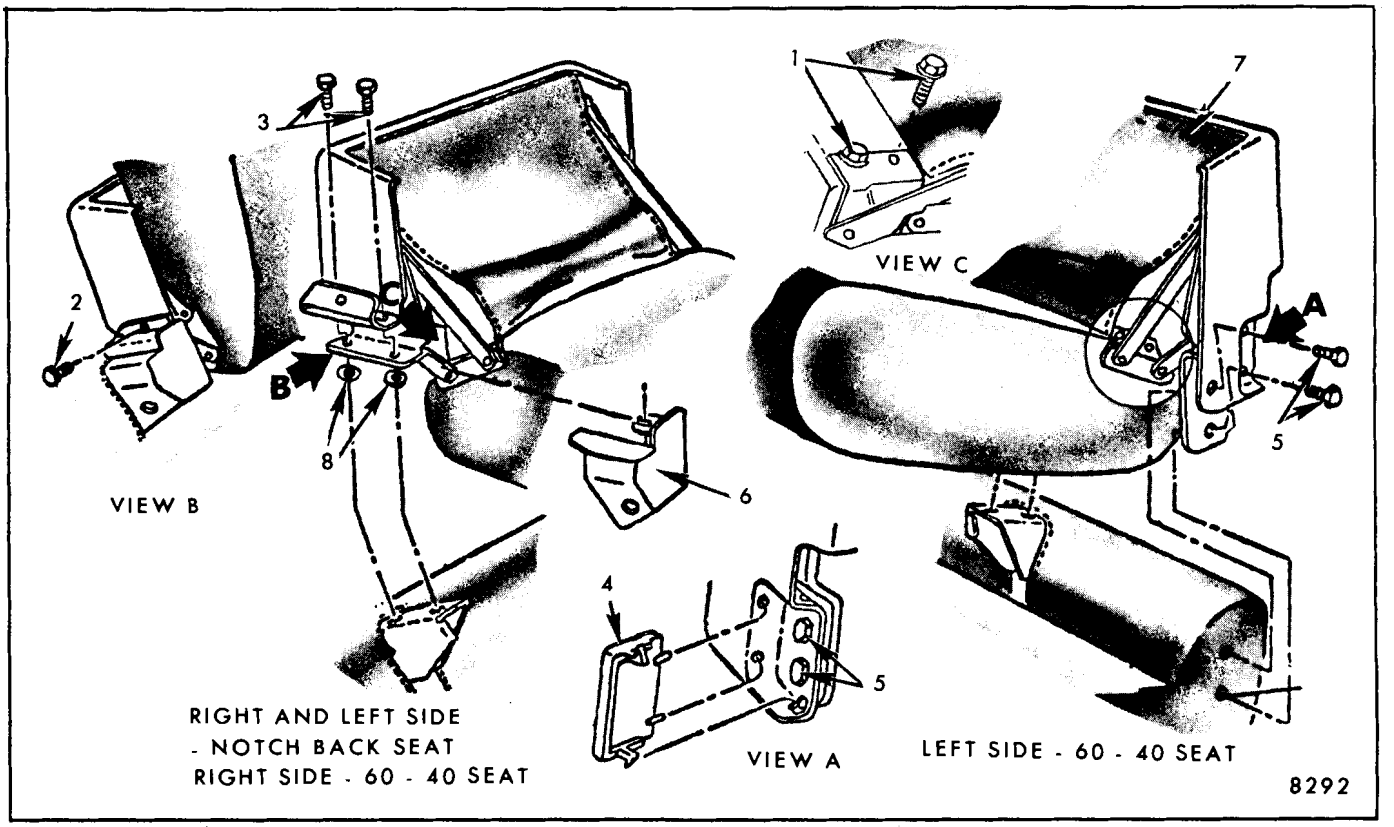


Fig. 9-58-Front Seat Center Armrest - Full Width Notch Down and 60-40 Seat - "A and E" Styles

1. Armrest-to-Linkage Screws
2. Serrated Fastener (Plastic) for Securing Screw Finishing Flap
3. Armrest Assembly-to-Seat Cushion Frame Screws
4. Trim Finishing Cover
5. Armrest Assembly-to-Seat Cushion Frame Screws
6. Center Hinge Cover
7. Staples Securing Armrest Curtain Retainer
8. Adjustment Spacers

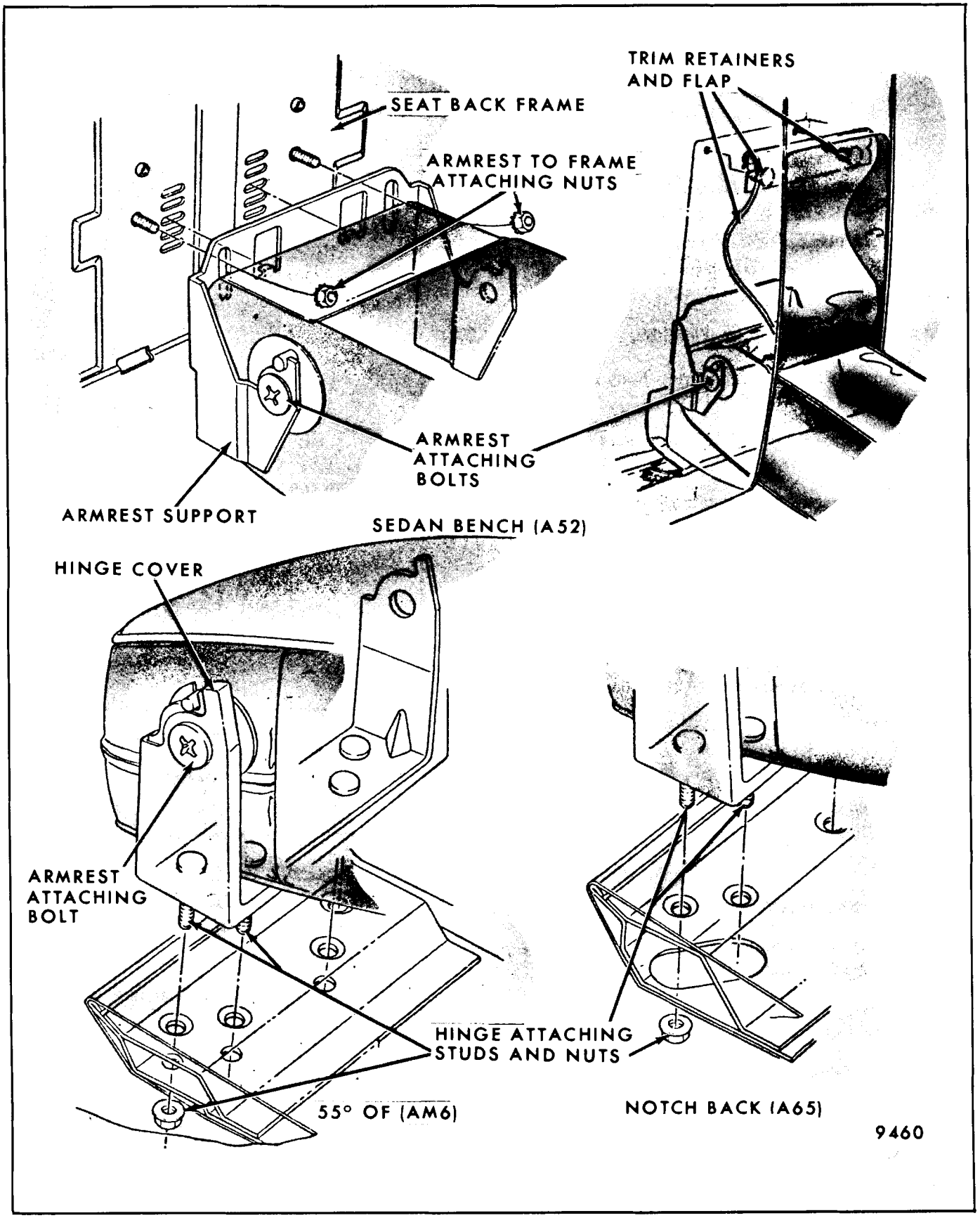


Fig. 9-59 - Front Seat Center Armrest - Full Width, Notch Back and 45-55 Seats - "B, C and D" Styles

4. To install, reverse removal procedure. Prior to installing serrated fasteners, shown at "2" in Figure 9-58, check alignment and operation of armrest. Where necessary to align armrest with seat back(s), install washer(s), as required, between armrest support and support on seat.

FRONT SEAT CENTER ARMREST AND HINGE ASSEMBLY - NOTCH BACK AND 45-55 SEAT - "B and C" Styles

Removal and Installation (Fig. 9-59)

1. Remove seat assembly from body and place on a clean protective surface.
2. Remove seat side finishing covers and remove seat adjusters.
3. Remove rear bar cover and seat back assembly.
4. Remove armrest to hinge assembly attaching bolts and remove armrest assembly.
5. To remove hinge, remove attaching nuts located under rear bar, hinge cover and pull upward on hinge.
6. To install, reverse removal procedure.

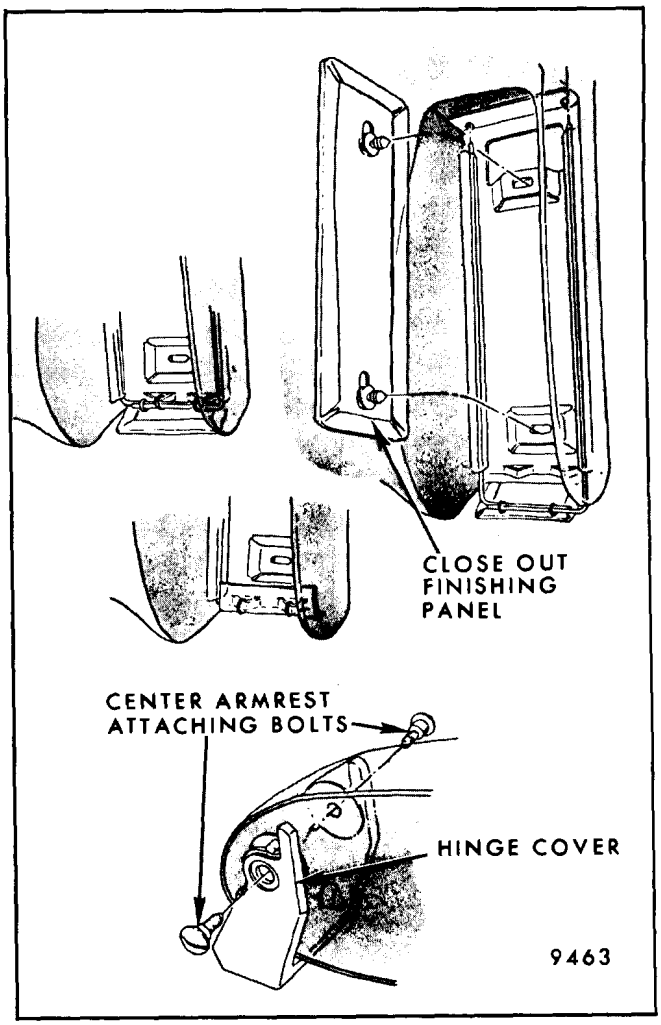


Fig. 9-60 - Front Seat Center Armrest and Hinge Support - "B and C" Styles - 50-50 Passenger and Driver's Seat

FRONT SEAT BACK CENTER ARMREST AND HINGE SUPPORT - "B and C" Styles - 50-50 Passenger and Driver's Seat

Removal and Installation (Fig. 9-60)

1. Remove rear seat adjuster to floor pan attaching bolts and loosen front attaching bolts.
2. Raise rear of seat and remove hog rings along seat trim carpet below armrest.
3. Remove two armrest attaching nuts from underside of seat frame.
4. Lower seat and remove armrest by pulling upward to free armrest studs from seat frame.
5. To remove hinge, first remove two armrest attaching bolts and armrest, then remove cover by pulling upward to expose hinge.
6. To install, reverse removal procedure.

FRONT SEAT BACK CENTER ARMREST AND SUPPORT - Cadillac "E" Styles - 50-50 Driver's and Passenger's Seat

Removal and Installation (Refer to Fig. 9-61)

1. Place center armrest in down position.
2. To remove armrest less support, lift upper portion of armrest close-out flap to disengage from retainer on seat back frame.
3. Remove armrest-to-support attaching screws and remove armrest.
4. To remove armrest support, remove armrest

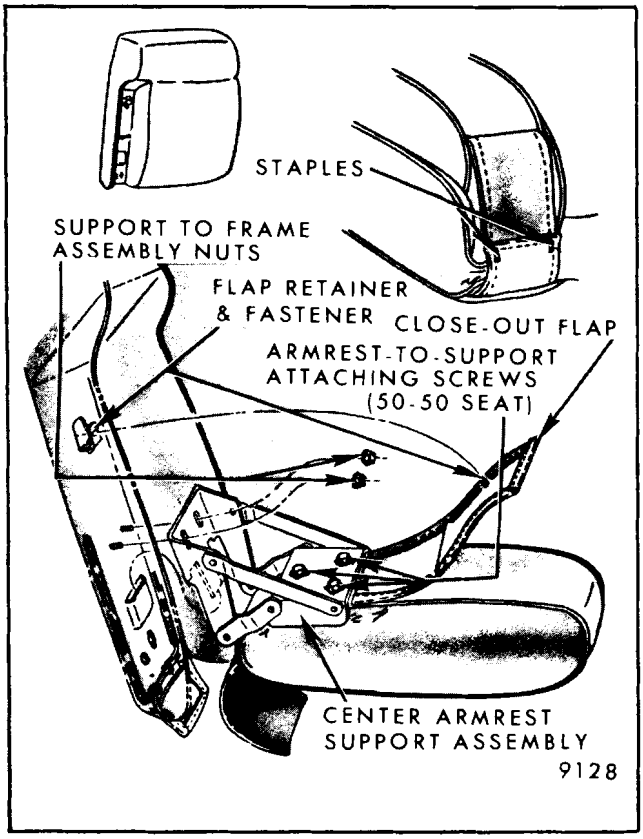


Fig. 9-61-Front Seat Back Center Armrest - Cadillac "E" Styles 50-50 Driver's and Passenger's Seat

support-to-seat back frame attaching nuts; then lift armrest support upward to disengage tab on support from slot in seat back frame.

5. To install armrest support and armrest, reverse removal procedure.

PASSENGER AND DRIVER SEAT BACK CENTER ARMREST AND SUPPORT - Cadillac "K" Style

Removal and Installation (Refer to Fig. 9-62)

1. Place center armrest in down position.

2. To remove armrest, less support, first disengage finishing covers from pivot support and remove pivot support-to-armrest bolts from both sides of armrest and remove armrest.

3. To remove armrest and support assembly, first detach finishing covers. Remove two pivot support to frame nuts; then disengage pivot support tab from slot in retaining plate and remove armrest and support assembly from seat.

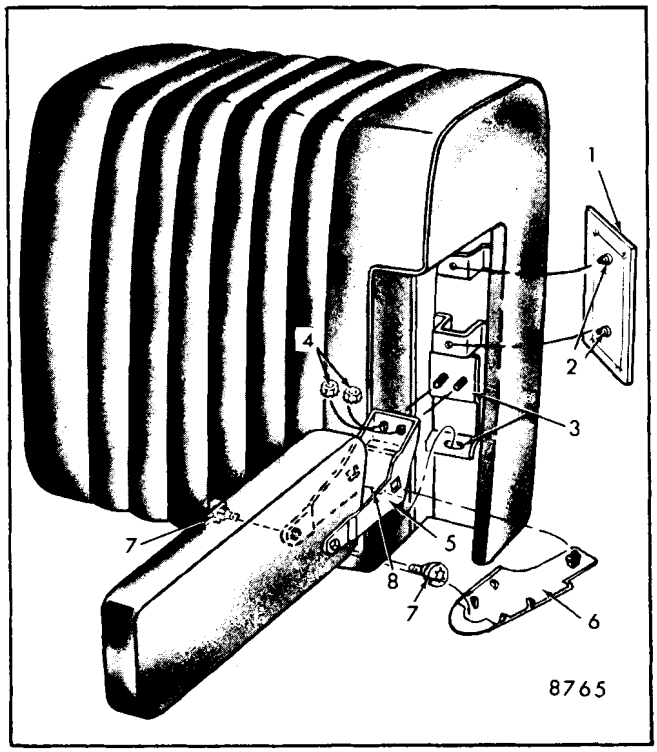


Fig. 9-62 - Passenger and Driver Seat Back Center Armrest Installation - Cadillac "K" Style

1. Center Armrest Trim Finishing Cover
2. Trim Finishing Cover Fastener
3. Pivot Support Retaining Plate and Slot
4. Pivot Support to Frame Assembly Nut
5. Center Armrest Pivot Support
6. Armrest Pivot Support Cover
7. Pivot Support-to-Armrest Bolt
8. Center Armrest Pivot Support Tab

4. To install front seat center armrest or support, reverse removal procedure. Torque 48-72 in-lb.

FOOTREST ASSEMBLY - Cadillac 6CB69 Styles

The folding footrest assemblies shown in Figure 9-63 are secured to the seat back by hinges. To remove footrest assembly, remove hinge-to-seat back attaching screws from both sides of footrest and remove footrest assembly from seat back. To remove trimmed footrest board, remove hinge-to-board attaching screws and remove hinges from footrest board. To install, reverse removal procedure. When installing footrest hinge-to-seat back attaching screws, install machine thread screws in upper attaching hole at each hinge.

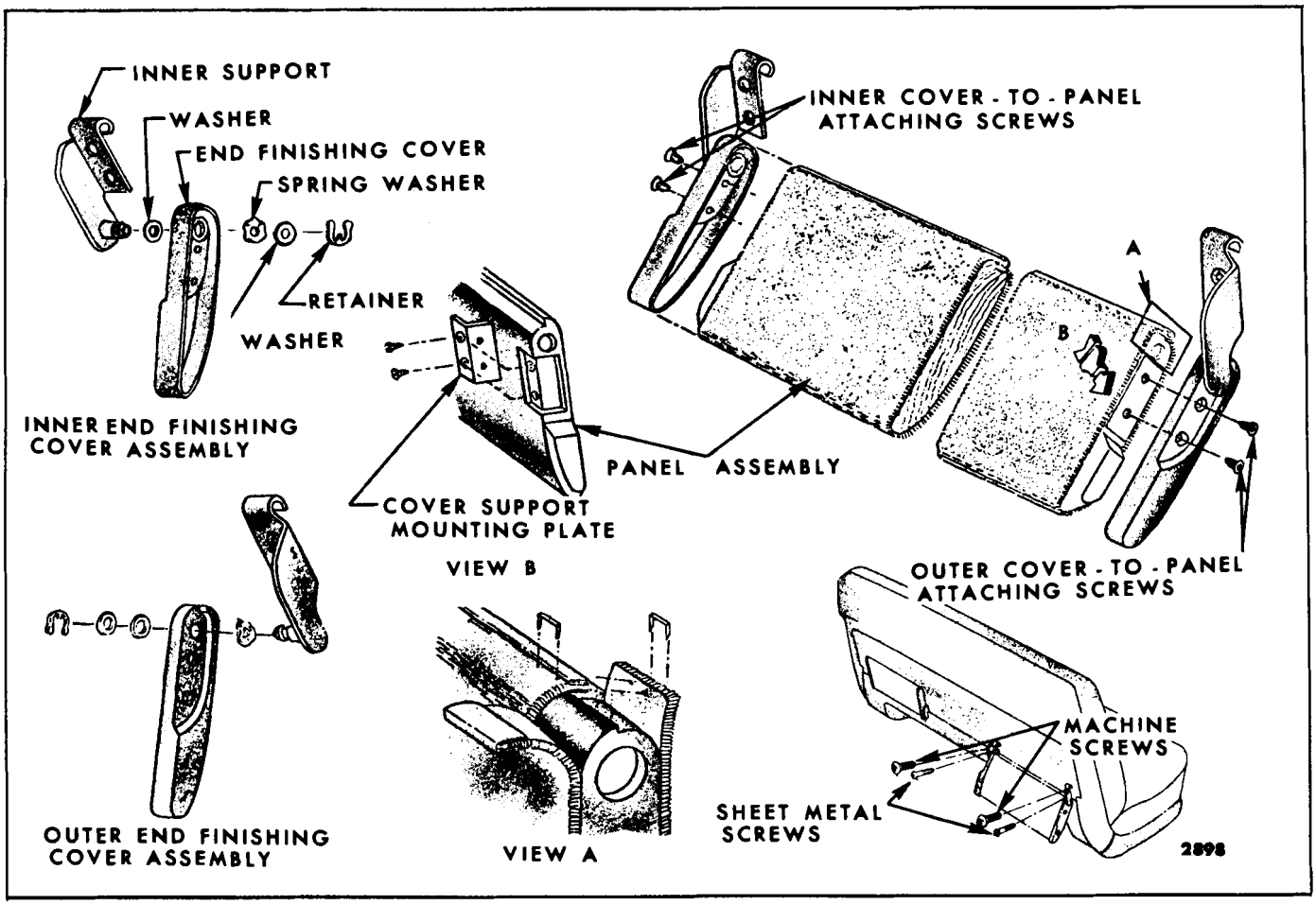


Fig. 9-63-Footrest Assembly - Cadillac 6CB69 Styles

REAR SEATS

REAR SEAT CUSHION ASSEMBLY - All Styles Except "A" Body and Station Wagons

Removal

Push lower forward edge of seat cushion rearward; then lift upward and pull forward on seat cushion frame to disengage cushion frame wires from retainers on rear seat pan (Figs. 9-64, 9-65, and 9-66).

NOTE: If difficulty is experienced in disengaging the front edge of the rear seat cushion from retainers on rear seat pan it may be necessary to kneel (on four-door styles) or stoop (on two-door styles) on the rear floor pan. Grasp lower edge of seat cushion at location of retainer on one side of seat; then lean forward (towards seat cushion) using leg pressure against hands or arms, exert sufficient rearward pressure to disengage seat from retainers.

Installation

1. Carefully lift cushion into body using caution not to damage adjacent trim. Position rear edge of cushion under rear seat back assembly.

2. Align frame wire offsets on front of seat cushion frame with retainers on floor pan (Fig. 9-65). Push seat cushion assembly rearward until offsets engage in retainers; then press down and pull cushion forward to fully engage in retainers.

   NOTE: If difficulty is experienced in engaging front of cushion in retainers, use the same method described under removal to engage cushion in retainers.

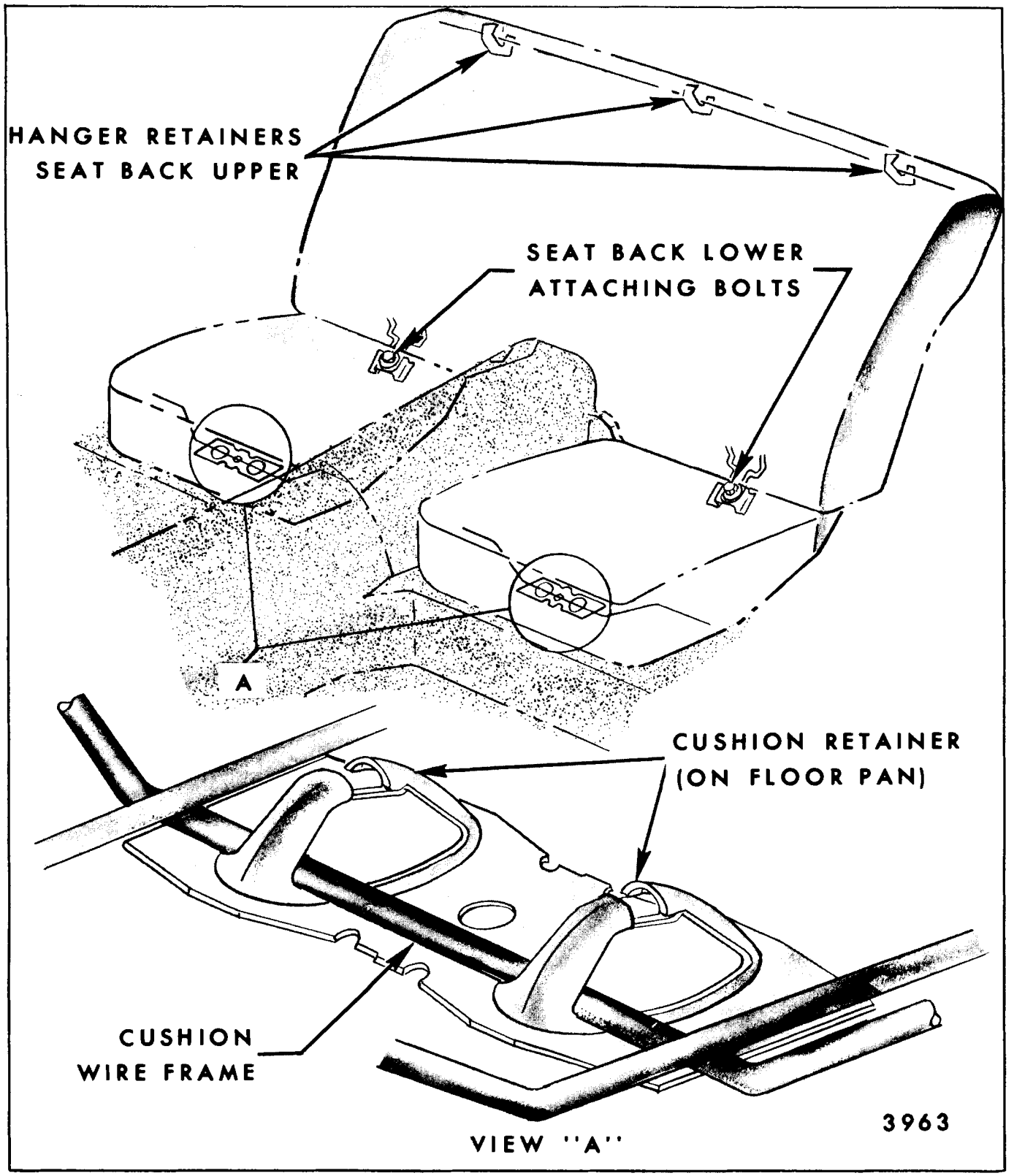


Fig. 9-64-Rear Seat Cushion and Back Installation - "F" Body Styles

If seat cushion frame offsets are not properly centered in relation to retainers on seat pan, proper engagement and placement of cushion will be extremely difficult.

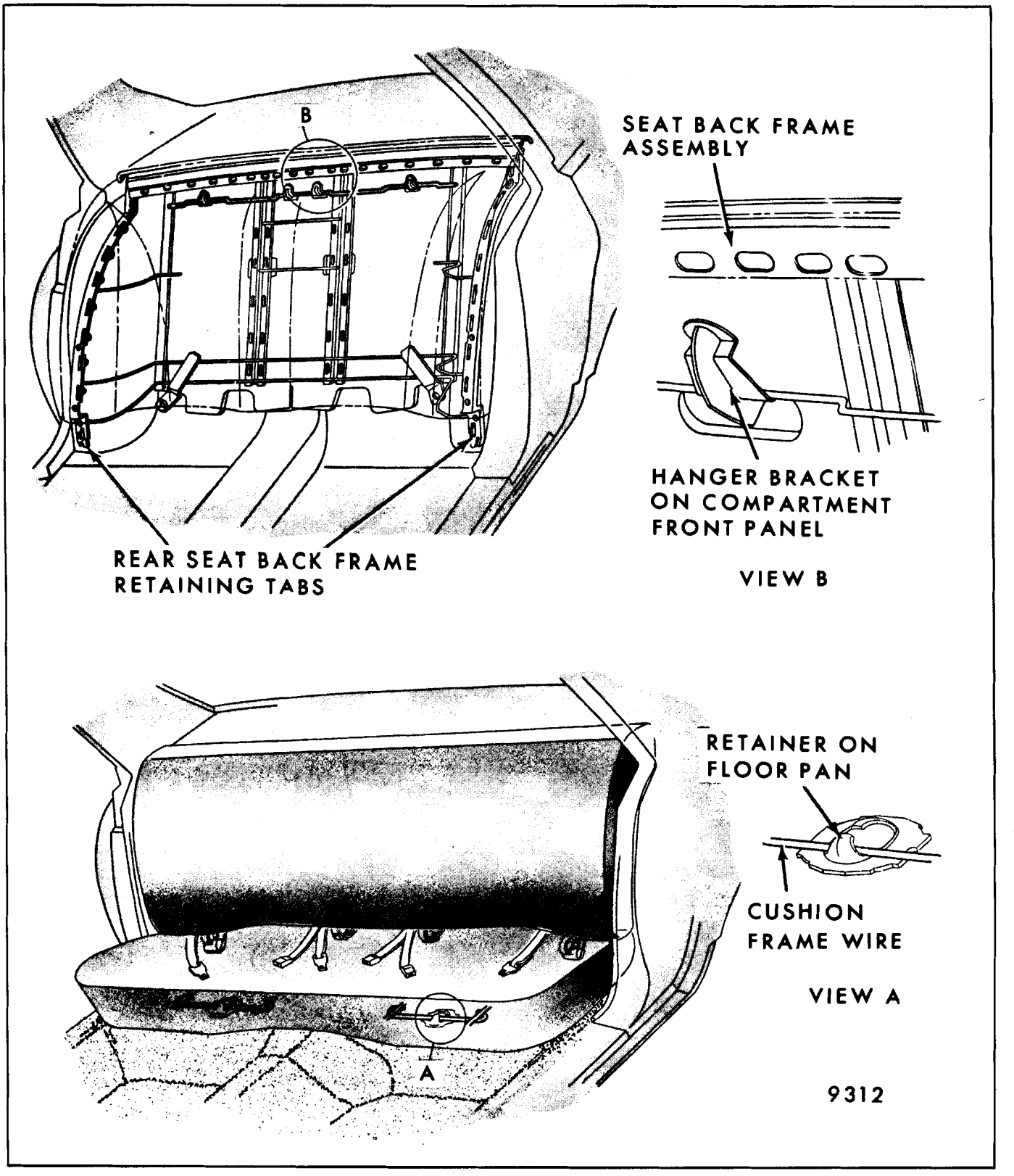


Fig. 9-65-Rear Seat Cushion and Back Installation - "B,C,D,E" Body Styles Except Station Wagon

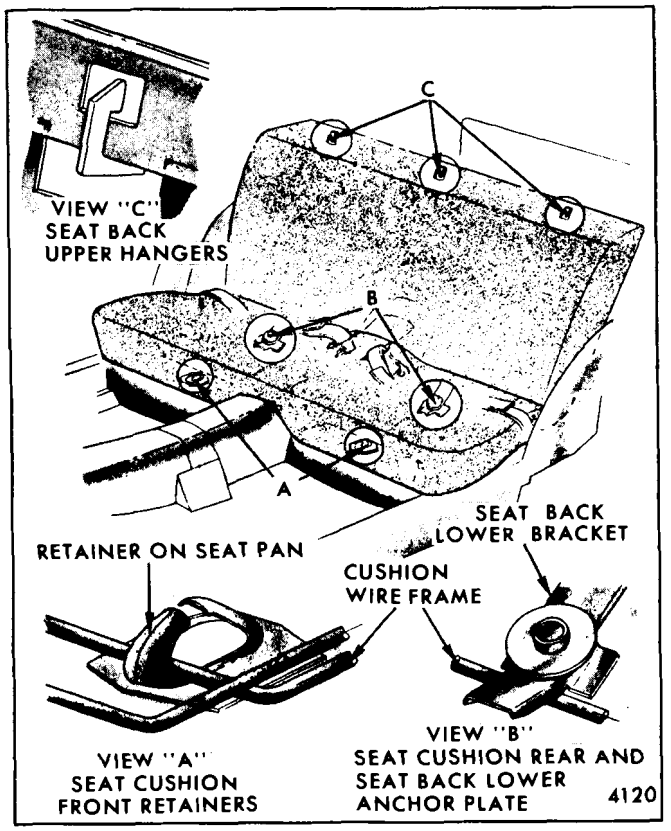


Fig. 9-66-Rear Seat Cushion and Seat Back - "H-11-27" Body Styles

REAR SEAT CUSHION ASSEMBLY - All "A" Body Styles

Removal and Installation

1. Under front of rear seat cushion, remove two bolts securing rear cushion wire frame to floor pan (Fig. 9-67).
2. Pull rear seat cushion forward to disengage rear of cushion from under rear seat back.
3. To install rear seat cushion, reverse removal procedure.

REAR SEAT BACK ASSEMBLY - "A and X" Body Styles Except Station Wagons and "X-17" Body Style

Removal and Installation

1. Remove rear seat cushion assembly as previously described.
2. At bottom of seat back, remove bolts securing rear seat outer lap belt retractors (see Figs. 9-65 and 9-67).
3. On "A,F,H and X" styles, raise seat back upward until disengaged from hangers on the seat back panel support. On "E" styles push seat back downward until wire offsets at top of seat back are disengaged from slots in seat back panel support. On "B,C,D and K" styles (see Fig. 9-68) at lower outboard corners of seat back, bend tabs forward that secure seat back and remove two screws securing center of seat back and pull lower portion of seat back forward to disengage corner tabs; then lift seat back upward until upper portion of seat back is disengaged from hanger brackets on seat back panel supports.
4. Remove seat back assembly from body.
5. To install, reverse removal procedure, making certain that all attaching body tabs and hangers have industrial body tape applied to them to act as an antisqueak. Install outer lap belt retractors over seat back lower brackets and tighten retractor bolts to 45 ft-lb.

REAR SEAT BACK CENTER ARMREST AND CURTAIN

Removal and Installation (Refer to Fig. 9-69)

1. Remove the rear seat cushion and back assemblies.
2. Remove the hog rings securing the curtain to the seat back frame wire and fold curtain forward.
3. Remove two screws securing armrest to seat back frame, then carefully remove armrest from seat back.
4. To install, reverse removal procedure.

REAR SEAT BACK CENTER ARMREST SUPPORTS

Removal and Installation

1. Remove rear seat back center armrest and curtain as previously described; then remove two screws securing armrest supports to the armrest.
2. To install, reverse removal procedure.

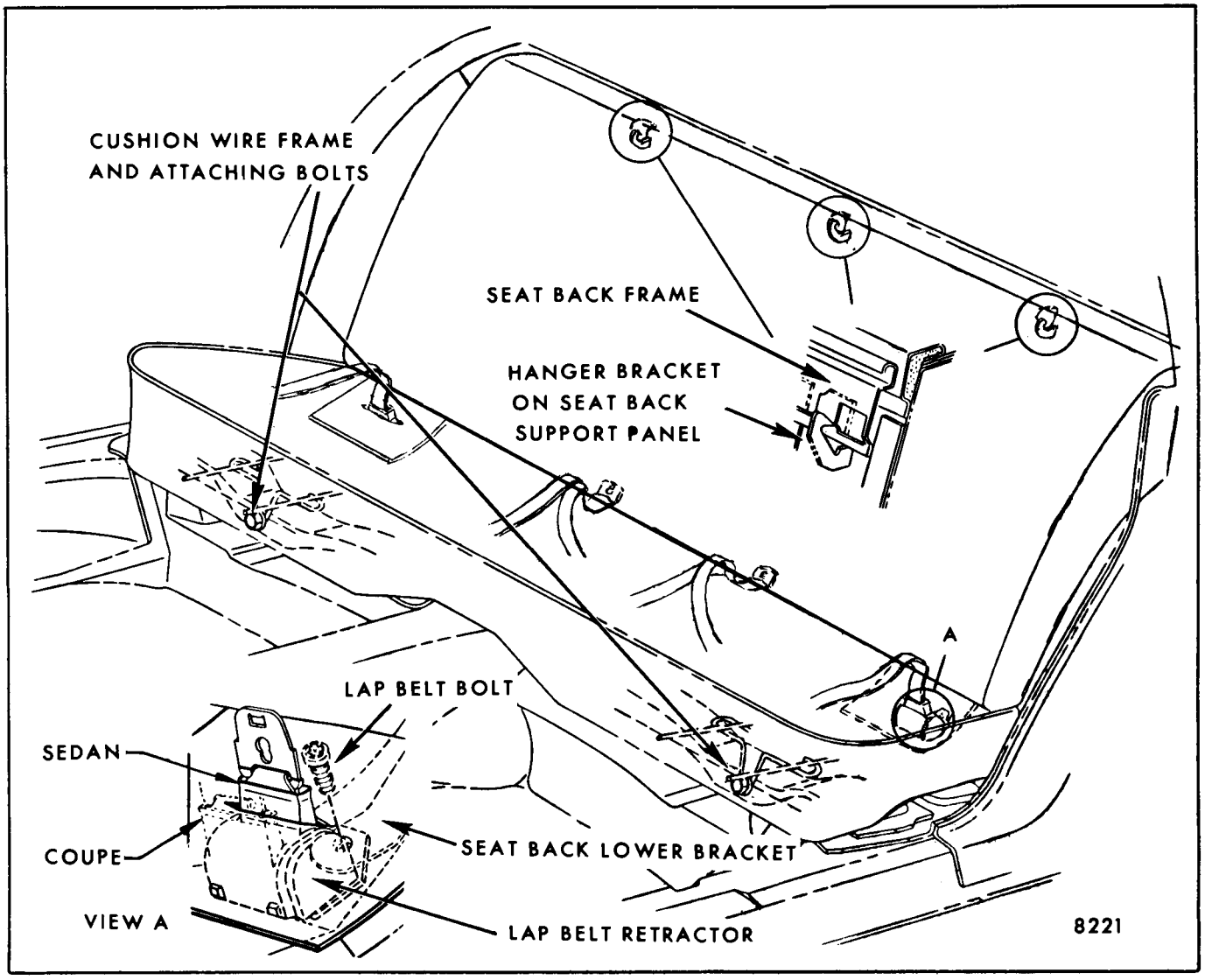


Fig. 9-67-Rear Seat Cushion and Back Installation - All "A" Body Except Station Wagons

REAR SEAT BACK CENTER ARMREST LINKAGE AND CURTAIN - "K" STYLE

Removal and Installation (Refer to Fig. 9-70)

1. Remove rear seat cushion and back assemblies.
2. Lower rear seat back center armrest. Carefully remove hog rings from armrest curtain and fold trim flap forward.
3. Remove four screws securing armrest linkage to back frame assembly; then remove armrest from seat back.
4. Remove four screws securing armrest linkage to armrest assembly and remove link assembly from armrest assembly.
5. To install, reverse removal procedure.

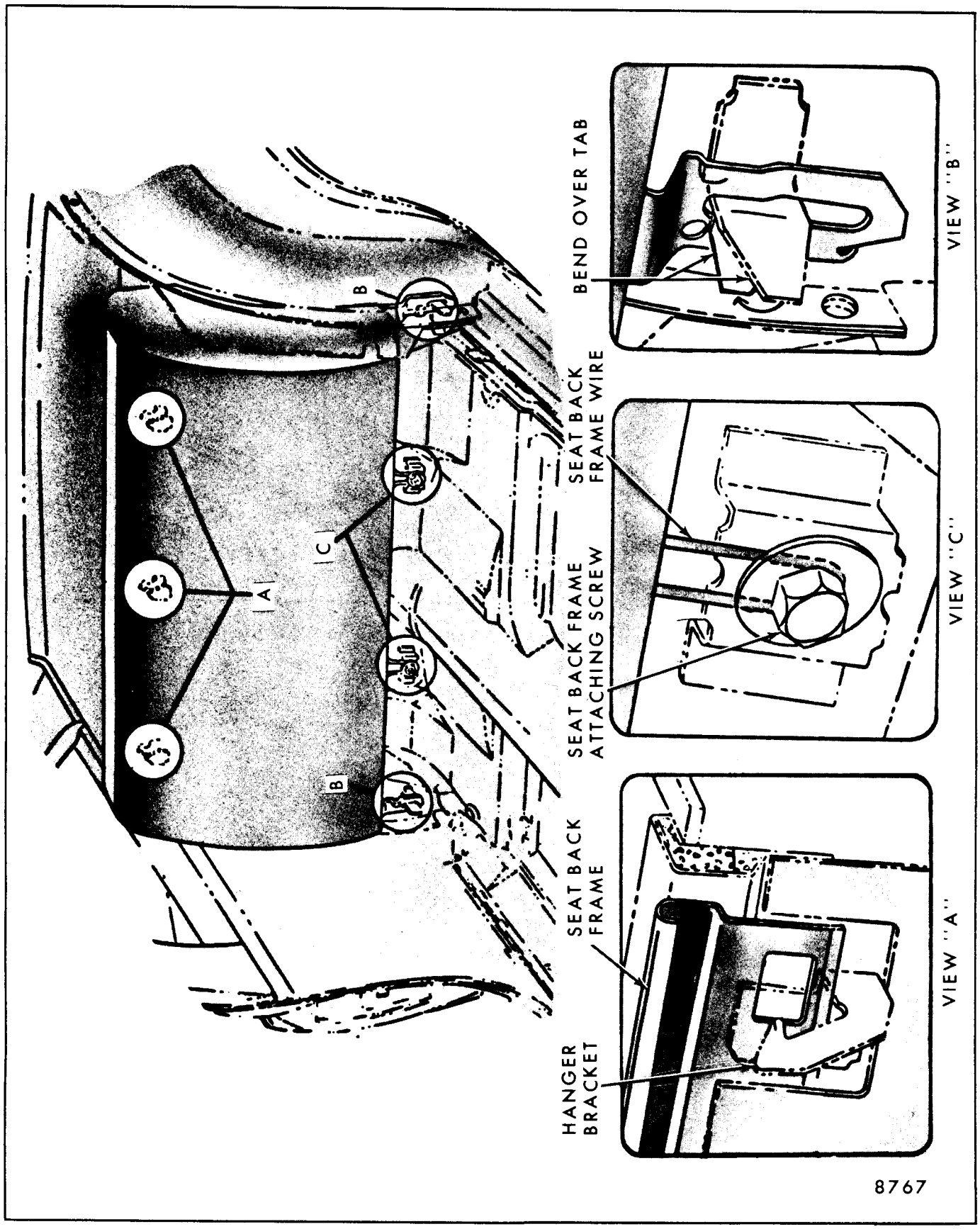


Fig. 9-68-Rear Seat Back Installation - "K" Style

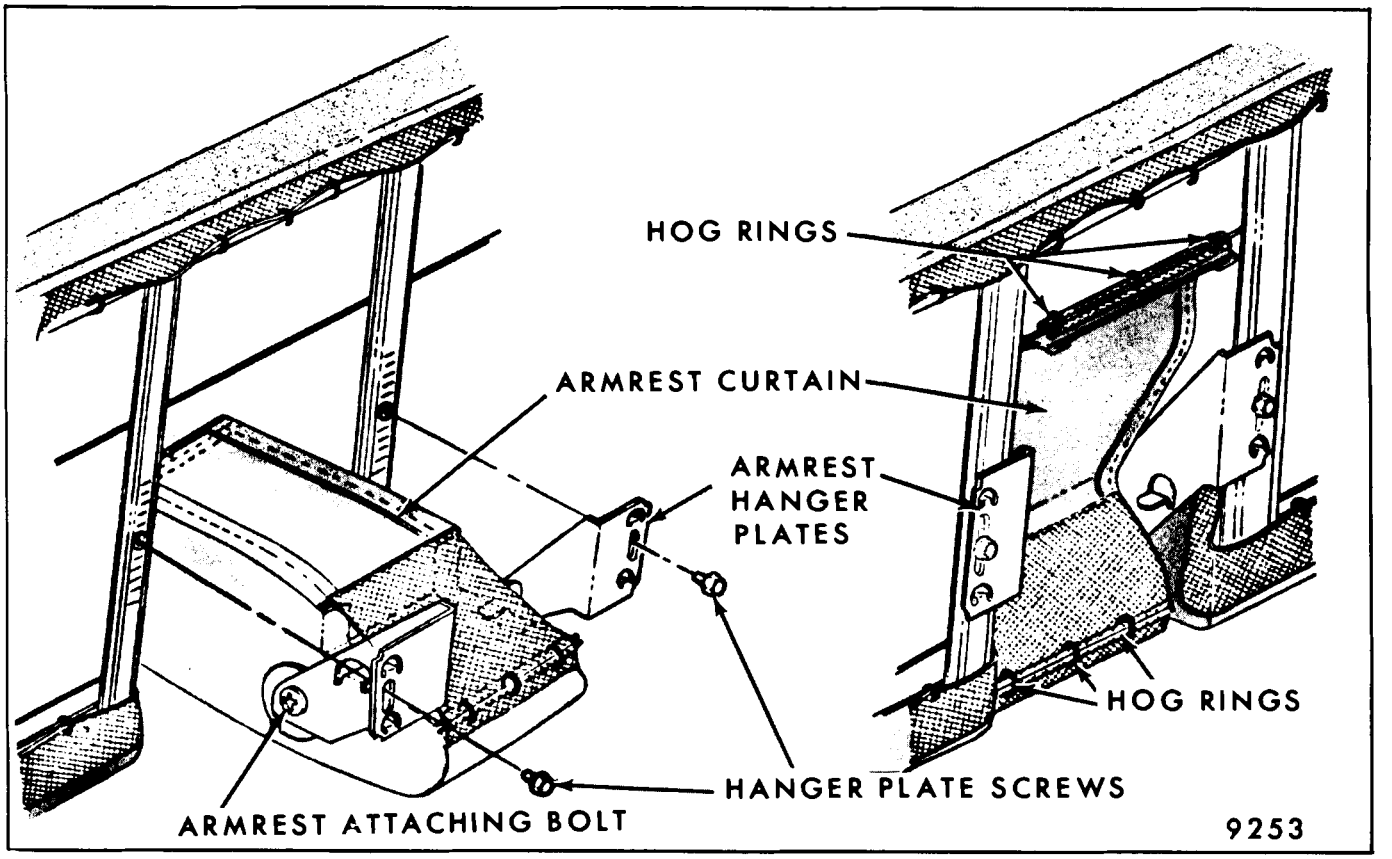


Fig. 9-69-Rear Seat Back Center Armrest and Supports - All "C" Styles

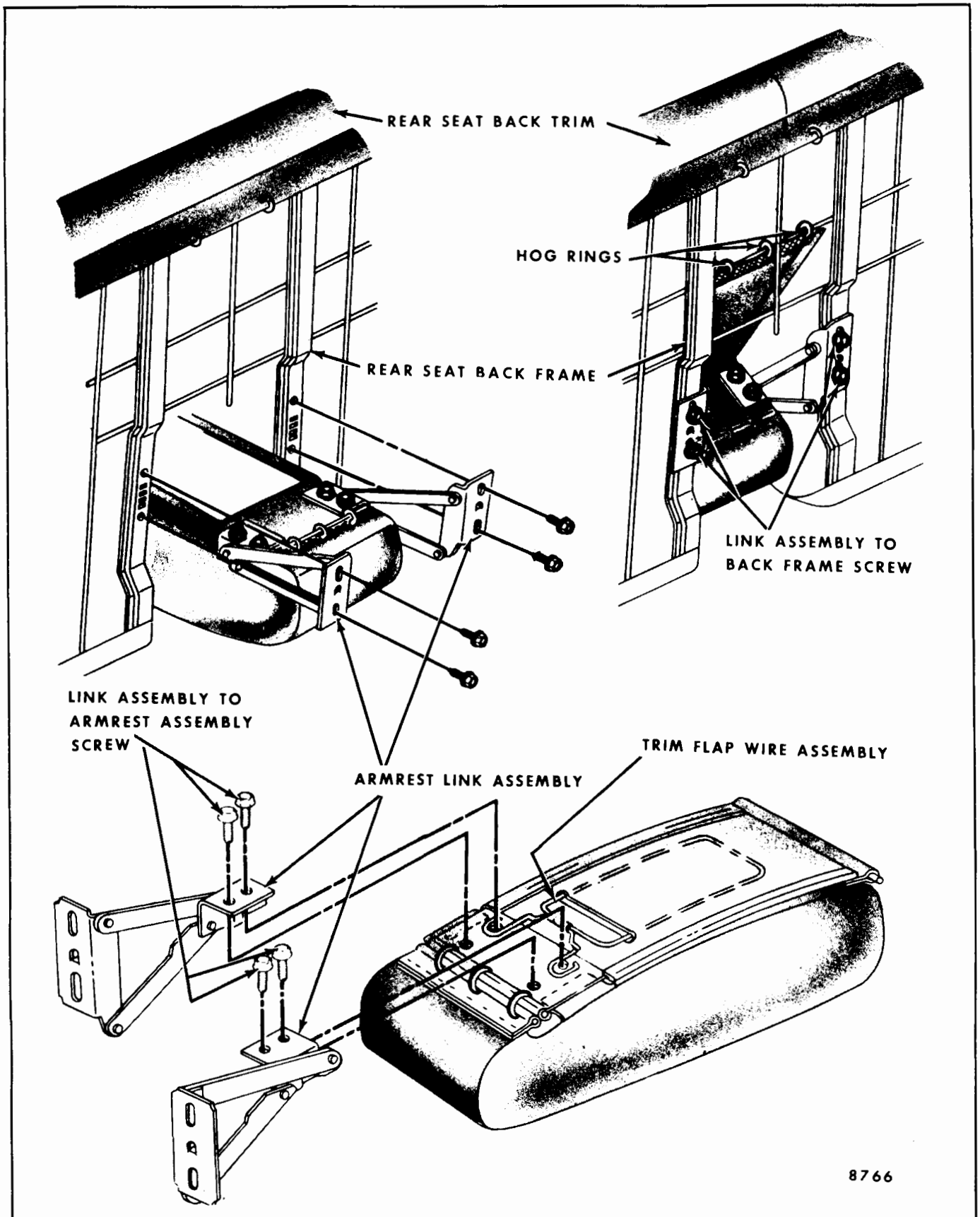


Fig. 9-70 - Rear Seat Back Center Armrest Installation - "K" Style

AUXILIARY SEAT ASSEMBLY - Cadillac Limousine Styles

Removal and Installation

1. Place auxiliary seat in the folded forward position.
2. Move rear seat footrest rearward; then unsnap carpet flap. Move footrest forward and carefully pull carpet flap from under footrest.
3. Remove footrest hinge attaching screws and remove footrest assembly (Fig. 9-71).
4. Remove auxiliary seat hinge pin cap screws; then remove cap and auxiliary seat assembly (Fig. 9-72).
5. To install auxiliary seat assembly, reverse removal procedure.

AUXILIARY SEAT ADJUSTMENT - Cadillac Limousine Styles

The auxiliary seats in Cadillac limousine styles can be adjusted to provide additional leg room for auxiliary seat passengers.

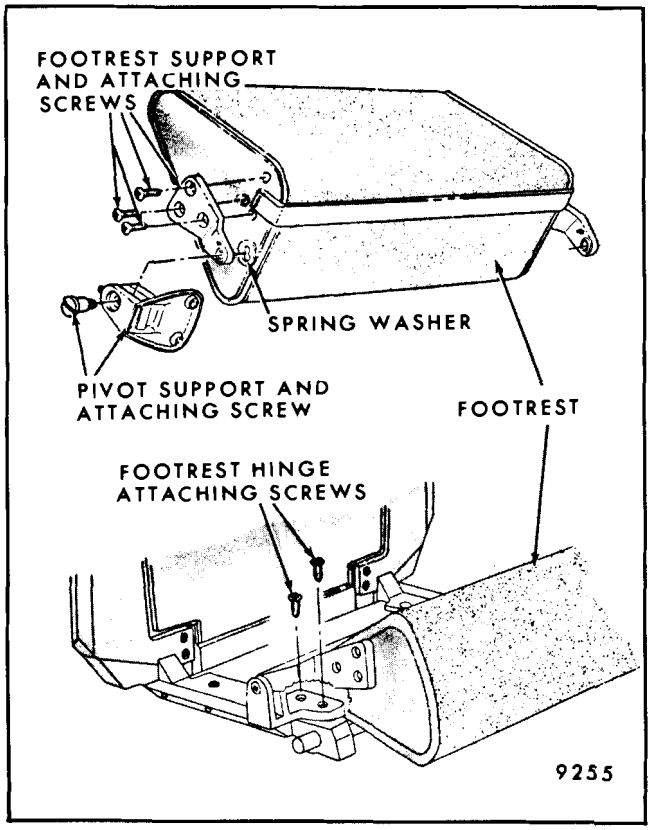


Fig. 9-71-Auxiliary Seat Footrest Assembly - Removal and Installation - Cadillac Limousine Styles

The following procedure describes and illustrates how to adjust the auxiliary seat.

1. Place auxiliary seat in the upright sitting position.
2. On the front side of the auxiliary seat heel board, turn back foot well carpet flap to expose the auxiliary seat lower outboard and inboard support assemblies.
3. Loosen the hex head adjusting screw lock nut at both inboard and outboard support (see Fig. 9-72).
4. Carefully turn the adjusting screw (see Fig. 9-72) at both supports the SAME AMOUNT to allow the seat to pivot rearward further, thereby providing additional leg room for the auxiliary seat passenger. Tighten the adjusting screw lock nut at both supports.

   When making this adjustment maintain a minimum distance of at least 6-1/4" from rear seat cushion to auxiliary seat.

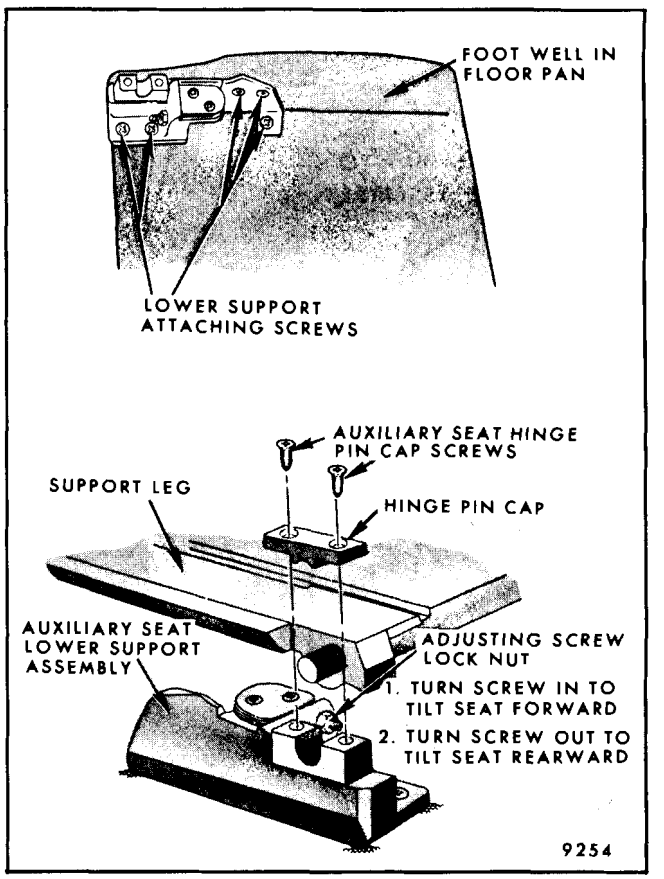


Fig. 9-72-Auxiliary Seat Lower Support and Adjustment - Cadillac Limousine Styles

AUXILIARY SEAT LOWER SUPPORT ASSEMBLY - Cadillac Limousine Styles

Removal and Installation

1. Remove auxiliary seat assembly as previously described.
2. Remove lower support assembly attaching screws shown in Figure 9-72 and remove support assembly.
3. To install auxiliary seat lower support assembly, reverse removal procedure.

FOLDING REAR SEAT AND LOAD FLOOR PANELS - "H-07, 15, 27, 77 and X-17" Styles

The "H-07, 15, 27, 77 and X-17" styles are equipped with a folding rear seat back and filler panel which can be lowered to provide a flat load floor area. The rear seat back has a positive acting seat back lock located on the right side. The lock must be disengaged to lower the seat back. When the rear seat back is raised to the up position the lock hook engages the striker and locks the seat back securely in place. The luggage compartment cover on the "X-17" styles has a hold-open support rod secured by a clip on the right side of the luggage compartment rear cross bar. The load floor consists of the rear seat back panel, rear seat back filler panel, luggage compartment front panel, luggage compartment panel and a right and left side luggage compartment outer panel (Fig. 9-73).

REAR SEAT CUSHION - "H-11 and 27" Styles

Removal and Installation

1. To remove rear seat cushion, push front of seat rearward and lift upward to disengage cushion frame wire from retainer on floor pan; then pull toward front of body until cushion frame rear wires disengage from under rear retainers on floor pan (Fig. 9- 66). Disengage seat belts from seat belt retainers and lift cushion from body.
2. To install, reverse removal procedure making sure seat frame wire is securely engaged in both front and rear floor pan retainers.

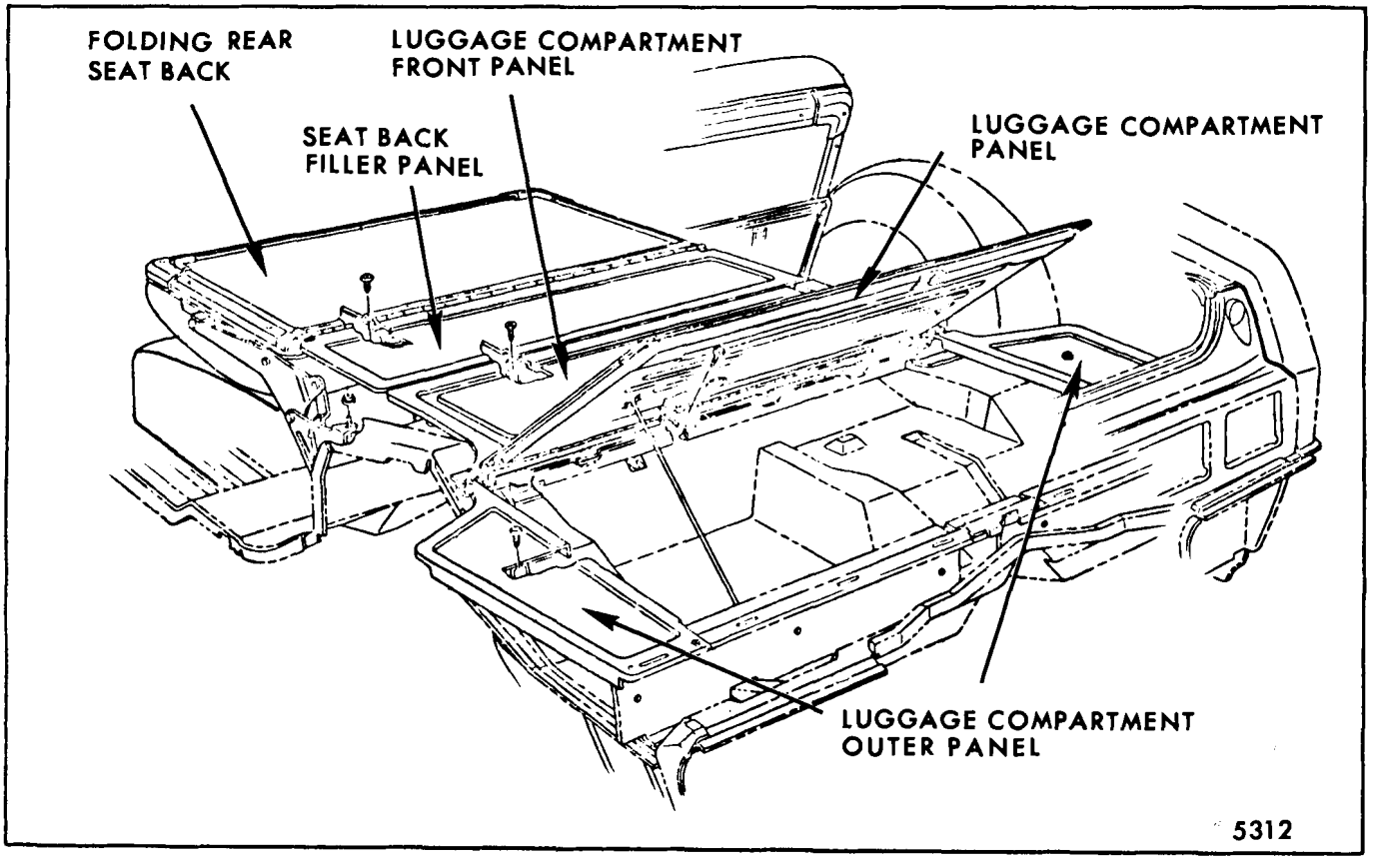


Fig. 9-73-Folding Rear Seat and Load Floor Panels - "X-17" Style Shown ("H-07, 15, 27 and 77" Styles Typical)

LUGGAGE COMPARTMENT PANEL AND HINGE ASSEMBLY - "X-17" Style

Removal and Installation

1. Lift luggage compartment panel sufficiently to gain access to hinge attaching screws at front of panel (Fig. 9-73).
2. Remove attaching screws and lift panel and hinge assembly from body.
3. To install, reverse removal procedure.

REAR SEAT BACK FILLER PANEL AND HINGE ASSEMBLY

Removal and Installation

1. With rear seat back and filler panel in load floor position, remove screws securing filler panel hinge to seat back panel and remove filler panel from body.
2. To install, reverse removal procedure.

REAR SEAT BACK ASSEMBLY (Includes Pivot Arms, Back Panel, Filler Panel and Seat Back Lock) - "X and H" Styles with Folding Rear Seat

Removal and Installation

1. With rear seat back in load floor position and with filler panel against seat back, remove pivot bolts (see Fig. 9-74) securing pivot arms to pivot arm supports; then remove seat back assembly from body.
2. To remove seat back pivot arm(s), remove lock and pivot arm attaching bolt on right side and/or pivot arm attaching bolts on left side (see Fig. 9-74), then remove pivot arm(s).
3. To remove seat back trim and foam pad from seat back panel, remove both right and left pivot arms as described in step 2 and remove seat back filler panel.
4. Remove hog rings securing trim cover to seat back panel and remove trim cover. To remove foam pad or if replacing back panel, carefully break cement bond securing pad to panel and remove pad.
5. To install, reverse removal procedure. Torque linkage to seat back frame attaching bolts to 14 to 22 N·m (10 to 16 ft-lb). If replacing foam pad, cement pad in position with foam rubber cement.

LUGGAGE COMPARTMENT FRONT FILLER PANEL - "X-17" Styles

Removal and Installation

1. With rear seat in load floor position, raise filler panel and place on top of seat back panel.
2. Remove luggage compartment panel and filler panel hinge assembly as previously described.
3. Remove luggage compartment front panel front attaching screws and seat back filler panel stops.
4. Remove luggage compartment front panel.
5. To install, reverse removal procedure.

REAR SEAT BACK LOCK ASSEMBLY

Removal and Installation

1. Lower rear seat back to load floor position.
2. Remove lock assembly (includes attaching bolt, lock spring, latch, handle and bushing) (Fig. 9-74).
3. To install lock assembly, reverse removal procedure. Tighten lock attaching bolt to 11 to 16 N·m (8 to 12 ft-lb) and check for proper operation of lock.

REAR SEAT BACK LOCK STRIKER, BUMPERS AND SUPPORTS

Removal and Installation (See Fig. 9-74)

1. Using lock striker removal tool J-23457 or BT-7107 or equivalent, remove striker.
2. To remove seat back bumpers, bumper gasket or bumper support, remove bumper screws or support screws.
3. To install, reverse removal procedure. Torque lock striker 30 to 46 N·m (22 to 34 ft-lb).

REAR SPEAKERS - ALL STYLES (Except "35,X-17 and H-07,27,77" Styles)

Description

One basic type of speaker assembly is installed to the rear seat to back window panel. Access for removal

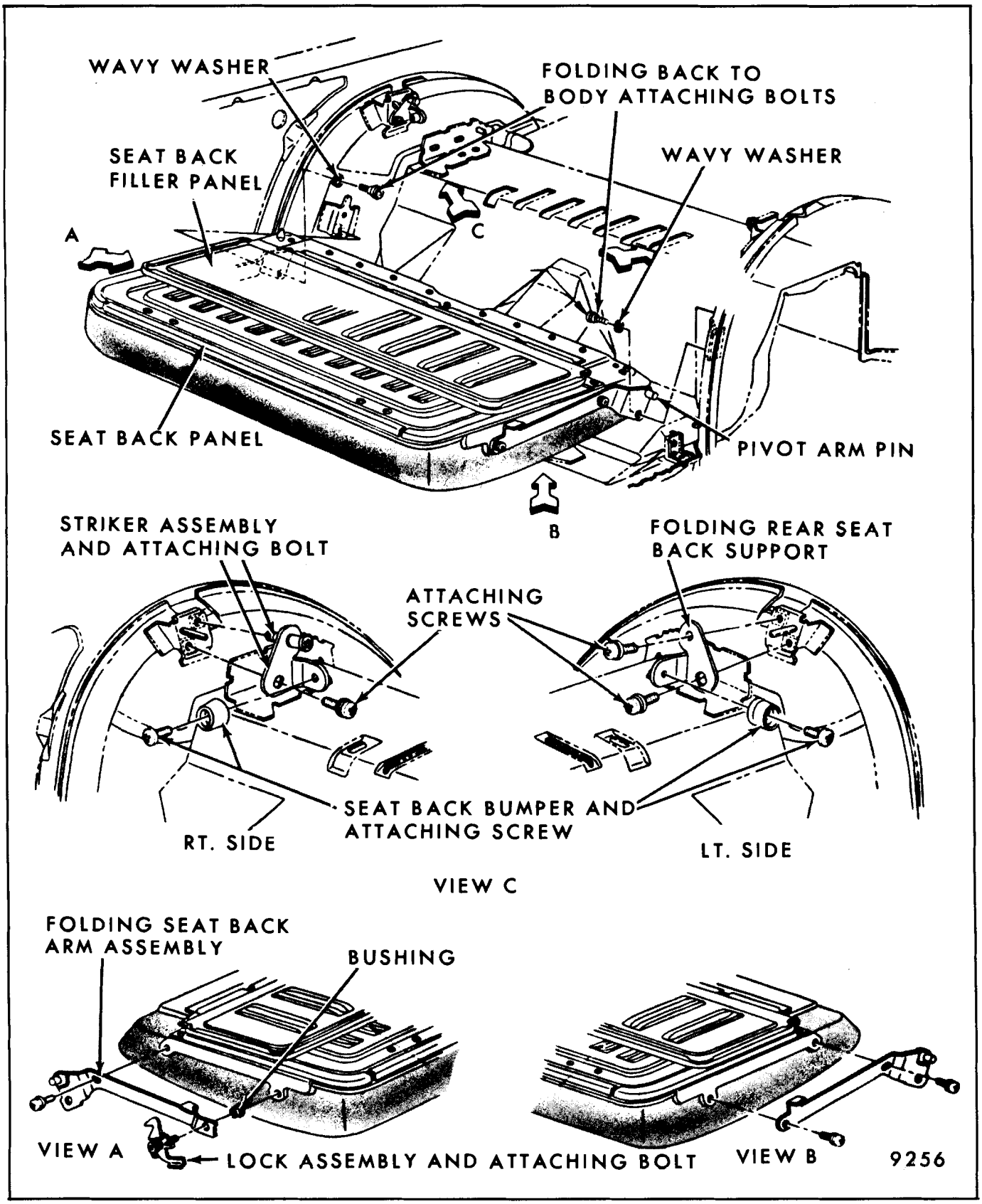


Fig. 9-74-Folding Rear Seat Back and Lock Installation Assembly - "H-07, 15, 27 and 77" Styles Shown ("X-17" Styles Typical)

is gained through the rear compartment.

If a nonperforated painted panel is used, the speaker is attached to a speaker grille assembly or retained by a one piece metal retainer (see Fig. 9-75, Views "B" and "D", and Fig. 9-77).

If a perforated vinyl coated panel is used, the speaker is retained with either a metal retainer Figure 9-75, View "D", or a bolt and clip assembly Figure 9-76, View "C".

Removal and Installation

1. If speaker baffle (cover) is installed to speaker assembly, detach baffle by removing push-on retainer or attaching nuts (see Fig. 9-76, View "A" and "B").
2. Disconnect speaker wire from body harness.

   NOTE: If replacing speaker remove baffle retainer as shown in Figure 9-75, View "D" and "E".
3. If not previously removed with baffle, remove four attaching nuts to separate speaker assembly from grille and lift grille assembly upward to complete removal (see Fig. 9-76).
4. On styles using metal retainer assembly to secure speaker to rear seat to back window panel, Figure 9-75, View "D", disengage spring hook from tab at rear of panel and swing speaker assembly downward to remove.
5. To install, reverse removal procedure.

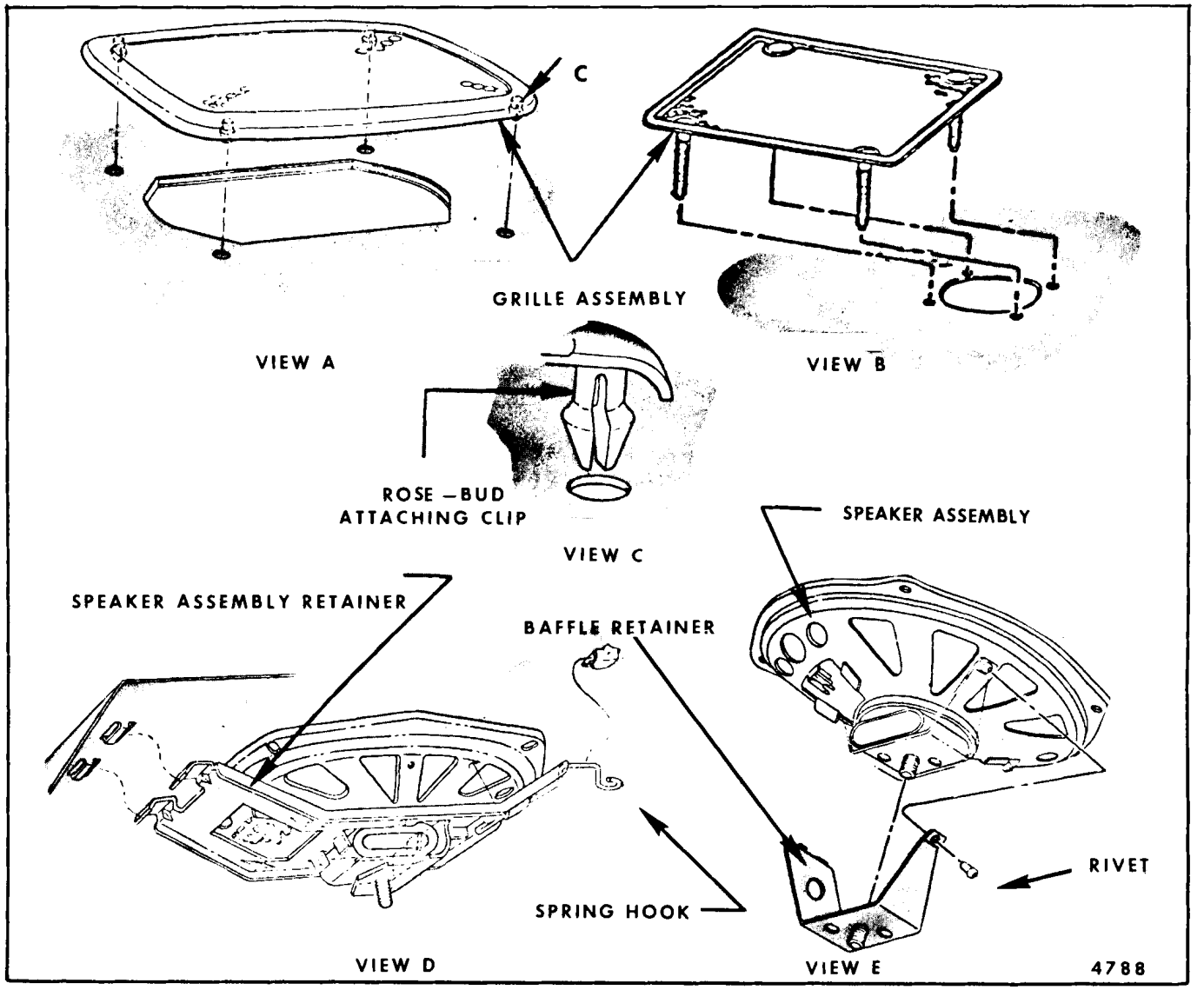


Fig. 9-75-Grille and Speaker Attachment

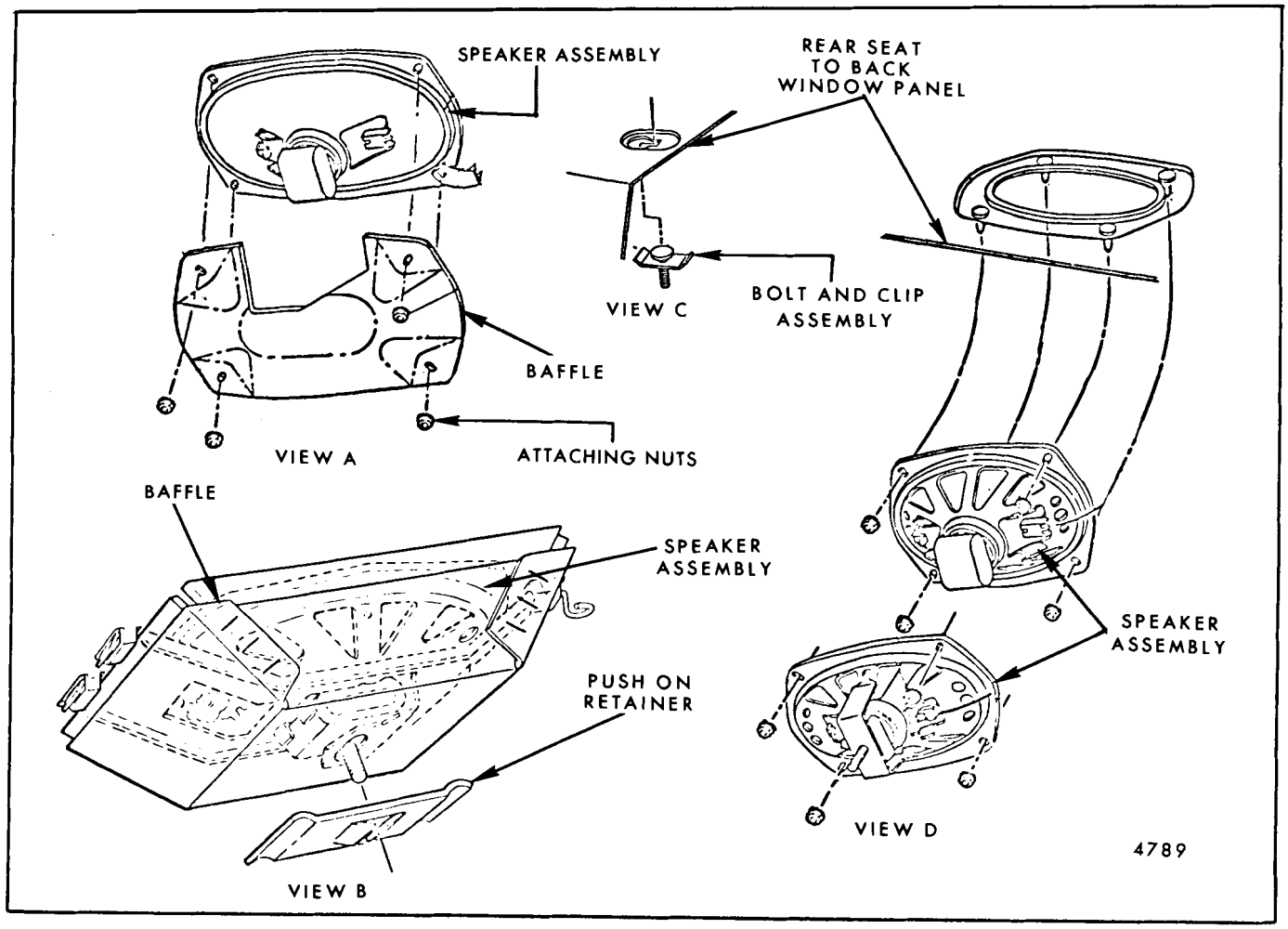


Fig. 9-76-Baffle and Speaker Attachment

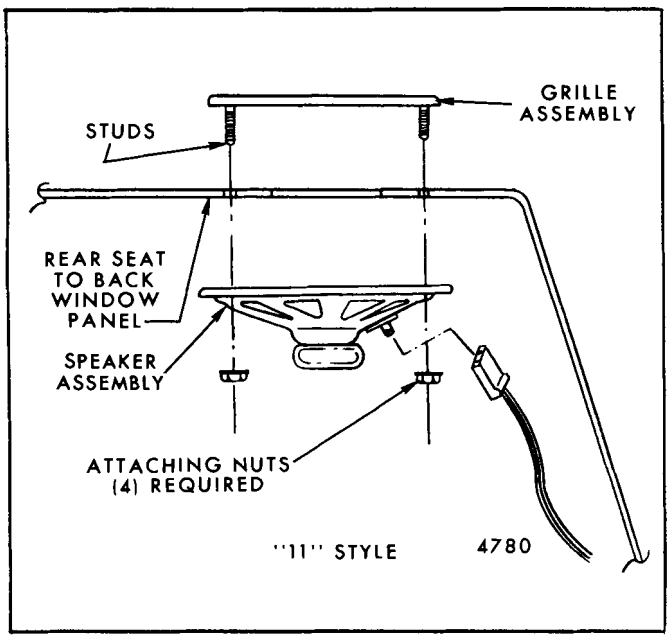


Fig. 9-77-Rear Speaker - "11" Styles

BACK WINDOW LOWER GARNISH MOLDING

Description

The back window lower garnish molding is installed over the rear edge of the rear seat to back window trim panel. On the "A- 29,37" and Chevrolet and Pontiac "A-57" styles, the molding is part of the compartment front panel. On "E,F and H" styles, the rear seat to back window trim panel is designed at the rear edge to replace the lower garnish molding.

Removal and Installation

1. On styles with screw attached moldings, removal of screws will allow molding disengagement.

2. On other than screw attached moldings, nylon clips secure the molding by engaging in slots or holes in the compartment front panel or rear seat to back window panel (Fig. 9-78).

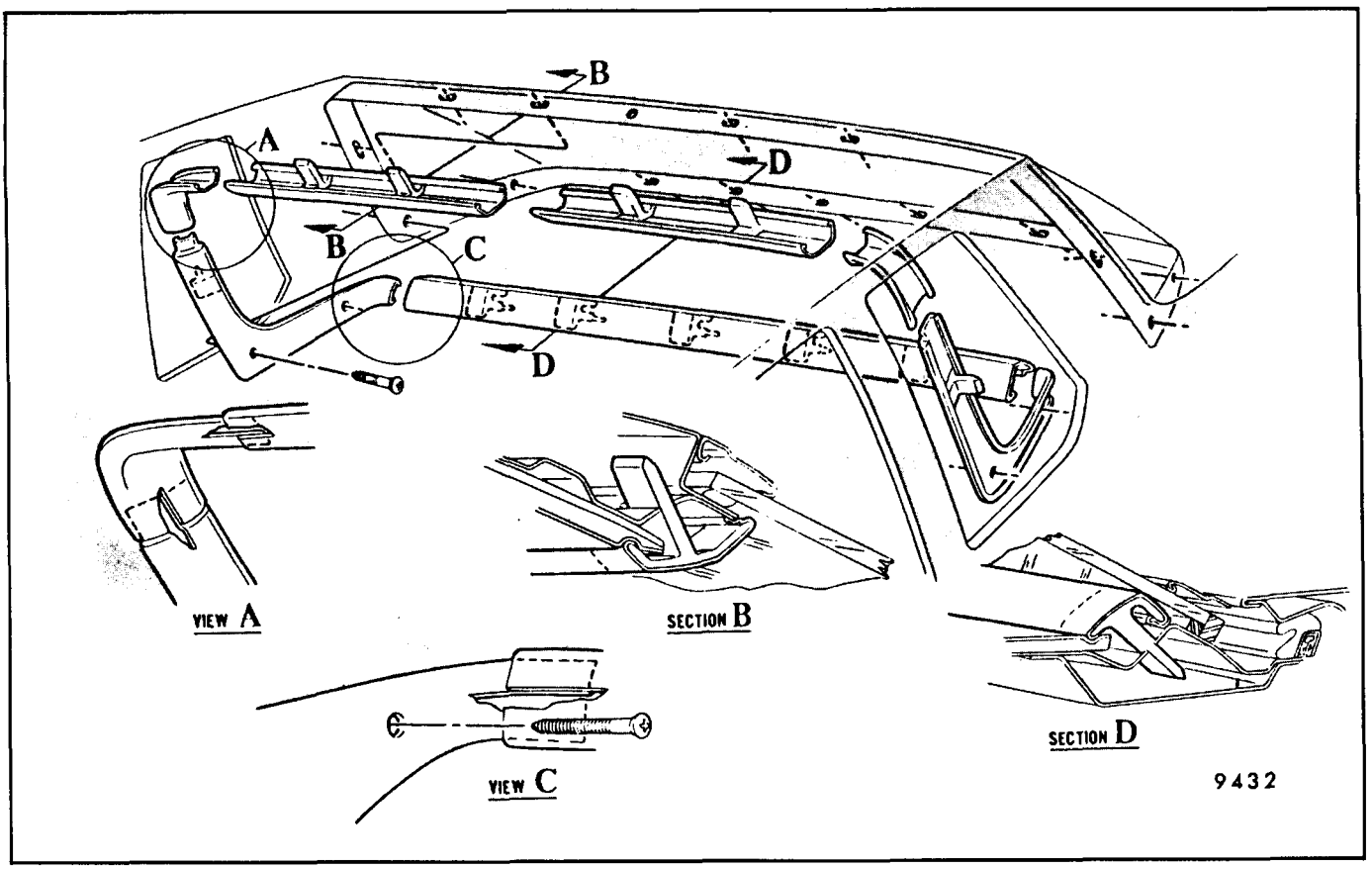


Fig. 9-78 - Back Window Garnish Moldings "B-37-69" Shown (Other Styles Similar)

3. Nylon clip retained moldings can be removed by using a flat bladed tool between the molding and the trim finishing panel and depressing the clip retention feature.

4. On moldings which use a round serrated fastener, use tool J- 24595 or BT-7323 or equivalent and pry the clip loose from attaching hole.

5. To install, align clips in molding section with attaching slots or holes and press firmly in place.

NOTE: On some styles it may be necessary to remove the side garnish to allow the lower to be removed. In addition, corner escutcheons may be present which telescope within the lower garnish end detail.

REAR SEAT TO BACK WINDOW PANEL TRIM ASSEMBLY - All Styles

Removal and Installation

Refer to appropriate illustration - Figure 9-79, 9-80, 9-81 or 9-82.

1. Remove rear seat cushion and back assemblies.

2. Detach optional equipment grilles where present.

3. Remove rear quarter lower and upper trim assemblies.

4. On "H" styles remove both right and left rear quarter window finishing moldings.

5. Carefully bend out tabs shown in View "B", Figure 9-79, and pull front of trim panel forward sufficiently to clear seat back hanger brackets (see View "A", Fig. 9-79); then lift trim panel upward and forward to disengage rear edge of foundation from under back window flange (see Section "C-C", Fig. 9-79) and remove trim panel.

6. On "A-57 and X-27,69" styles, remove two trim panel to seat back brace attaching screws and disengage tabs at rear of trim panel from slots.

7. Carefully break cement bond securing trim assembly at seat back panel (Fig. 9-82).

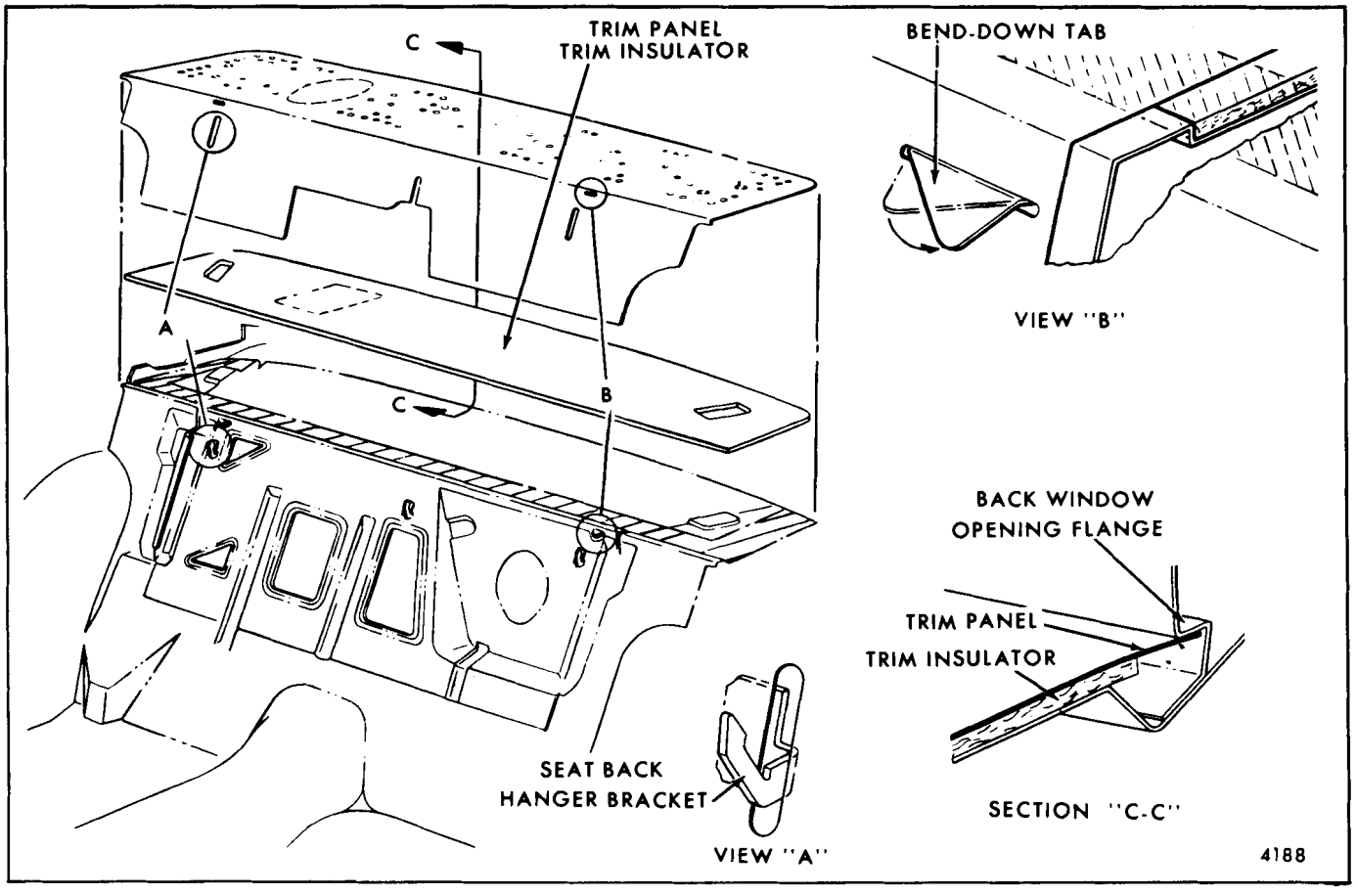


Fig. 9-79-Rear Seat-to-Back Window Trim Panel and Insulator - Typical "H-11" Styles

8. Remove trim assembly lifting up front edge and by pulling assembly forward.

9. To install, position trim assembly to back window panel by inserting rear edge of assembly under garnish molding or feature strip. Center and align front edge of trim assembly with front edge of seat back panel as shown in Figure 9-82. With nonstaining vinyl trim adhesive, cement valance of trim assembly to seat back panel as shown. Install attaching screws if present, then reverse balance of removal procedure.

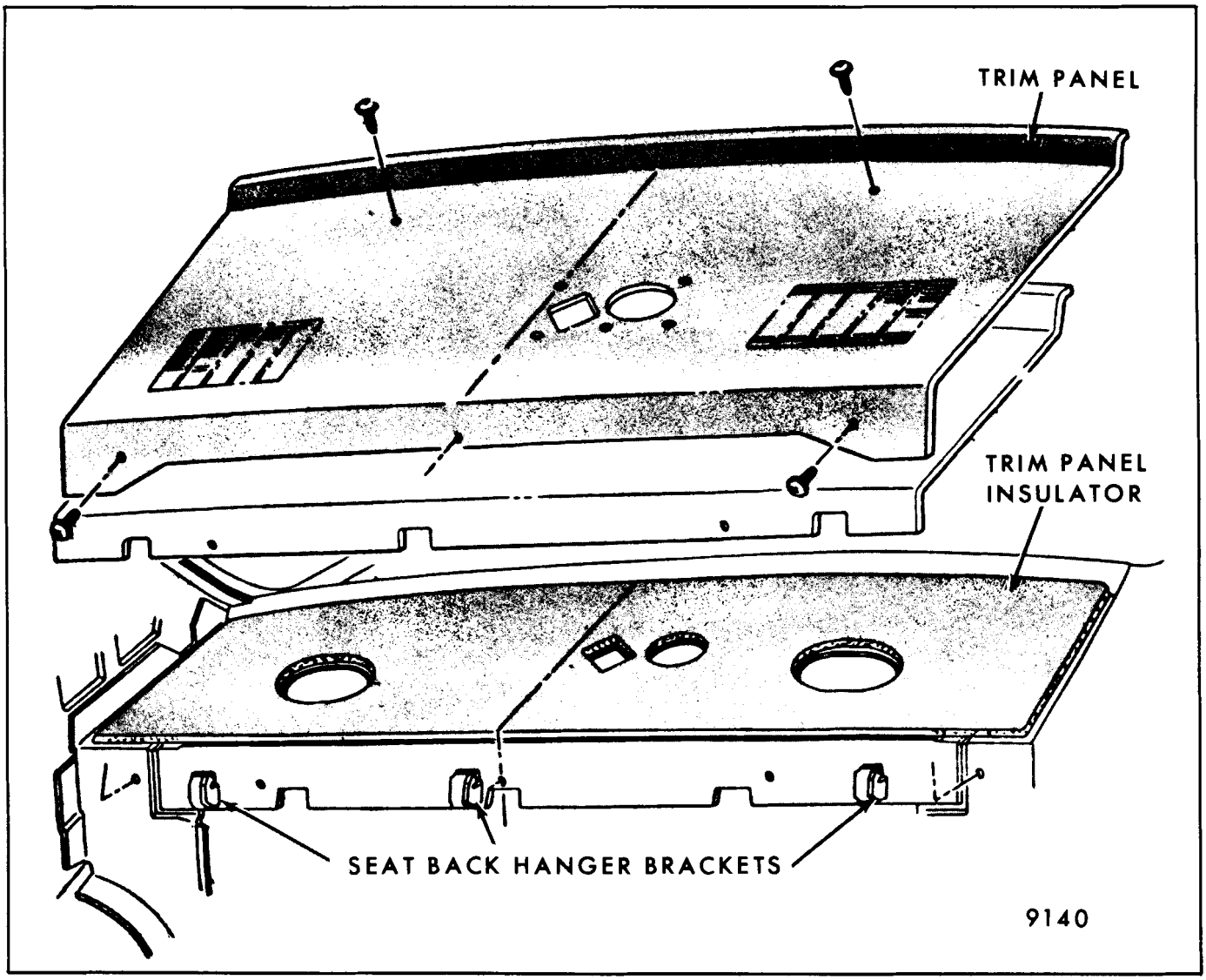


Fig. 9-80-Back Window Trim Panel and Insulator Attachment - Typical "H-27,X-27,69" Styles

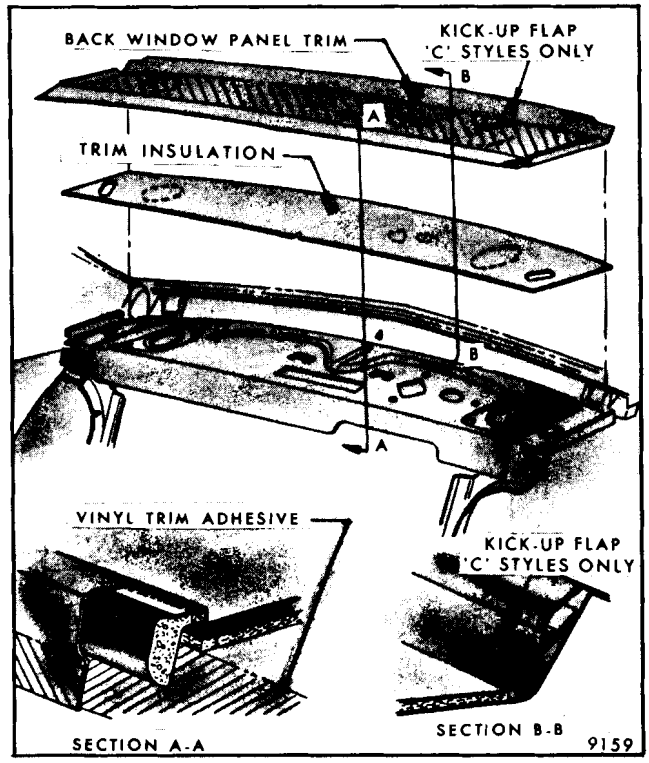


Fig. 9-81-Back Window Trim Panel and Insulator Attachment "A,E and F" Styles

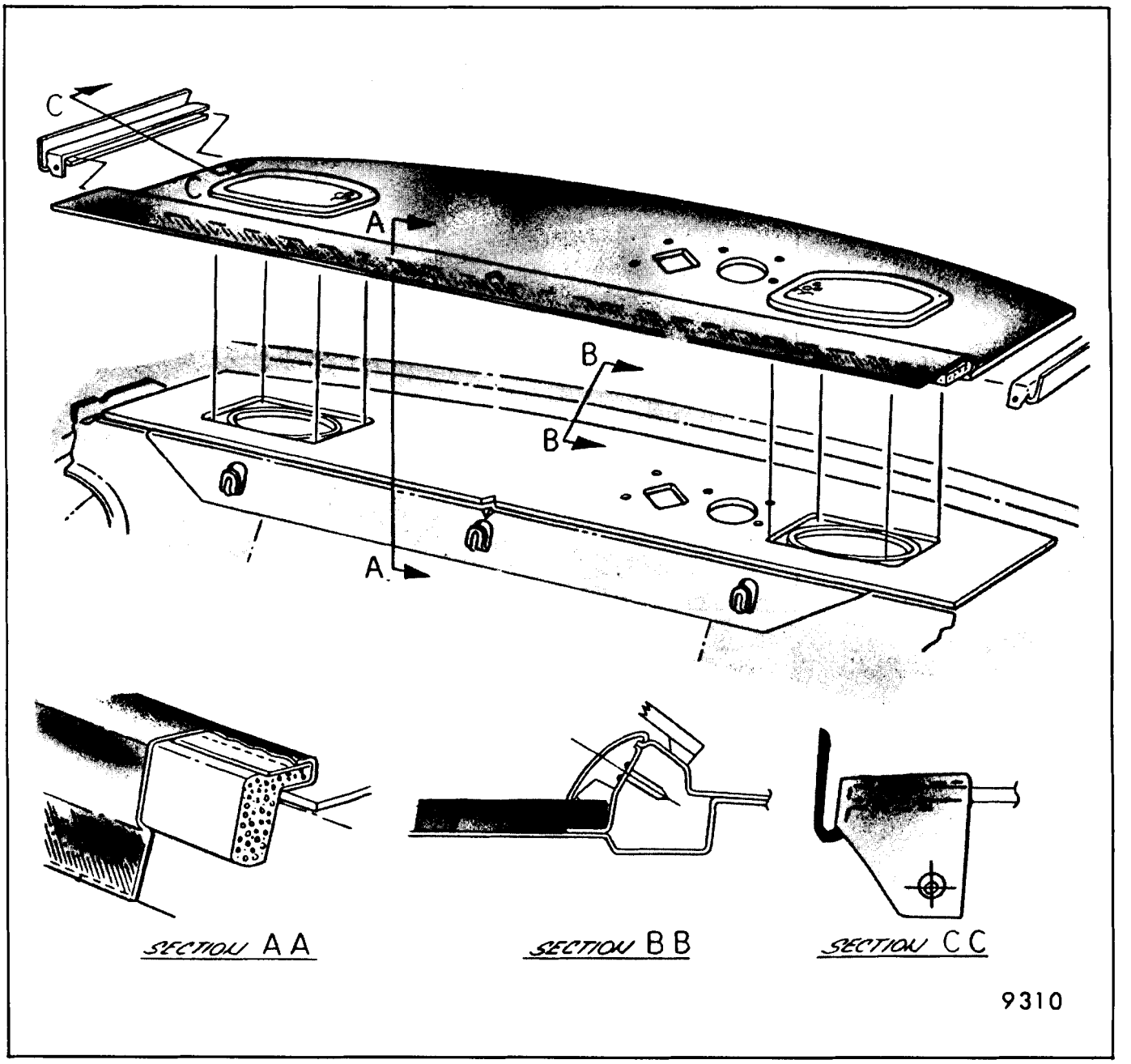


Fig. 9-82-Rear Seat to Back Window Trim Finishing Panel - "B- 69" Style Shown (Other Styles Similar)

STATION WAGON FOLDING REAR SEATS AND LOAD FLOOR PANELS - All "A and B" Station Wagon Styles

DESCRIPTION

All station wagon second seat backs incorporate seat back locks located at the upper right side of the seat backs.

On three-seat station wagons, the third seat back incorporates a lock located at the right lower side of the third seat back. On "B" body wagons the third seat lock is unlocked by lifting the lock remote control handle located under the right side of the luggage compartment rear panel. When unlocked, the seat back lowers into the load floor position by means of a torque rod located in the seat back. By depressing the seat back further, the load floor latch retains the panel in the load floor position.

CAUTION: *Station wagon second and third seat attaching parts such as seat linkage-to-floor pan and seat linkage-to-seat cushion or back bolts and nuts, seat back lock bolts, etc., are important attaching parts in that they could affect the performance of vital components and systems. They must be replaced with an identical part or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

The following views are typical of the station wagon folding seats and rear compartment load floor panels.

These illustrations identify the component panels of the rear compartment area and their relationship to adjacent panels.

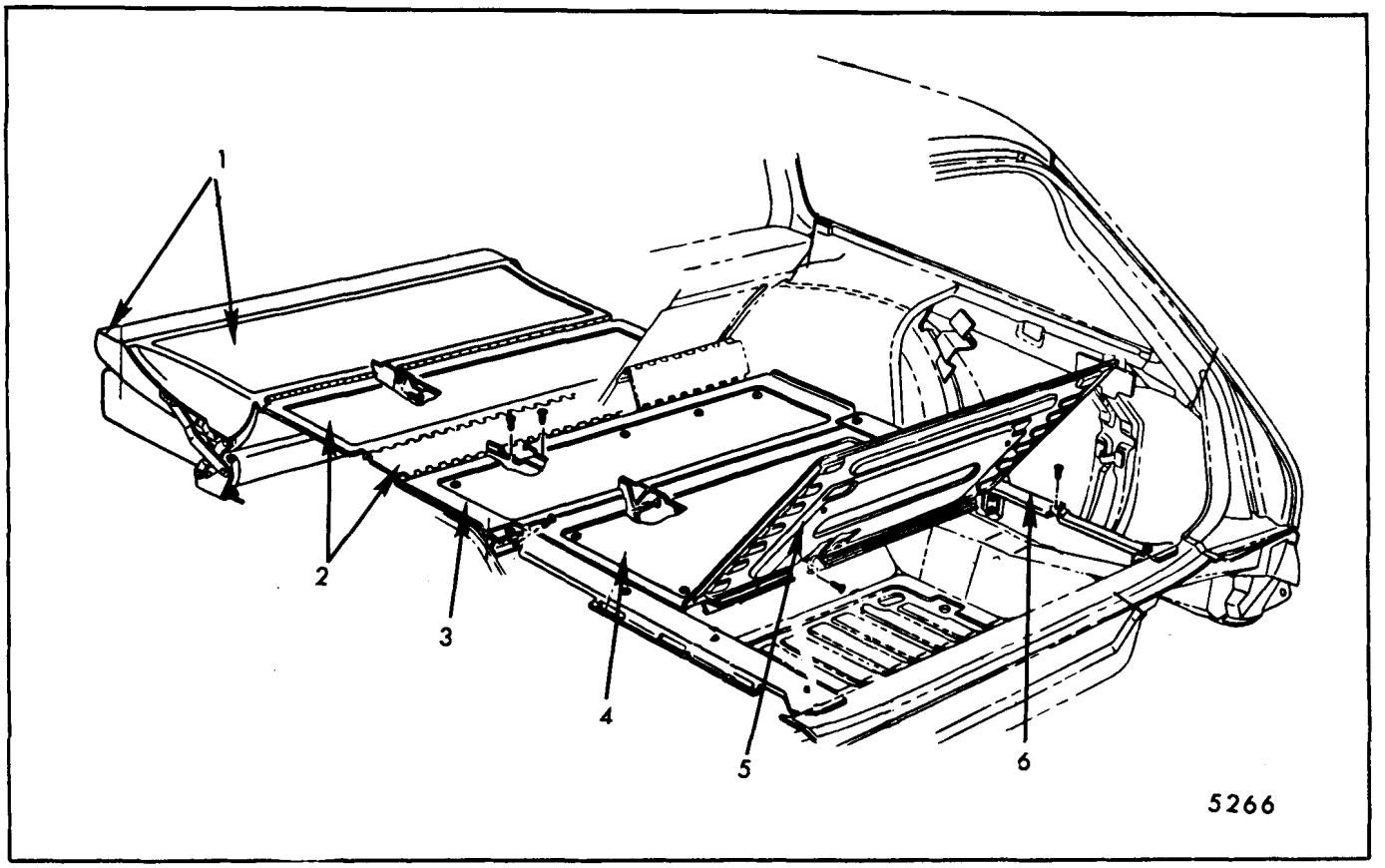


Fig. 9-83-Folding Seats and Load Floor Panels - "A" Body Three-Seat Station Wagon Styles

1. Folding Second Seat Back and Back Panel
2. Second Seat Back Filler Panels
3. Rear Compartment Floor Panel (at Kick-Up)
4. Folding Third Seat Back and Panel
5. Luggage Compartment Rear Panel
6. Side Filler Panels

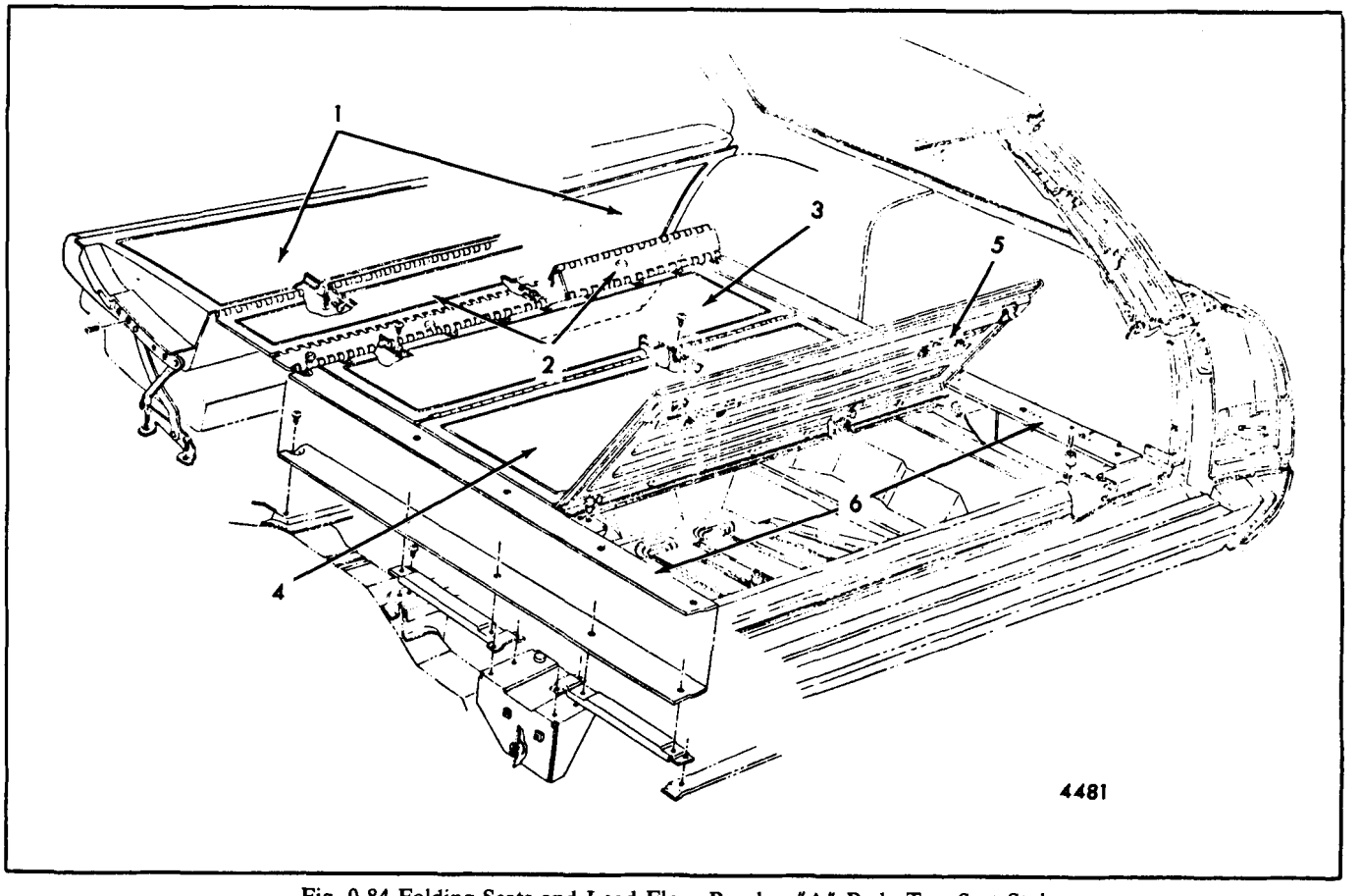


Fig. 9-84-Folding Seats and Load Floor Panels - "A" Body Two-Seat Styles

1. Folding Second Seat Back
2. Folding Second Seat Back Filler Panel
3. Rear Compartment Floor Panel (at Kick-Up)
4. Luggage Compartment Front Panel
5. Luggage Compartment Rear Panel
6. Rear Floor Side Filler Panels

1. Figure 9-83 is typical of all "A" body three-seat station wagon styles.
2. Figure 9-84 is typical of all "A" body two-seat station wagon styles.
3. Figure 9-85 is typical of all "B" body station wagon styles.

REAR FLOOR SIDE FILLER PANEL (Right or Left Side) - "A" Styles or Load Floor Bumper Side Strip (Right, Left Side or Rear) "B" Styles

Removal and Installation

1. On "A" body styles (Fig. 9-87), remove attaching screws from top of panel. If removing right side filler panel, remove spare tire cover panel and remove screws securing filler panel, then remove panel. On "B" body styles (Fig. 9-85), remove side and rear filler strips by inserting screwdriver or similar tool between module and filler strip and lift upward to disengage snap- in retainers from module.

   On "A" body three-seat styles, remove side filler panel supports.

2. To install filler panel, reverse removal procedure. If installing a new filler panel on "A" styles, apply cloth body tape over screw attaching holes prior to installation.

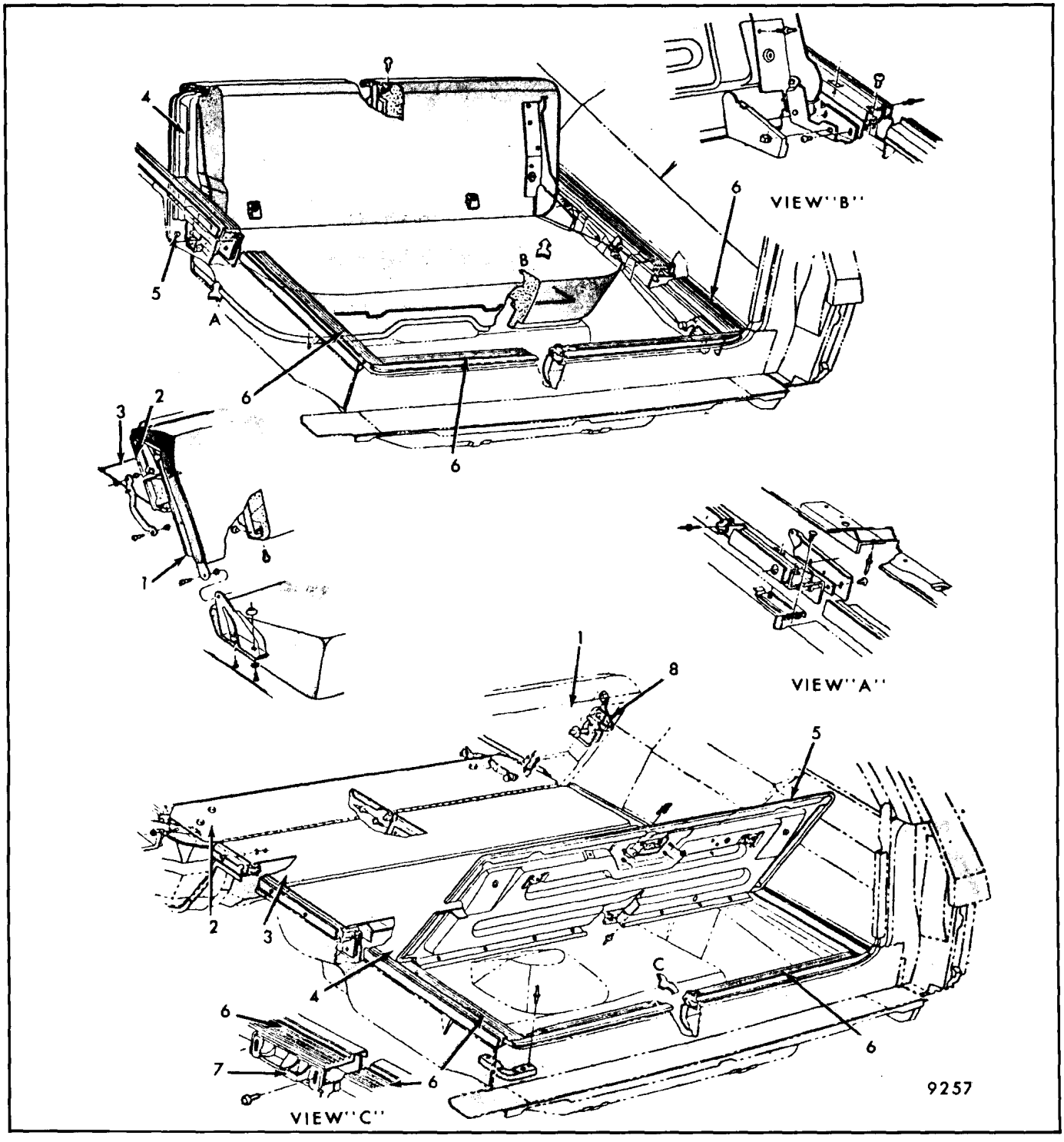


Fig. 9-85-Folding Seats and Load Floor Panels - "B" Body Styles

1. Folding Second Seat Back Panel
2. Luggage Compartment Filler Panel at Second Seat
3. Luggage Compartment Panel at Kick-Up
4. Luggage Compartment Front Panel - Two-Seat Styles, Folding Third Seat Back Panel - Three-Seat Styles
5. Luggage Compartment Rear Panel
6. Load Floor Bumper Side and Rear Strips
7. Luggage Compartment Rear Panel Striker - Two-Seat Styles, Folding and Third Seat Back Panel Striker - Three-Seat Styles
8. Folding Second Seat Back Lock Assembly

LUGGAGE COMPARTMENT PANEL(S) AND PANEL HINGE ASSEMBLY - Two and Three-Seat Styles

Removal and Installation

1. Raise luggage compartment panel sufficiently to gain access to panel piano hinge attaching screws; then support panel in this position and remove panel to hinge attaching screws.
2. On "A" three-seat styles remove three seat back panel to seat back cushion attaching screws.
3. To install, reverse removal procedure.

FOLDING THIRD SEAT CUSHION - "A" Body Three-Seat Styles

Removal and Installation

1. Lift third seat back to full raised position.
2. Remove two seat cushion to seat support attaching bolts then disengage seat belts from belt holders and remove cushion (Fig. 9- 86).
3. To install, reverse removal procedure.

FOLDING THIRD SEAT BACK TRIM ASSEMBLY - "A" Body Three-Seat Styles

Removal and Installation

1. Raise third seat back assembly to vertical position.
2. Remove three screws securing top edge of seat back trim to seat back panel.
3. Pull top edge of seat back trim slightly rearward; then lift trim assembly upward to disengage tabs from three seat back trim foundation retainers on lower portion of panel. Remove trim assembly from body and place on a clean, protected surface.
4. To install, reverse removal procedure. Make sure seat back trim foundation tabs are engaged with all three retainers at lower portion of panel prior to installing seat back trim attaching screws.

FOLDING THIRD SEAT BACK PANEL ASSEMBLY - "A" Body Three-Seat Styles

Removal and Installation (Refer to Fig. 9-87)

1. Lift third seat back to full raised position and remove seat back cushion as previously described.
2. Remove right and left side filler panels and detach side filler panel supports.
3. Remove pivot support and lock covers.
4. Remove three pivot and lock support attaching bolts (right and left side) then lift seat back panel, pivot and lock support assembly from body.
5. To detach support and lock assembly from seat back panel remove two attaching bolts securing support to panel.
6. To install, reverse removal procedure.

FOLDING THIRD SEAT BACK LOCK AND PIVOT SUPPORT (Right Side) PIVOT SUPPORT (Left Side) - "A" Styles

Removal and Installation

1. Raise third seat back to full-up position.
2. Remove side filler panel and side filler panel support.
3. Remove pivot support and lock cover.
4. Remove three pivot and lock assembly attaching bolts.
5. Lift seat back assembly upward to obtain access to the pivot and lock assembly to seat back panel attaching bolt.
6. To install, reverse removal procedure. Check operation of third seat to assure proper operation of lock.

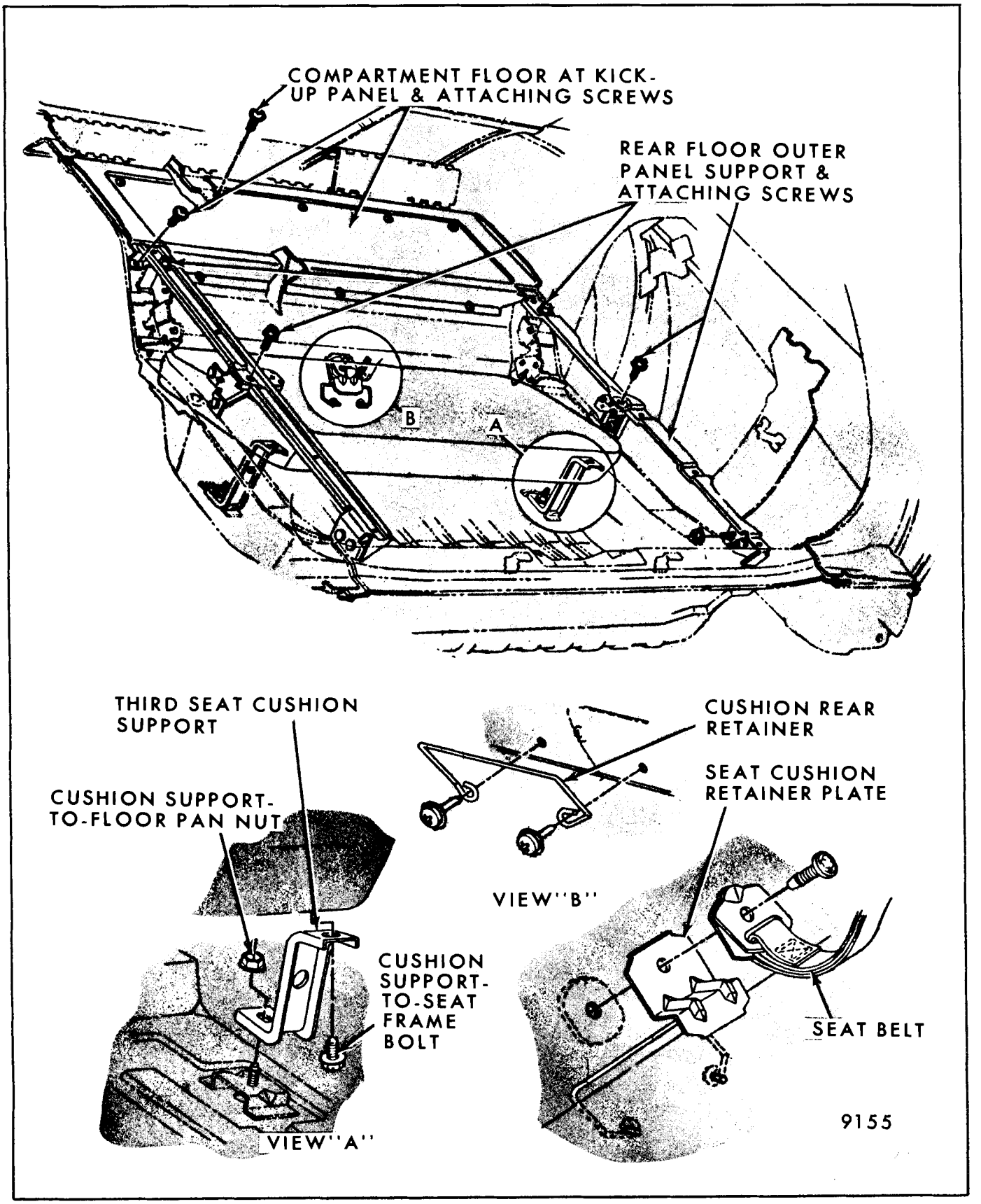


Fig. 9-86-Folding Third Seat Cushion - "A" Body Three-Seat Styles

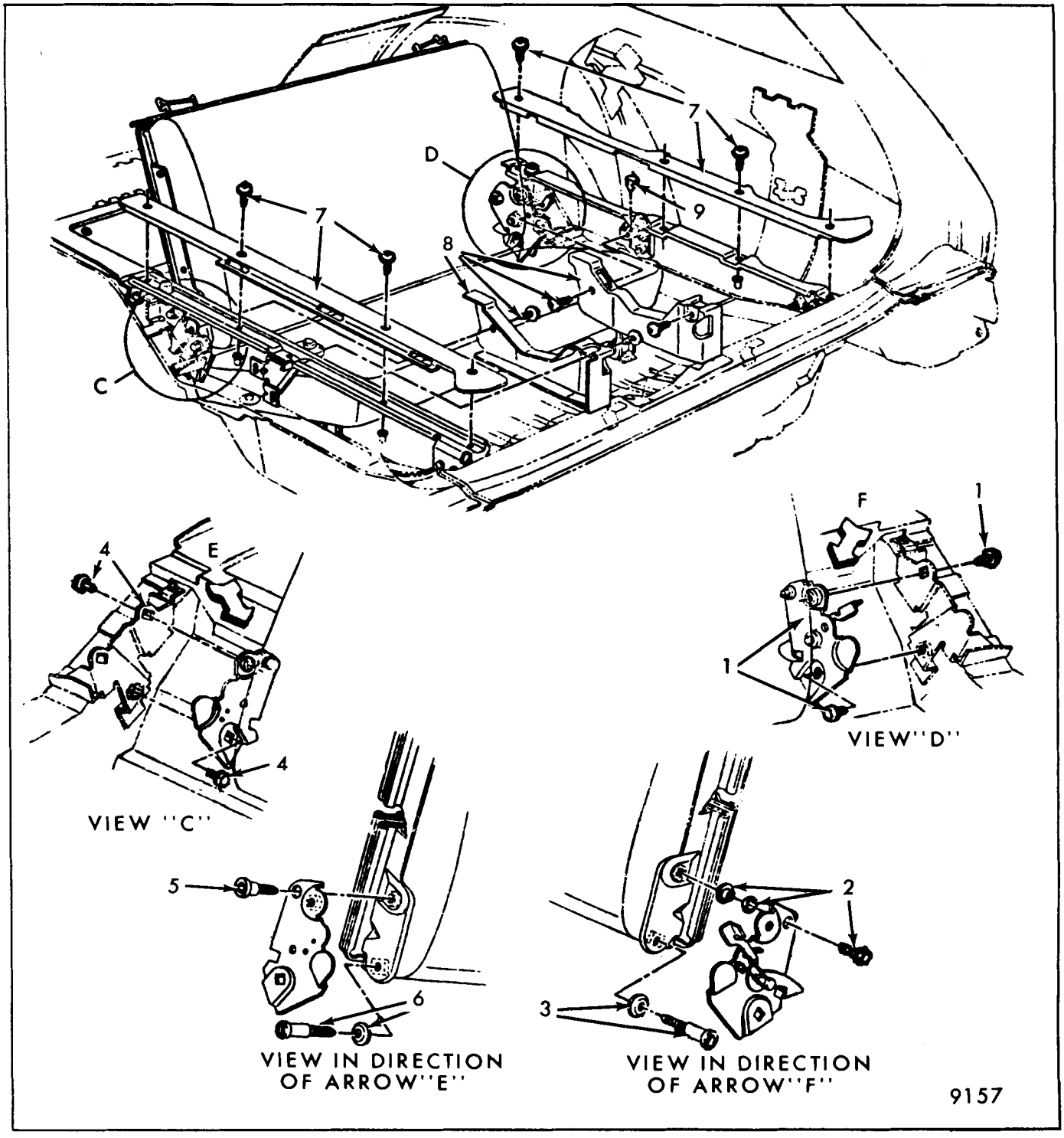


Fig. 9-87-Folding Third Seat Back and Lock Installation - "A" Body Three-Seat Styles

1. Seat Back Lock and Lock-to-Body Screw (Right Side of Body)
2. Seat Back Panel-to-Lock Pivot Bolt, Bushing and Washer (Right Side of Body)
3. Seat Back Lock Striker and Washer (Right Side of Body)
4. Seat Back Support and Support-to-Body Bolts (Left Side of Body)
5. Seat Back Panel and Panel-to-Support Pivot Bolt (Left Side of Body)
6. Seat Back Striker and Washer (Left Side of Body)
7. Load Floor Side Filler Panels and Screws
8. Folding Third Seat Pivot Support, Lock and Stop Cover and Fasteners
9. Folding Third Seat Back Bumper

COMPARTMENT FLOOR PANEL ASSEMBLY (At Kick-Up) - "A" Body Two and Three-Seat Styles (See Figs. 9-83 and 9-84)

Removal and Installation

1. On three-seat styles, remove folding third seat back assembly as previously described.
2. On two-seat styles, remove luggage compartment front and rear panel assemblies (complete) as previously described.

   On three-seat styles, raise third seat back sufficently to gain access to panel-to-floor pan attaching screws at rear edge of panel.

   On three-seat styles, remove seven panel to floor pan attaching screws.
3. At front of compartment floor panel remove five screws securing panel to floor pan; then remove compartment floor panel from body.
4. To install, reverse removal procedure.

SECOND SEAT BACK FILLER PANEL - "A" Body Two and Three-Seat Styles

Removal and Installation

1. Remove compartment floor panel assembly (at kick-up) as previously described.
2. Along rear edge of filler panel, remove screws which secure panel to floor pan.
3. Fold filler panel forward sufficiently to remove screws which secure panel to folding second seat back assembly and remove filler panel from body.

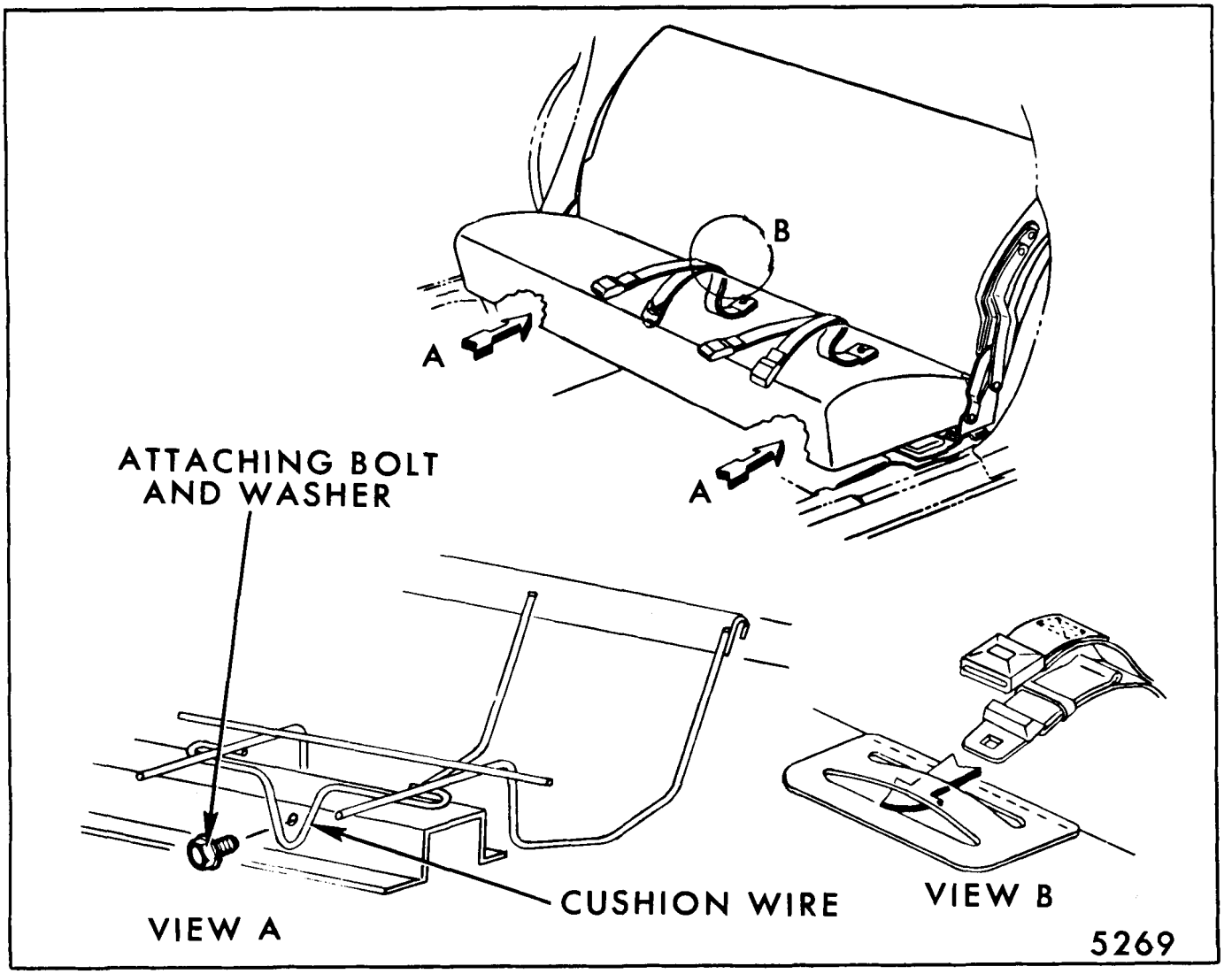


Fig. 9-88-Second Seat Cushion Attachment - "A" Body Two and Three-Seat Styles

4. To install, reverse removal procedure.

SECOND SEAT CUSHION - "A" Body Two-Seat and Three-Seat Styles

Removal and Installation

1. Remove two seat cushion wire attaching bolts at forward edge of seat cushion. Then lift upward and pull forward on seat cushion to remove (Fig. 9-88).

2. To install, reverse removal procedure.

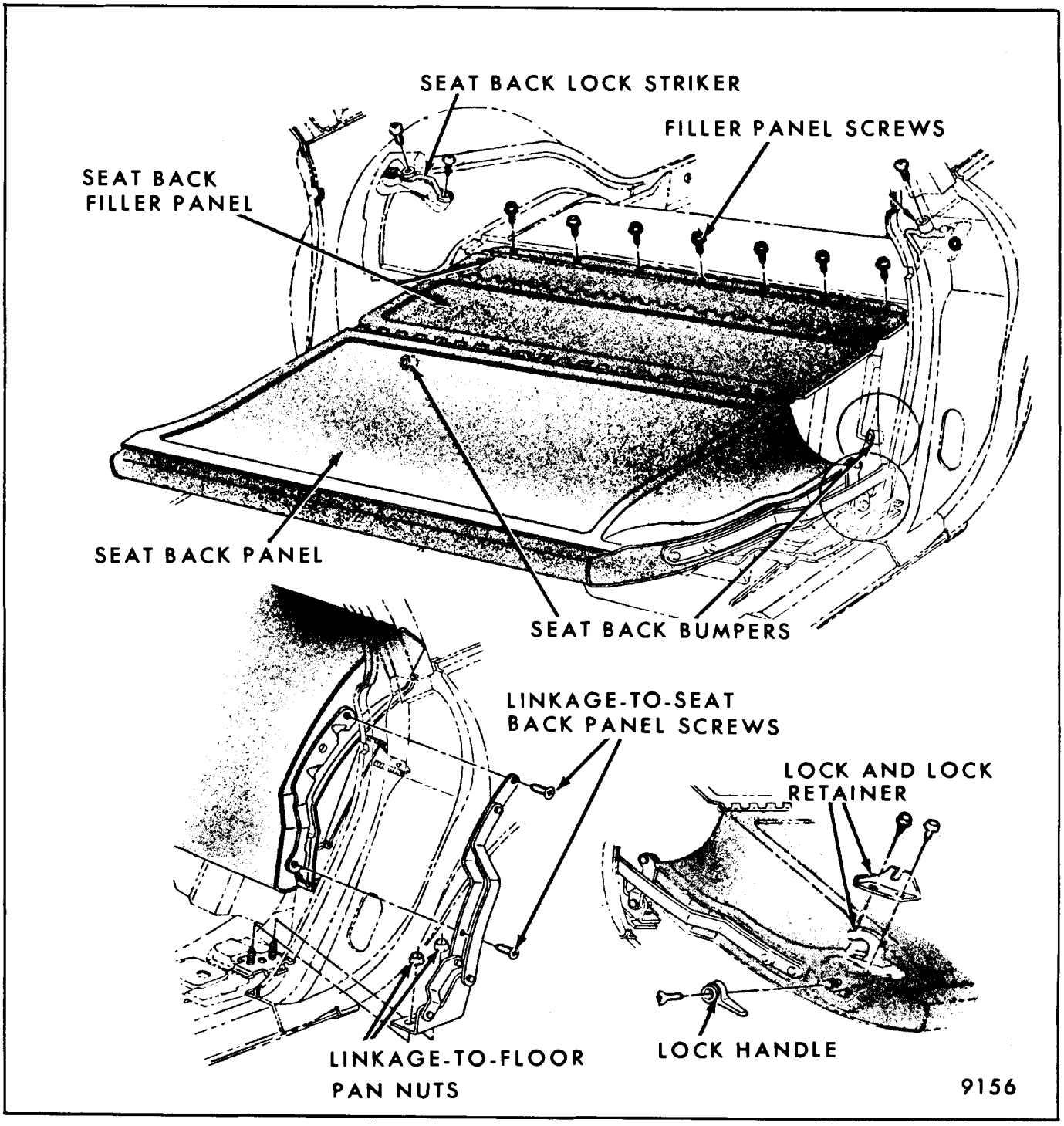


Fig. 9-89-Folding Second Seat Back Linkage and Filler Panel - "A" Body Two-Seat and Three-Seat Styles

FOLDING SECOND SEAT BACK TRIM PANEL AND LINKAGE ASSEMBLY - "A" Body Two-Seat and Three-Seat Styles

Removal and Installation (See Fig. 9-89)

1. Raise folding second seat back and remove second seat cushion.
2. On underside of folding second seat back remove screws securing rear floor filler panel hinge to seat back panel.

   NOTE: Do not remove screws securing seat back trim assembly to seat back panel.

3. Mark position of folding second seat back linkage supports on floor pan. Remove nuts from both sides of seat back securing linkage supports to floor pan.

   Lift seat back assembly with attached linkage from body and place on a clean, protected surface.

4. To remove linkage from folding second seat back remove linkage-to-seat back panel attaching bolts and remove linkage.
5. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK LINKAGE ASSEMBLY (Right or Left Side) - "A" Body Two-Seat and Three-Seat Styles

If both right and left linkage assemblies are to be removed on full width second seat, remove second seat back trim, back panel and linkage assembly and remove linkage from seat back panel as described under Folding Second Seat Back Trim, Panel and Linkage Assembly - Removal and Installation.

If one linkage assembly (right or left side) is to be removed proceed as follows:

Removal and Installation (See Fig. 9-89)

1. Remove second seat cushion.
2. Move folding second seat back forward just sufficiently to remove two lower linkage-to-seat back panel attaching screws.
3. Carefully return seat back to full-up position; then place a support under seat back assembly to support seat back in this position.
4. Remove two upper linkage-to-seat back panel attaching screws.
5. Remove nuts securing linkage support to floor pan, then carefully remove linkage assembly from seat back and floor pan.
6. To install, reverse removal procedure.

LUGGAGE COMPARTMENT LOCK CYLINDER - Two-Seat Styles

Removal and Installation

1. Open luggage compartment rear panel.
2. On underside of luggage compartment rear panel remove catch retainer and catch from lock cylinder case, then turn lock cylinder with key until cylinder can be removed from case (Figs. 9-90 and 9-94).
3. To install, reverse removal procedure.

LUGGAGE COMPARTMENT LOCK

Removal and Installation (See Fig. 9-90)

1. Open luggage compartment rear panel.

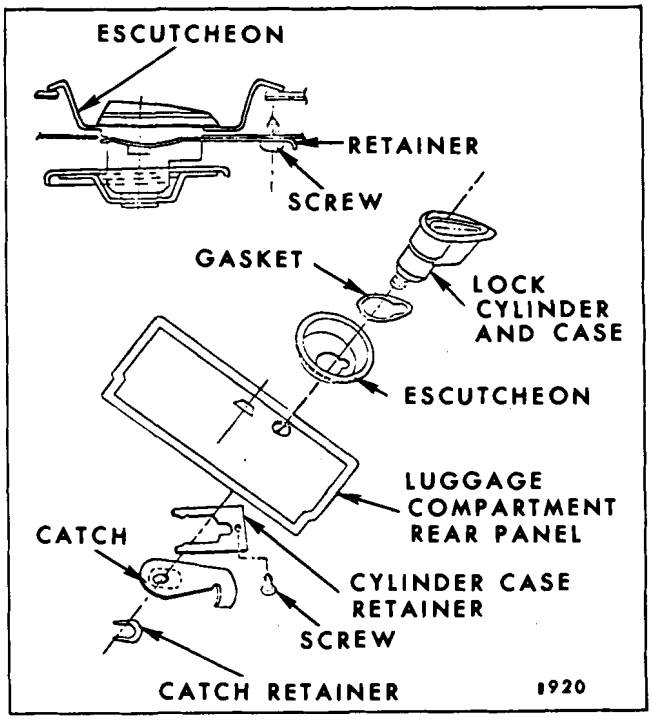


Fig. 9-90-Luggage Compartment Lock - "A" Body Styles

2. On underside of luggage compartment rear panel, remove catch retainer and catch.

3. Remove lock cylinder case retainer screw and retainer; then remove lock cylinder and case, gasket and escutcheon from panel.

4. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK LOCK - All "A" Styles

Description

The station wagon full width folding second seat incorporates a seat back lock located at the upper right side of the seat back. The folding second seat can be folded down by actuating the lock handle forward and pulling the seat back down.

Removal and Installation

1. Remove folding second seat back trim and spring assembly as previously described.

2. Remove seat back lock handle attaching screw and remove lock handle (Fig. 9-91).

3. Remove seat back lock retainer attaching screws and remove seat back lock retainer and lock from seat back panel (Fig. 9-91).

4. To install seat back lock assembly, reverse removal procedure. A small amount of lock adjustment is available to obtain proper engagement of lock bolt with lock striker on wheelhouse as shown in Figure 9-92.

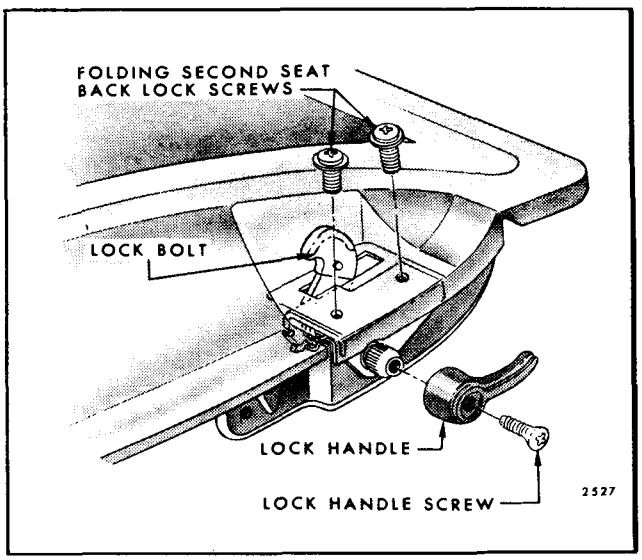


Fig. 9-91-Folding Second Seat Back Lock Installation - All "A" Styles

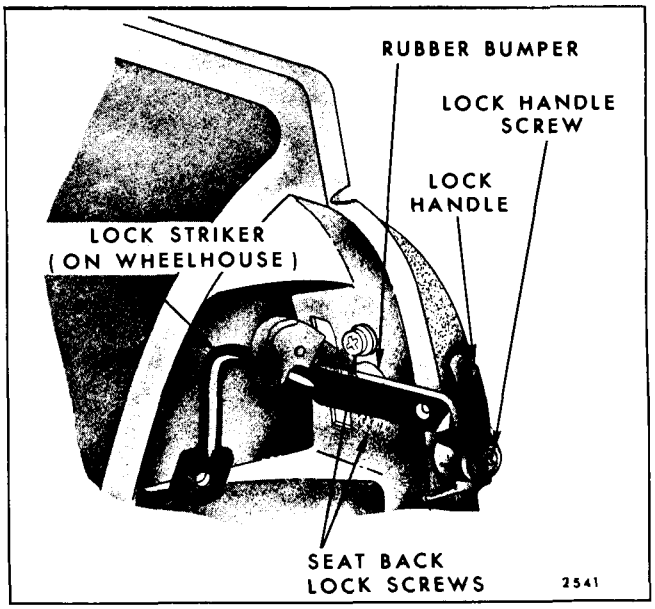


Fig. 9-92-Folding Second Seat Back Lock and Striker - All "A" Styles

FOLDING SEATS AND LOAD FLOOR PANELS - "B" Body Station Wagons

The "B-35" body style two-seat station wagon second seat and load floor panels are very similar to the "A" body two-seat station wagons (see Fig. 9-85).

The rearward facing third seat incorporates a remote controlled seat back lock at lower right side of seat back. When the third seat back lock is released by lifting the remote control handle under the right side of the luggage compartment rear panel (see Fig. 9-96), the third seat back can be lowered into the load floor position.

SECOND SEAT CUSHION - "B" Body Station Wagon Styles

To remove the second seat cushion, push lower forward edge of seat cushion rearward; then lift upward and pull forward on seat cushion frame to disengage cushion frame offsets from retainers on seat pan (see Fig. 9-93); disengage seat belt webbing from seat cushion and remove cushion. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK TRIM, FOAM PAD AND WIRE FRAME ASSEMBLY - "A and B" Body Two-Seat and Three-Seat Station Wagons

Removal and Installation (See Fig. 9-93)

1. Lower folding second seat back to load floor position.

2. Remove two filler panel link attaching bolts, one from each side of seat back assembly.

3. At bottom of second seat back, remove five trim and foam pad wire mat attaching screws.

4. Raise seat back sufficiently to pull lower edge of trim, foam pad and wire mat forward; then lift assembly upward to disengage upper edge of assembly from four hanger tabs on seat back panel and remove assembly.

5. To install, reverse removal procedure. Use awl or suitable tool to locate wire mat attaching holes through bottom of seat back panel.

FOLDING SECOND SEAT BACK PANEL ASSEMBLY AND HINGE SUPPORT - "B" Body Station Wagons

Removal and Installation (See Fig. 9-93)

1. Remove two link to second seat back panel attaching bolts.

2. Remove four floor support to back panel attaching bolts and remove back panel assembly from body.

3. To remove hinge support, remove hinge pin retainer and pin.

4. To install second seat back panel assembly, reverse removal procedure.

FOLDING SECOND SEAT BACK FILLER PANEL LINK

Removal and Installation (See Figs. 9-93 and 9-97)

1. Place second seat back assembly in an unlocked position, remove the link to seat back bolt and lower second seat back.

2. Lower luggage compartment filler panel, remove load floor rail cable assembly and remove link from filler panel.

3. To install, reverse removal procedure.

LUGGAGE COMPARTMENT FILLER PANEL ASSEMBLY - "B" Body Two-Seat Styles

Removal and Installation (See Figs. 9-93 and 9-97)

1. Remove both link to second seat back panel attaching bolts.

2. Remove cable pin ring retainers and disengage cables from link retaining pins.

3. Place filler panel assembly in an upright position.

4. Drill out eight 3/16" diameter peel rivets and remove assembly.

5. To install, reverse removal procedure.

LUGGAGE COMPARTMENT PANEL FRONT, REAR OR HINGE ASSEMBLY - "B" Body Two-Seat Station Wagon

Removal and Installation (See Fig. 9-94)

1. Raise panel assemblies into full open position and remove luggage compartment side panels.

2. Remove screws below front corner areas of panel assembly at module side rails and remove panel assemblies.

3. To remove hinge assembly, drill out 5/32" pop rivets. To install, reverse removal procedure.

4. To replace luggage compartment front panel, drill out 5/32" diameter pop rivets to remove hinge assembly and 3/16" diameter peel rivets to remove pivot support assembly. To install, reverse removal procedure.

5. To replace luggage compartment rear panel, drill out 5/32" pop rivets along hinge and remove panel. To install, reverse removal procedure.

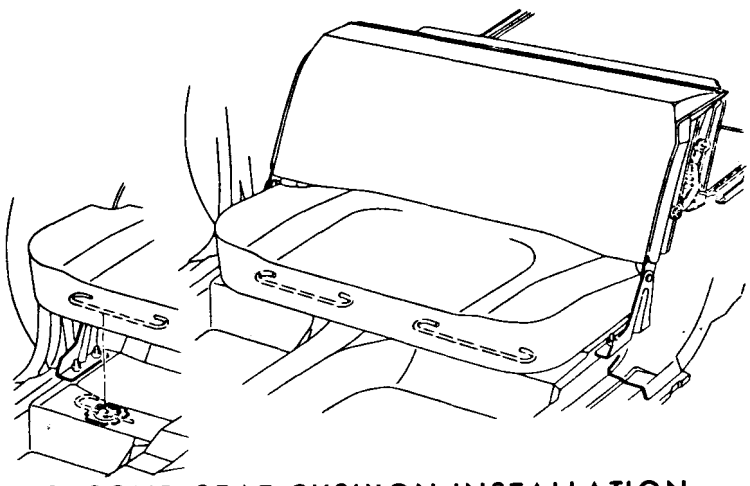
FOLDING SECOND SEAT BACK LOCK - All "B" Station Wagon Styles

The station wagon full width folding second seat incorporates a seat back lock located on the upper right side of the wheelhouse. The folding second seat can be folded down by pushing the lock button rearward and pulling the seat back down.

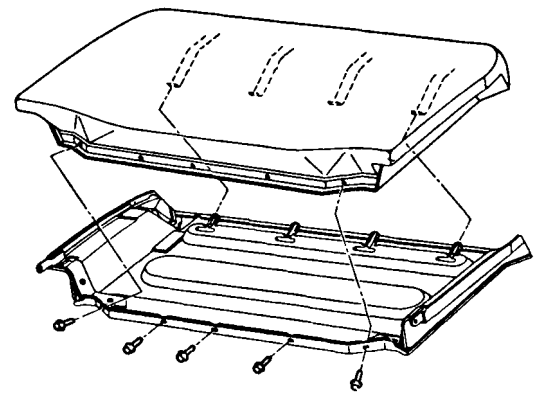
Removal and Installation (See Fig. 9-95)

1. Place folding second seat in the load floor position.

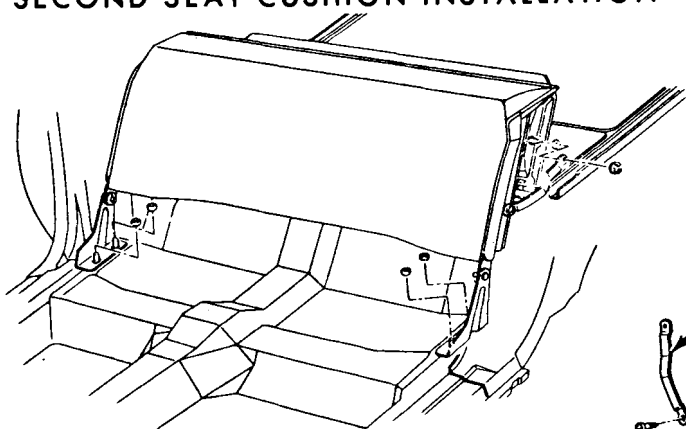
2. Remove lock pillar trim as described in quarter trim section.



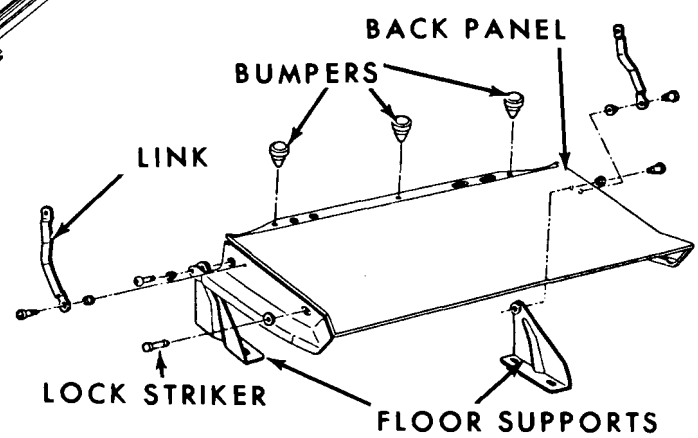
SECOND SEAT CUSHION INSTALLATION

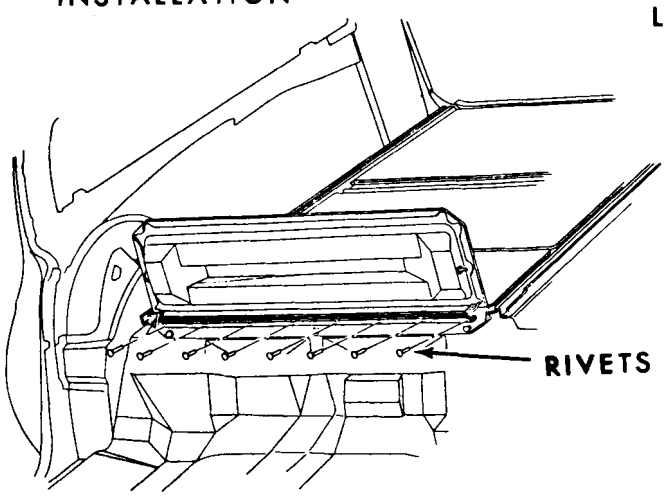


SECOND SEAT BACK TRIM ASSEMBLY INSTALLATION



SECOND SEAT BACK PANEL INSTALLATION





FILLER PANEL INSTALLATION

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Fig. 9-93 - Folding Second Seat Installation - All "B" Station Wagons

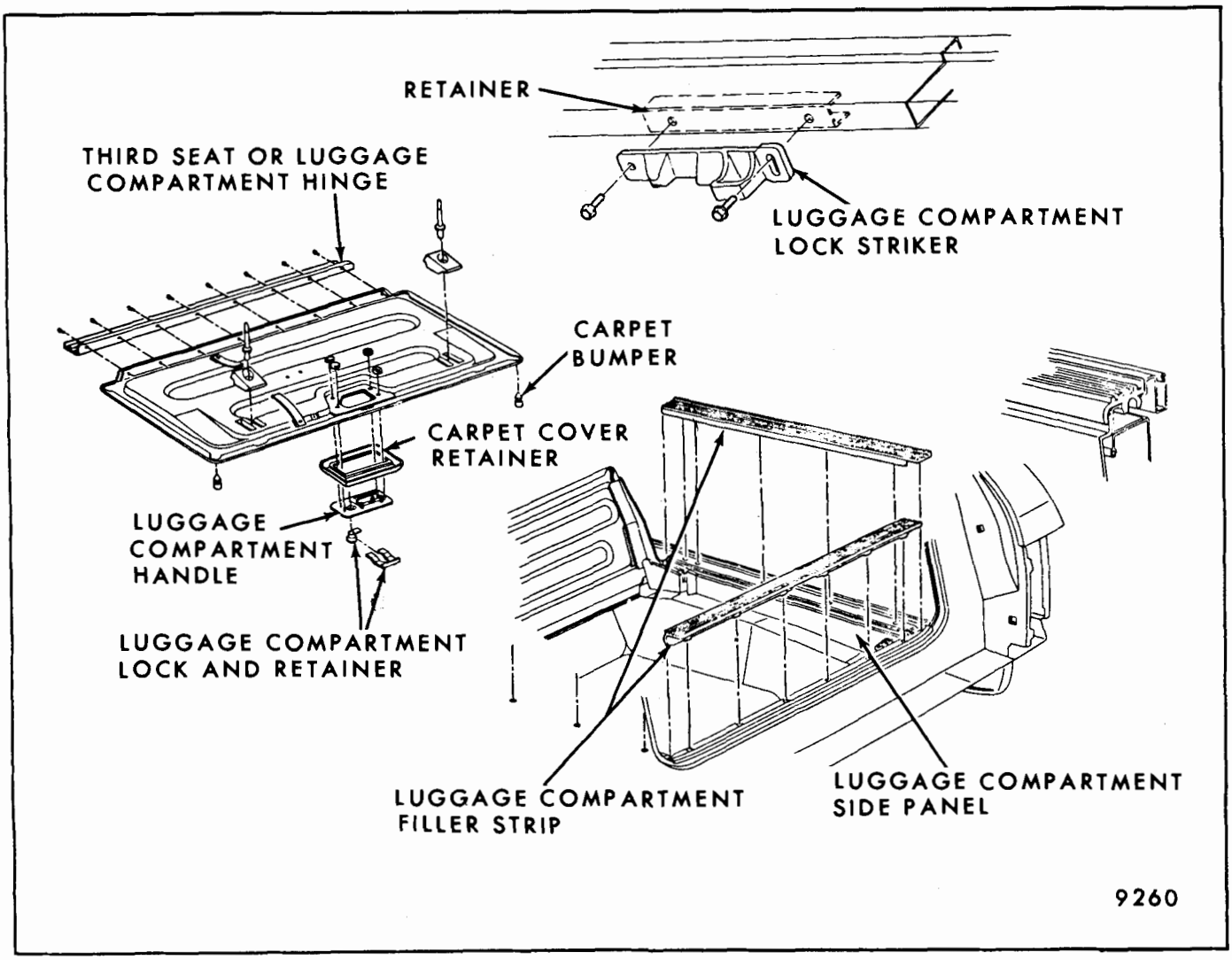


Fig. 9-94 - Luggage Compartment and Lock Installation - "B" Station Wagon Styles

3. Remove two folding second seat back lock retaining screws and remove lock assembly.

4. To install, reverse removal procedure.

LUGGAGE COMPARTMENT AND FOLDING THIRD SEAT MODULE - "B" Body Three-Seat Station Wagons

Removal and Installation (See Figs. 9-93 and 9-95)

1. Remove two link to second seat back panel attaching bolts.

2. Remove quarter and lock pillar trim as described in trim section.

3. Remove module attaching screws along front flange of filler and kick-up panels.

4. Remove load floor bumper side and rear rubber strips.

5. On third seat styles, position seat back assembly in unlocked position by disengaging folding third seat back lock to disarm two way torque rod.

6. Remove two bolts located in the right and left side rails attached to loose nuts located in rectangular nut retainers at the front of module that hold the third seat assembly in position.

7. Remove balance of attaching screws along side and rear rails and remove module.

   NOTE: Place three-way tailgate in the gate position before removing module.

8. To install, reverse removal procedure.

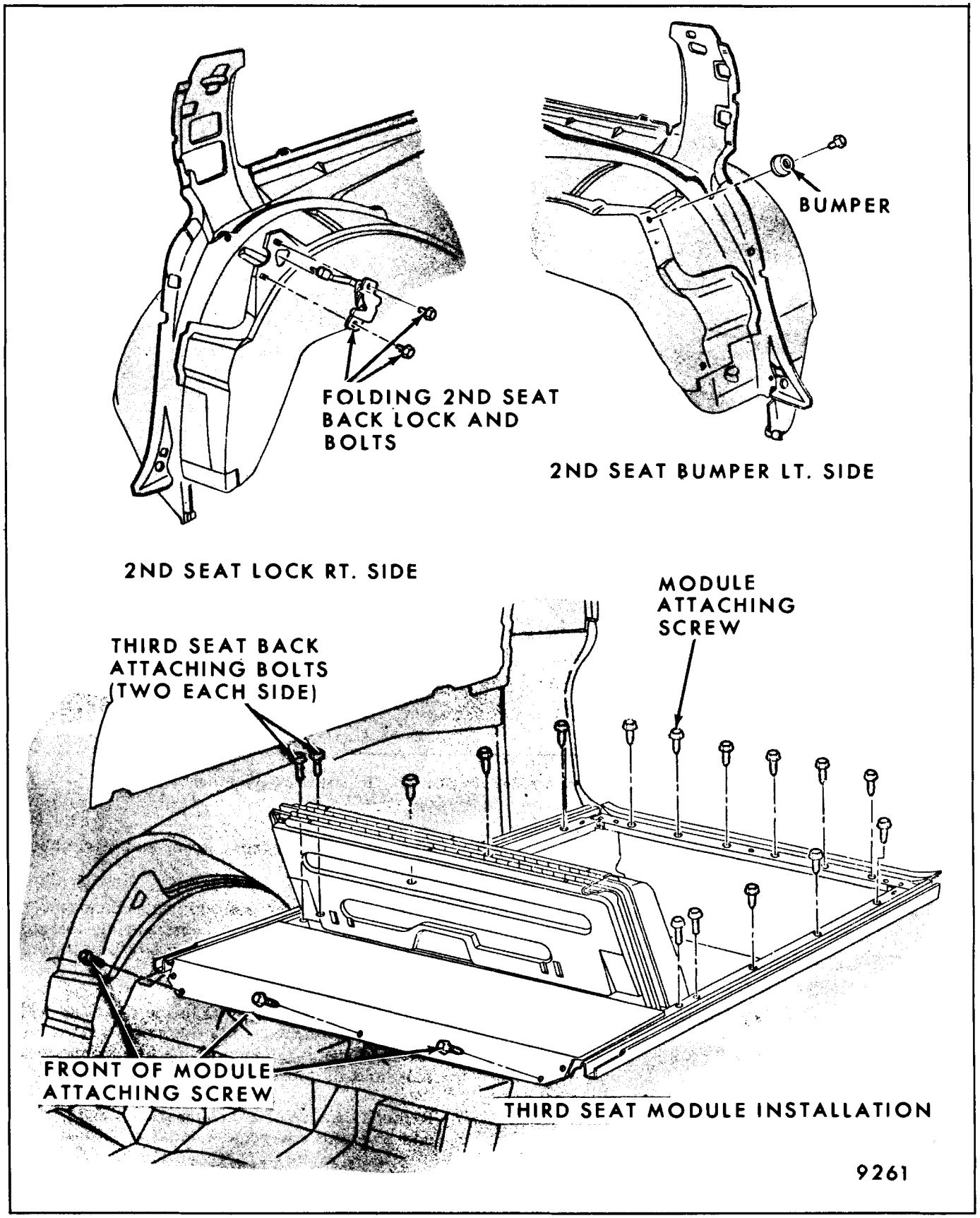


Fig. 9-95 - Second Seat Back Lock, Bumper and Third Seat Module Installation - All "B" Station Wagons

THIRD SEAT AND LUGGAGE COMPARTMENT SIDE OR REAR RAILS - "B" Body Station Wagons

Removal and Installation (See Fig. 9-95)

1. Remove module as previously described.
2. Drill out 5/32" pop rivets and remove rail.
3. To install, reverse removal procedure.

LUGGAGE COMPARTMENT AT KICK-UP PANEL - "B" Body Three-Seat Station Wagons

Removal and Installation (See Fig. 9-95)

1. Remove two luggage compartment filler panel to second seat back link attaching bolts.
2. Remove module as previously described.
3. Drill out 5/32" pop rivets from side module rails and remove assembly.
4. To install, reverse removal procedure.

FOLDING THIRD SEAT BACK PANEL, LOCK, SUPPORT, TORQUE ROD, HINGE OR LUGGAGE COMPARTMENT REAR PANEL ASSEMBLY - "B" Body Three- Seat Station Wagons

Removal and Installation (See Figs. 9-94 and 9-96)

1. Remove rubber load floor bumper side strips and plastic trim panels (both sides) using removal tool J-24595 or BT-7323.
2. Position seat back assembly in unlocked position by disengaging folding third seat back lock to disarm two way torque rod.
3. Remove two screws from both right and left side rails located below front corner areas of seat back assembly at module side rails.
4. Disengage release cable from keyhole slot in right side lock assembly by pulling downward on spring loaded lock cable retainer to detach cable from lock assembly.
5. Remove panel assembly by pulling panel assembly to the right to disengage torque rod from left side body attachment. To install, reverse removal procedure.
6. To remove third seat back trim, first disengage seat back hinge cover trim flap from top of seat back by removing cover retainers on luggage compartment rear panel and release tabs on hinge; then remove screws from top of panel (hinge side) and remove seat back pad by lifting upward. To install, reverse removal procedure.
7. To remove hinge assembly, disengage hinge cover as previously described and then drill out all 5/32" pop rivets and remove hinge assembly. To install, reverse removal procedure.
8. To replace folding third seat back panel assembly, drill out all 5/32" pop rivets securing hinge, lock, side pivot support and torque rod individual assemblies. To install, reverse removal procedure.
9. To replace luggage compartment rear panel assembly, unlock, fold forward, drill out 5/32" pop rivets along hinge and remove panel assembly. To install, reverse removal procedure.

THIRD SEAT CUSHION ASSEMBLY - "B" Body Three-Seat Station Wagons

Removal and Installation (See Fig. 9-96)

1. Push seat cushion frame offsets located at the front of cushion forward and lift cushion upward.
2. Push forward on cushion assembly and downward on rear edge of cushion to disengage rear of cushion frame offsets from floor retainers and remove assembly.
3. To install, reverse removal procedures, making sure all seat frame offsets are engaged with both front and rear retainers on floor pan.

FOLDING THIRD SEAT BACK LOCK ASSEMBLY - "B" Body Three-Seat Station Wagons

Removal and Installation (See Fig. 9-96)

1. Remove folding third seat back panel assembly as previously described.
2. Remove folding third seat cushion trim as previously described.
3. Drill out five 3/16" diameter peel rivets and remove lock assembly.
4. To install lock assembly, reverse removal procedure.

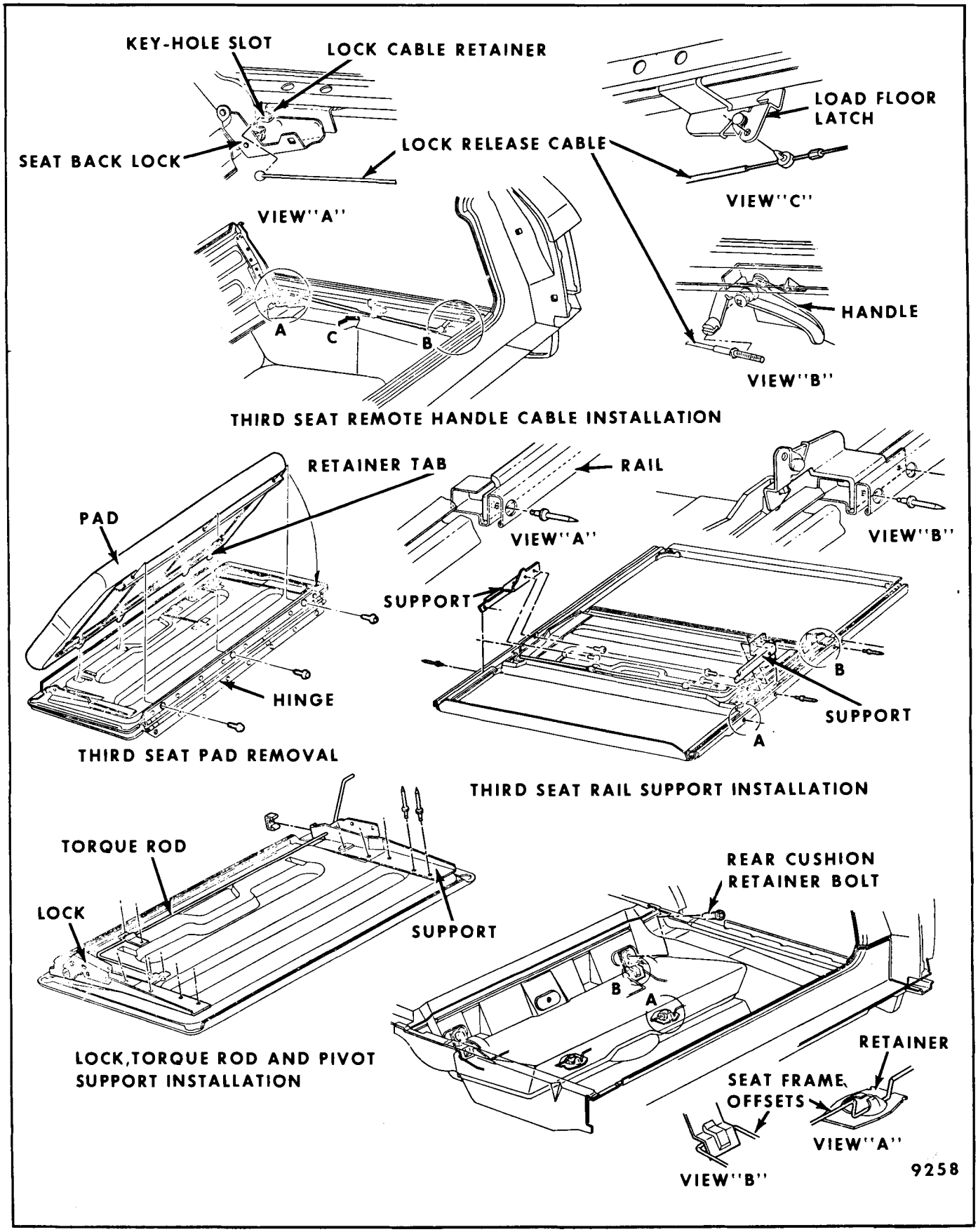


Fig. 9-96-Third Seat Cushion and Back Installation - "B" Body Three-Seat Station Wagons

FOLDING THIRD SEAT BACK LOCK REMOTE CONTROL HANDLE ASSEMBLY - "B" Body Three-Seat Station Wagons

Removal and Installation (See Fig. 9-96)

1. Remove right side load floor bumper side strip as previously described.
2. Remove right side luggage compartment side trim panel using removal tool J-24595 or BT-7323.
3. Remove handle assembly attaching screw.
4. Remove cable from handle assembly.
5. To install, reverse removal procedure.

FOLDING THIRD SEAT BACK LOCK REMOTE CONTROL CABLE ASSEMBLY - "B" Body Three-Seat Station Wagons

Removal and Installation (See Fig. 9-96)

1. Remove right side load floor bumper side strip as previously described.
2. Remove right side luggage compartment side trim panel using removal tool J-24595 or BT-7323.
3. Carefully remove cable assembly from handle assembly by pulling downward on spring loaded lock cable retainer and slide cable from retainer.
4. Remove snap-on fastener from latch assembly

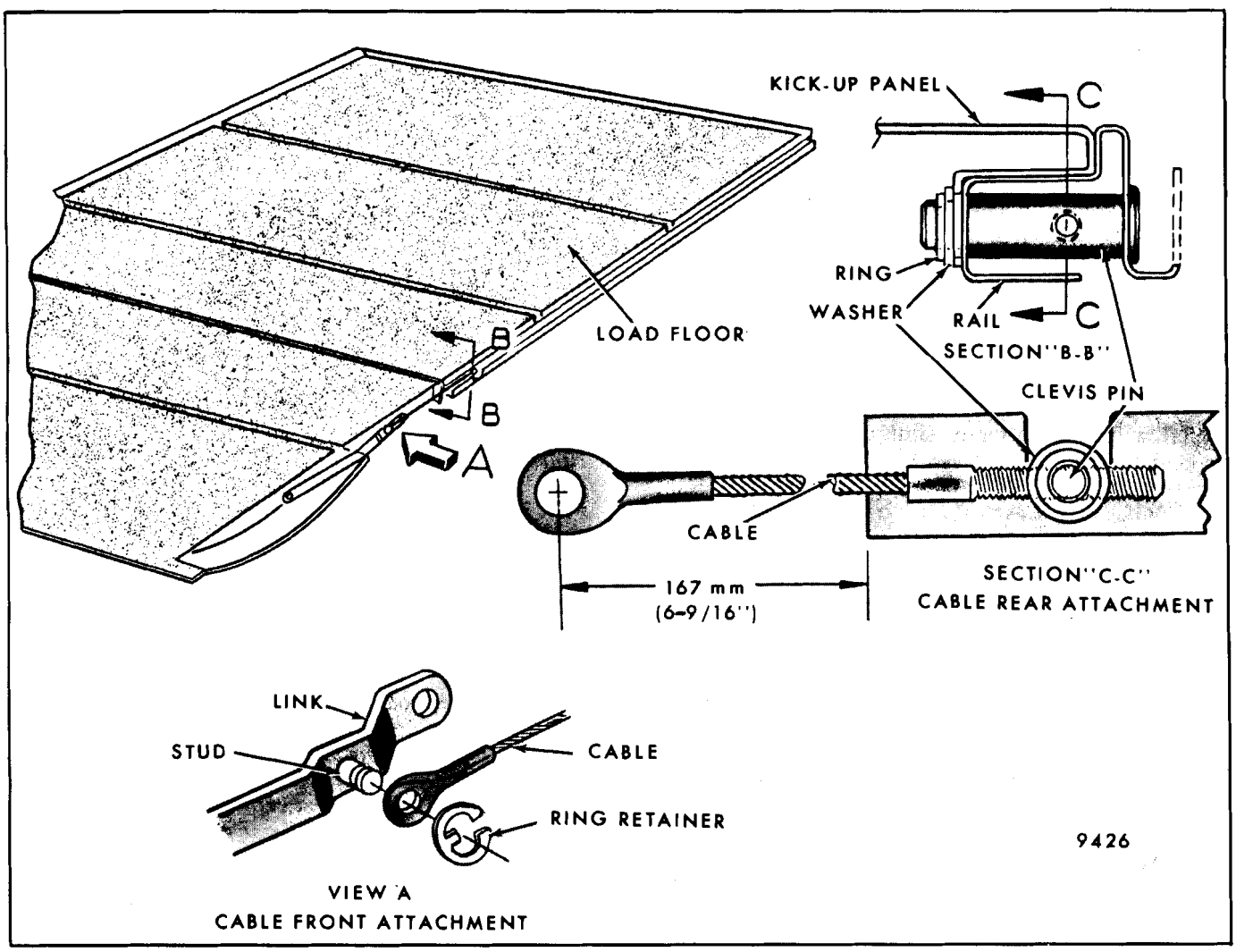


Fig. 9-97-Folding Second Seat and Load Floor Cable Installation

by placing a screwdriver between fastener and latch and twist.

5. Remove ball fastener from lock assembly through keyhole slot with aid of screwdriver.

6. To install, reverse removal procedure.

FOLDING SECOND SEAT TO LOAD FLOOR RAIL CABLE ASSEMBLY - "B" Body Station Wagons

Removal and Installation (See Fig. 9-97)

1. Unlock and lower second seat back assembly until cable is loose.

2. Remove cable ring retainer and slide cable from link stud.

3. Unscrew cable assembly from clevis pin and remove.

   NOTE: If cable is broken in the clevis pin, the module must be removed as described under Luggage Compartment and Folding Third Seat Module - Removal and Installation.

4. To install, reverse removal procedure.

   NOTE: When installing new cable, measure from the end of the side rail to the center of the cable loop 167 mm (6-9/16"); where required, adjust cable rear attachment to obtain this dimension.

LAP AND SHOULDER BELTS - All Styles

GENERAL INFORMATION

The front seat belts incorporate a 4-to-8 second fasten seat belt reminder lamp and sound signal designed to remind the driver if the lap and shoulder belts are not fastened when the ignition is turned to the on position. If the driver's seat belt IS BUCKLED, the buzzer will not operate; however, the fasten seat belt reminder lamp will stay on for a 4-to-8 second period. If the driver's seat belt IS NOT BUCKLED, the reminder lamp and sound signal will automatically shut off after the 4-to-8 second interval.

SERVICING LAP AND SHOULDER BELTS - All Styles

Before servicing or replacing lap and shoulder belts, including single loop belt systems, refer to the following precautionary items:

1. Lap and shoulder belts will be serviced as follows:

   a. Retractor portion(s) of front seat lap and shoulder belt for outboard passenger and driver.

   b. Buckle portion of front seat lap belt for outboard passenger and driver.

   c. All belts other than those mentioned in above steps a and b will be serviced in complete sets.

   d. Do not intermix standard and deluxe belts on front or rear seats.

2. Keep sharp edges and damaging objects away from belts.

3. Avoid bending or damaging any portion of the belt buckle or latch plate.

4. Do not bleach or dye belt or strap webbing (clean with a mild soap solution and water).

5. When installing lap or shoulder belt anchor bolt, start bolt by hand to assure that bolt is threaded straight.

6. Do not attempt repairs on lap or shoulder belt retractor mechanisms or lap belt retractor covers. Replace defective assemblies with new service replacement parts.

   CAUTION: *Lap belt to floor pan and shoulder belt to roof panel or quarter panel fasteners are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

7. Do not attempt to remove seat belt retractor cover. The cover and the long rivet securing the cover to the retractor are not available as service replacement parts.

8. On "B and C" styles, less Cadillac "C" styles, tighten ALL seat belt anchor bolts to specified torque of 60 N·m (45 ft-lb). On "A,E,F,H and X" styles and Cadillac "C,D and K" styles, tighten LAP BELT anchor bolts to specified torque of 60 N·m (45 ft-lb) and SHOULDER BELT anchor bolts to 23 N·m (18 ft-lb).

LAP BELTS AND SHOULDER BELTS - "A,E,F,H and X" Styles and Cadillac "C, D and K" Styles

Description

The shoulder belt is attached to the front seat lap belt latch plate and connected to an inertia locking retractor installed to the roof or quarter inner panel above the right and left side of the front seat. The shoulder belt remains unlocked to allow occupants to move freely while the vehicle is being operated. When the vehicle decelerates or changes direction abruptly, the shoulder belt is locked in position by a pendulum or ball that causes a locking bar to engage a cog of the retractor mechanism.

On Cadillac styles, except "E" styles, the retractor incorporates a comfort lock feature that allows the occupant to adjust the shoulder belt for proper fit and comfort. When engaged, the comfort lock prevents full retraction of the webbing to eliminate occupant discomfort due to webbing load on the shoulder. The occupant can readjust the comfort lock during vehicle operation as described in the operational requirements.

Also, Cadillac styles, except "E" styles, utilize an electro- mechanical retractor system that allows the driver and outboard passenger lap belt retractors to free wheel until the "D" ring is locked into the buckle or until after approximately a 15-second delay. In addition, when the lap belt is unbuckled, the comfort lock feature in the shoulder belt retractor automatically disengages allowing the belts to retract completely into the retractor.

Removal and Installation

Refer to illustrations on following pages and select the appropriate illustration for removing and installing lap belts and shoulder belts.

CAUTION: *Lap belt to floor pan and shoulder belt to roof panel or quarter panel fasteners are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

Check position of factory installed lap belt and shoulder belt anchors and reinstall anchor plates in same position. Care must be exercised when making installation that all anchor plates interlock as shown in illustrations.

On "A,E,F,H and X" styles, remove shoulder belt retractor cover by removing two attaching screws and disengage retaining strip from lugs at outboard side of cover (Fig. 9-107).

On Cadillac "C,D and K" styles, remove rear seat cushion, seat back and upper and lower trim panels or center pillar trim cover, as required, to expose retractor and guide.

To detach shoulder strap guide loop from escutcheon on head restraint or seat back, remove plastic fastener from the top of loop with removal tool J-21104 or equivalent and then insert a flat-bladed screwdriver between guide loop and escutcheon. Then push guide to side and turn screwdriver to snap guide from escutcheon.

To remove center passenger lap belts from full width seat or buckle assemblies on bucket seats, remove screw-in sleeve plug; then remove anchor bolts from floor pan. On "E" styles, carefully cut stitches at upper end of plastic sleeve to remove belts from lap belt protector. On full width seat, carefully pull anchor end of belt through lap belt protector. When installing belts, tighten anchor bolts to 45 ft-lb for "A,F,H and X" styles and 60 N·m (45 ft-lb) for "E" styles and Cadillac "C,D and K" styles and screw sleeve plug into position (Fig. 9-98). On two-door styles, it is important that seat belt webbing is routed over seat back outer hinge arm and not under arm.

On "A" styles (less swivel seat) with manual seat adjuster, remove front seat to floor pan attaching bolts to facilitate removal of seat belt retractor.

CAUTION: *Internal drive thread-forming anchor bolts are used to secure lap belts to the floor pan. To remove or install internal drive anchor bolts, use door lock striker and lap belt anchor bolt removal tool J-23457 or equivalent. Start bolt by hand to assure that bolt is threaded straight.*

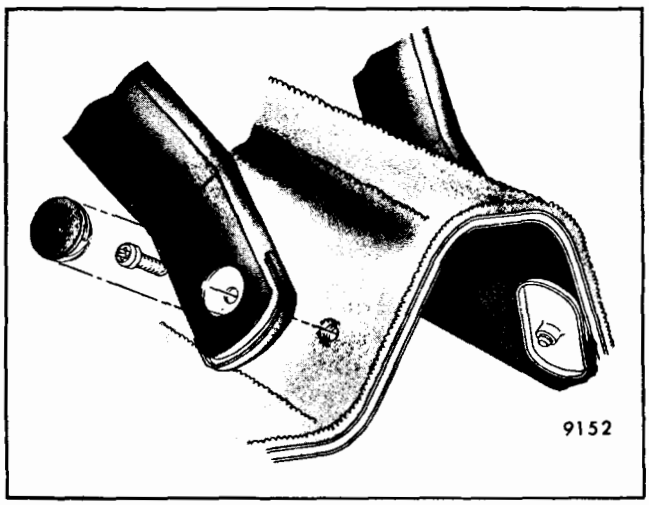
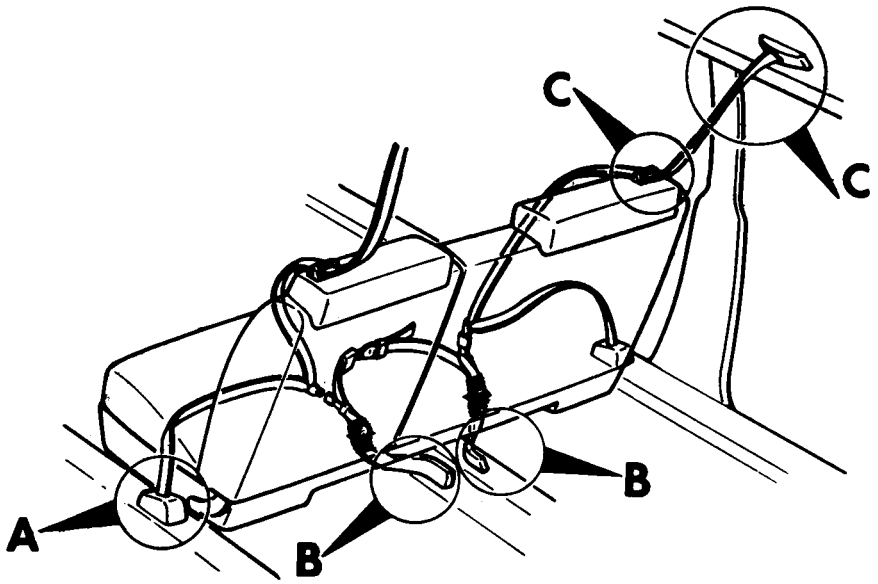


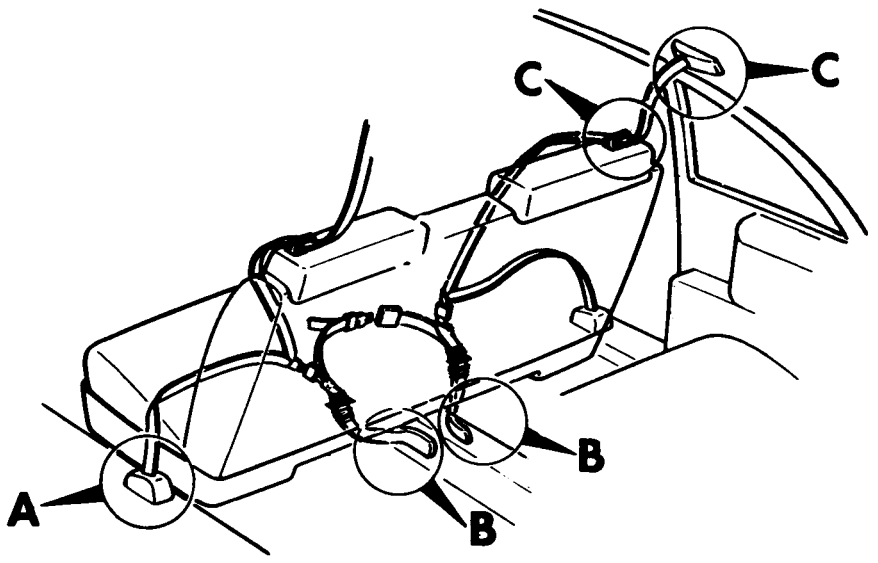
Fig. 9-98-Screw-in Type Seat Belt Sleeve Plug Installation

On front seat belts where retractor anchor bolt is under retractor cover, carefully pry open retractor access hole cover at top and sides; then disconnect retractor switch at connector and remove anchor bolt.



60—40 SEAT
("A" STYLES)

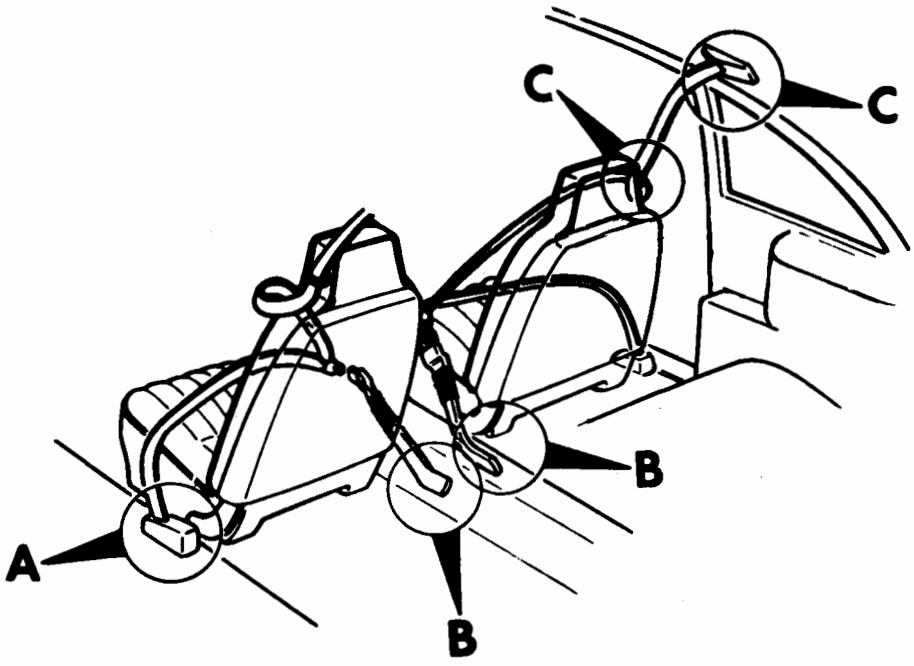
VIEW A REF. FIG. 9-103 AND 9- 102
VIEW B REF. FIG. 9-105
VIEW C REF. FIG. 9-106



BENCH SEAT
("A & X" STYLES)

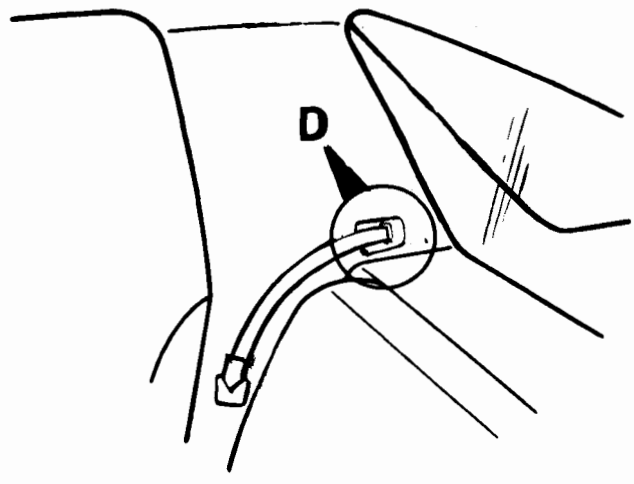
9514

Fig. 9-99-Front Seat Lap and Shoulder Belt Attaching Locations - "A and X" Styles



BUCKET SEATS
("A,F,H & X" STYLES)

VIEW A REF .FIGS. 9-103 AND 9-102
VIEW B-REF. FIG 9-105
VIEW C - REF.FIG. 9-106



'A-80' STYLES
VIEW D - REF FIG 9-106

9515

Fig. 9-100-Front Seat Lap and Shoulder Belt Attaching Locations - "A,F,H,X and A-80" Styles

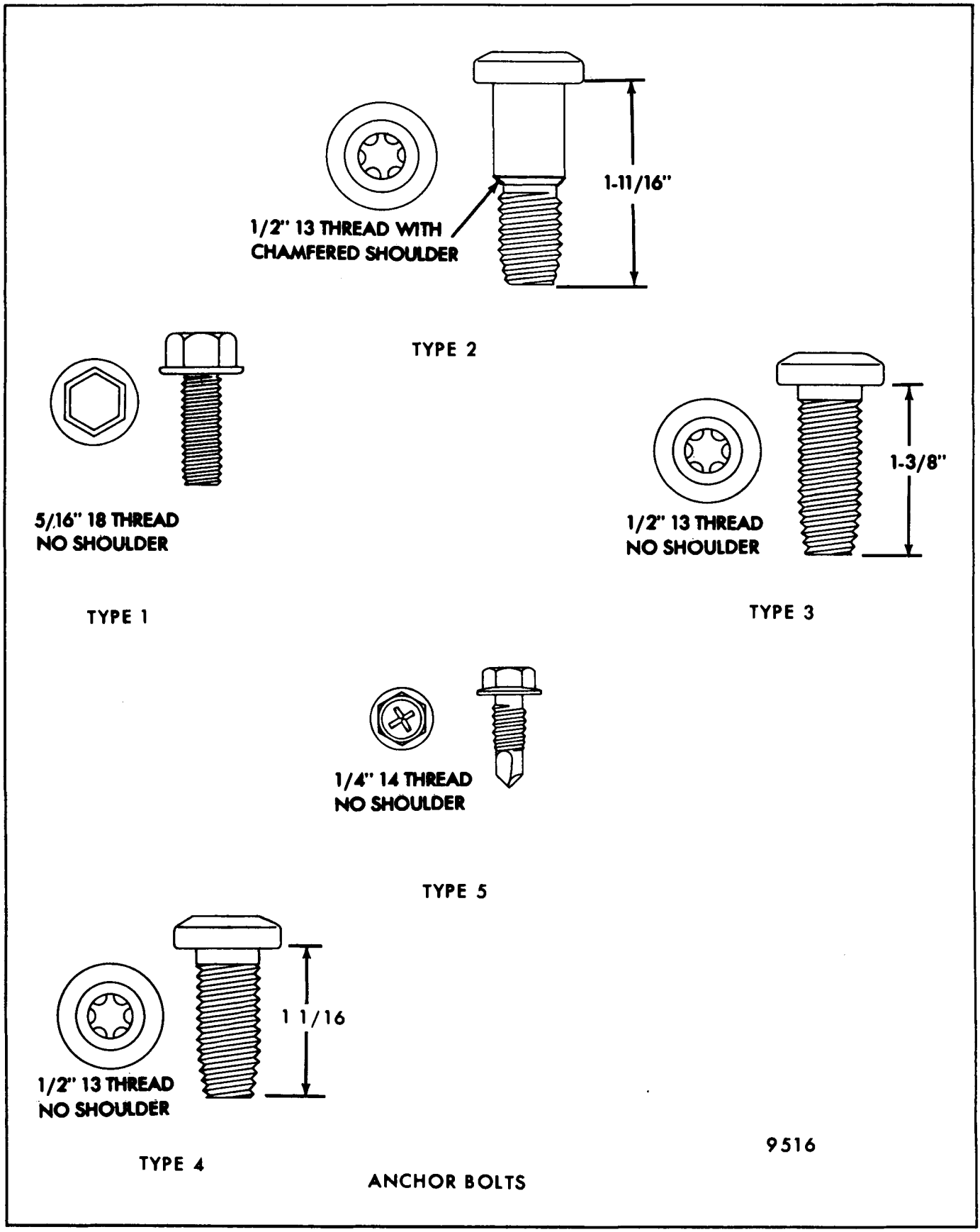


Fig. 9-101-Front Seat Lap and Shoulder Belt Anchor Bolts - "A,F,H and X" Styles

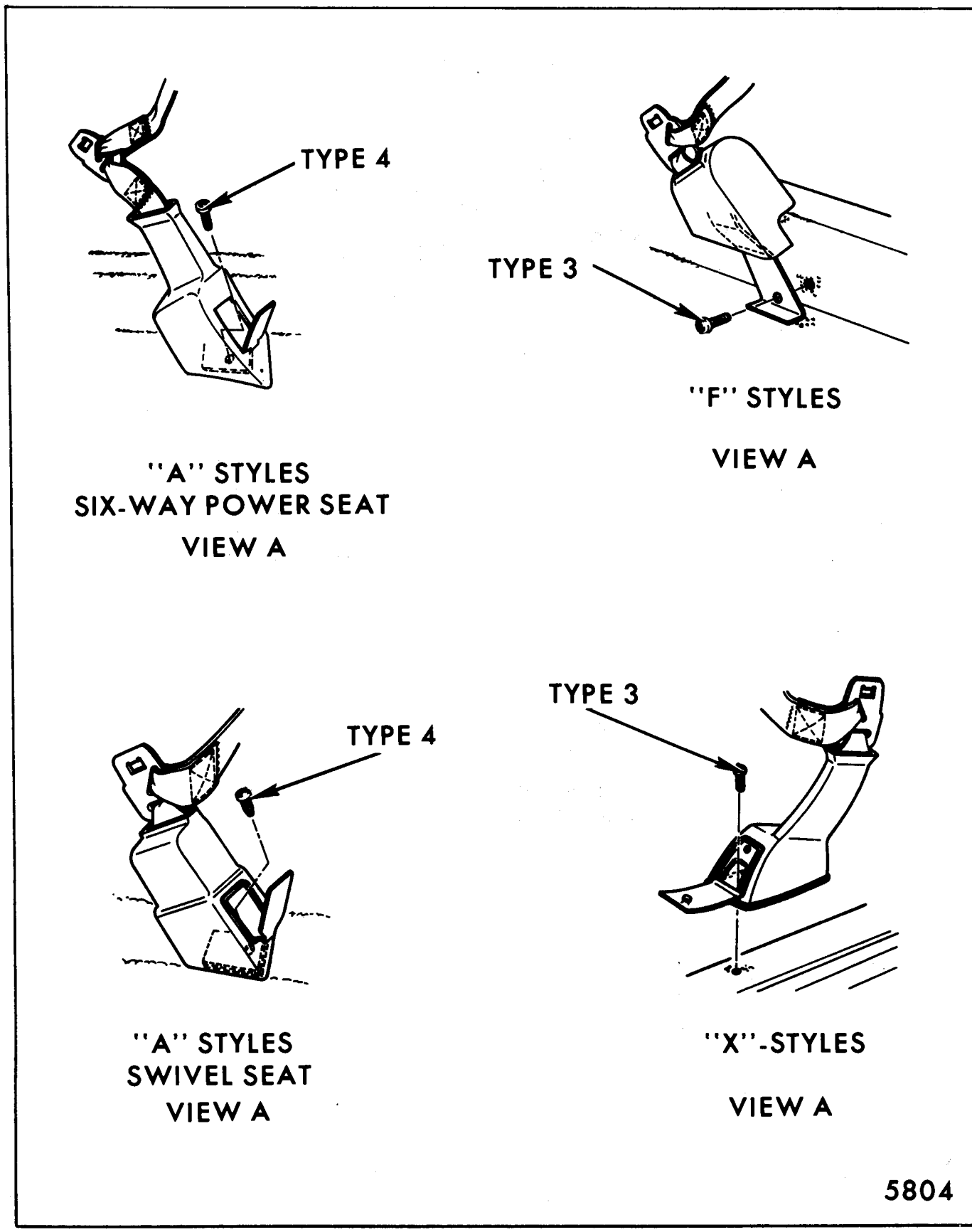


Fig. 9-102-Front Seat Outer Lap Belts and Retractors - "A,F and X" Styles

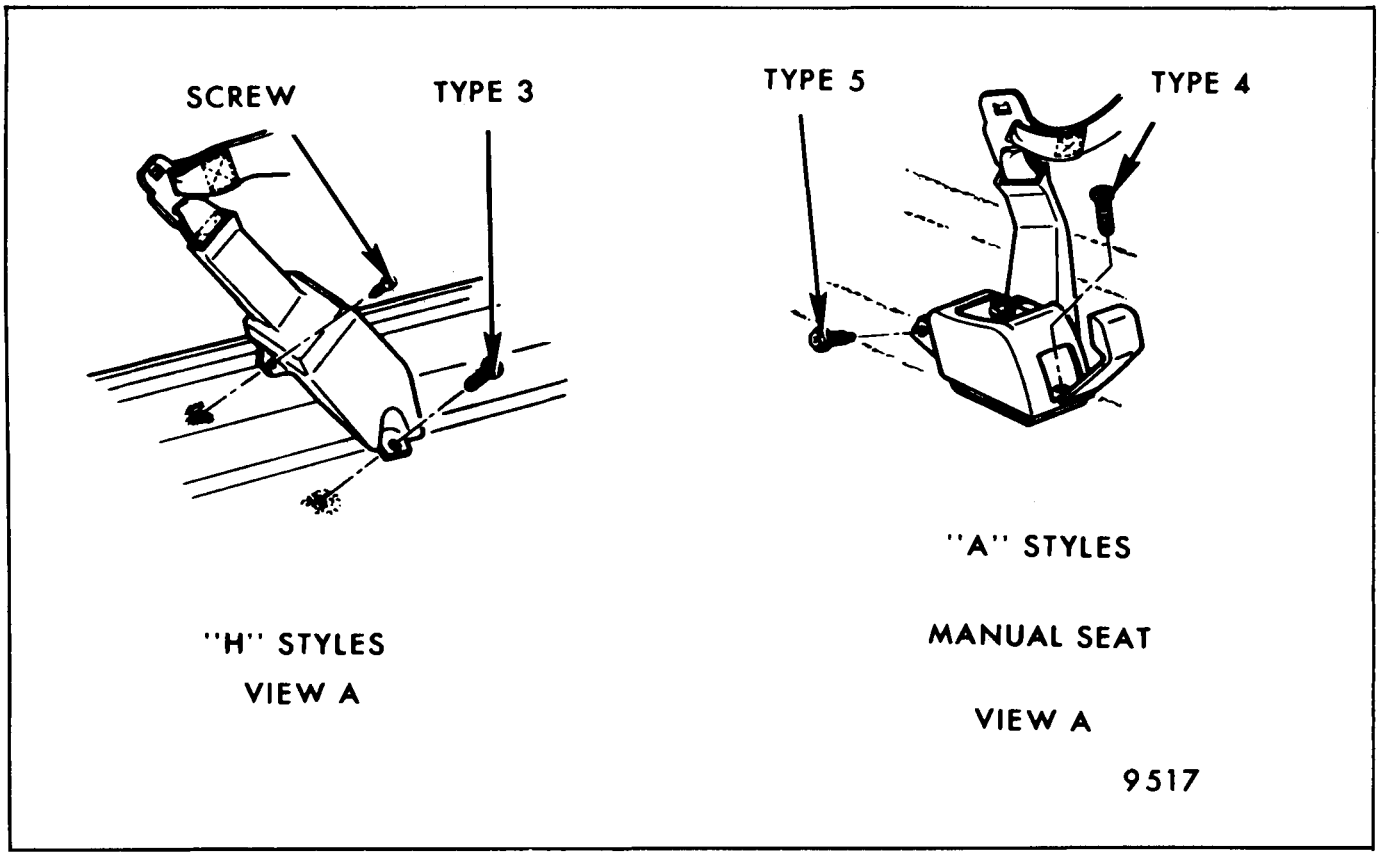


Fig. 9-103-Front Seat Outer Lap Belts and Retractors - "A and H" Styles

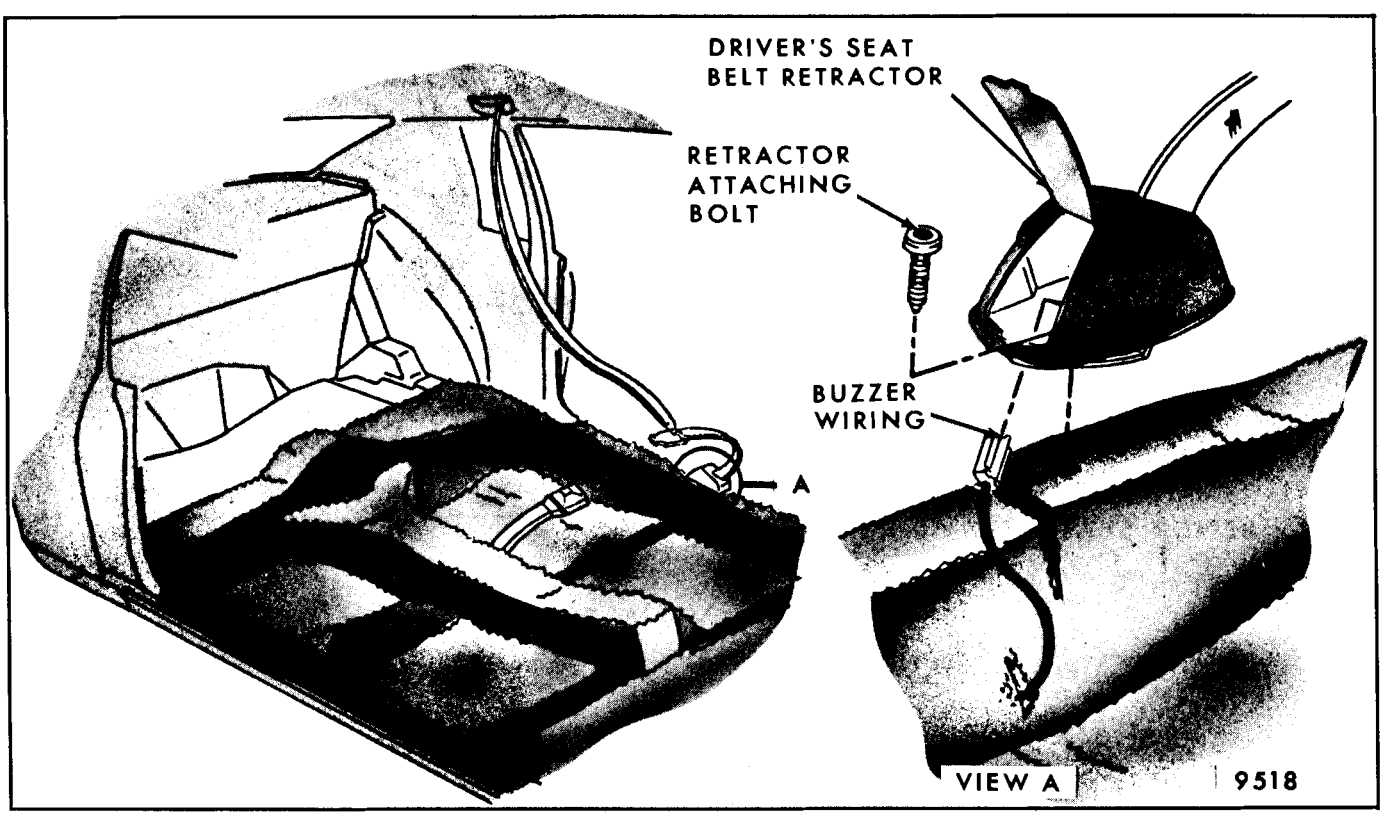


Fig. 9-104-Driver's Seat Belt Buzzer Wiring (Typical)

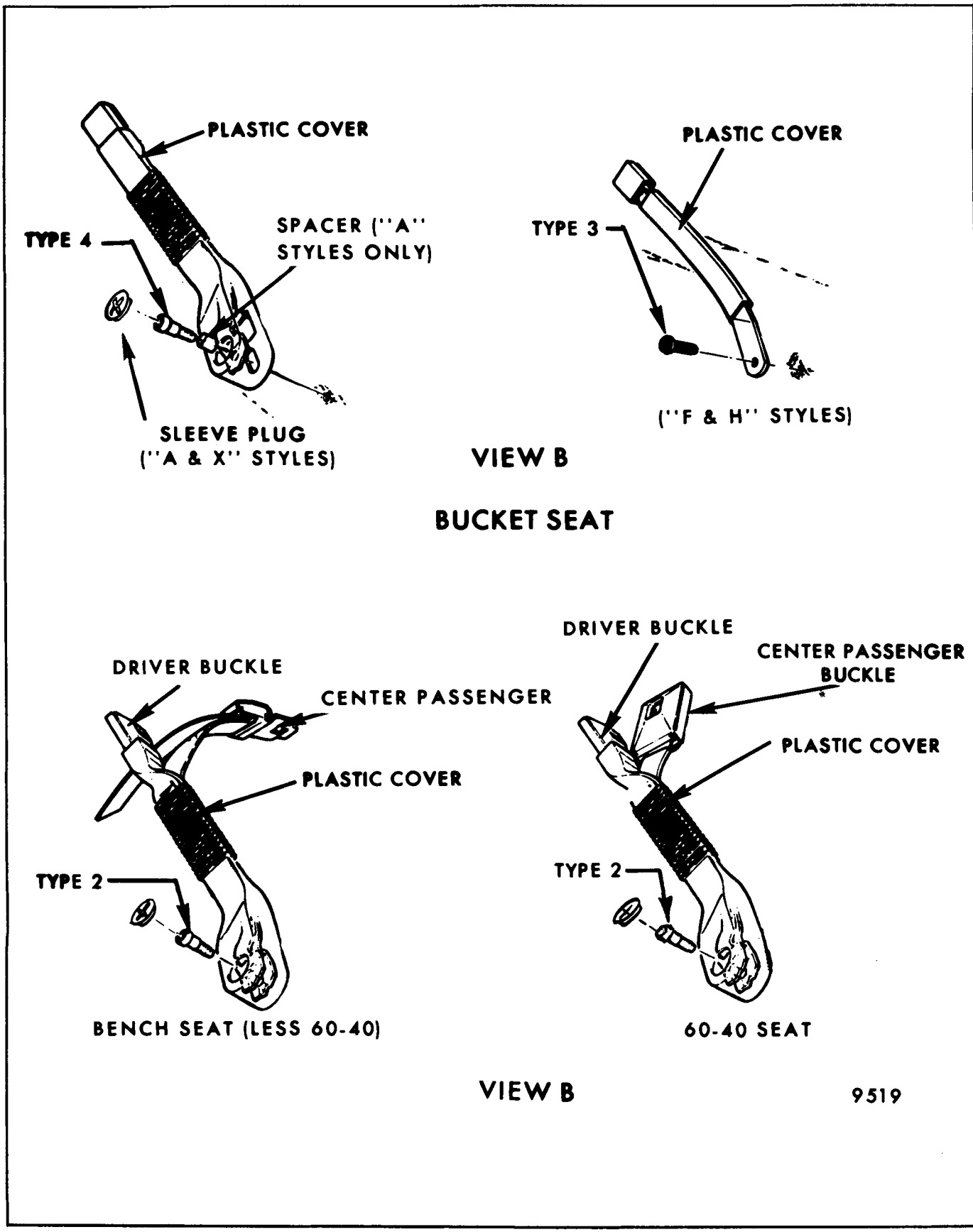


Fig. 9-105-Front Seat Inner Lap Belts - "A,F,H and X" Styles

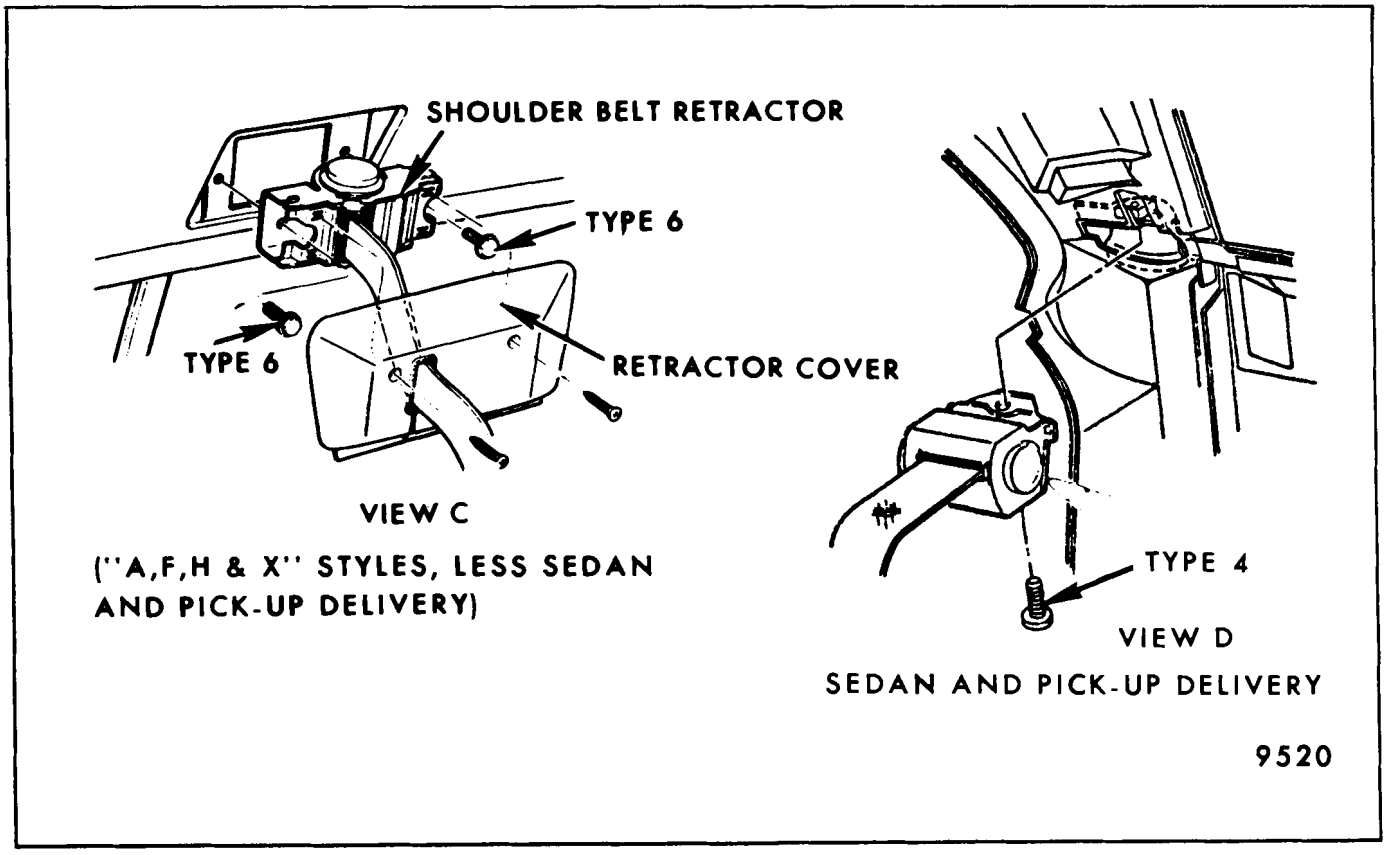


Fig. 9-106-Front Seat Shoulder Belts - "A,F,H and X" Styles

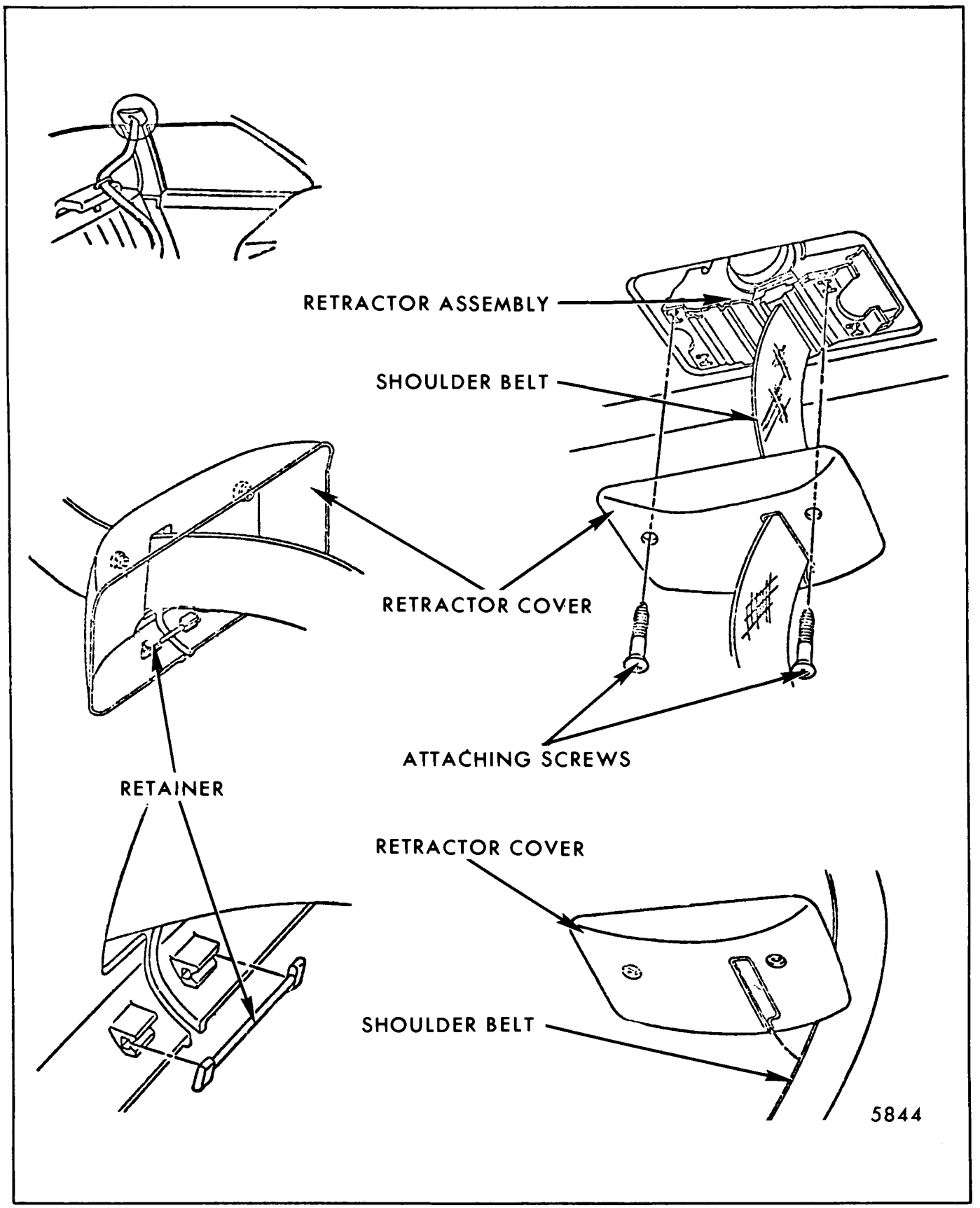
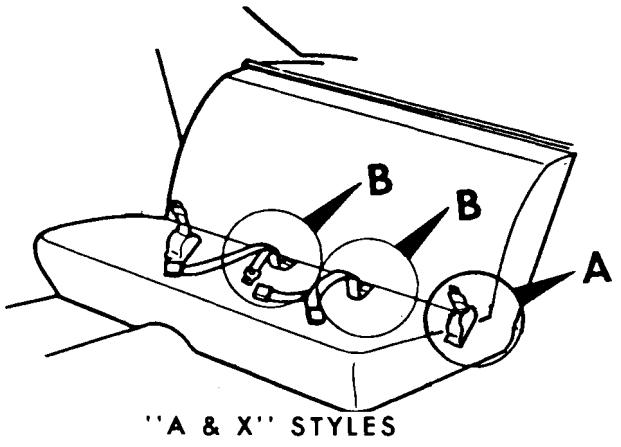
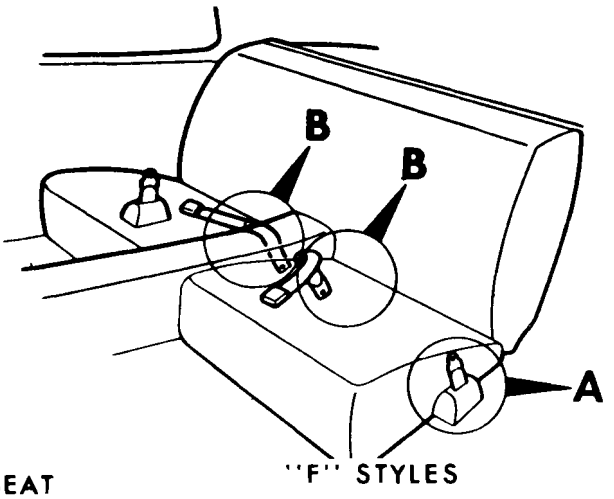


Fig. 9-107-Shoulder Belt Retractor Cover Removal - "A,F,H and X" Styles

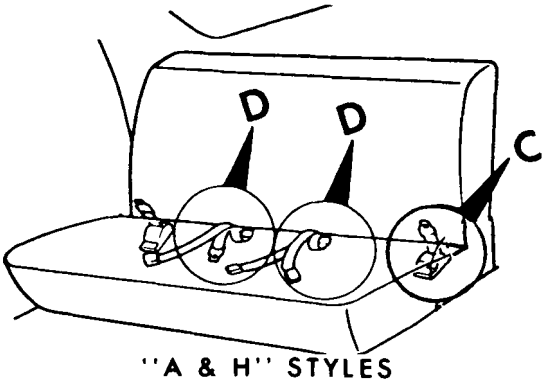


"A & X" STYLES



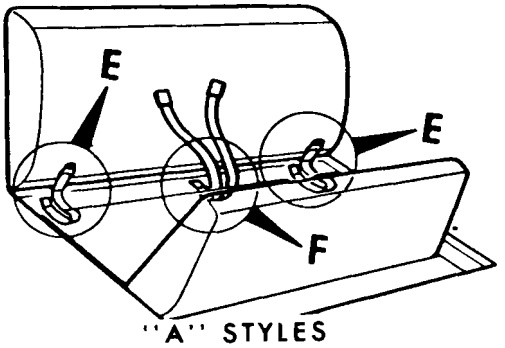
"F" STYLES

REAR SEAT
VIEW A REF. FIG. 9-110
VIEW B REF. FIG. 9-111



"A & H" STYLES

STATION WAGON SECOND SEAT
VIEWS C AND D REF. FIG. 9-112

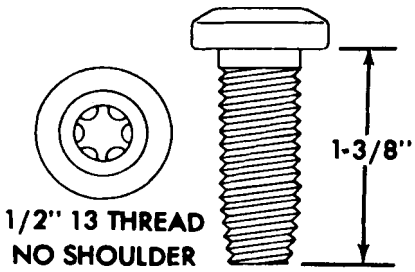


"A" STYLES

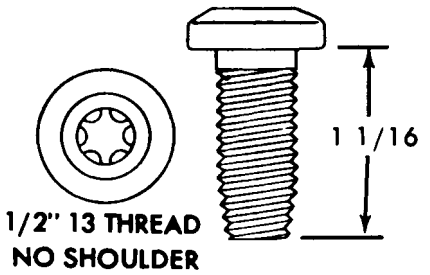
STATION WAGON THIRD SEAT
VIEWS E AND F REF. FIG. 9-113

9544

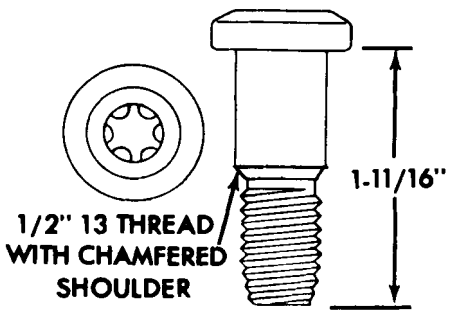
Fig. 9-108-Rear Seat Lap Belt Attaching Locations - "A,F,H and X" Styles



TYPE 1



TYPE 2



TYPE 3

CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.

9177

Fig. 9-109-Rear Seat Lap Belt Anchor Bolts - "A,F,H and X" Styles

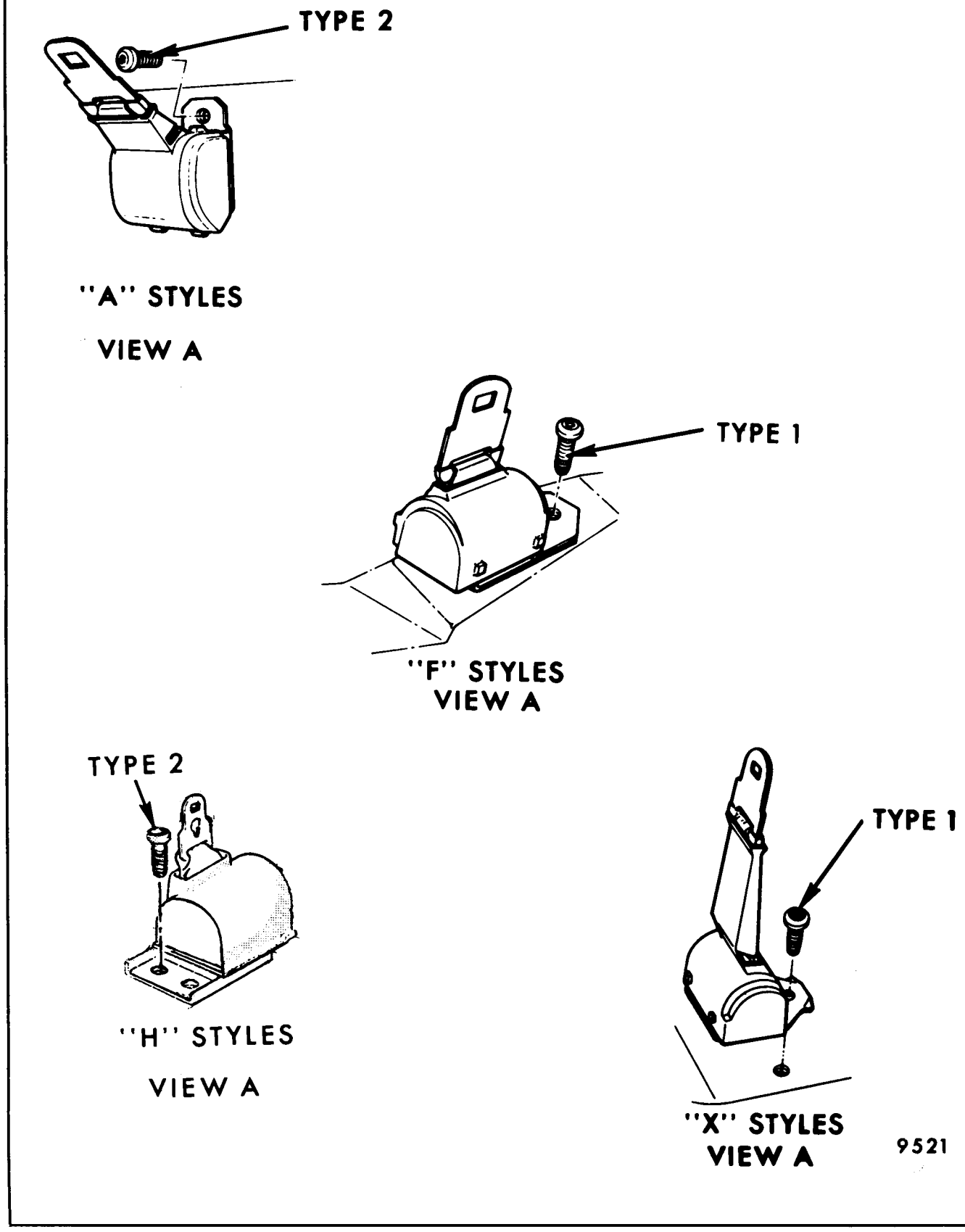


Fig. 9-110-Rear Seat Outer Lap Belt and Retractors - "A,F,H and X" Styles

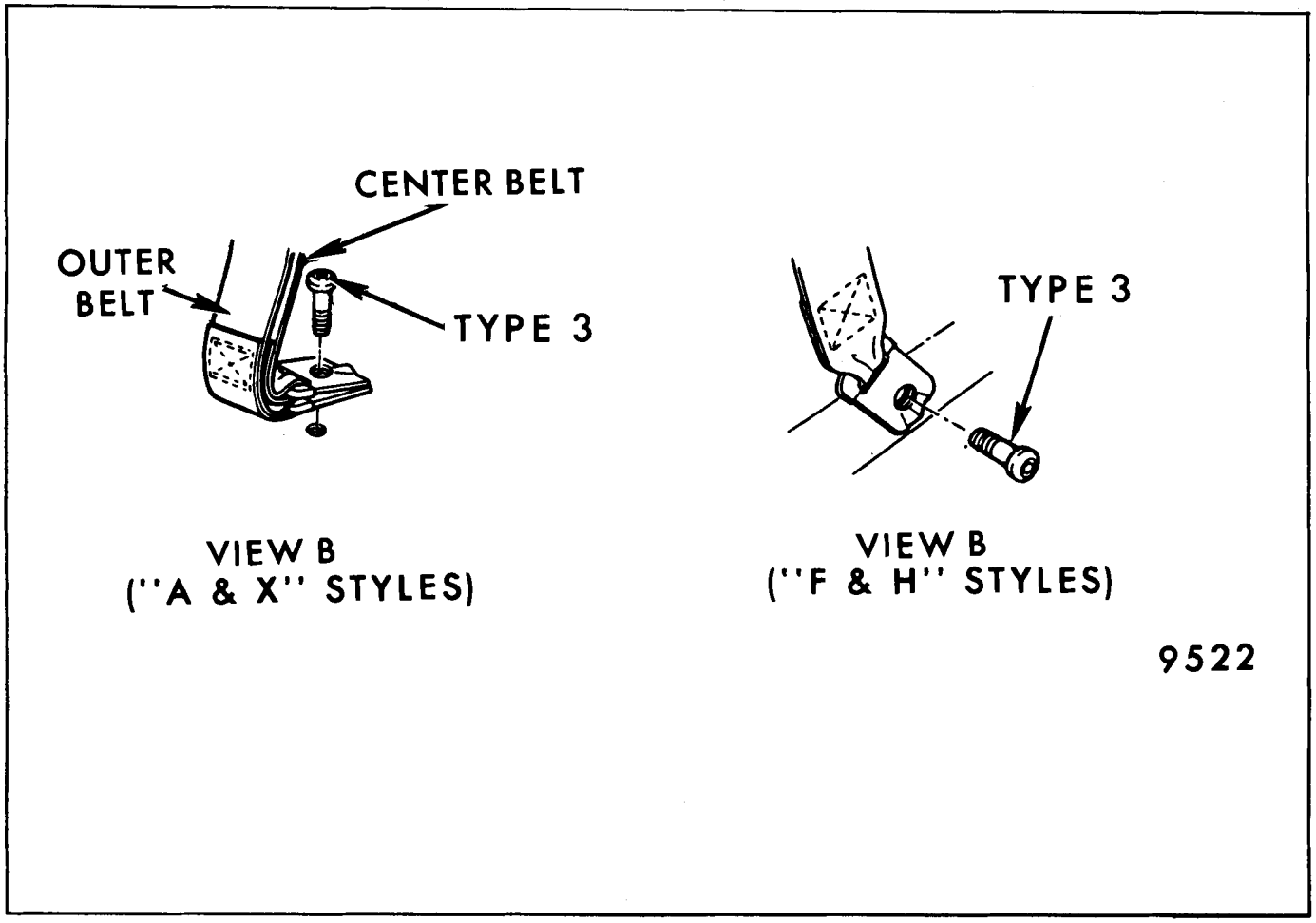
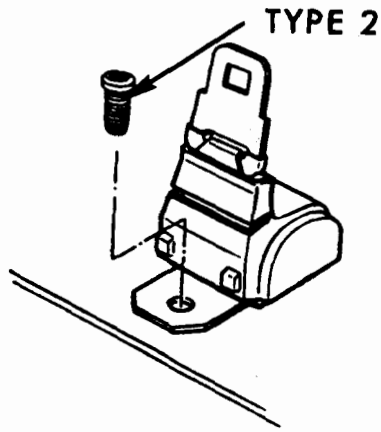
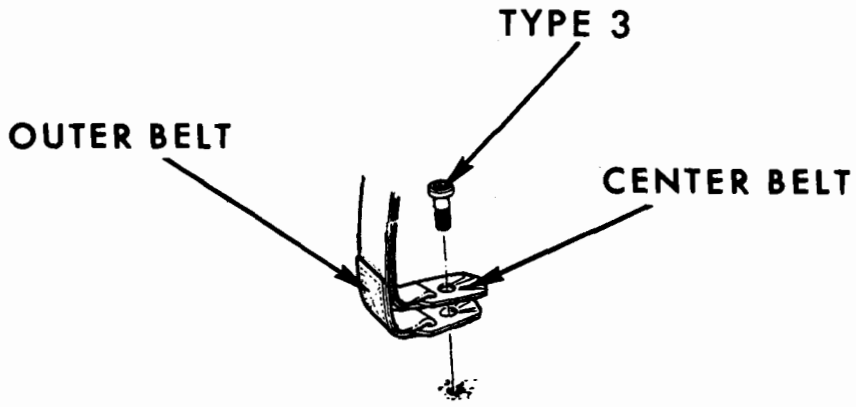


Fig. 9-111-Rear Seat Inner Lap Belts - "A,F,H and X" Styles



VIEW C
STATION WAGON SECOND SEAT-OUTER
("A & H" STYLES

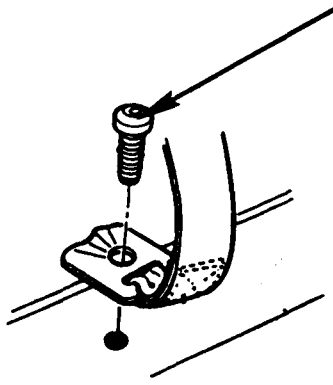


VIEW D
STATION WAGON SECOND SEAT - INNER
("A & H" STYLES)

9523

Fig. 9-112-Station Wagon Second Seat Outer and Inner Lap Belts and Retractors - "A and H" Styles

TYPE 1



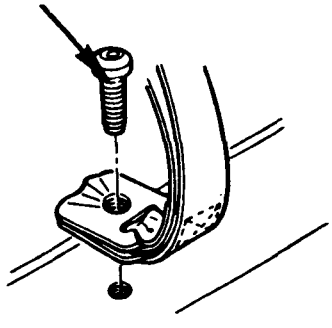
VIEW E ("A" STYLES)

STATION WAGON THIRD SEAT - OUTER

CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. TIGHTEN ALL FLOOR ANCHOR BOLTS TO 20 TO 45 FT. LBS. TORQUE.

TYPE 1



VIEW F ("A' STYLES)

STATION WAGON THIRD SEAT - INNER

9524

Fig. 9-113-Station Wagon Third Seat Inner and Outer Lap Belts - "A" Styles

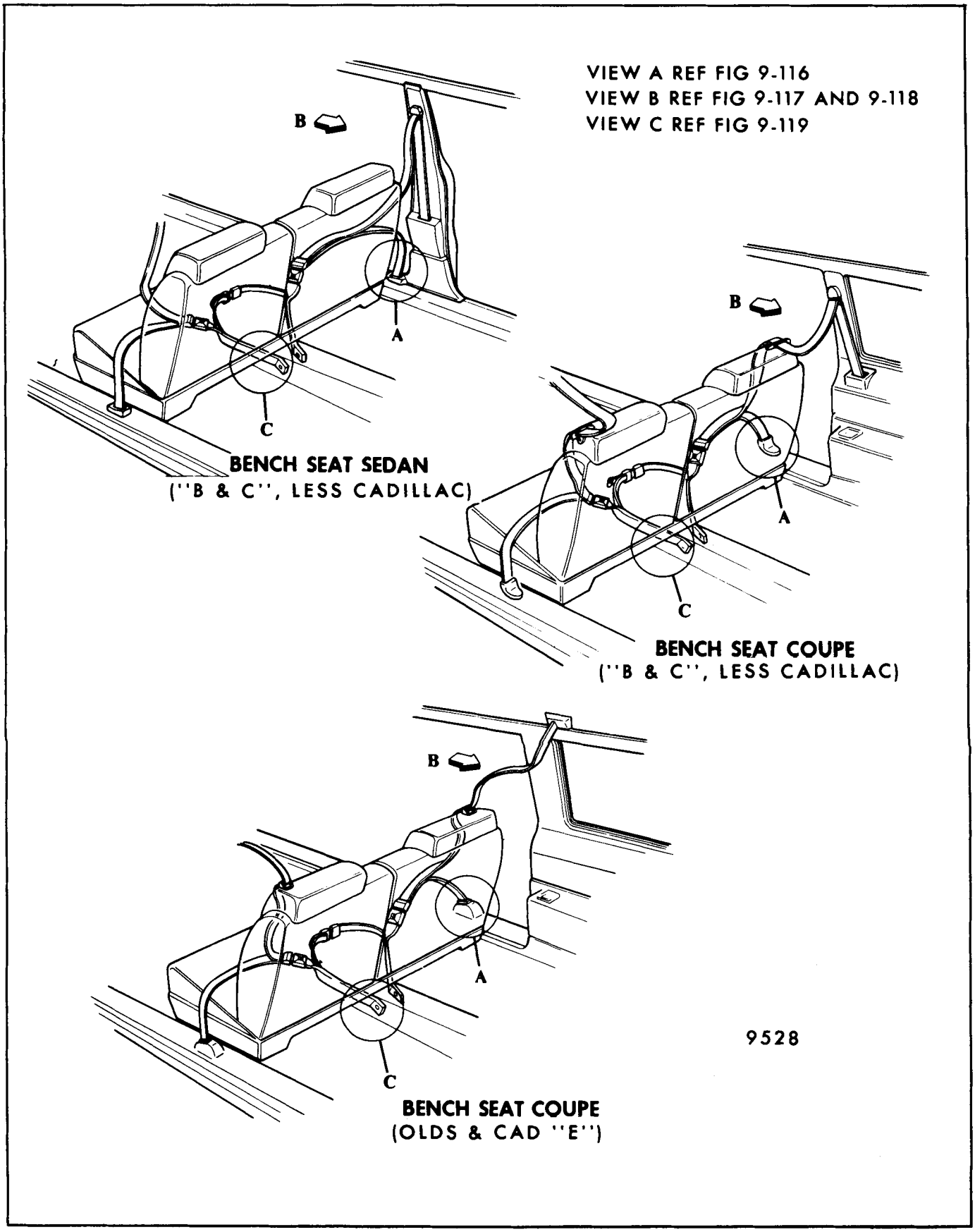
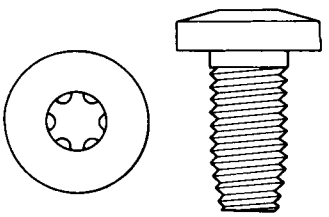
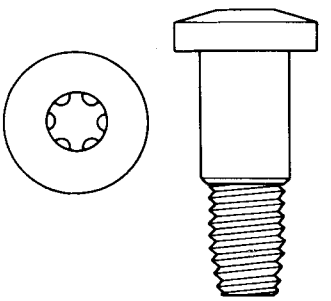


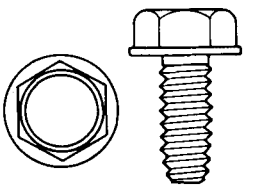
Fig. 9-114-Front Seat Lap and Shoulder Belt Attaching Locations - "B,C and E" Styles, Less Cadillac "C" Styles



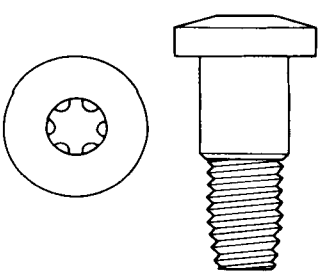
METRIC
12P 1.75
TYPE 1



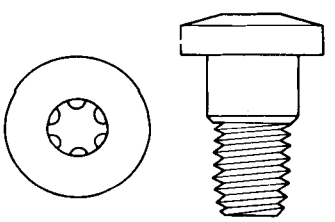
METRIC
12P 1.75
TYPE 2



METRIC
M8 1.25
TYPE 3



METRIC
12P 1.75
TYPE 4



METRIC
12P 1.75
TYPE 5

TORQUE NOTE

TORQUE IN THE METRIC SYSTEM IS EXPRESSED IN NEWTON-METRES. THE SYMBOL FOR NEWTON-METRES IS N·m.

BOLT TYPE 1, 2, 4 AND 5 TIGHTEN TO (27.2 -60 N·m.) MAXIMUM TORQUE OR (20 TO 45 FT. LBS. TORQUE.)

BOLT TYPE 3, TIGHTEN TO 23 N·m. MAXIMUM TORQUE OR (12 TO 18 FT. LBS. TORQUE.)

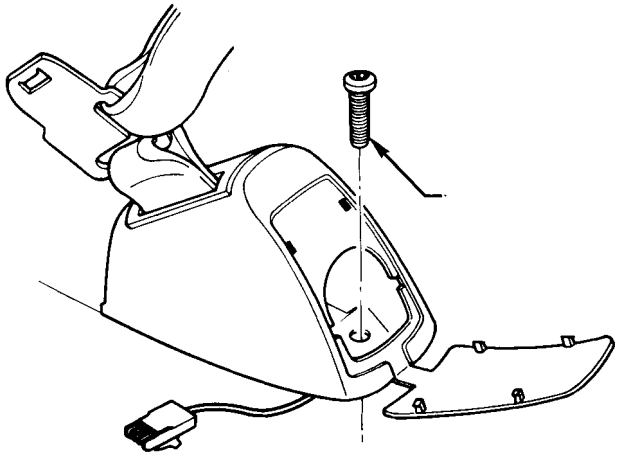
CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. SEE NOTE FOR PRECISE TORQUE SPECIFICATIONS.

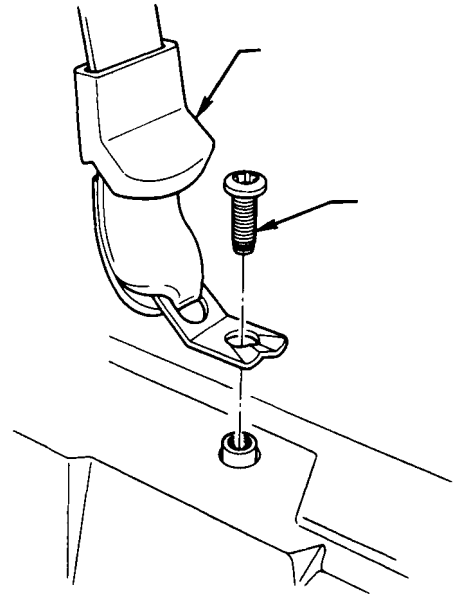
9529

Fig. 9-115-Front Seat Lap and Shoulder Belt Bolts (Metric) - "B,C and E" Styles, Less Cadillac "C" Styles

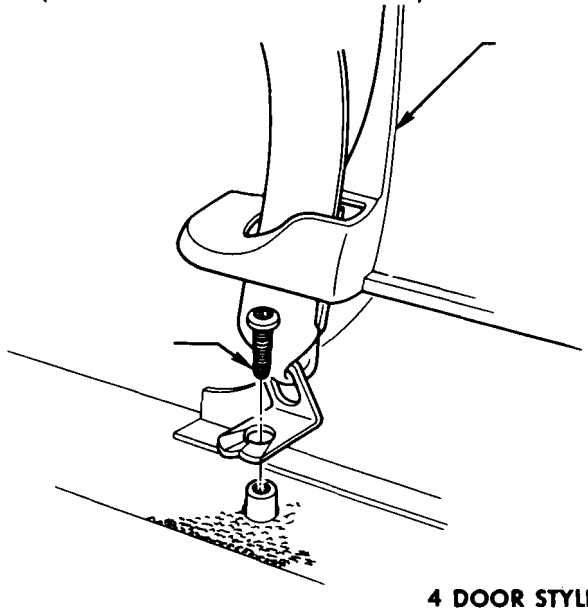
FRONT SEAT - OUTER
VIEW A



2 DOOR STYLE
("B & C" STYLES, LESS CADILLAC "C" STYLES)



2 DOOR STYLE
(OLDS & CAD "E" STYLES)



9530

4 DOOR STYLE
("B & C" STYLES, LESS CADILLAC "C" STYLES)

Fig. 9-116-Front Seat Outer Lap Belts and Retractors - "B,C and E" Styles Less Cadillac "C" Styles

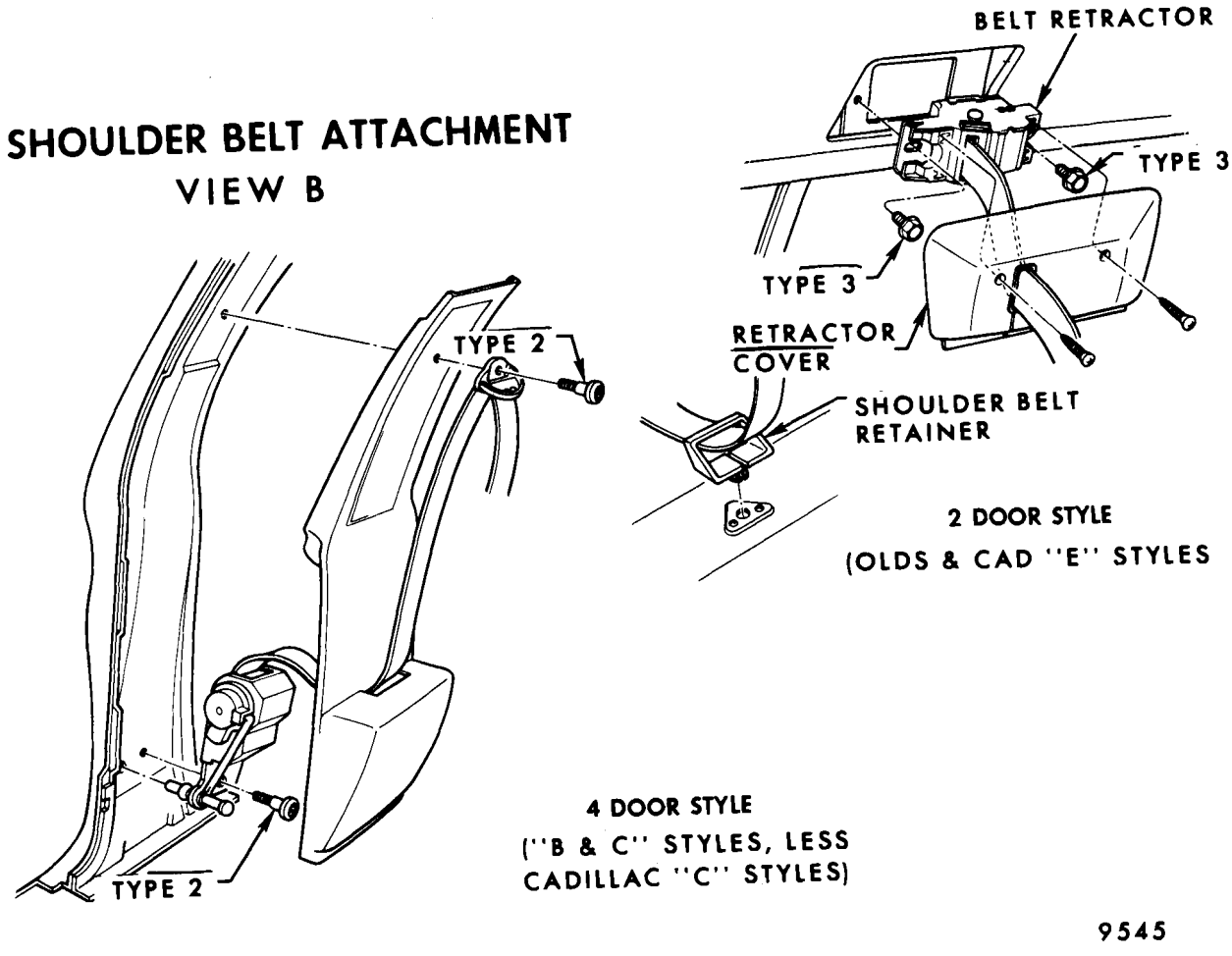


Fig. 9-117-Front Seat Shoulder Belts - "B,C and E" Styles, Less Cadillac "C" Styles

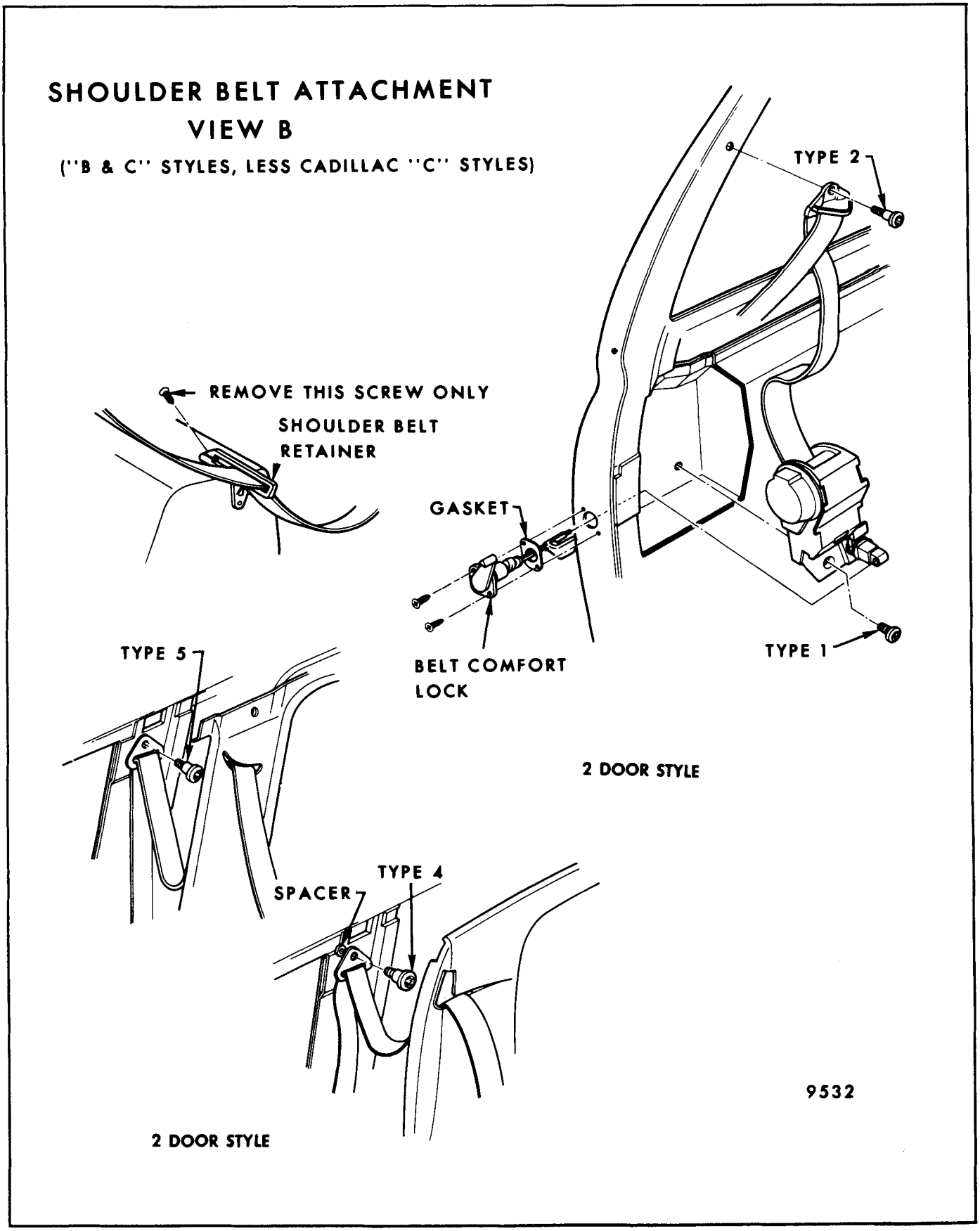


Fig. 9-118-Front Seat Shoulder Belts - "B and C" Styles, Less Cadillac "C" Styles

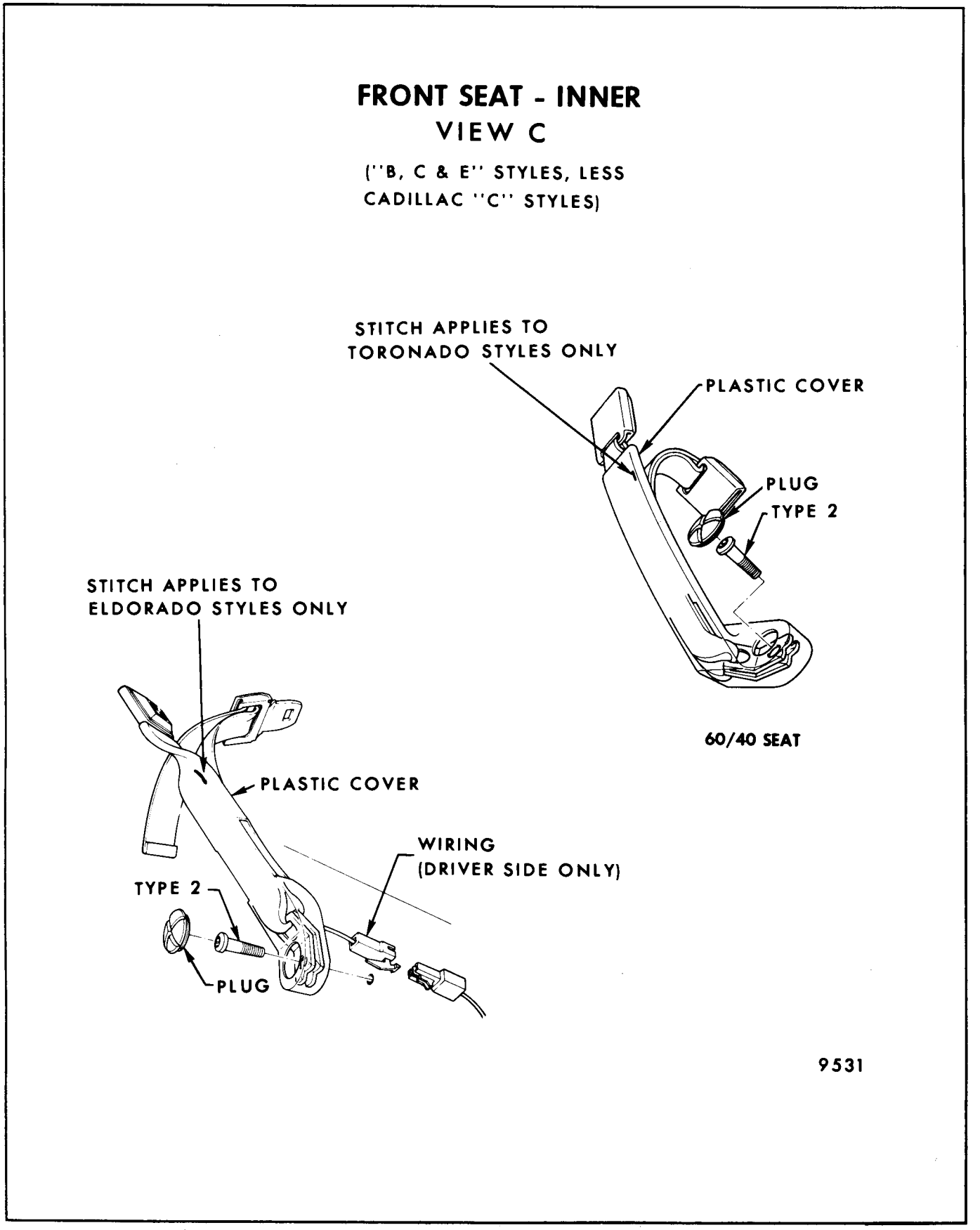


Fig. 9-119-Front Seat Inner Lap Belts - "B,C and E" Styles, Less Cadillac "C" Styles

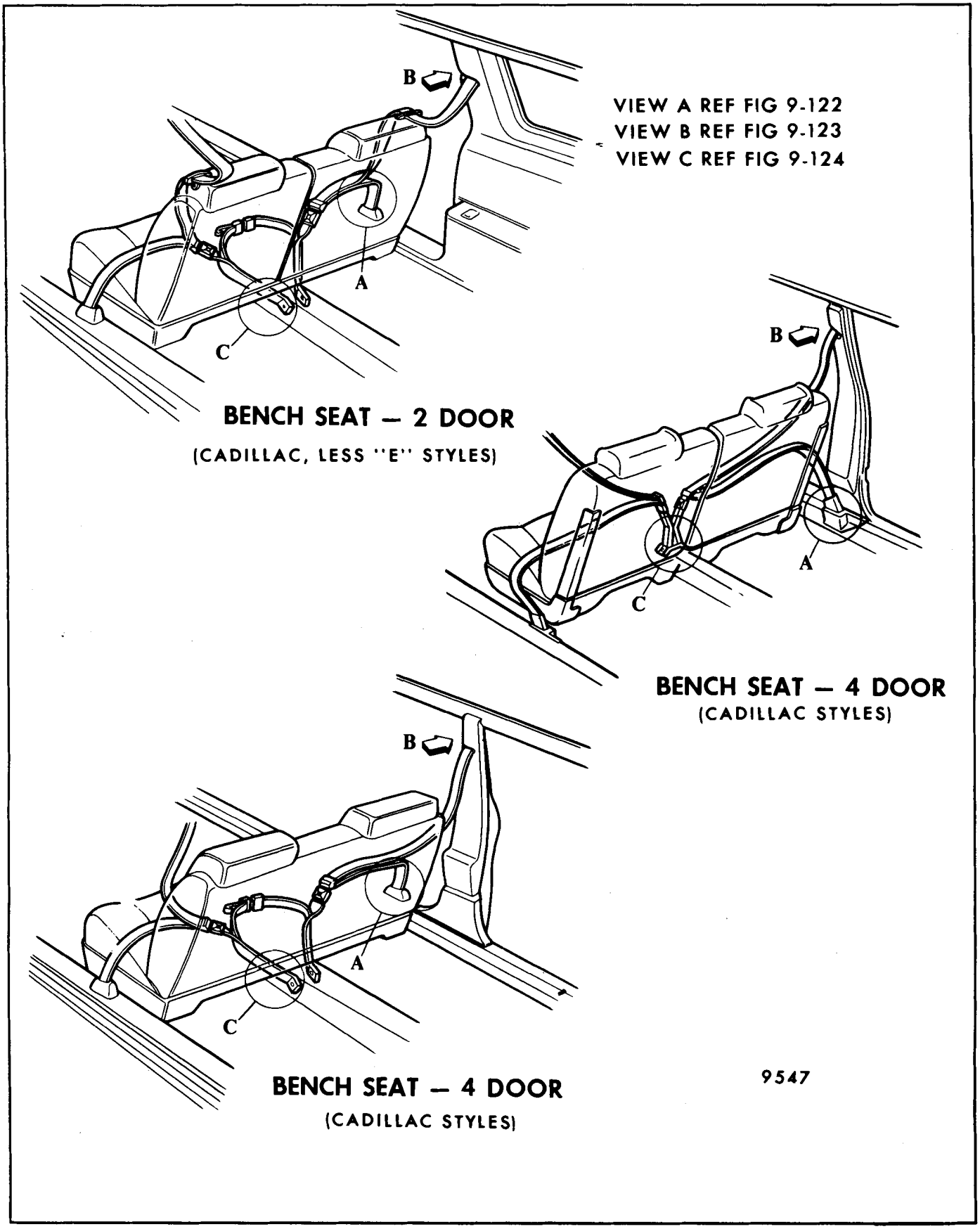
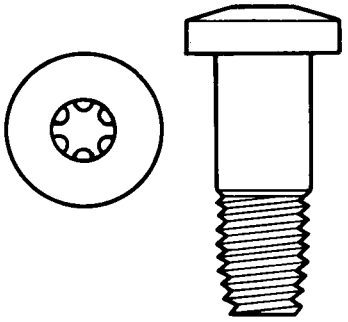
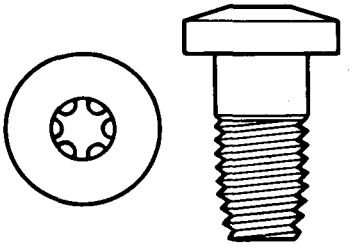


Fig. 9-120-Front Seat Lap and Shoulder Belt Attaching Locations - Cadillac Styles, Less "E" Styles



METRIC
12P 1.75
TYPE 1



METRIC
12P 1.75
TYPE 2

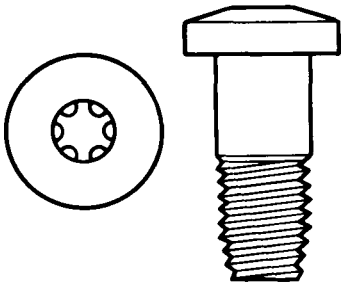
CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. SEE NOTE FOR PRECISE TORQUE SPECIFICATIONS.

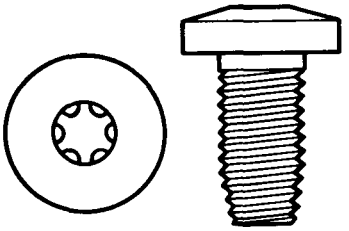
TORQUE NOTE

TORQUE IN THE METRIC SYSTEM IS EXPRESSED IN NEWTON-METRES. THE SYMBOL FOR NEWTON-METRES IS N•m.

BOLT TYPE 1, 2, 3 AND 4 TIGHTEN TO (27.2 - 60 Nm.) MAXIMUM TORQUE OR (20 - 45 FT. LBS. TORQUE.)



METRIC
12P 1.75
TYPE 3



METRIC
12P 1.75
TYPE 4

9548

Fig. 9-121-Front Seat Lap and Shoulder Belt Bolts (Metric) - Cadillac Styles, Less "E" Styles

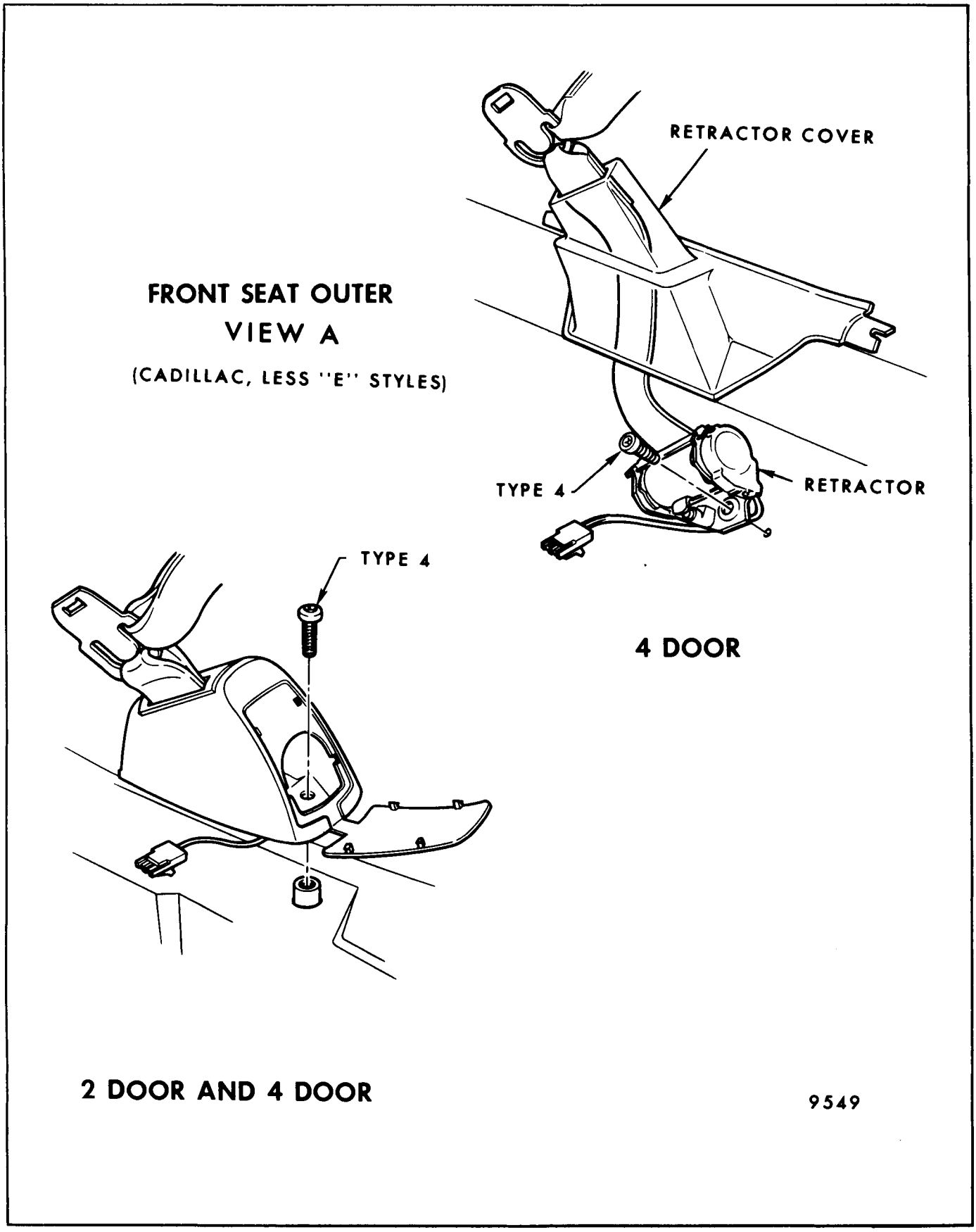
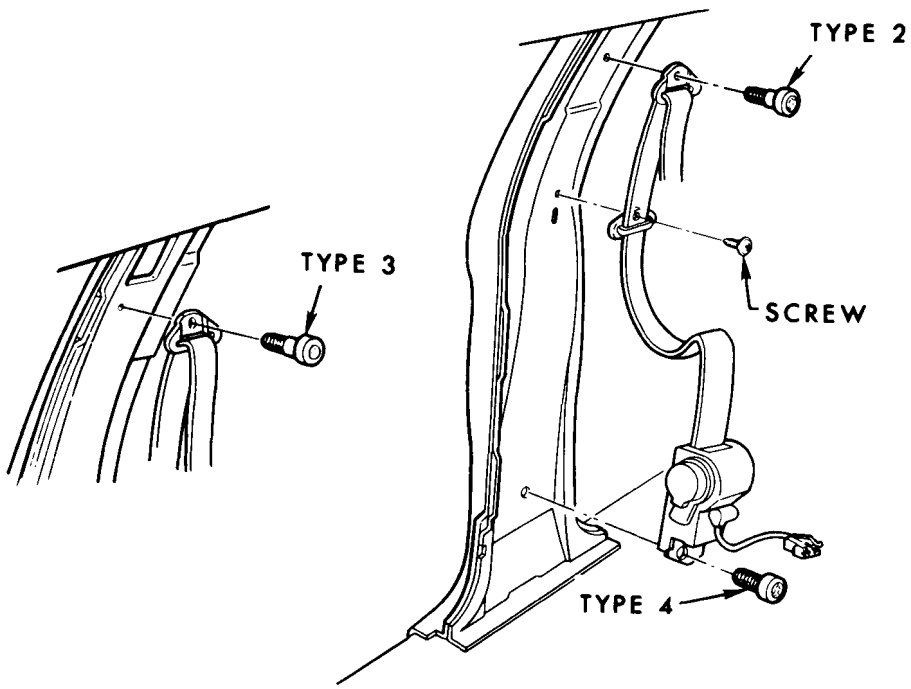
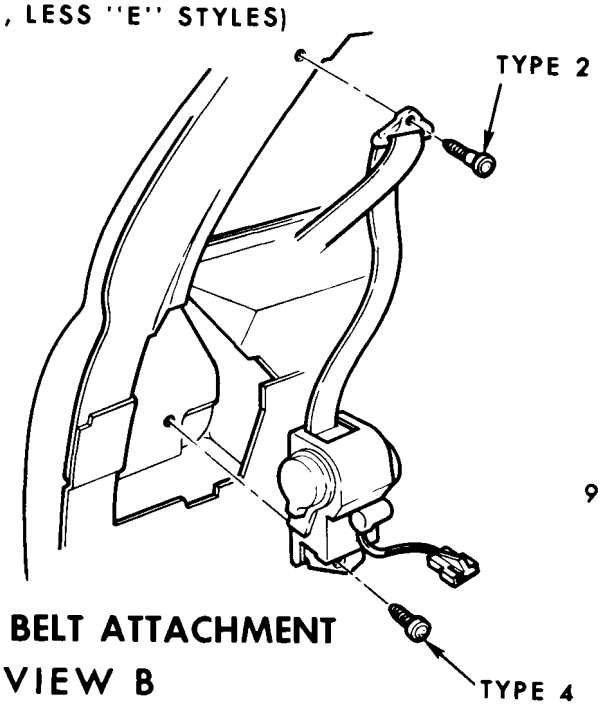


Fig. 9-122-Front Seat Outer Lap Belts and Retractors - Cadillac Styles, Less "E" Styles



SHOULDER BELT ATTACHMENT
VIEW B
(CADILLAC, LESS "E" STYLES)



SHOULDER BELT ATTACHMENT
VIEW B
(CADILLAC, LESS "E" STYLES)

Fig. 9-123-Front Seat Shoulder Belts - Cadillac Styles, Less "E" Styles

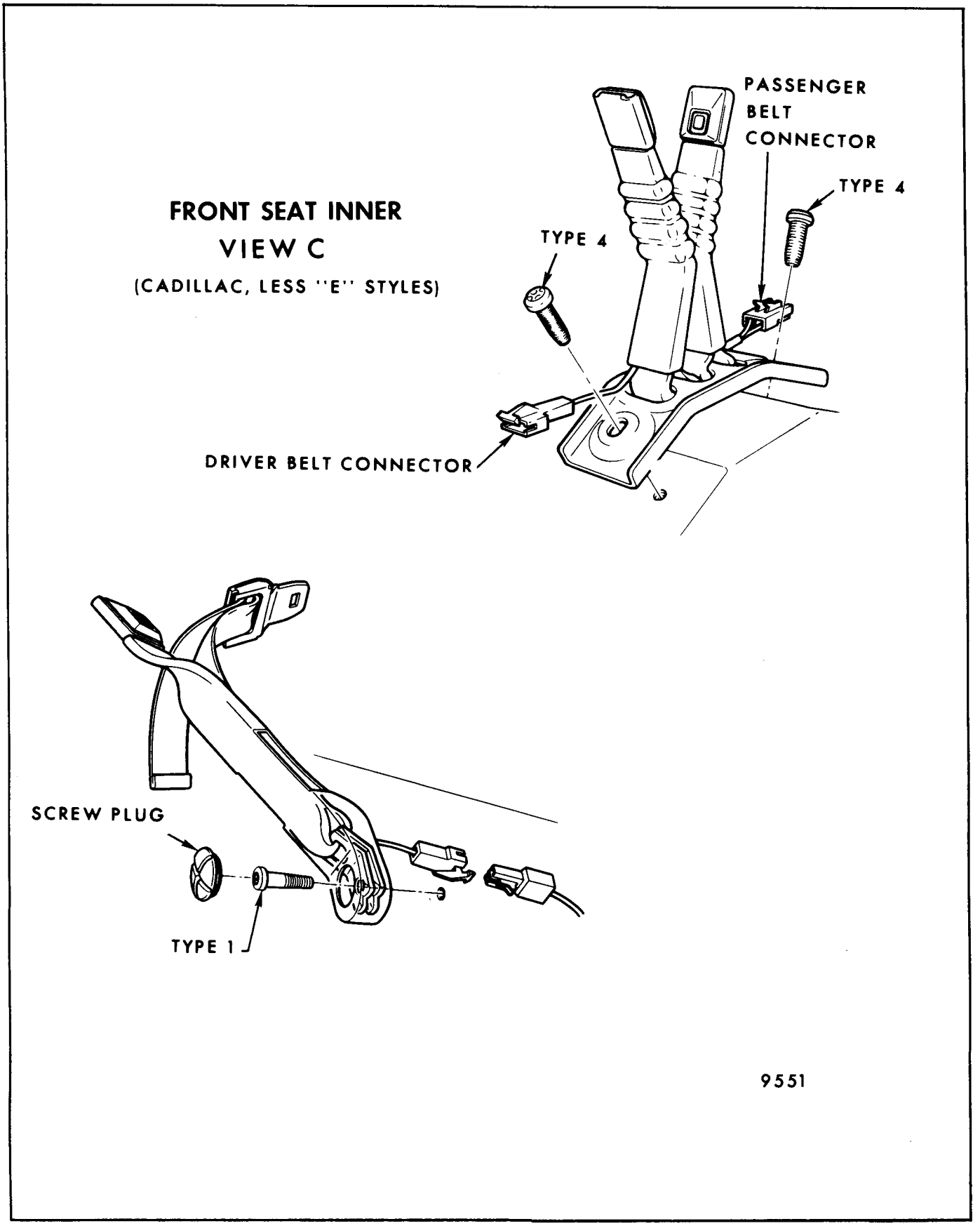
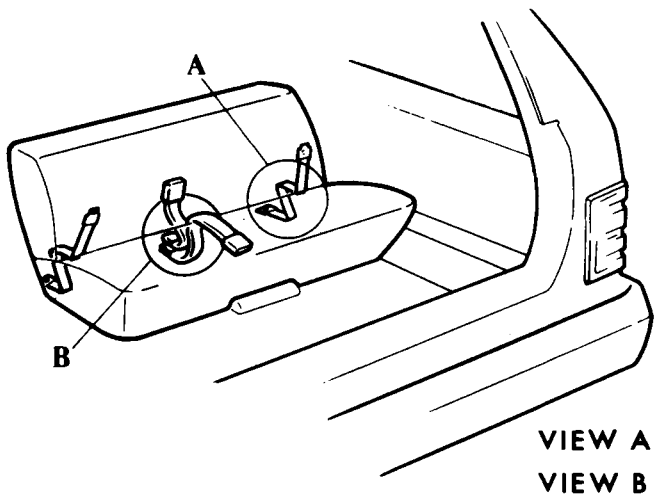
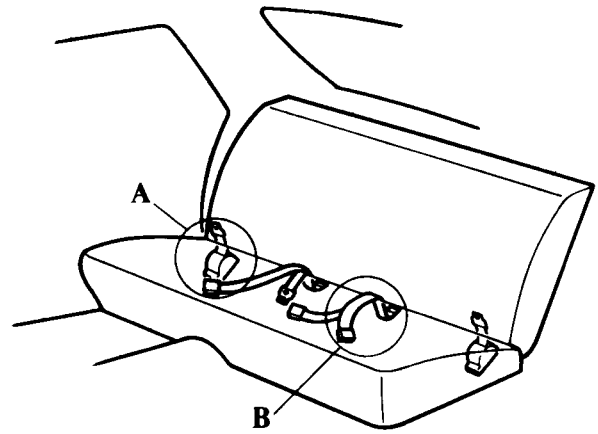


Fig. 9-124-Front Seat Inner Belts - Cadillac Styles, Less "E" Styles

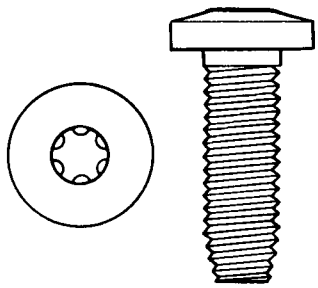
STATION WAGON THIRD SEAT REAR ("B" STYLES)



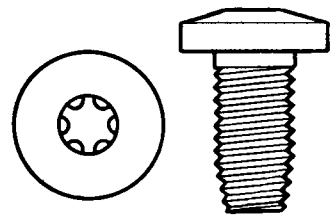
REAR SEAT ("B, C, D, E & K" STYLES)



VIEW A REF FIG 9-126
VIEW B REF FIG 9-127



METRIC
12P 1.75
TYPE 1



METRIC
12P 1.75
TYPE 2

TORQUE NOTE

TORQUE IN THE METRIC SYSTEM IS EXPRESSED IN NEWTON-METRES. THE SYMBOL FOR NEWTON-METRES IS N·m.

BOLT TYPE 1, 2, AND 3, TIGHTEN TO 60 Nm. MAXIMUM TORQUE OR (20 - 45 FT. LBS. TORQUE.)

CAUTION

CHECK POSITION OF FACTORY INSTALLED BELT ANCHORAGE AND INSTALL REPLACEMENT BELT AND ANCHOR PLATE IN SAME POSITION. CARE MUST BE EXERCISED WHEN MAKING REPLACEMENT THAT ALL BELT ANCHOR PLATES INTER-LOCK AS SHOWN. SEE NOTE FOR PRECISE TORQUE SPECIFICATIONS.

9552

Fig. 9-125-Rear Seat Lap Belt Attaching Locations and Bolts (Metric - "B,C,D,E and K" Styles

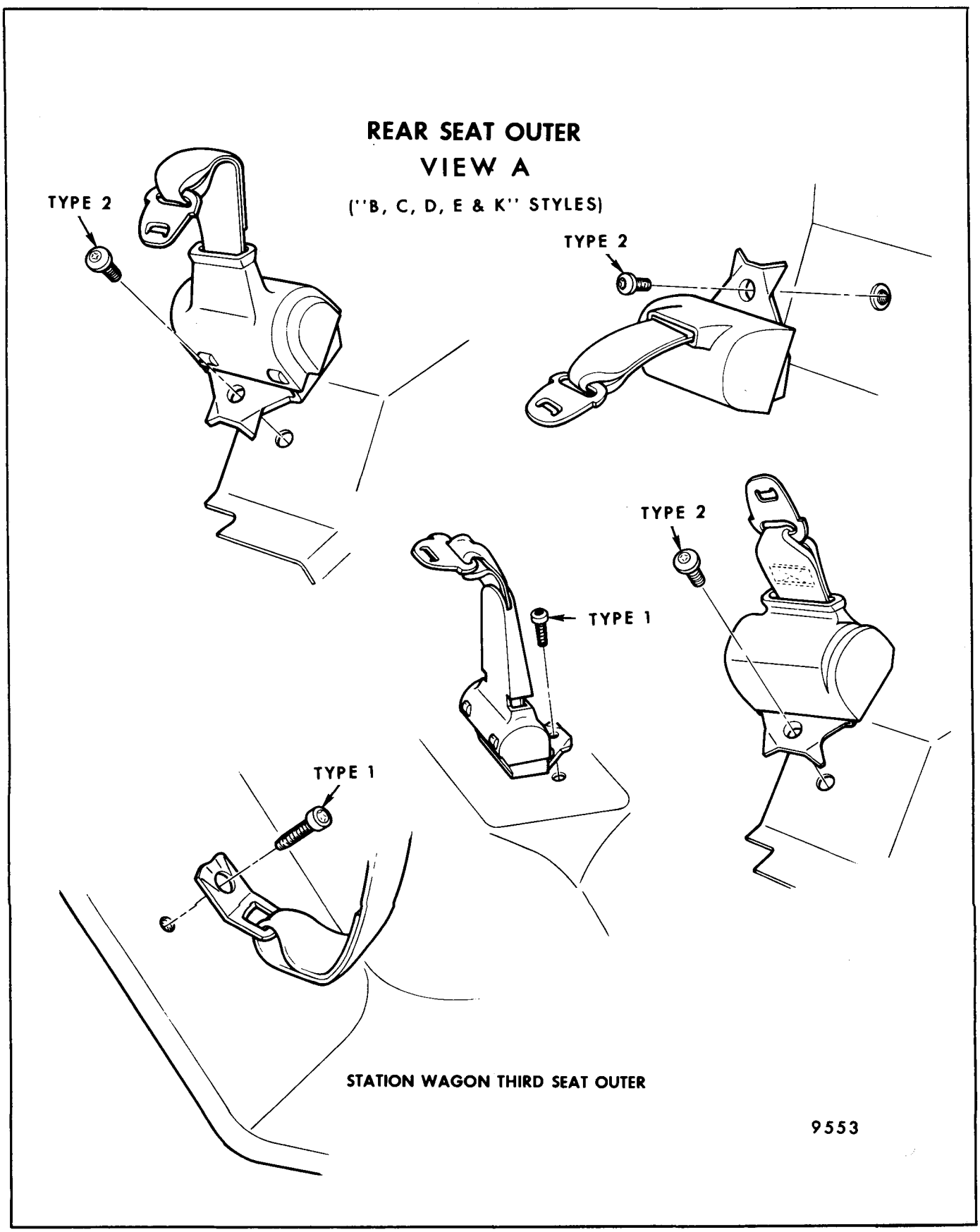


Fig. 9-126-Rear Seat Outer Lap Belts and Retractors - "B,C,D,E and K" Styles

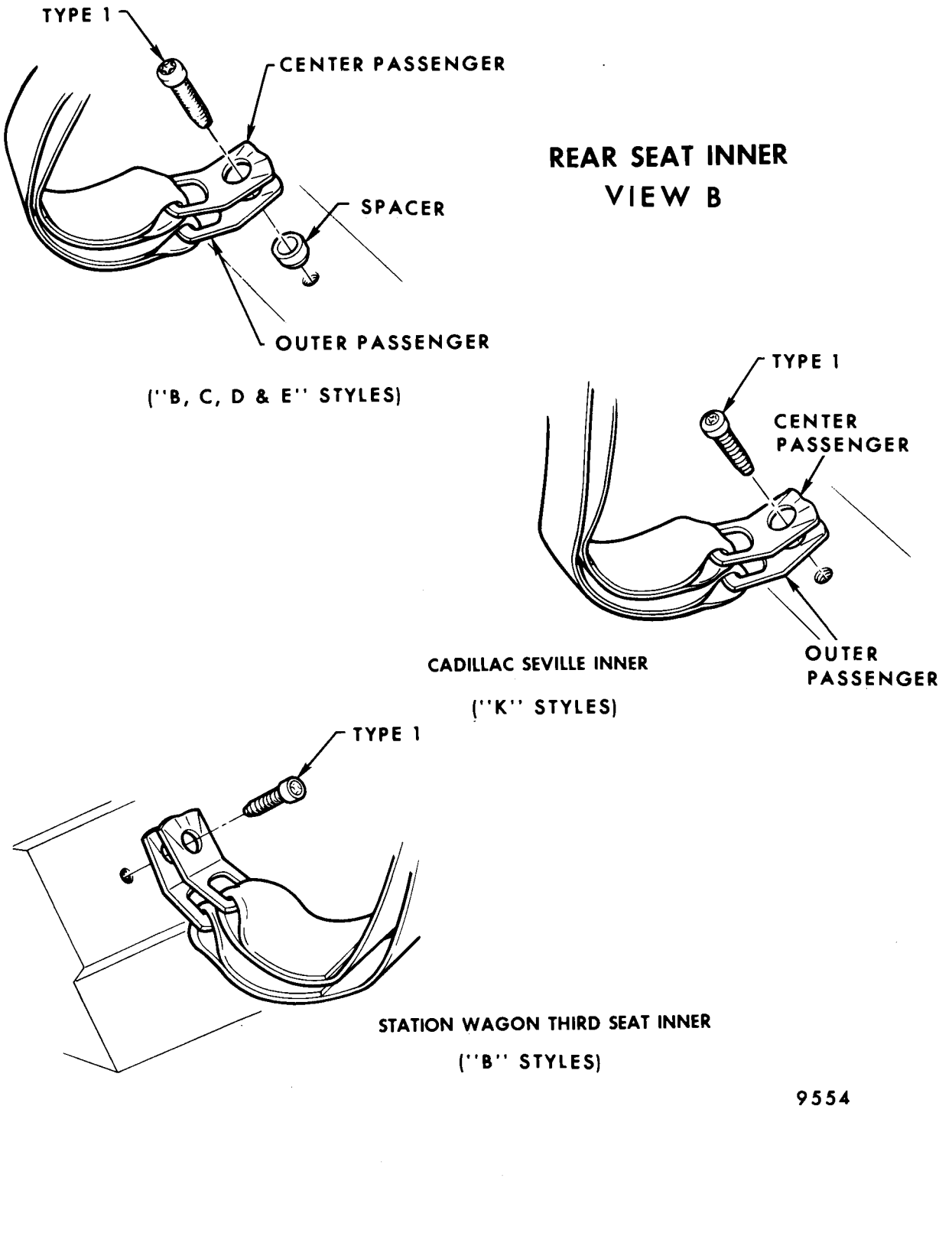


Fig. 9-127-Rear Seat Inner Lap Belts - "B,C,D,E and K" Styles

LAP AND SINGLE LOOP BELTS - "B and C" Styles, Less Cadillac Styles

The single loop belt system consists of a single continuous length of webbing. The webbing is routed from the anchor (at the rocker panel), through a self-locking latch plate (at the buckle), around the guide assembly (at the top of the center pillar or quarter inner panel) and into a single retractor in the lower area of the center pillar or quarter inner. The emergency locking feature of the retractor remains unlocked to allow free movement of the occupant's upper body while the vehicle is being operated. When the vehicle decelerates or changes direction abruptly, the single loop belt(s) is locked in position by a ball that causes a locking bar to engage a cog of the retractor mechanism.

The retractor incorporates a comfort lock feature that allows the occupant to adjust the shoulder belt for proper fit and comfort. When engaged, the comfort lock prevents full retraction of the webbing to eliminate occupant discomfort due to webbing load on the shoulder. The occupant can readjust the comfort lock during vehicle operation as described in the operational requirements below. Whenever the occupant's door is opened, the comfort lock is automatically unlocked so the webbing can fully retract to the stowed position. This is controlled by the comfort lock plunger located at the lower front side of the center pillar.

Comfort Lock Operational Checks and Requirements

The comfort lock feature must function as follows:

1. With door closed, extend the webbing from the retractor to the working range of the belt.
2. Let the belt retract a minimum of 6".
3. Extract the belt for 1/2" and release belt. The comfort lock must engage and prevent retraction.
4. Extract belt 4" and release. The belt must return to the comfort lock position previously set. Full retraction is a failure of the system.
5. Extract belt 6" and release. The belt must fully retract without locking.

Removal and Installation

Refer to illustrations on prior pages and select the appropriate illustration for removing and installing lap belts and shoulder belts.

CAUTION: *Front seat single loop belt to rocker panel, floor pan, center pillar and rear seat lap belt to floor pan fasteners are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.*

Check position of factory installed lap belt and single loop belt anchors and reinstall anchor plates in same position as shown in illustrations.

To remove seat belt retractor, remove sill plate(s) quarter trim or center pillar trim seat cushion and seat back and seat belt outer anchor plate covers as required. With anchor bolts exposed, remove retractor assembly, guide assembly and lower attaching bolts with tool J-23457 or equivalant.

When installing retractor assembly attaching bolts, tighten to 60 N·m (45 ft-lb).

To remove center passenger lap belts, remove screw-in sleeve plug (Fig. 9-98) to gain access to anchor bolts. Then remove bolts with tool J-23457 or equivalent.

When installing, tighten bolts to 60 N·m (45 ft-lb).

FRONT SEAT BELT WARNING SYSTEM - All Styles Except Cadillac "C,D and K" Styles

Description

The warning system incorporates a 4-to-8 second fasten seat belt warning lamp and driver's activated buzzer designed to remind the driver and passenger(s) to fasten seat belts.

The warning lamp, located in the instrument panel, will illuminate every time the ignition switch is turned on whether or not the driver's seat belt is buckled, but will automatically go off after 4-to-8 seconds. The buzzer is also controlled by the 4-to-8 second timer, but will operate only if the driver has not buckled up prior to turning on the ignition. If no attempt is made to buckle up after turning on the ignition, the buzzer will also shut off automatically after 4-to-8 seconds.

The major body components consist of the seat belt body harness and driver's seat belt buckle switch assembly.

To diagnose a system failure, refer to the appropriate seat belt reminder lamp/buzzer diagnosis chart (Fig. 9-128) and seat belt reminder lamp/buzzer circuit diagram (Figs. 9-129, 9-130 and 9- 131).

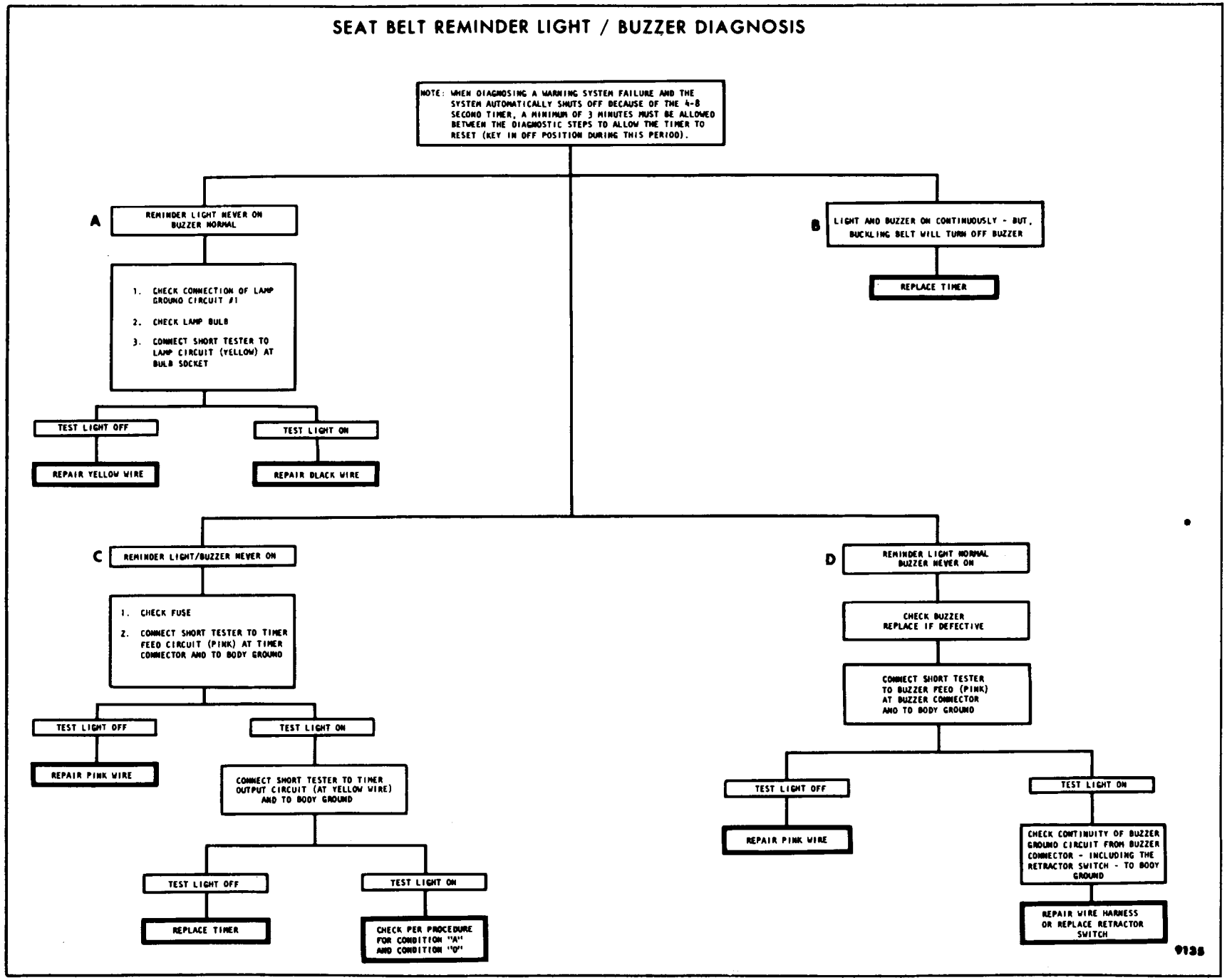


Fig. 9-128 - Seat Belt Reminder Lamp/Buzzer Diagnosis Chart - All Styles

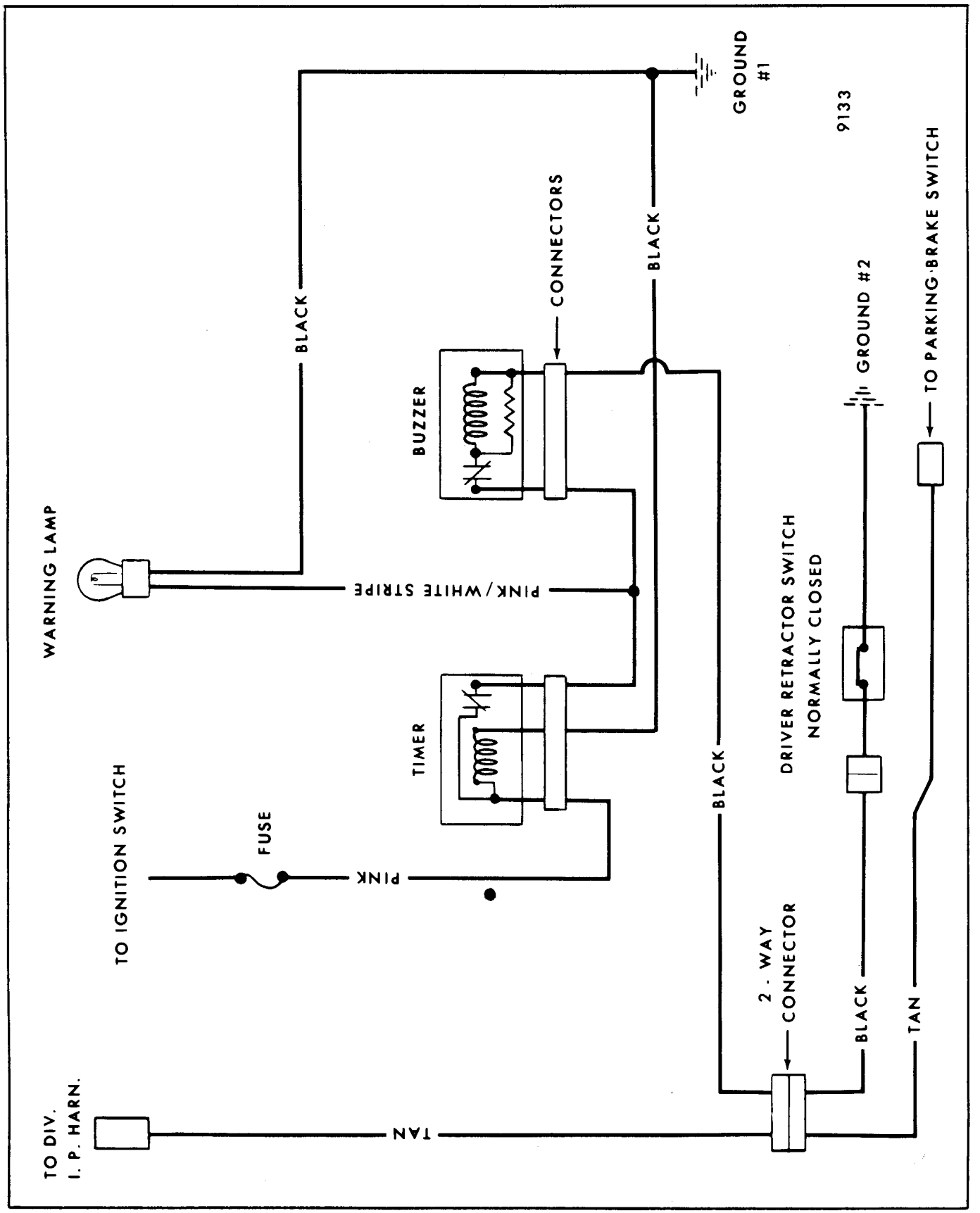


Fig. 9-129 - Seat Belt Reminder Lamp/Buzzer Circuit Diagram - "H" Styles

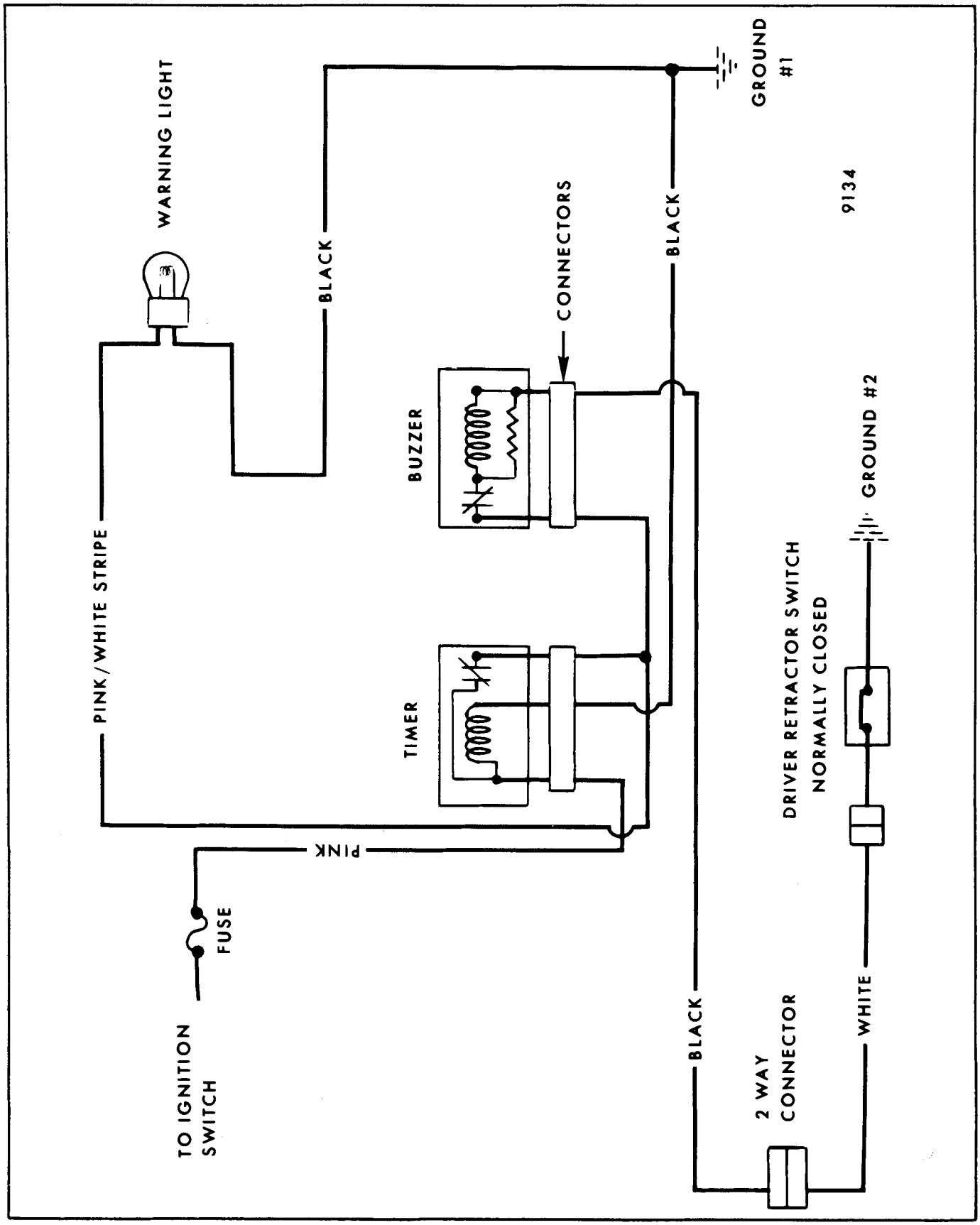


Fig. 9-130 - Seat Belt Reminder Lamp/Buzzer Circuit Diagram - All Styles Except "H" Styles and Cadillac "C,D and K" Styles

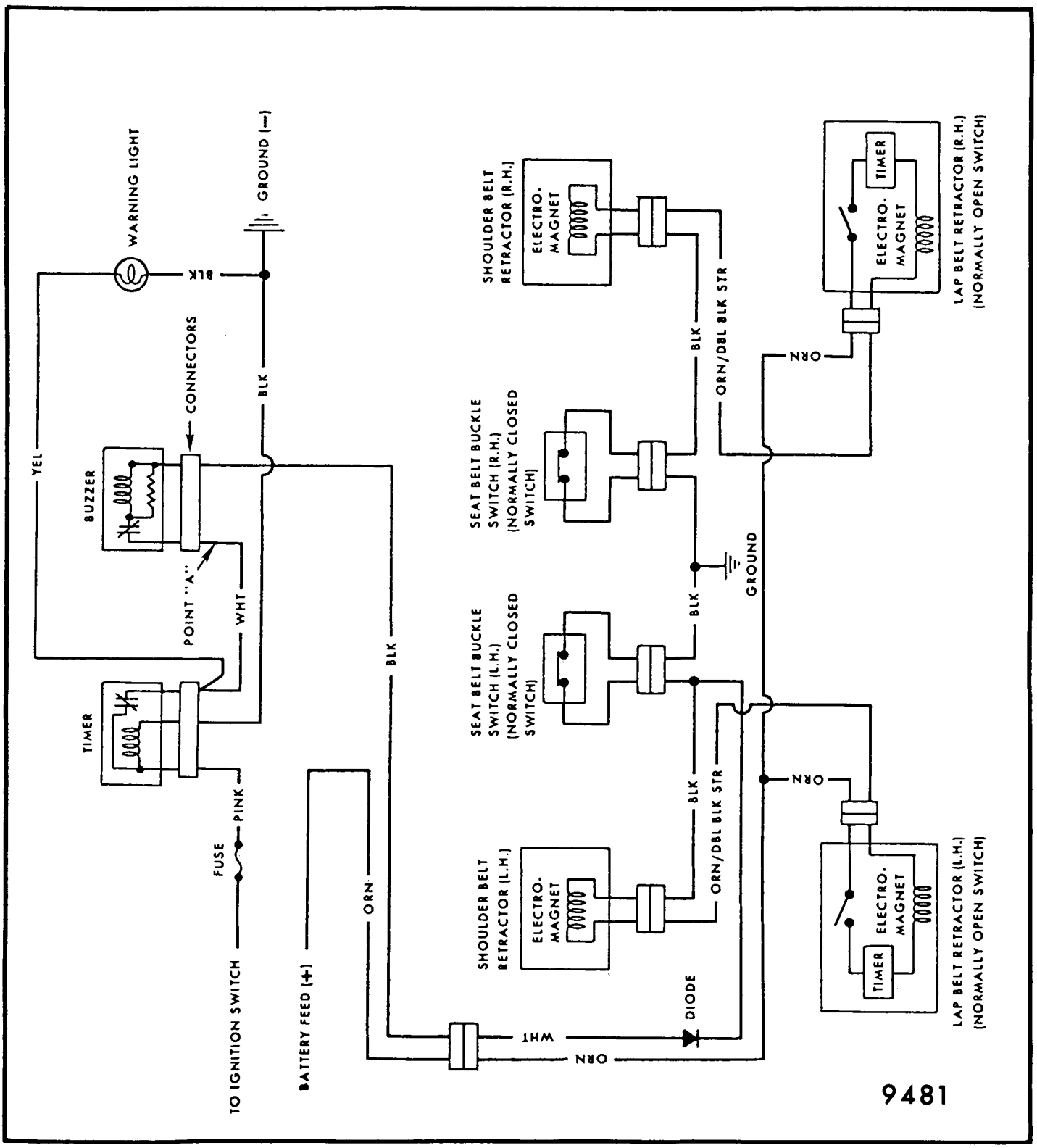


Fig. 9-131 - Seat Belt Reminder Lamp/Buzzer and Electric Retractor System Circuit Diagram - Cadillac "C,D and K" Styles ("K" Style shown, "C and D" similar)

FRONT SEAT BELT WARNING AND ELECTRIC RETRACTOR SYSTEM - Cadillac "C,D and K" Styles

Description

The front seat belt warning and electric retractor system incorporates a 4-to-8 second fasten seat belt warning lamp and driver's activated buzzer designed to remind the driver and passenger(s) to fasten seat belts. The warning lamp illuminates every time the ignition switch is turned on, whether or not the driver's seat belt is buckled, and automatically goes off after 4- to-8 seconds. The buzzer is also controlled by the 4-to-8 second timer, but operates only if the driver has not buckled up prior to turning on the ignition. Also, if no attempt is made to buckle up after turning on the ignition, the buzzer shuts off automatically after 4-to-8 seconds.

In addition, the driver and outboard passenger retractors incorporate an electro-mechanical device and timer which prevents the lap belt retractors from locking (free-wheels) until the "D" ring is locked into the belt buckle.

NOTE: The timing device automatically de-energizes the electro- mechanical system, after approximately a 15-second delay, to assure locking of the retractor.

Also, the comfort feature is automatically disengaged when the "D" ring is released from the buckle.

To diagnosis a system failure, refer to Figure 9-131 and following diagnosis chart.

NOTE: Prior to beginning diagnosis procedure, make sure reminder lamp/buzzer is functioning normally. If not, first perform diagnosis procedure for reminder lamp/buzzer as outlined in Figure 9-128. If electric retractor system is still not functioning, perform diagnosis procedure as outlined below:

ELECTRIC RETRACTOR SYSTEM DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. System does not operate from either side.	a. Short or open circuit in orange feed wire between source and retractors.	a. Check feed circuit (orange wire) from source to retractors. Repairs as required.
2. System does not operate from driver side but operates from passenger side.	a. Open circuit in orange feed wire between driver lap belt retractor and source or orange/double black stripe wire between lap and shoulder belt retractors. b. Open in black ground wire between driver shoulder belt retractor and lap belt buckle. c. Defective driver side lap belt retractor or shoulder belt retractor (failed open).	a. Check feed circuit (orange wire) from lap belt retractor to source and orange/double black stripe wire between lap and shoulder belt retractors. b. Check driver side shoulder belt retractor black ground wire. Repair as required. c. Replace driver side retractors.
3. System does not operate from passenger side but operates from driver side.	a. Open circuit in orange feed wire between passenger side lap belt retractor and source or orange/double black stripe wire between lap and shoulder belt retractors. b. Open in black ground wire between passenger shoulder belt retractor and lap belt retractor. c. Defective passenger side lap belt buckle switch (failed open). d. Defective passenger side lap belt or shoulder belt retractors (failed open).	a. Check feed circuit (orange wire) from lap belt retractor to source and orange/double black stripe wire between lap and shoulder belt retractors. b. Check passenger side shoulder belt retractor black ground wire. Repair as required. c. Replace passenger side lap belt buckle assembly. d. Replace passenger side retractors
4. Driver or passenger lap belt retractor does not lock when "D" ring is locked into belt buckle, but locks automatically after approximately a 15-second delay (lap belt retractor freewheels).	a. Shorted black, ground wire between buckle switch(s) and shoulder belt retractor(s). b. Defective lap belt buckle switch(s) (failed closed) or shoulder belt retractor(s) (internally grounded).	a. Check black ground wire(s). Repair as required. b. Replace lap belt buckle assembly(s) or shoulder belt retractor(s).

SECTION 10
ELECTRICAL

TABLE OF CONTENTS

SUBJECT	PAGE
Introduction	10-1
General Checking and Body Wiring Repair Procedures	10-4
Power Windows	10-6
Power Window Diagnosis	10-15
Power Operated Tailgate Window	10-16
Power Operated Tailgate Window Diagnosis	10-19
Power Seats	
Two-Way Seat	10-25
Two-Way Seat Diagnosis	10-26
Six-Way Seat	10-27
Six-Way Seat Diagnosis	10-31
Power Reclining Seat Back	10-31
Power Reclining Seat Back Diagnosis	10-33
Power Operated Sun Roof	10-35
Power Operated Sun Roof Diagnosis	10-36
Exterior and Interior Lamps	10-38
Illuminated Lock Cylinder and Courtesy Lamps	10-38
Electronic Lamp Monitoring System	10-44
Power Door Locks	
Solenoid Lock Actuators	10-44
Permanent Magnet Motor Lock Actuators	10-48
Permanent Magnet Motor Lock Actuator Diagnosis	10-50
Power Tailgate Lock	10-56
Power Tailgate Lock Diagnosis	10-57
Automatic Door Locking System	
Cadillac Styles	10-63
Diagnostic Procedures	10-64
Electric Seat Back Lock Release	10-74
Electric Back Window Grid Defogger	10-75
Grid Defogger Repair	10-76
Back Window Defogger-Blower Type	10-79

INTRODUCTION

Body electrical equipment and circuit diagrams for individual electrical systems are covered in this section for all styles. Refer to the appropriate chassis service manual for complete chassis-body wiring diagrams.

NOTE: The wire identification chart (Fig. 10-4) is applicable for all wiring diagrams unless otherwise specified.

Circuit wiring for power equipment is protected by a fuse panel mounted plug-in type 30 amp circuit breaker.

The front body harness incorporates a harmonica type connector at the front (Fig. 10-1) and a block type connector at the rear (Fig. 10-2), except on the "H" body which uses harmonica type connectors both fore and aft. All connectors have a positive locking self- ejecting feature which provides positive locking when properly engaged or ejects if it is not fully engaged. To facilitate disengagement of the connectors, use tool J-24388 or equivalent (Fig. 10-5).

All wires crossing the body beneath the instrument panel are enclosed in a one-piece plastic cross body harness conduit, which is secured to the center duct panel with clips (Fig. 10-3).

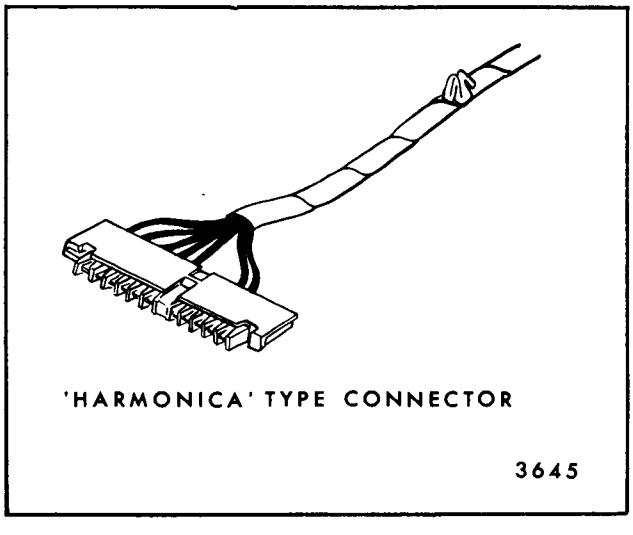


Fig. 10-1-Front Body Harness - Forward Connector and Aft Connector on "H" Styles

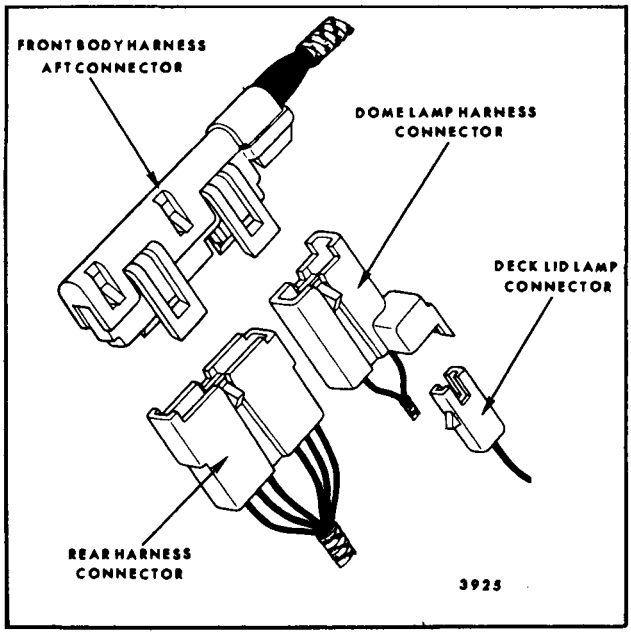


Fig. 10-2-Front Body Harness - Aft Connector - "F" Style Shown

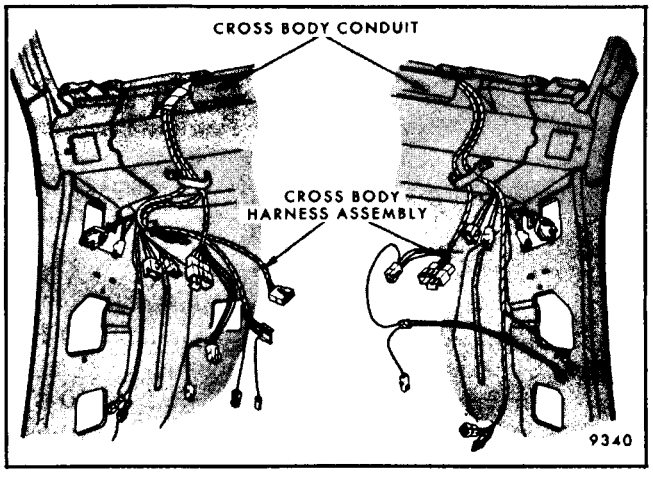
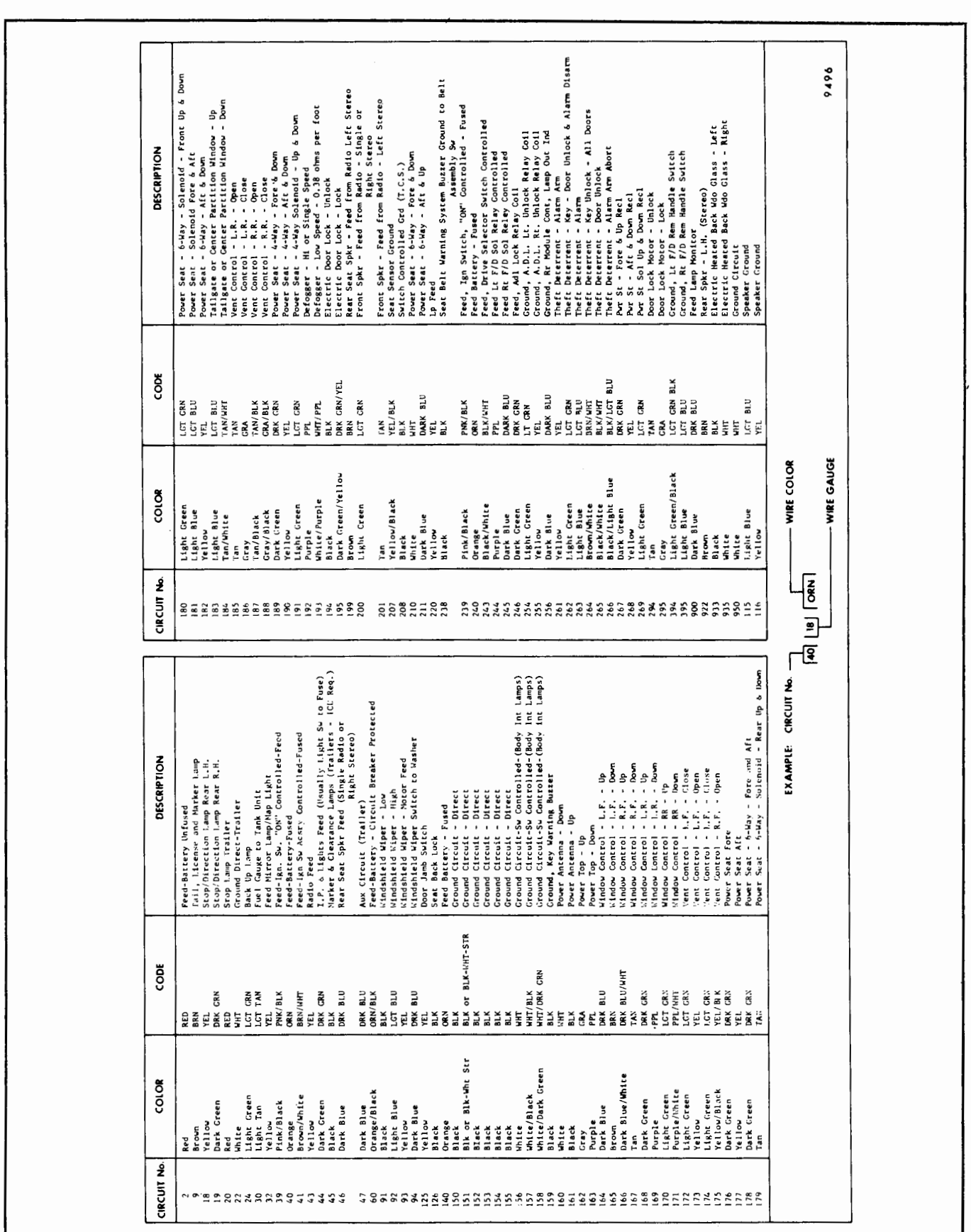


Fig. 10-3-Cross Body Harness Conduit

DOOR JAMB SWITCHES

Door jamb switch assemblies consist of a plunger, plunger collar, threaded retainer and terminals. They are installed in the front and/or rear door hinge pillars. When the door of the vehicle is closed the plunger is depressed which creates an open in the ground circuit. When the door is opened the plunger is released and completes the circuit to ground (Fig. 10-6).



CIRCUIT No.	COLOR	CODE	DESCRIPTION
2	Red	RED	Feed-Battery Unfused
9	Brown	BRN	Tail, License and Marker Lamp
18	Yellow	YEL	Stop/Direction Lamp Rear L.H.
19	Dark Green	DRK GRN	Stop/Direction Lamp Rear R.H.
20	Red	RED	Stop Lamp Trailer
22	White	WHT	Ground Direct-Trailer
24	Light Green	LGT GRN	Back Up Lamp
30	Light Tan	LGT TAN	Fuel Gauge to Tank Unit
32	Yellow	YEL	Feed Mirror Lamp/Map Light
39	Pink/Black	PNK/BLK	Feed-Ign. Sw. "ON" Controlled-Feed
40	Orange	ORN	Feed-Battery-Fused
41	Brown/White	BRN/WHT	Feed-Ign Sw Acsry Controlled-Fused
43	Yellow	YEL	Radio Feed
44	Dark Green	DRK GRN	I.P. & Lights Feed (Usually Light Sw to Fuse)
45	Black	BLK	Marker & Clearance Lamps (Trailers - Not Req.)
46	Dark Blue	DRK BLU	Rear Seat Spkr Feed (Single Radio or Right Stereo)
47	Dark Blue	DRK BLU	Aux Circuit (Trailer)
60	Orange/Black	ORN/BLK	Feed-Battery - Circuit Breaker Protected
91	Black	BLK	Windshield Wiper - Low
92	Light Blue	LGT BLU	Windshield Wiper - High
93	Yellow	YEL	Windshield Wiper - Motor Feed
94	Dark Blue	DRK BLU	Windshield Wiper Switch to Washer
125	Yellow	YEL	Door Jamb Switch
126	Black	BLK	Seat Back Lock
140	Orange	ORN	Feed Battery - Fused
150	Black	BLK	Ground Circuit - Direct
151	Blk or Blk-Wht Str	BLK or BLK-WHT-STR	Ground Circuit - Direct
152	Black	BLK	Ground Circuit - Direct
153	Black	BLK	Ground Circuit - Direct
154	Black	BLK	Ground Circuit - Direct
155	Black	BLK	Ground Circuit - Direct
156	White	WHT	Ground Circuit-Sw Controlled-(Body Int Lamps)
157	White/Black	WHT/BLK	Ground Circuit-Sw Controlled-(Body Int Lamps)
158	White/Dark Green	WHT/DRK GRN	Ground Circuit-Sw Controlled-(Body Int Lamps)
159	Black	BLK	Ground, Key Warning Buzzer
160	White	WHT	Power Antenna - Down
161	Black	BLK	Power Antenna - Up
162	Gray	GRA	Power Top - Up
163	Purple	PPL	Power Top - Down
164	Dark Blue	DRK BLU	Window Control - L.F. - Up
165	Brown	BRN	Window Control - L.F. - Down
166	Dark Blue/White	DRK BLU/WHT	Window Control - R.F. - Up
167	Tan	TAN	Window Control - R.F. - Down
168	Dark Green	DRK GRN	Window Control - L.R. - Up
169	Purple	PPL	Window Control - L.R. - Down
170	Light Green	LGT GRN	Window Control - RR - Up
171	Purple/White	PPL/WHT	Window Control - RR - Down
172	Light Green	LGT GRN	Vent Control - L.F. - Close
173	Yellow	YEL	Vent Control - L.F. - Open
174	Light Green	LGT GRN	Vent Control - R.F. - Close
175	Yellow/Black	YEL/BLK	Vent Control - R.F. - Open
176	Dark Green	DRK GRN	Power Seat Fore
177	Yellow	YEL	Power Seat Aft
178	Dark Green	DRK GRN	Power Seat - 6-Way - Fore and Aft
179	Tan	TAN	Power Seat - 6-Way - Solenoid - Rear Up & Down

CIRCUIT No.	COLOR	CODE	DESCRIPTION
180	Light Green	LGT GRN	Power Seat - 6-Way - Solenoid - Front Up & Down
181	Light Blue	LGT BLU	Power Seat - Solenoid Fore & Aft
182	Yellow	YEL	Power Seat - 6-Way - Aft & Down
183	Light Blue	LGT BLU	Tailgate or Center Partition Window - Up
184	Tan/White	TAN/WHT	Tailgate or Center Partition Window - Down
185	Tan	TAN	Vent Control - L.R. - Open
186	Gray	GRA	Vent Control - L.R. - Close
187	Tan/Black	TAN/BLK	Vent Control - R.R. - Open
188	Gray/Black	GRA/BLK	Vent Control - R.R. - Close
189	Dark Green	DRK GRN	Power Seat - 4-Way - Fore & Down
190	Yellow	YEL	Power Seat - 4-Way - Aft & Down
191	Light Green	LGT GRN	Power Seat - 4-Way Solenoid - Up & Down
192	Purple	PPL	Defogger - Hi or Single Speed
193	White/Purple	WHT/PPL	Defogger - Low Speed - 0.38 ohms per foot
194	Black	BLK	Electric Door Lock - Unlock
195	Dark Green/Yellow	DRK GRN/YEL	Electric Door Lock - Lock
199	Brown	BRN	Rear Seat Spkr - Feed from Radio Left Stereo
200	Light Green	LGT GRN	Front Spkr - Feed from Radio - Single or Right Stereo
201	Tan	TAN	Front Spkr - Feed from Radio - Left Stereo
207	Yellow/Black	YEL/BLK	Seat Sensor Ground
208	Black	BLK	Switch Controlled Grd (T.C.S.)
210	White	WHT	Power Seat - 6-Way - Fore & Down
211	Dark Blue	DARK BLU	Power Seat - 6-Way - Aft & Up
220	Yellow	YEL	Lp Feed
238	Black	BLK	Seat Belt Warning System Buzzer Ground to Belt Assembly Sw
239	Pink/Black	PNK/BLK	Feed, Ign Switch, "ON" Controlled - Fused
240	Orange	ORN	Feed Battery - Fused
243	Black/White	BLK/WHT	Feed, Drive Selector Switch Controlled
244	Purple	PPL	Feed Lt F/D Sol Relay Controlled
245	Dark Blue	DARK BLU	Feed Rt F/D Sol Relay Controlled
246	Dark Green	DRK GRN	Feed, Adl Lock Relay Coil
254	Light Green	LT GRN	Ground, A.D.L. Lt. Unlock Relay Coil
255	Yellow	YEL	Ground, A.D.L. Rt. Unlock Relay Coil
256	Dark Blue	DARK BLU	Ground, Rt Module Cont, Lamp Out Ind
261	Yellow	YEL	Theft Deterrent - Alarm Arm
262	Light Green	LGT GRN	Theft Deterrent - Key - Door Unlock & Alarm Disarm
263	Light Blue	LGT BLU	Theft Deterrent - Alarm
264	Brown/White	BRN/WHT	Theft Deterrent - Key Unlock - All Doors
265	Black/White	BLK/WHT	Theft Deterrent - Door Unlock
266	Black/Light Blue	BLK/LGT BLU	Theft Deterrent - Alarm Arm Abort
267	Dark Green	DRK GRN	Pwr St - Fore & Up Recl
268	Yellow	YEL	Pwr St - Aft & Down Recl
269	Light Green	LGT GRN	Pwr St Sol Up & Down Recl
294	Tan	TAN	Door Lock Motor - Unlock
295	Gray	GRA	Door Lock Motor - Lock
394	Light Green/Black	LGT GRN BLK	Ground, Lt F/D Rem Handle Switch
395	Light Blue	LGT BLU	Ground, Rt F/D Rem Handle Switch
900	Dark Blue	DRK BLU	Feed Lamp Monitor
922	Brown	BRN	Rear Spkr - L.H. (Stereo)
933	Black	BLK	Electric Heated Back Wdo Glass - Left
935	White	WHT	Electric Heated Back Wdo Glass - Right
950	White	WHT	Ground Circuit
115	Light Blue	LGT BLU	Speaker Ground
116	Yellow	YEL	Speaker Ground

EXAMPLE: CIRCUIT No. 40 | 18 | ORN — WIRE COLOR — WIRE GAUGE

9496

Fig. 10-4 - Wire Identification Chart

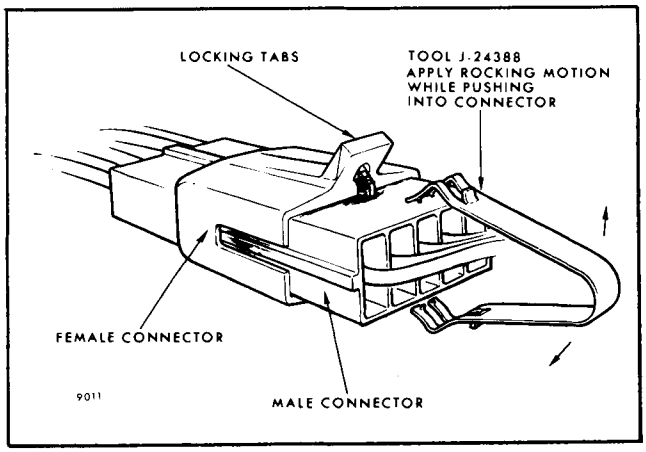


Fig. 10-5-Positive Locking Connectors

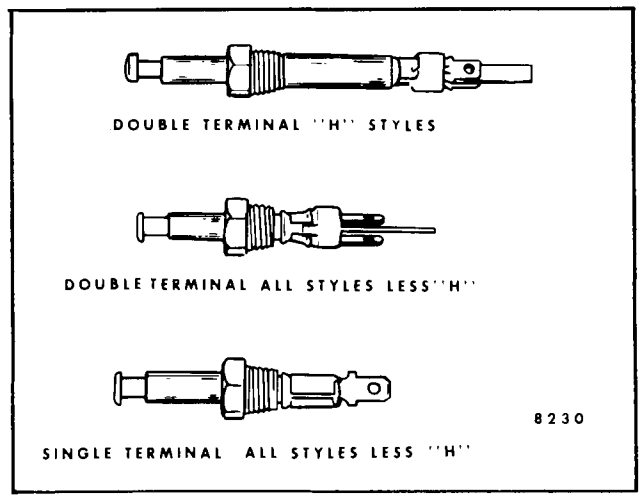


Fig. 10-6-Door Jamb Switches

GENERAL CHECKING AND BODY WIRING REPAIR PROCEDURES

Generally most common failures are open or short circuits. An open circuit is one in which the circuit cannot be completed due to a broken wire, poor terminal contact or improper ground.

A short circuit consists of a feed circuit that has been shorted and completed to ground before it reaches the intended operating unit or a ground circuit that is grounding prematurely. A short in a feed circuit will usually create an overload and activate the circuit breaker or blow the fuse. A short in a ground circuit will cause continuous operation of the operating unit.

DEFECTIVE COMPONENTS

Occasionally an open or short circuit exists within a circuit component, such as a motor, switch, relay, etc. These units can be checked by bypassing the suspected component.

Checking an Inoperative Switch:

Place a no. 12 gauge jumper wire on the switch terminal block between the center terminal (feed) and one of the two motor wire terminals. If the motor operates, the switch is defective. The principle involved here is to bypass the suspected defective component and this procedure can be applied to check almost all component parts.

OPEN CIRCUITS

1. Visually inspect wire for damage.
2. If wire damage is apparent, check wire on battery side of suspected area by grounding one end of a light tester and inserting pointed end through insulation. If tester lights, current is present.

   Perform same operation on opposite side of suspected area. If tester does not light, break is between check points.

   NOTE: To check for current between a switch and an operating unit, switch must be actuated to insure current in the wire. Also, be sure that light tester is operating properly before checking circuit. Touch one end of tester to negative terminal of battery and other end to positive terminal. If battery is not discharged and tester is working properly, tester will light.
3. If no wire damage is apparent, check for current in wire midway between power source and inoperative component with a light tester. If tester does not light, check wire at intervals in direction of power source. If tester does light, proceed with tester in opposite direction until the break is located.
4. Repair broken wire as outlined under Body Wiring Repair procedures.

IMPROPER GROUND

Many times perfectly sound operating units, such as motors, are considered defective and are replaced because an effective ground is not established. To check for proper ground, refer to the following:

1. Attach one end of a no. 12 gauge jumper wire to body of inoperative unit.

2. Connect other end to a good ground, such as a bare metal panel.

   NOTE: Due to various hinge construction and possibility of heavy lubrication on door hinges, it may be advisable to ground door inner panel to the body proper when checking circuits in an open door.

3. Energize unit. If unit operates, original ground is defective.

4. Re-establish the ground.

SHORT CIRCUITS

When a short exists in a given feed circuit, usually either the circuit breaker will be actuated or a fuse will be blown. However, if the short is located between a switch and an operating unit, the circuit breaker will not actuate or the fuse blow until the switch is actuated. If the short occurs between the circuit breaker (or fuse) and the switch, the circuit will be inoperative all the time. Also, on circuit breaker protected feed circuits that are not ignition controlled, a drain on the battery will continue until the short is repaired or the battery runs down.

A short in a grounded circuit such as used in the seat belt warning system will not cause the circuit to be inoperative. However, a short in a grounding circuit will cause continuous operation of the operating unit until corrected.

Short Tester Checking Procedure

Locating a short circuit depends largely on the symptoms. As an aid in locating a short in a feed circuit, a labor-saving device known as a short tester (J-8681, BT-1120 or equivalent) may be utilized. Its advantage is the fact that it does not require trim removal prior to testing operations. All short testers have the following parts in common:

1. Two leads with alligator clips (for bypassing an existing circuit breaker or fuse).

2. A 10 to 15 amp circuit breaker (to replace the existing circuit breaker or fuse).

3. A meter for detecting intermittent electrical current.

The tester meter is designed to react to the magnetic lines of force that surround an energized wire or conductor. However, the current must be interrupted at intervals by means of a circuit breaker incorporated into the testing device in order to cause the meter needle to deflect. The use of a short tester should include the following steps:

1. Reference should be made to service manual electrical diagrams in order to establish proper wire color identification.

2. Disconnect the affected circuit breaker (both wires) or remove blown fuse and substitute either of these items with the circuit breaker of the tester. This is accomplished by connecting the tester leads to the input and output side of the fuse clip or wires previously removed from the existing circuit breaker.

3. The tester may respond immediately by making a snapping noise. (This sound may be accompanied by a warning light on some testers.) This response is an indication that the short is located in a FEED line between the power source and a switch. If the tester does not respond, proceed as follows:

   a. Turn on or actuate all switches in the inoperative circuit.

   b. Observe all lights or units affected by actuating all switches. The light or unit that DOES NOT operate intermittently but causes the tester to react is in the shorted circuit, and indicates the side of the car that is affected.

      NOTE: When the affected circuit has been positively identified, reference should again be made to proper wire diagram as an aid in the steps that follow. In addition, switch in the circuit being checked must be held in closed position.

4. Beginning at power source for the inoperative circuit, place tester meter directly over the wire (or harness) with meter arrows parallel to the wire(s) being checked. The meter needle will deflect noticeably each time tester completes the circuit.

   NOTE: Since this test will most often be made over intervening layers of trim material (cloth, rubber, plastic, metal), it may be necessary to move the meter laterally over the circuit at each check point to achieve the strongest signal on the meter.

5. Check progressively with the meter along the circuit from the power source to the inoperative unit. A sharp DECREASE in the AMOUNT of meter needle deflection will indicate the location (within 4 to 5 inches) of the short. It must be remembered, however, that the above meter reaction would also occur if the wrong circuit

was followed or the meter was not held directly above the circuit (reference NOTE, in step 4).

6. Once the location of the short is accurately established, necessary trim parts may be removed to perform repairs as outlined under Body Wiring Repair Procedures.

BODY WIRING REPAIR PROCEDURES

Aluminum Wiring (Front Body Wiring Harness Only)

The aluminum front body wiring harness consists of 14 and 16 gauge insulated wires and is enclosed in a brown colored plastic conduit (copper wires are encased in a black conduit).

Due to reduced flexibility of aluminum wiring when compared to copper, the aluminum harness is used only in a location where it will remain in a stationary position. Also, a special repair kit, part no. 1684873 or equivalent, is available when repairs are necessary to the aluminum wiring harness.

The kit consists of an assortment of 6" long aluminum wires with terminals attached to one end, splice clips, tube of corrosion preventive compound and instruction sheet. To insure minimum resistance through a circuit when making repairs, it is essential that the materials included in this kit be utilized as outlined below. This is necessary to minimize the possibility of galvanic corrosion or increased resistance occurring between the terminal and wire and/or splice clip and wire. Increased resistance would materially affect the operation of the electrical components in the circuit being repaired.

1. TERMINAL REPLACEMENT

   a. Cut off approximately 6" of wire connected to defective terminal.

   b. Using proper gauge wire strippers, strip off approximately 1/4" of insulation from end of wire to be repaired and wire from kit with terminal attached.

   CAUTION: *Care should be exercised when stripping insulation from wire. If proper gauge strippers are not used, damage to wire may occur and weaken harness assembly at this point.*

   c. Place end of one wire in either end of splice clip and crimp firmly to wire. Repeat with remaining wire.

   CAUTION: *To prevent possible damage to wire, do not overcrimp near ends of splice clip.*

   d. When splice is completed, apply a coat of corrosion preventive compound (petroleum jelly) included in the repair kit to splice area and terminal.

   e. Apply tape to spliced area to insulate.

   f. Insert terminal into proper connector cavity making sure it is firmly seated.

2. SPLICING TO CORRECT OPEN AND SHORT CIRCUITS - Carefully strip ends of wire on both sides of open or shorted circuit. Then complete steps "c, d and e" under Terminal Replacement Procedure.

Copper Wiring (All Harnesses Except Front Body Wiring Harness)

Copper wiring is encased in a black conduit and can be repaired using conventional methods such as soldering and taping, solderless connectors, etc. In addition, terminal, connectors, etc., are available as replacement parts.

POWER WINDOWS

DESCRIPTION

The wiring harness for the electrically operated windows consists of the following major sections:

1. Crossover or center harness - this harness is installed beneath the instrument panel and completes the circuit from the left door and power source to the right door windows on all styles.

2. Front door window harness - the impact bar and reinforcements incorporated in some door construction reduces accessibility for power window wiring harness. Therefore, if replacement of door harness should become necessary, attach a leader to the end of the harness before removal from the door. On "B, C, E and F" styles the harness is routed directly from the door hinge pillar entrance to the inboard side of the door inner panel and routed in the depressions provided.

3. Front door window control rear harness ("F" styles only) - this harness is routed from the left shroud side panel along a recess in the left rocker

inner panel. At a point opposite the driver's seat, the harness exits from the rocker and is routed below the seat to the center console at which point the single window switch is located. A front door opening carpet support covers the recess in the rocker panel while protecting and concealing the harness.

4. Feed harness to rear doors or quarter windows - on "A" styles this harness connects to the front crossover harness on the left side of the shroud (fire wall) and extends rearward in the main body harness conduit under the driver's seat.

   On 4-door styles, the harness exits from the conduit slightly rearward of the front seat and routes to each center pillar. On 2- door styles, the harness continues in the conduit to the rear seat back panel and routes along the lower edge of that panel to each quarter.

   On "B,C,E" styles, this harness is routed from the crossover harness at the shroud side panel (right and left side similar) into the conduit that is secured to the inboard side of the rocker panel and exits at the center pillar or at the quarter panel. This harness terminates at the window motor and window switch.

5. Rear door or quarter window harness - on "A" styles the left and right rear door harness connects to the feed harness in the base of the center pillar. To disengage the connector, pull harness inboard at base of center pillar for accessibility.

Power windows are operated by a rectangular shaped 12 volt series-wound motor with an internal circuit breaker and a self- locking rubber coupled gear drive. The harness to the door window motor connector is designed with a locking embossment to insure a positive connection. When disengaging the harness connector from the door motor, it is necessary to depress the thumb release. When installing the harness, the thumb release must be held depressed until the embossment on the female connector is locked in the hole of the motor connector.

All styles except Cadillac use a relay in the window circuit to prevent window operation until the ignition switch is turned ON. The feed circuit for Cadillac is through the ignition switch.

The relay is located on the left shroud side panel for all styles except the "F" style which is located on the steering column lower support.

A junction block (Fig. 10-7) located on the reinforcement at the left and right shroud is used to supply current to power operated equipment

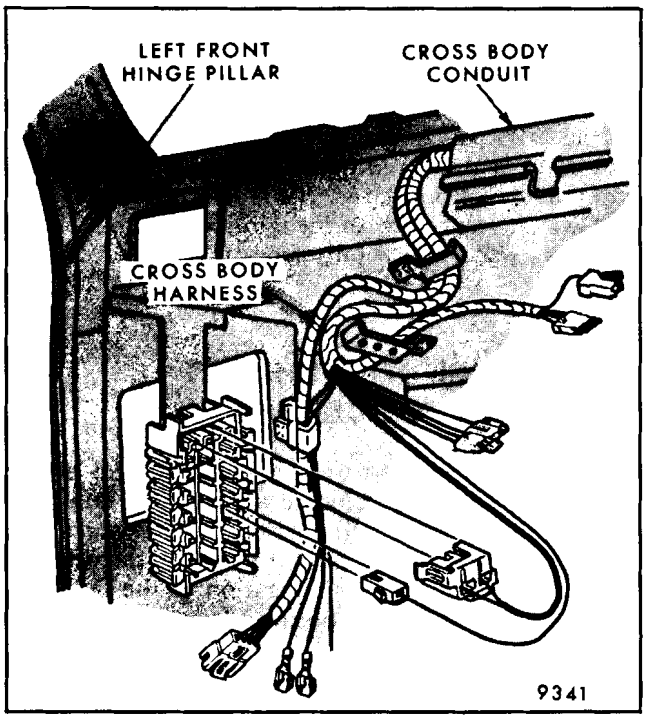


Fig. 10-7-Accessory Junction Block (Left Side Shown, Right Side Similar on "B,C,D,E,K" Styles)

circuits. Current is supplied to the junction block from the circuit breaker, and the power window harness plugs into the junction block.

All four button window control switches incorporate an elongated, positive locking, nonconductive stud. The switch is secured to the harness connector by a plastic nut (Fig. 10-8).

On Cadillac styles only, a two position (Lock-Normal) window blockout (cutout) switch is installed on the left front door armrest. This switch incorporates an elongated pin which protrudes through a hole provided in the harness connector

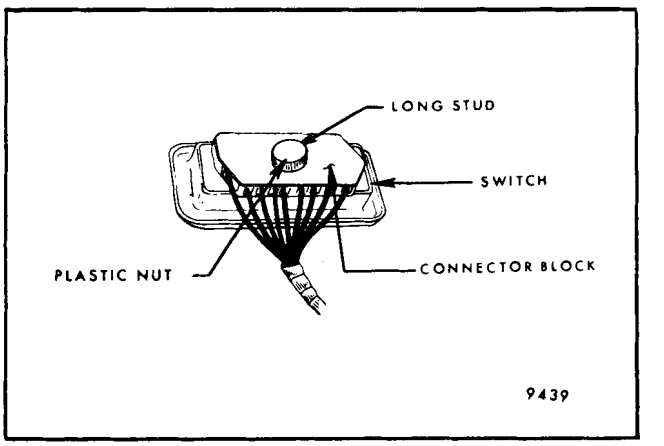


Fig. 10-8-Four Button Trim Pad Switch - Armrest Switch Similar

back plate and a plastic coated, push-on plastic nut is snapped over the pin.

The window blockout switch button should be left in the NORMAL position when ignition switch is ON to permit normal operation of power windows from all switch locations. If the control button is in the LOCK position with the ignition switch ON, the windows will operate only from the master control switch.

POWER WINDOW CIRCUIT CHECKING PROCEDURES

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Be sure to check the harness connectors for proper engagement and become familiar with the typical circuit diagrams (Figs. 10-12, 10-13 10- 14, 10-15 and 10-16).

Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.

2. To check circuit breaker, disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker and with test light, check terminal from which wire was disconnected. If tester does not light, circuit breaker is inoperative.

Checking Ignition Relay Assembly

1. With test light, check relay feed (orange/black wire). If tester does not light, there is an open or short circuit between relay and circuit breaker.

2. Turn ignition switch ON and with test light check output terminal or relay (red/white wire). If tester does not light:

   a. Put test light on ignition relay coil terminal (pink or tan wire).

   b. If tester lights, replace ignition relay.

   c. If tester does not light, locate short or open circuit along pink or tan wire (check fuse at dash panel).

Checking for Current at Master Window Control Switch

1. With ignition switch ON, connect one test light lead to master window control switch feed terminal (red/white stripe) of switch block and ground other test lead.

2. If tester does not light, there is an open or short circuit between the relay and master control switch.

3. If tester does not light on Cadillac styles, check window blockout switch.

Checking Window Blockout Switch - Cadillac Styles Only

1. With the ignition switch ON, insert one end of a no. 12 gauge jumper wire into the terminal with the red/white stripe wire and the other end into the terminal with the pink/black stripe wire.

2. Operate control switches. If any of the windows operate with the jumper but not with the blockout switch, the switch is defective.

Checking Feed Circuit Continuity at Window Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other tester lead to body metal (Fig. 10-9).

2. If tester does not light, there is an open or short circuit between switch and power source.

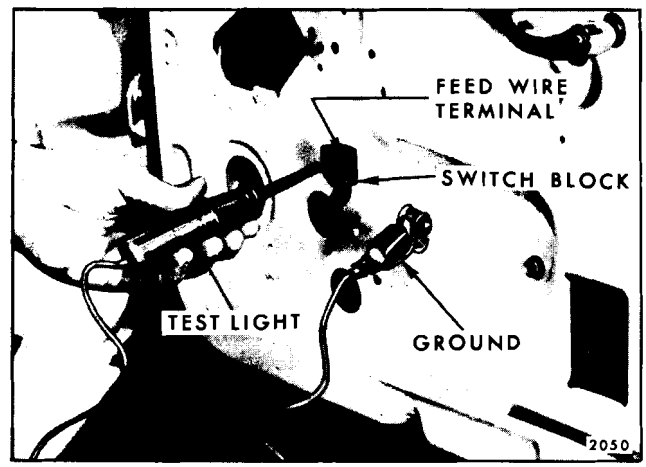


Fig. 10-9-Checking Feed Circuit

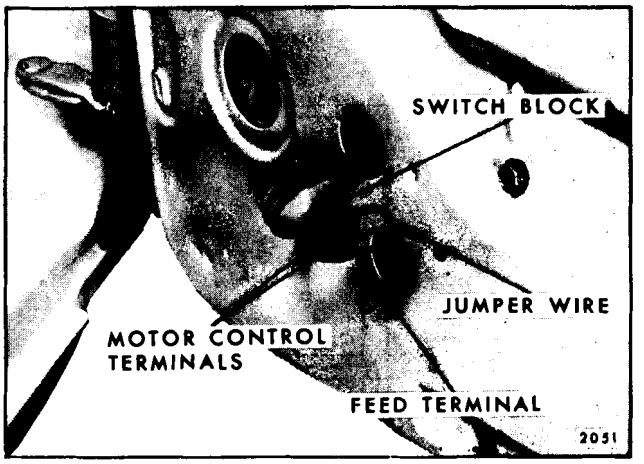


Fig. 10-10-Checking Window Control Switch

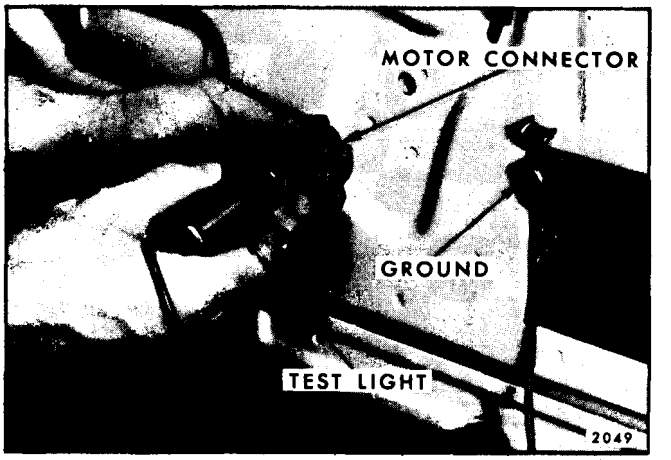


Fig. 10-11-Checking Circuit Between Switch and Motor

Checking Window Control Switch

1. Insert one end of a no. 12 gauge jumper wire to the switch feed terminal and the other end to one of the motor lead terminals in the switch block. Repeat this check on the remaining motor lead terminal (Fig. 10-10).

2. If the window operates with the jumper wire, but does not operate with the switch, the switch is defective.

Checking Wires Between Door Window Switch and Door Window Motor

1. Disengage harness connector from window motor. The thumb release on the harness connector must be depressed before it can be disengaged from the motor.

2. Insert one end of a no. 12 gauge jumper wire to the switch feed terminal and the other end to one of the motor lead terminals in the switch block (Fig. 10-10).

3. With test light, check for current at motor harness connector terminal being tested. If tester does not light, there is an open or short circuit in the harness between the control switch and motor connector (Fig. 10-11).

4. Check other terminal.

Checking Wires Between Quarter Window Switch and Quarter Window Motor

1. Insert one end of a No. 12 gauge jumper wire in the switch feed terminal and the other end in one of the motor lead terminals of the switch block (Fig. 10-10).

2. With a test light, check for current at the corresponding terminal at the motor harness connector. If tester does not light, there is an open or short circuit between control switch and motor connector (Fig. 10-11).

3. Check other terminal.

Checking Window Motor

1. Check window regulator and channels for possible mechanical bind of window.

2. Check attachment of window motor to insure an effective ground.

3. Connect one end of a no. 12 gauge jumper wire to the power source and the other end to one of the terminals on the window motor.

4. Check the other motor terminal in the same manner. If the motor fails to operate with a jumper wire, the motor is defective and should be replaced.

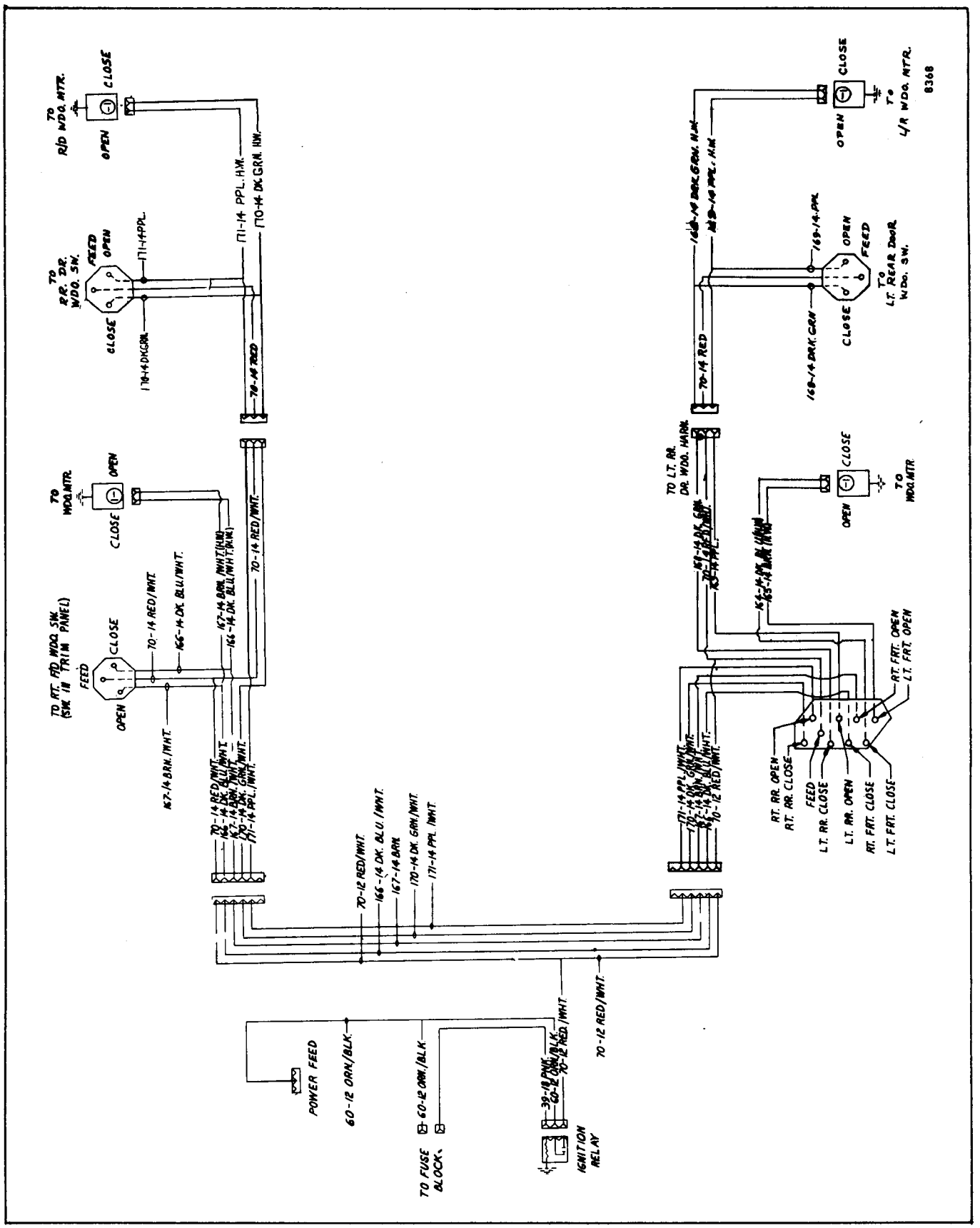


Fig. 10-12-Four-Door Power Window Circuit Diagram - "A and X" Styles (2-Door Similar)

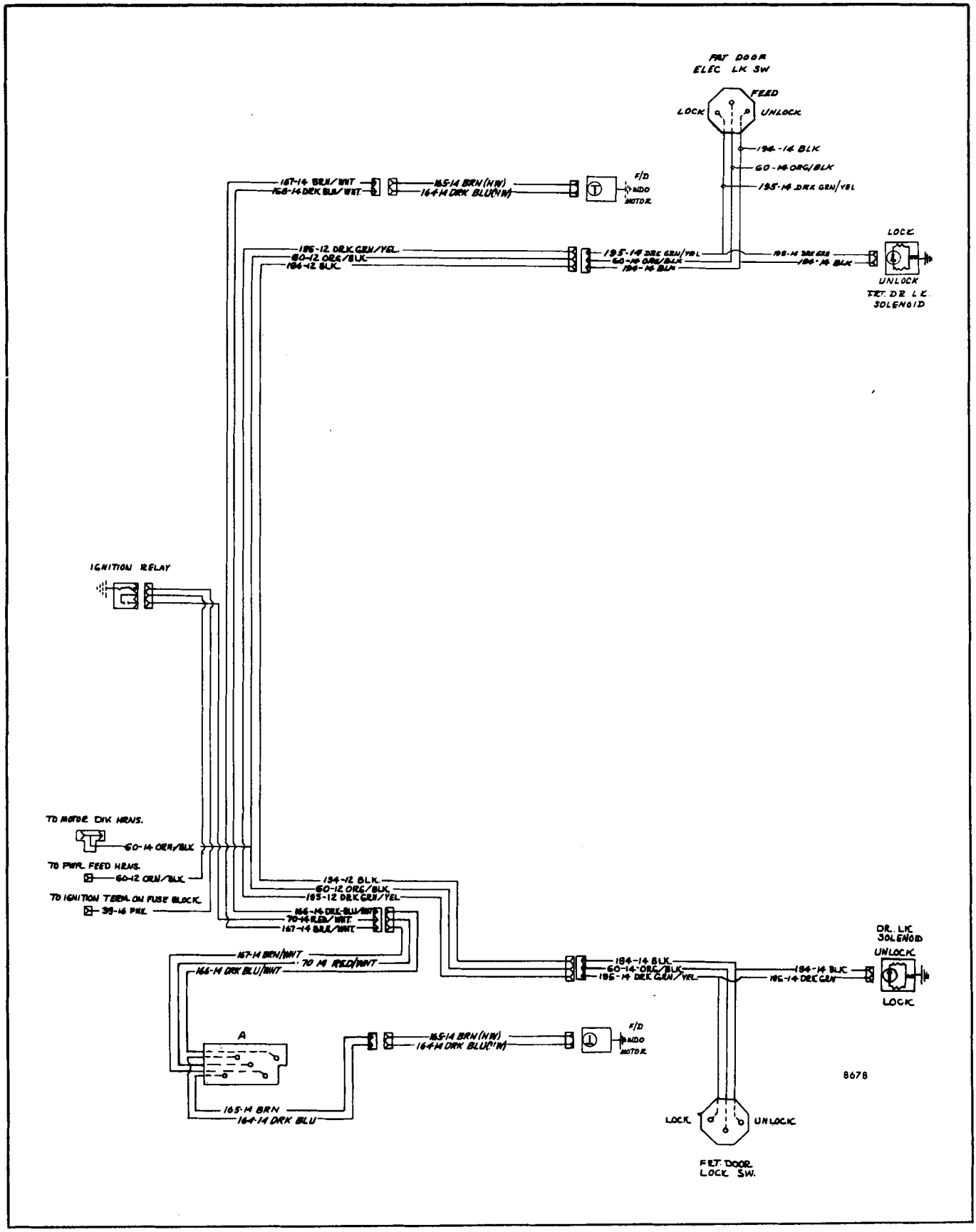


Fig. 10-13-Power Window and Electric Door Lock Circuit Diagram - Chevrolet "F" Styles

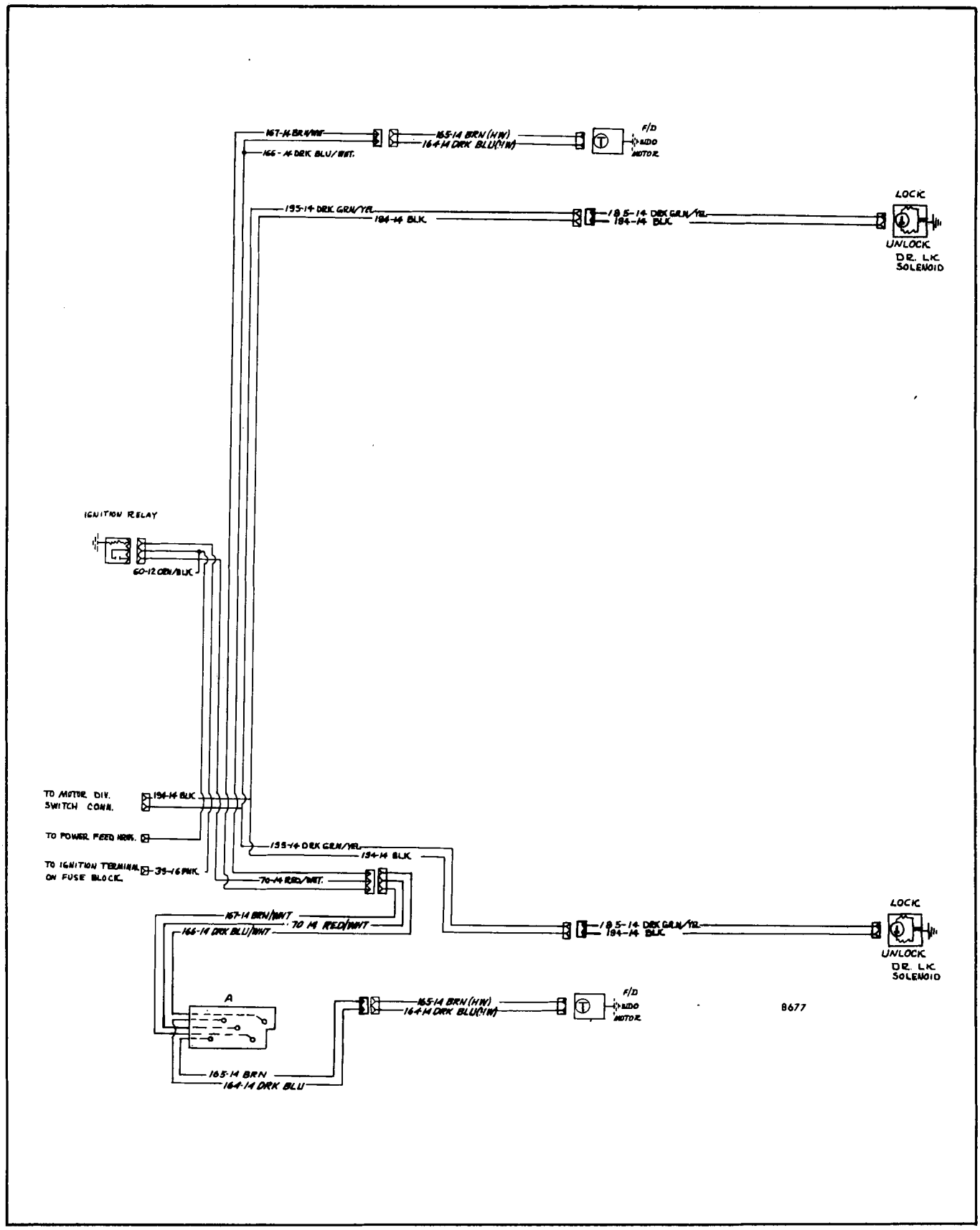


Fig. 10-14-Power Window and Electric Door Lock Circuit Diagram - Pontiac "F" Style

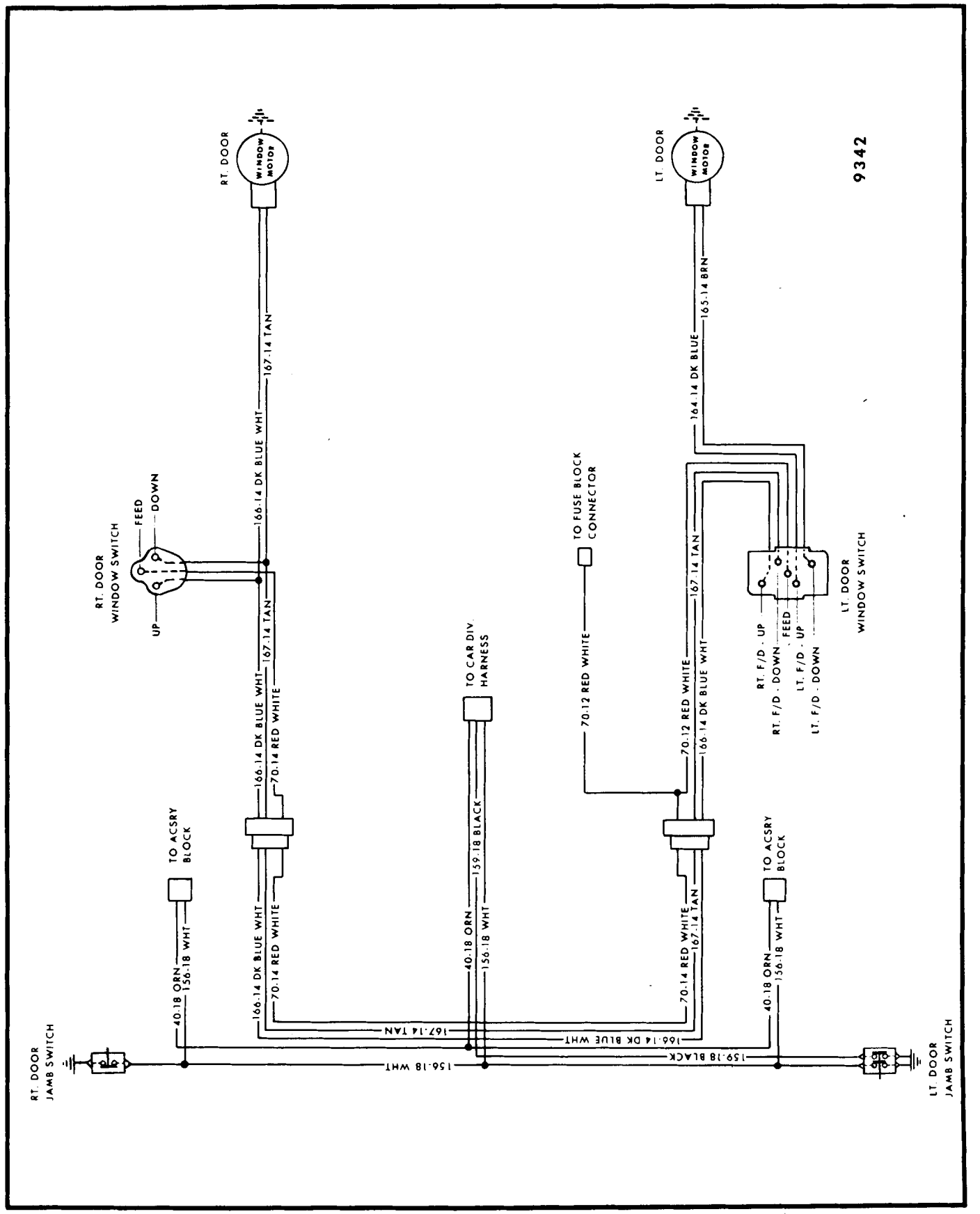


Fig. 10-15-Power Window Circuit Diagram - Two Door Styles (Typical)

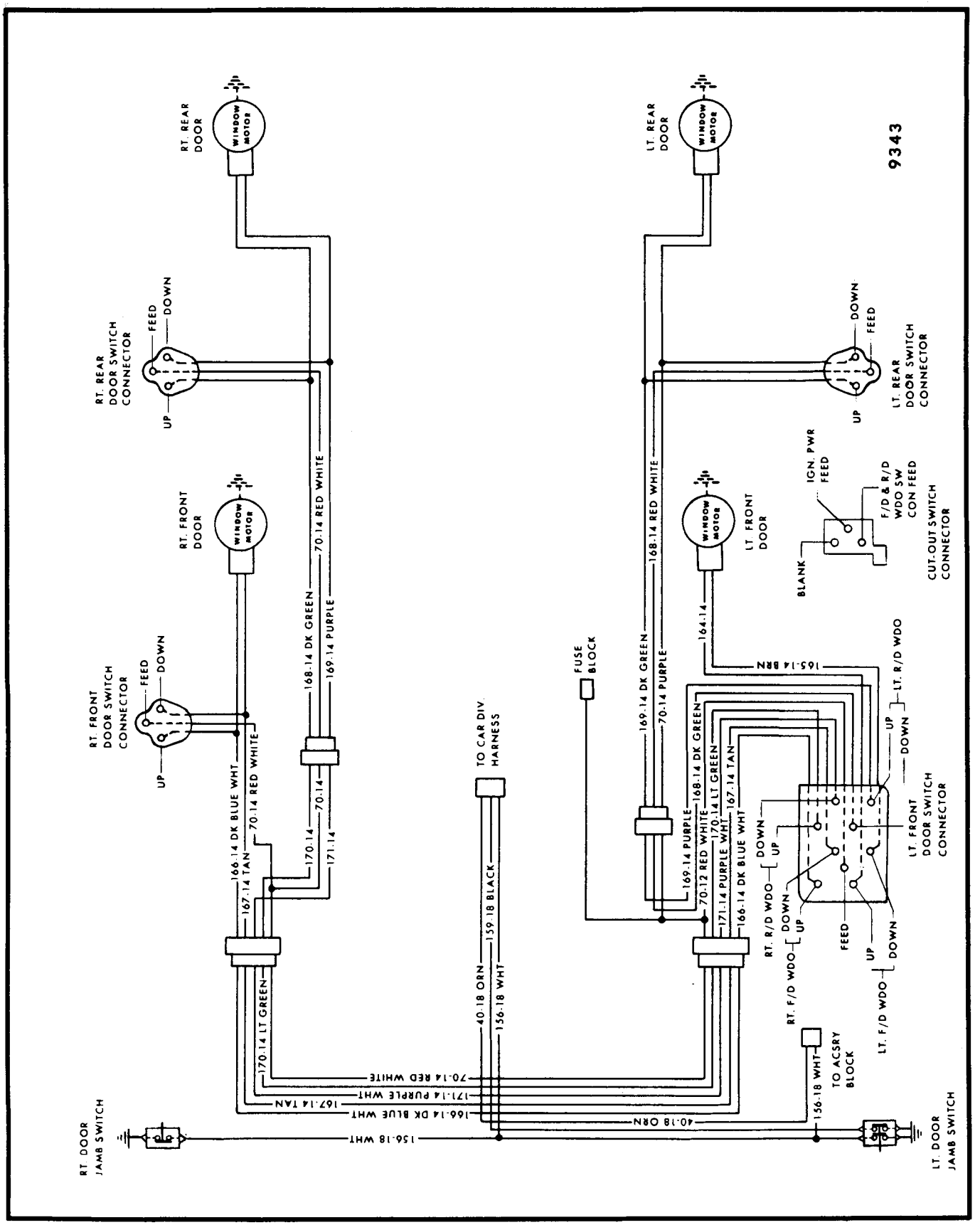


Fig. 10-16-Power Window Circuit Diagram - 4-Door Styles (Typical)

POWER WINDOW DIAGNOSIS CHART

The following typical conditions and corrections have been listed as an aid for eliminating electrical problems in the power window electrical circuit. It should be noted that multiple problems in the circuit may lead to a combination of conditions, each of which must be checked separately.

CONDITION	APPARENT CAUSE	CORRECTION
1. None of the windows will operate with ignition switch ON.	a. Short or open circuit in power feed circuit.	a. Check circuit breaker operation. b. Check ignition relay operation. c. Check feed connection to power harness beneath instrument panel. d. Check feed circuit wires for possible short or open circuit. e. Check window blockout switch (Cadillac styles only).
	b. Defective window control switch ("F" style only).	a. Check window control console switch ("F" style only).
2. Right rear door window does not operate from master control switch on left door or from control switch on right rear door. Left door window operates.	a. Short or open circuit between right rear door harness and power window front harness. b. Short or open circuit in affected window control switch or window motor circuit. c. Possible mechanical failure or bind in window channels d. Defective window motor.	a. Check harness connectors beneath outer end of instrument panel for proper installation. b. Check wires in power window front harness for possible short or open circuit. c. Check operation of rear door window control switch. d. Check circuit from window control switch to window motor for short or open circuit. e. Check window regulator and channels for possible mechanical failure or bind. f. Check operation of motor.
3. Right door windows will operate from left door master control switch but will not operate from right door control switch. Left door windows operate.	a. Open or short circuit in front harness feed wire circuit.	a. Check feed wire in front harness for possible short or open circuit.

POWER OPERATED STATION WAGON TAILGATE WINDOW - "B" STYLES

ELECTRICAL TAILGATE WINDOW CIRCUIT

Description

On "B" station wagon styles the power operated tailgate window is standard equipment. The window is controlled by a gearbox type regulator and a rectangular shaped 12V DC reversible motor with an internal circuit breaker. In addition to the internal circuit breaker in the motor, the circuit is also protected by a 30 amp circuit breaker at the fuse block.

The tailgate can be opened as a gate or door. It can also be locked or unlocked manually with the key or with the inside lock actuator knob.

Control Switches

The tailgate window can be operated from a switch mounted on the instrument panel or a key switch that is mounted on the right side of the tailgate outer panel. The window cannot be operated from the instrument panel switch unless the ignition switch is turned on. This circuit also includes a blockout switch to prevent operation of the window while the tailgate is open as a gate from either control switch (Fig. 10-18).

The key switch includes a link to the tailgate lock lever. Turning the key counterclockwise to the first detent manually unlocks the gate. Turning the key in the same direction to the second detent electrically opens (lowers) the tailgate window. Turning the key clockwise will manually lock the gate and electrically raise the window in the same manner.

Tailgate Ajar Lamp and Switch

A tailgate ajar lamp which is mounted to the instrument panel will light if the tailgate is not fully closed in the door position. The ajar switch is mounted to the lower lock assembly and closes completing the circuit to ground when the gate is opened as a door (Fig. 10-17).

NOTE: A complete circuit diagram of the tailgate power window is shown in Figure 10-19.

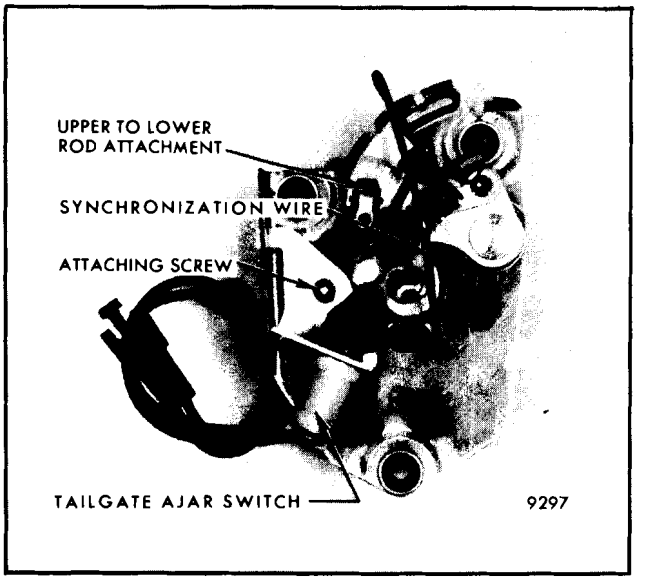


Fig. 10-17 - Tailgate Ajar Switch

The tailgate window harness is enclosed in the body wire harness conduit and consists of two sections. The front section extends to the rear of the left wheelhouse just below the left quarter window (rear harness connectors are located here).

The rear harness is routed along the rear cross bar panel to the tailgate window motor and switch at the left back body pillar.

NOTE: Should replacement of front harness become necessary, access to front and rear harness connector may be gained by removing the left rear quarter trim pad. A leader should be secured to the end of the harness to aid in installation of replacement harness.

Diagnostic Procedures

Diagnostic charts have been provided to assist in identifying and eliminating electrical failures that may occur with the tailgate power window system. Prior to using the charts, the manner in which the system is malfunctioning should be observed and the condition matched to the appropriate diagnosis chart.

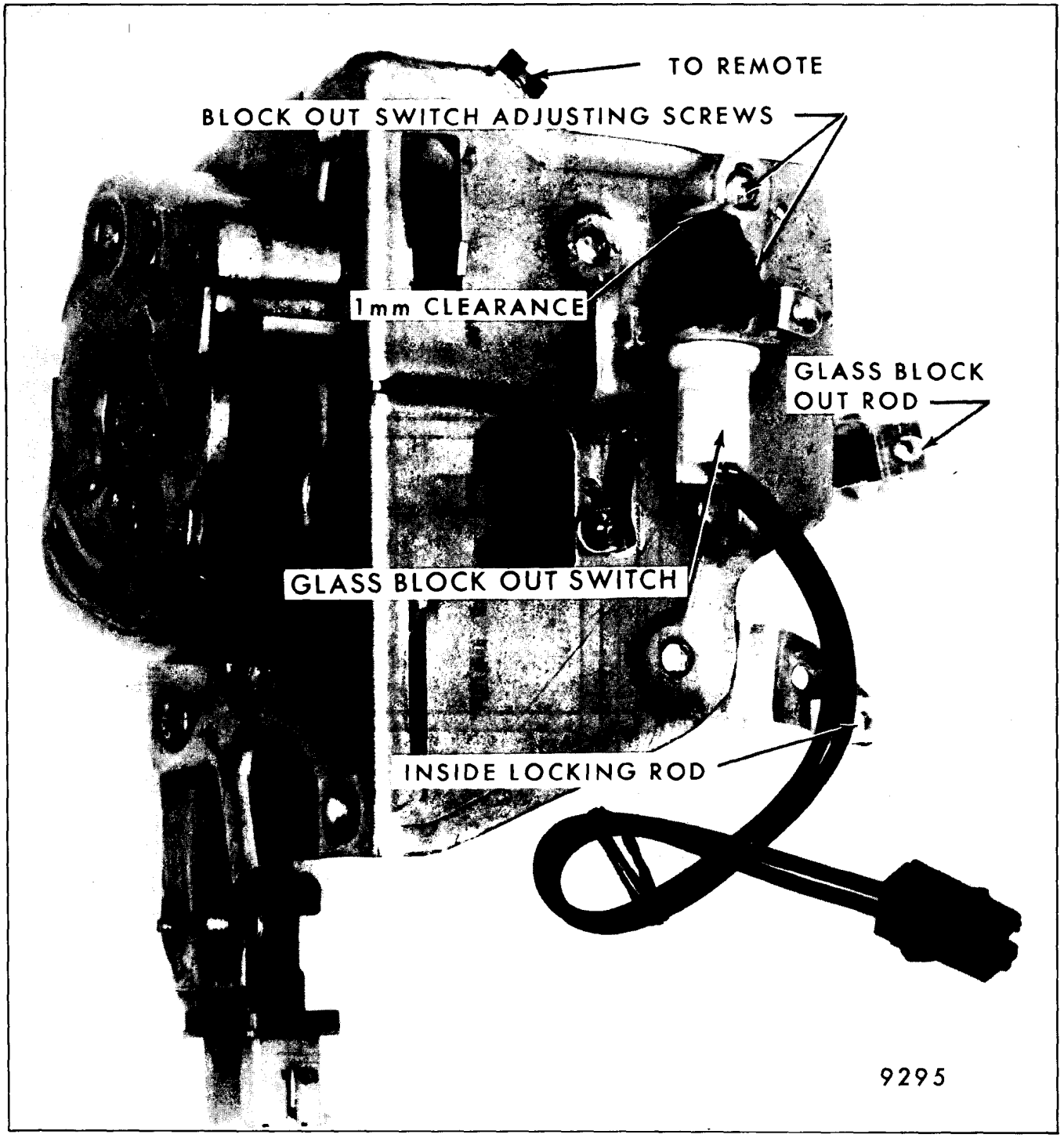


Fig. 10-18 - Tailgate Window Blockout Switch

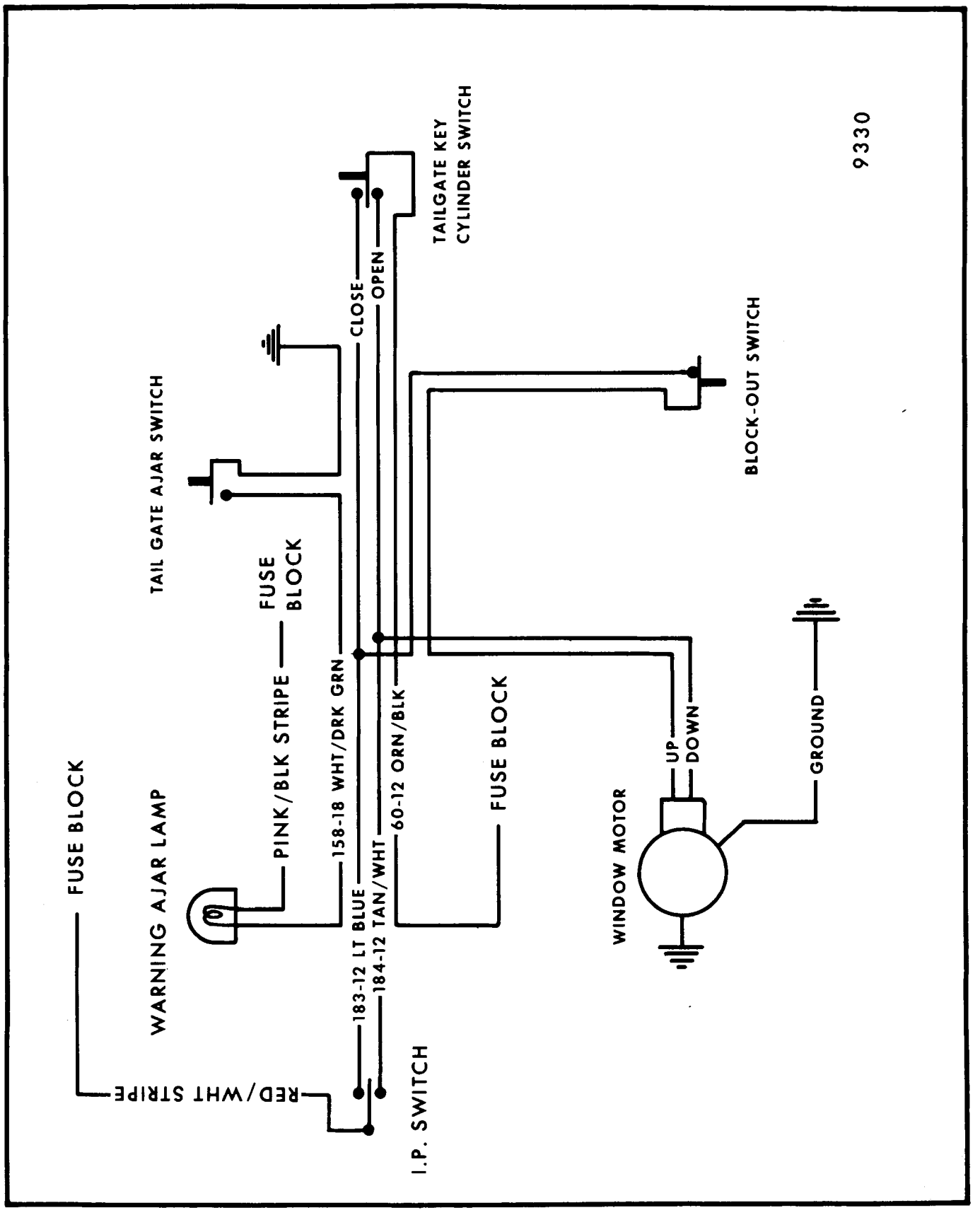


Fig. 10-19 - Tailgate Power Window Circuit Diagram

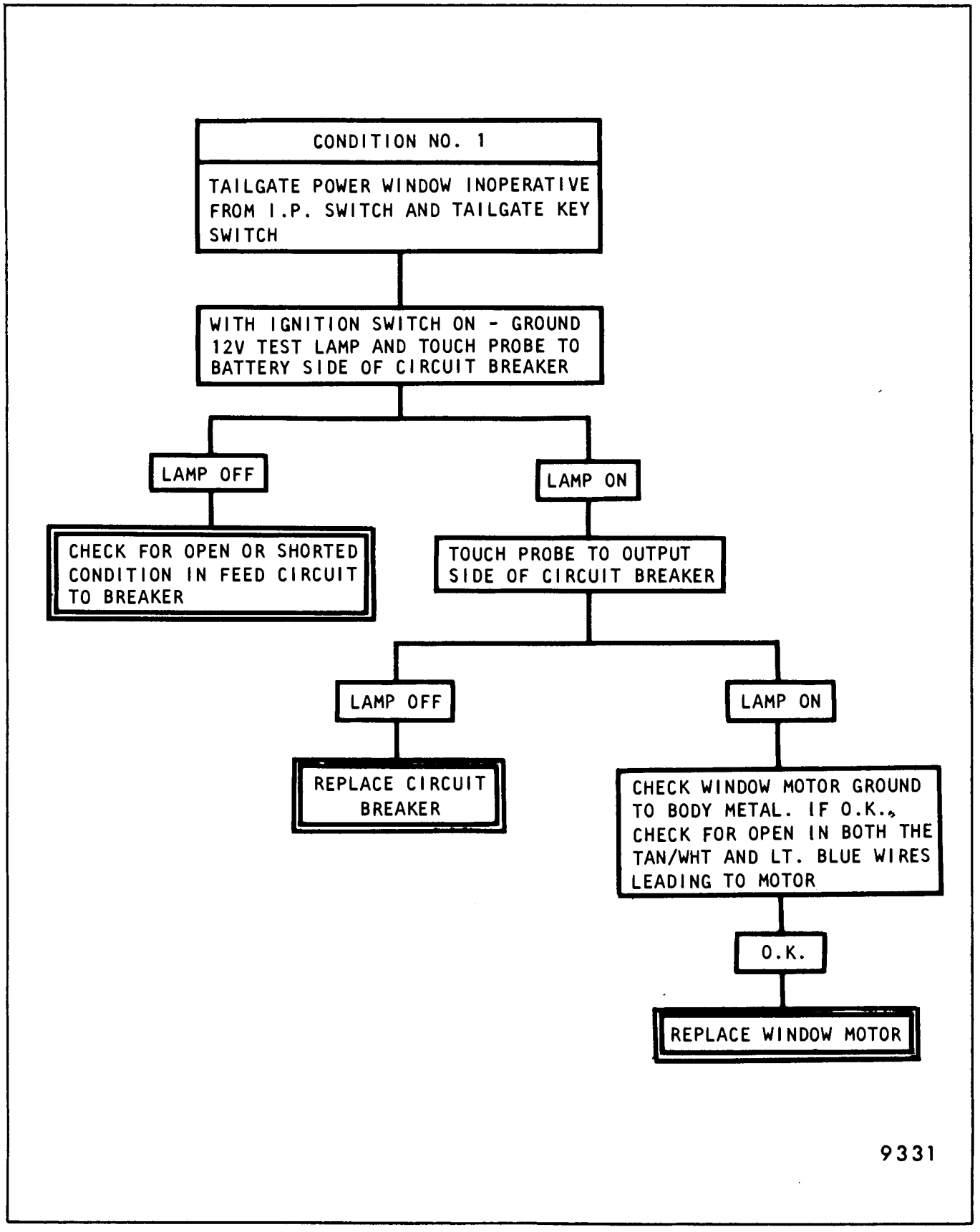


Fig. 10-20 - Condition No. 1

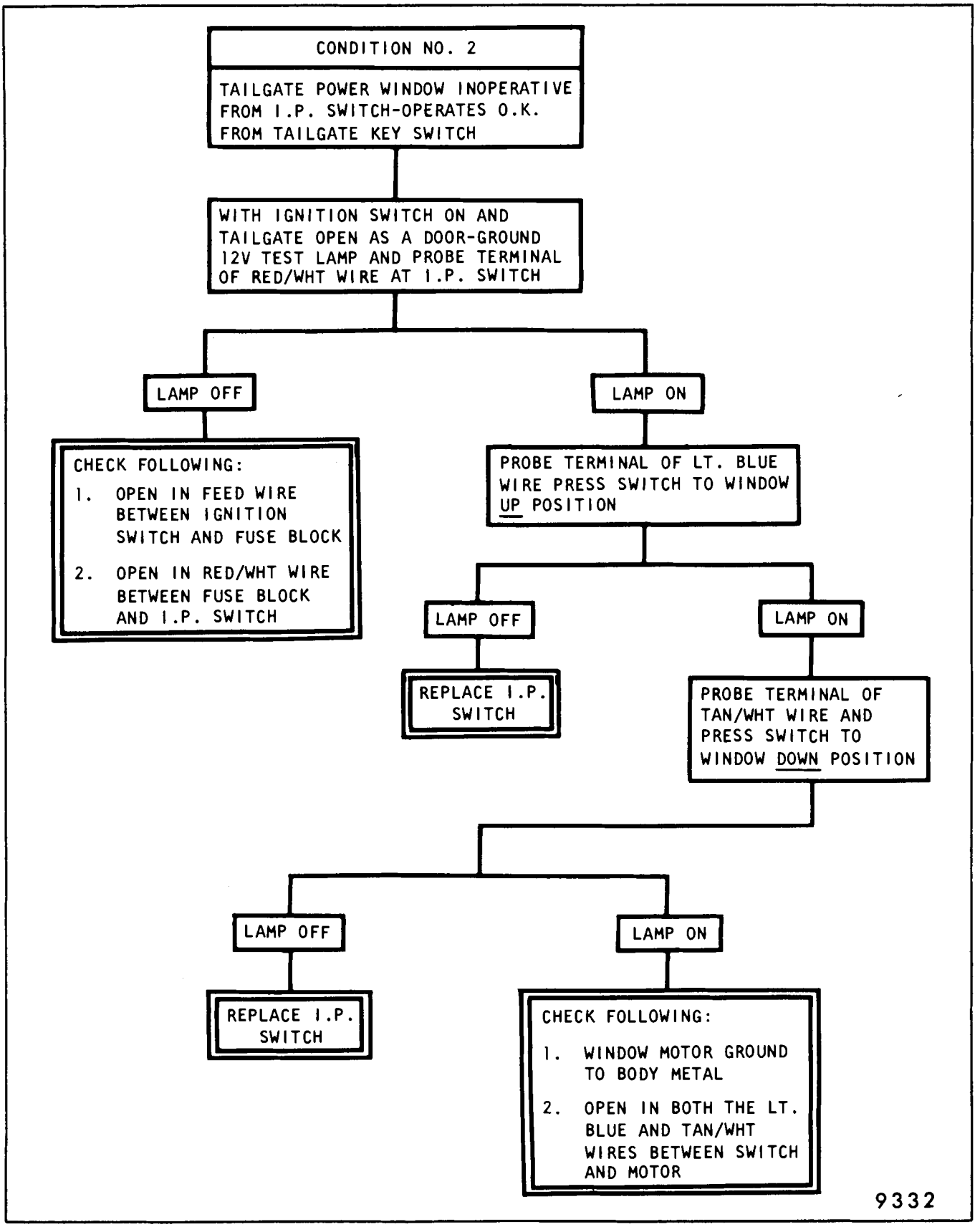


Fig. 10-21 - Condition No. 2

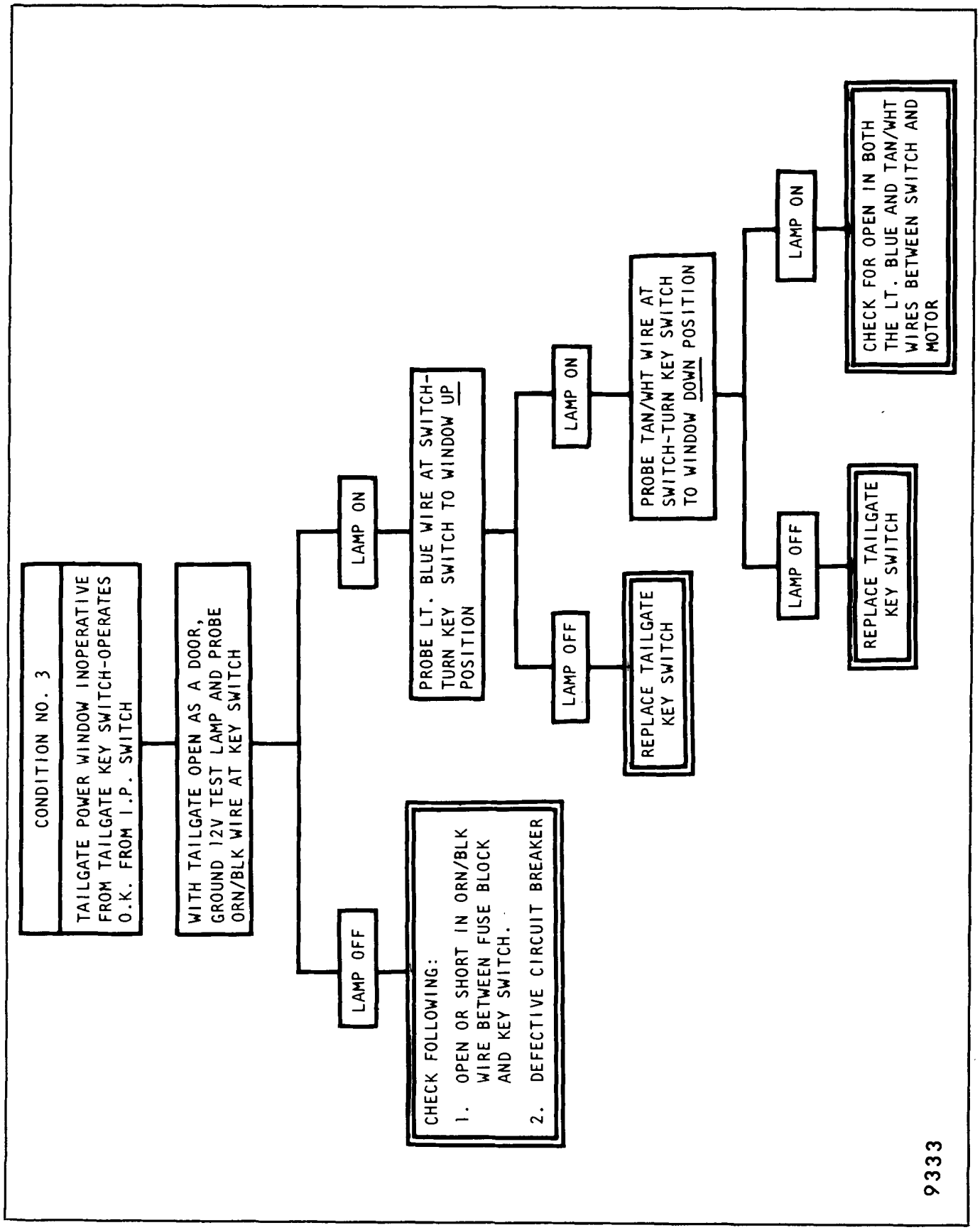


Fig. 10-22 - Condition No. 3

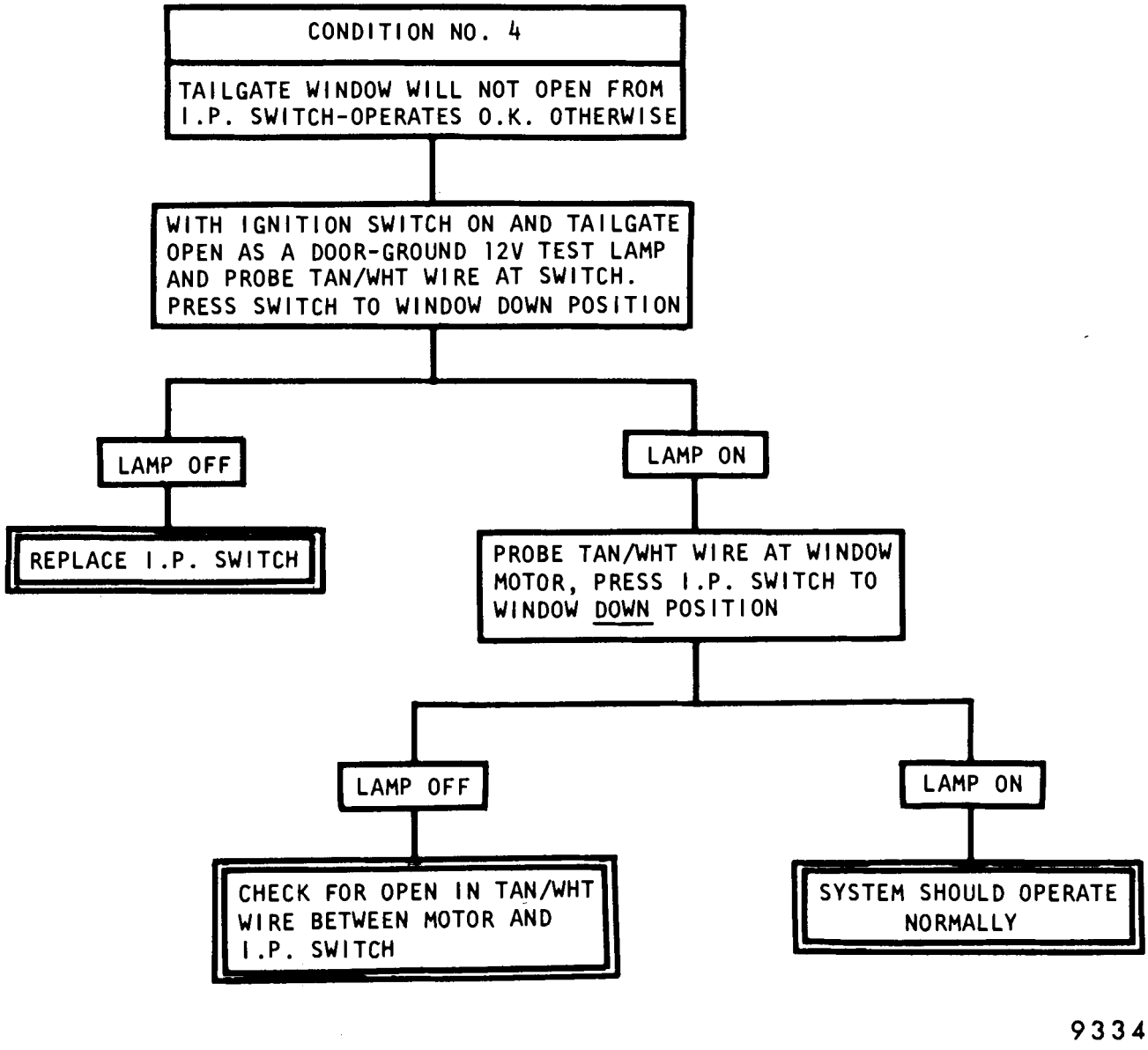


Fig. 10-23 - Condition No. 4

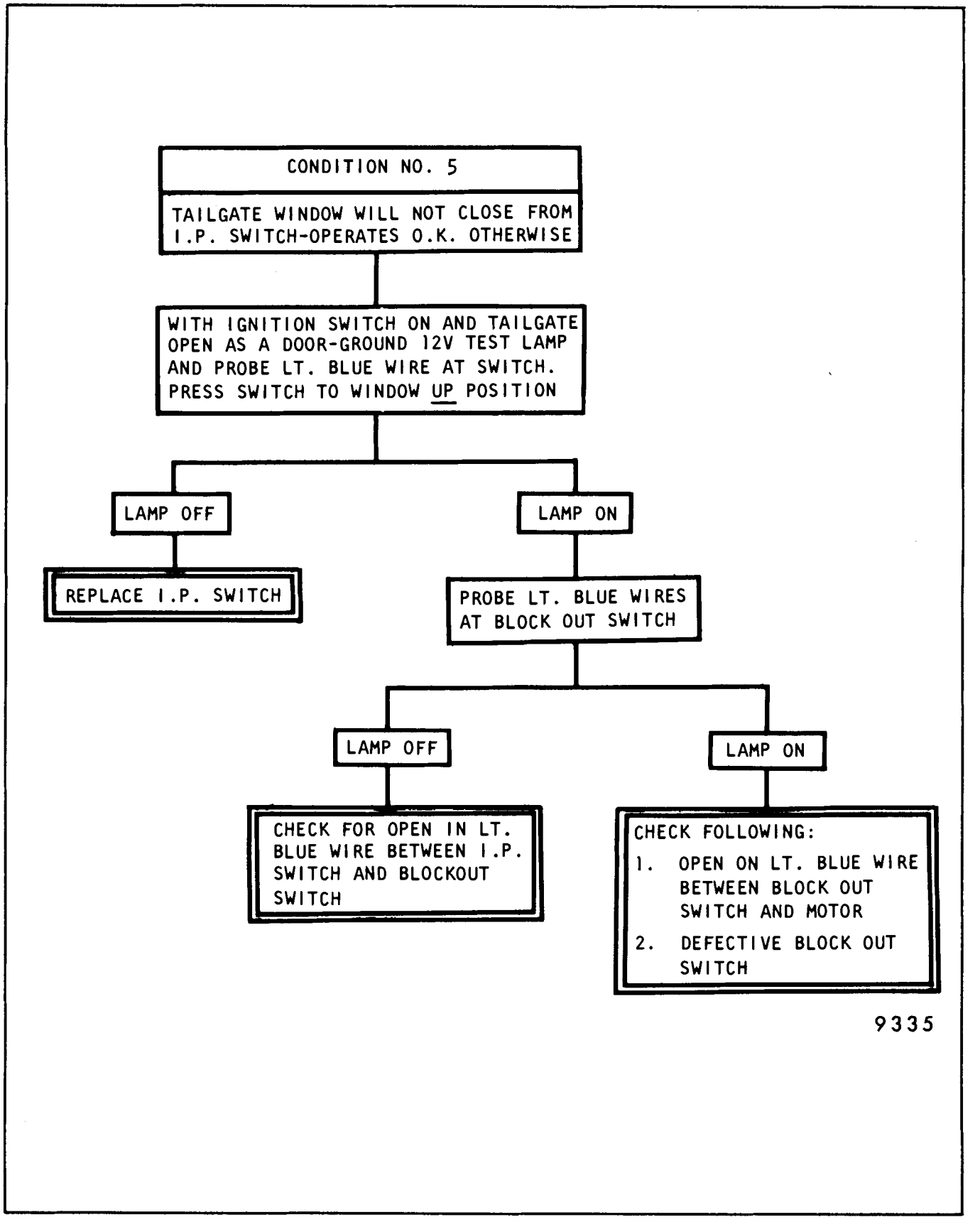


Fig. 10-24 - Condition No. 5

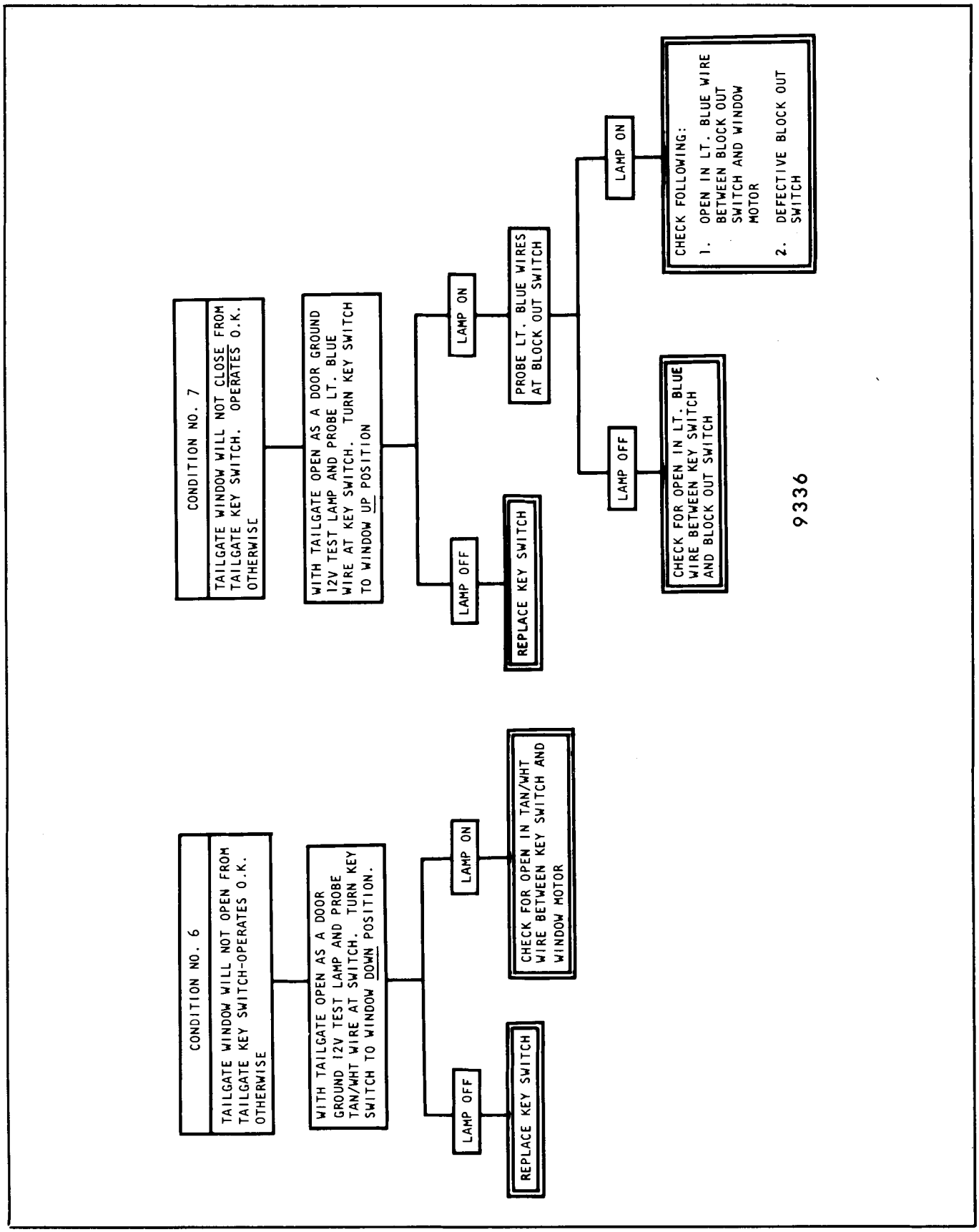


Fig. 10-25 - Condition No. 6 and No. 7

POWER SEATS

HORIZONTAL POWER SEATS

Description

The seat adjusters are actuated by a 12 volt series-wound motor located near the front left side of the seat bottom frame, and are energized through a control switch installed in the seat side panel or in the door armrest.

For circuit diagram see Figure 10-26.

The horizontal seat circuit is protected by a 30 amp circuit breaker.

A junction block (Fig. 10-27) located on the reinforcement at the left or right shroud panel is used to supply current to the power- operated seat circuit. Current is supplied to the junction block from the circuit breaker, and the power seat harness feed wire plugs into the junction block.

The trouble diagnosis chart will help locate typical problems which may occur.

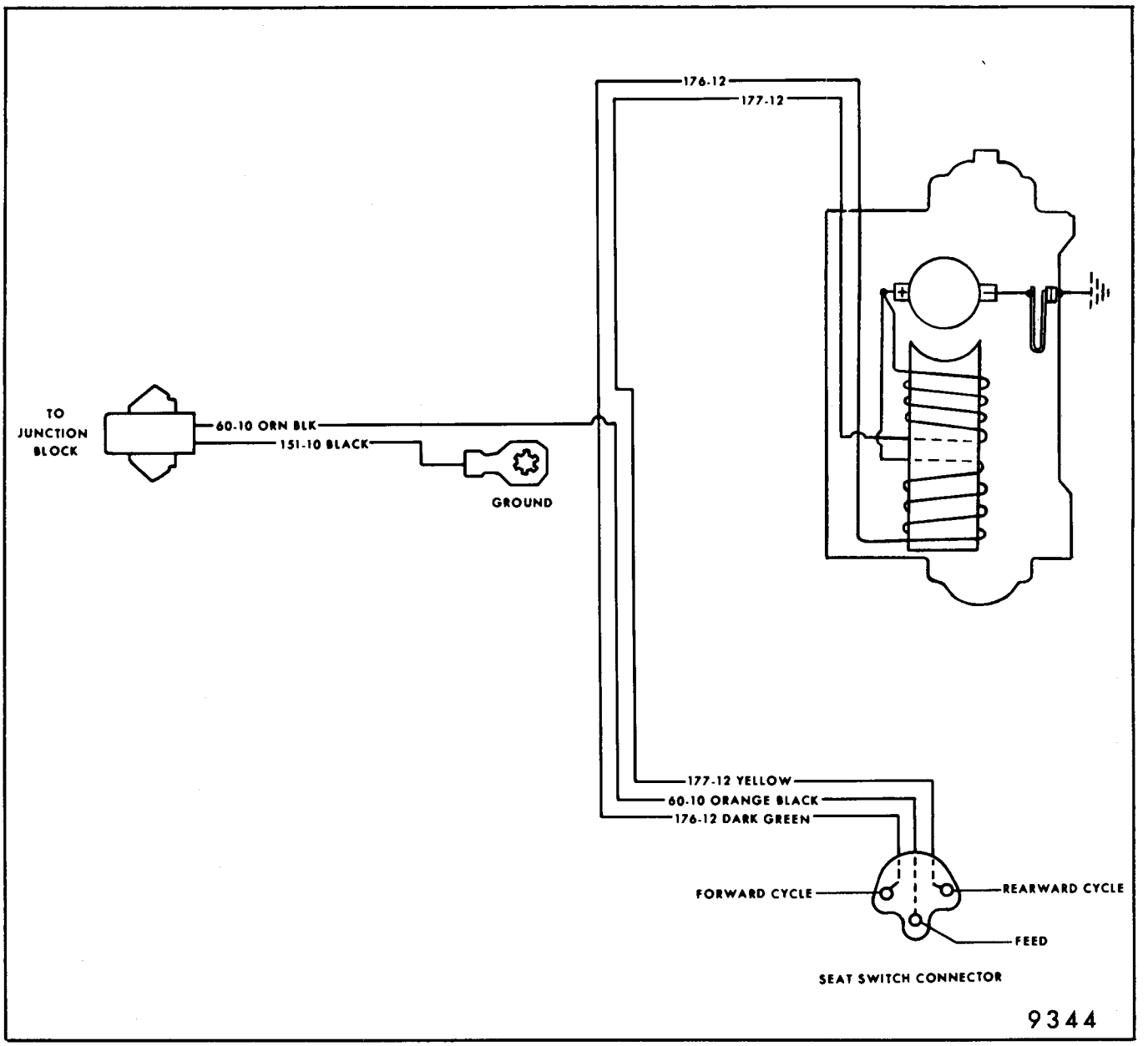


Fig. 10-26-Horizontal Seat Circuit

DIAGNOSIS CHART - HORIZONTAL SEAT

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat motor does not operate in either forward or rearward direction.	a. Open or short circuit in feed harness.	a. Connect one test light lead to feed terminal of switch block (orange/black wire) and ground other tester lead to body metal. If tester does not light, there is an open or short circuit between switch and power source.
	b. Inoperative motor.	b. Check operation of seat control switch with jumper wire. See Checking Door Window Control Switch for similar operation. c. Check circuit from control switch to motor for short or open circuit and check ground wire attachment of adjuster d. Check operation of motor with no. 12 gauge jumper wire. Connect one end of jumper wire to power source and the other end to one of the seat motor terminals. Motor should operate. Perform same check at the other motor terminal. If motor does not operate, repair or replace motor as required.
2. Seat motor operates in only one direction.	a. Defective switch.	a. Check operation of seat control switch with jumper wire.
	b. Open or short circuit in motor feed wires.	b. Check circuit from control switch to motor for short or open circuit.
	c. Defective seat motor.	c. Check operation of motor with no. 12 gauge jumper wire. Connect one end of jumper wire to power source and the other end to one of the seat motor terminals. Perform same check at the other motor terminal. If motor does not operate, repair or replace motor as required.

SIX-WAY POWER SEATS

Description

The seat adjusters for the 6-way seats are actuated by a 12 volt motor installed at the left side of the seat assembly.

The motor is energized by a three button-type control switch located in the left seat side panel or in the left front door armrest.

The power seat circuit is protected by a 30 amp circuit breaker.

A junction block (Fig. 10-27) located on the reinforcement at the left or right shroud is used to supply current to the power operated seat circuit. Current is supplied to the junction block from the circuit breaker, and the power seat harness feed wire plugs into the junction block.

The electrical portion of the six-way seat operates as follows:

When the control switch is actuated, current flows to the transmission solenoid which controls the desired seat movement. The energizing of the solenoid coil results in the solenoid plunger dog engaging the gear mechanism to rotate the control cable. The same switch action which energized the solenoid completes the circuit to one of the motor field coils. The current flows through the relay coil, closes the contacts between the relay power source and the motor armature feed wire, and results in the operation of the seat motor. When the control switch lever is released, the switch contacts open, a spring returns the shaft dog and solenoid plunger to their original position disengaging them from the gear dog.

CIRCUIT CHECKING PROCEDURES - SIX-WAY SEAT

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Before performing any extensive checking procedures, check the seat adjuster drive cables for proper attachment. In addition, study the seat circuit diagrams to become familiar with the seat circuit (Fig. 10-28).

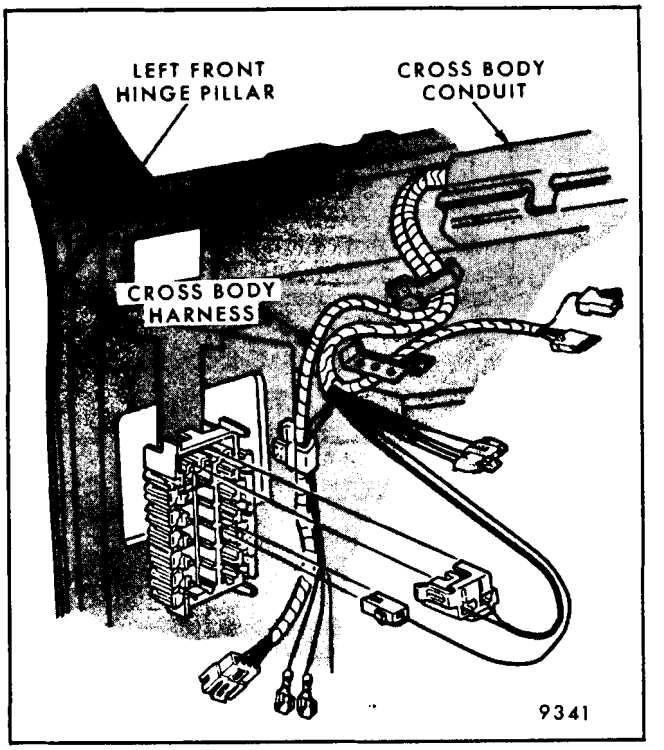


Fig. 10-27-Accessory Junction Block (left Side Shown, Right Side Similar on "B,C,D,E and K" Styles)

Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to input side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.

2. To check circuit breaker, connect test light lead to the output side of breaker and ground other lead. If tester does not light, circuit breaker is inoperative.

Checking Feed Circuit Continuity at Relay on Seat Motor

1. Disengage triple connector body from seat motor relay terminal (Fig. 10-29).

2. Insert one test lead into relay power feed (orange/black wire) connector slot or harness, and ground other test light lead.

3. If tester does not light, there is no current at end of feed wire. Failure is caused by an open or short in feed circuit.

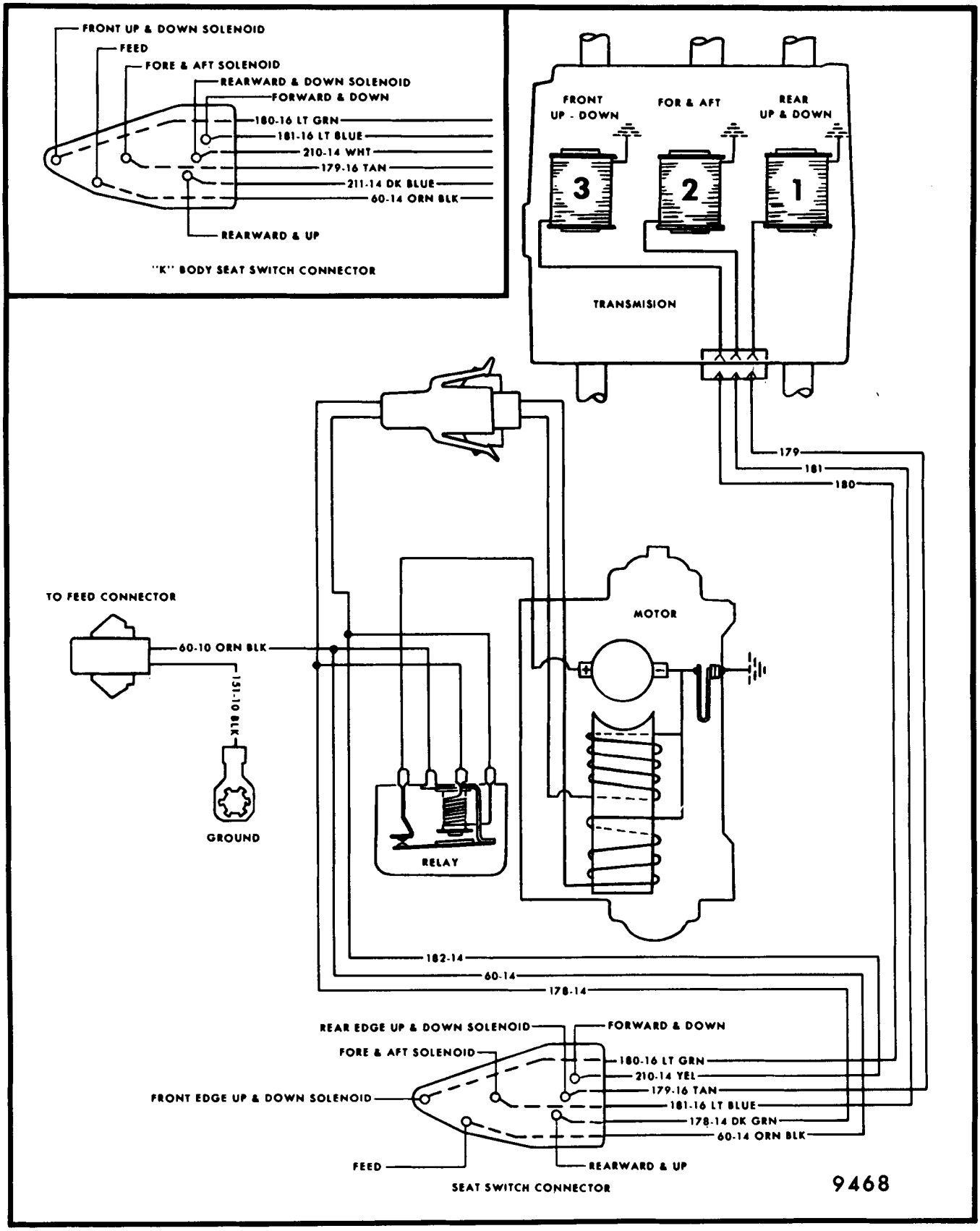


Fig. 10-28-Six-Way Seat Circuit - "B, C E and K" Styles Shown (Other Styles Similar)

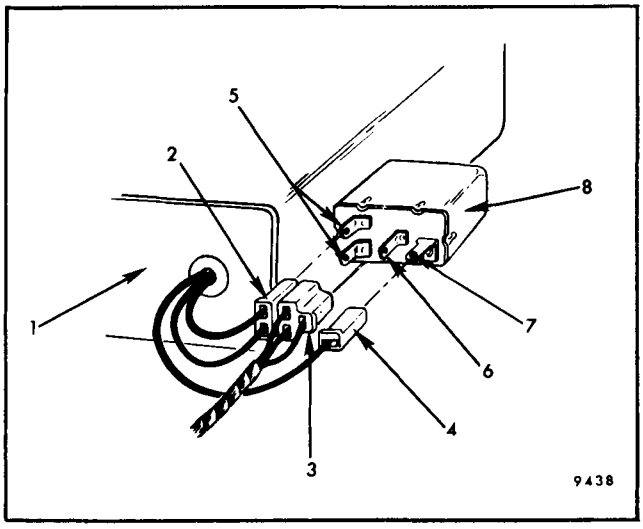


Fig. 10-29-Seat Adjuster Motor Control Relay

1. Seat Adjuster Motor
2. Motor Field Connector
3. Control Switch to Relay Connector
4. Motor Armature Connector
5. Motor Field Feed Studs
6. Relay Input Stud
7. Armature Feed Stud
8. Motor Control Relay

Check Feed Circuit Continuity at Seat Control Switch

1. Connect one test light lead to feed terminal of switch block and ground other test lead to body metal.
2. If tester does not light, there is an open or short circuit between switch and power source.

Checking Seat Control Switch

NOTE: In the following operations which specify the seat control switch to be actuated, a switch that has been checked for proper operation may be connected to the switch block. If a switch is not available, a three-way jumper wire can be made to perform the switch function. The jumper wire and the switch locations to be connected to obtain a specific movement of the seat are shown in Figures 10-30 and 10-31. If a jumper wire is used, letter the locations on the switch block as indicated in the illustration. Details outlining the making and use of the jumper wire follow the checking procedure.

1. Obtain switch or jumper wire and connect to switch block.
2. Operate switch. If adjusters operate with new switch or jumper wire, but did not operate with original switch, the original switch is defective.
3. Check all six movements of seat adjuster.

Checking Wires Between Control Switch and Motor Relay

1. Disengage triple harness connectors from relay at motor.
2. Insert one test light lead into motor field (yellow or dark green wire) connector slot on harness and ground other lead.
3. Actuate seat switch to energize field wire being tested.
4. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch. Check other motor field wire in the same manner.

Checking Motor Control Relay

1. Disconnect three motor leads (double and single connector) from relay assembly. These are wires leading from the motor to relay (Fig. 10-29).
2. Connect one end of a jumper wire to one of motor field feed studs on relay and ground other end of the jumper wire.
3. Connect one end of test light to motor armature feed stud on relay and ground other tester lead.
4. With a jumper wire, energize field stud which is not grounded. If tester does not light, relay is defective.

Checking the Motor Assembly

1. Check seat ground wire attachment for proper ground.
2. Disconnect motor armature feed wire and motor field feeds from relay assembly.
3. With a jumper wire, energize armature feed and one of field feeds.
4. If motor does not operate, it is defective. Check other motor field wire in same manner.

Checking the Wire Between Solenoid and Switch

1. Disengage harness connector from transmission.
2. Connect one test light lead to end of harness wire being tested and ground other lead.
3. Operate switch to energize wire being tested. If tester does not light, there is no current at end of wire. Failure is caused by an open or short circuit between end of wire and switch.

4. Check other wires between solenoid and switch in same manner.

Checking Solenoids

1. Check seat ground wire attachment for proper ground.

2. Energize solenoid being checked with jumper wire.

   NOTE: If solenoid is functioning, a click should be heard when solenoid is energized.

   CAUTION: *To prevent damaging solenoid, do not energize solenoid for more than one minute.*

3. With solenoid energized, actuate seat control switch to energize adjuster motor.

4. If adjusters do not operate, and there is no mechanical failure in seat unit, solenoid is defective.

Three-Way Jumper Wire for Checking Seat Switch

To make jumper wire, obtain two pieces of no. 12 gauge wire, each 4-1/2" long, join one end of each wire as shown in Figure 10- 30. The joined end can be inserted in the feed location in the switch block; one of the remaining ends can be inserted into one of the field locations in the switch block; the other end can be inserted into one of the solenoid locations.

NOTE: To obtain a seat movement using a 3-way jumper wire at the switch block, the switch feed location, one of the motor field wire locations and one of the solenoid locations must be connected simultaneously.

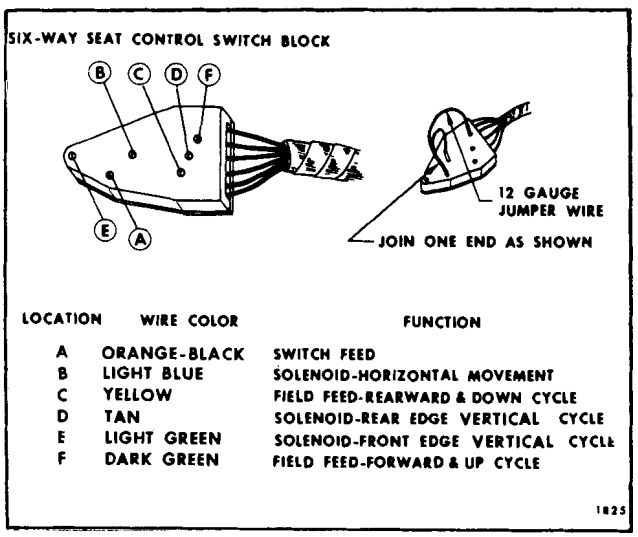


Fig. 10-30-Six-Way Seat Switch Block in Seat Side Panel

1. On bodies with switch in seat side panel (Fig. 10-30) proceed as follows:

   a. To raise front end of seat, place jumper in locations A, F and E.

   b. To lower front edge of seat, place jumper in locations A, C and E.

   c. To raise rear edge of seat, place jumper in locations A, F and D.

   d. To lower rear edge of seat, place jumper in locations A, C and D.

   e. To move seat forward, place jumper in locations A, B and F.

   f. To move seat rearward, place jumper in locations A, C and B.

2. On bodies with switch in armrest (Fig. 10-31), proceed as follows:

   a. To raise front edge of seat, place jumper in locations A, C and E.

   b. To lower front edge of seat, place jumper in locations A, F and E.

   c. To raise rear edge of seat, place jumper in locations A, C and D.

   d. To lower rear edge of seat, place jumper in locations A, F and D.

   e. To move seat rearward, place jumper in locations A, F and B.

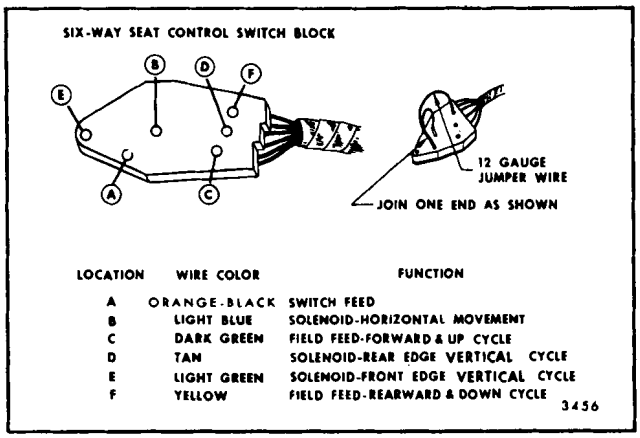


Fig. 10-31-Six-Way Seat Switch Block in Armrest

DIAGNOSIS CHART - SIX-WAY SEAT

CONDITION	APPARENT CAUSE	CORRECTION
1. Seat adjuster motor does not operate.	a. Short or open circuit between power source or switch and motor. b. Defective motor.	a. Check circuit from power source and switch to motor to locate failure. b. Check motor. If defective, repair or replace as required.
2. Seat adjuster motor operates, but seat adjusters are not actuated or seat adjuster motor operates, front edge of seat moves up and seat moves forward and rearward. The rear edge of seat cannot be operated.	a. Short or open circuit between switch and affected solenoid. b. Defective solenoid.	a. Check circuit from switch to solenoid to locate failure. b. Check solenoid. If defective, repair or replace as required.
3. Seat adjuster motor operates and seat adjusters move front and rear edge of seat up and forward but will not move the seat down and rearward or seat adjustor motor operates and seat adjusters move front and rear of seat down and rearward, but will not move the seat up and forward.	a. Short or open circuit between one of the motor field wires and seat control switch. b. Defective field coil in motor.	a. Check circuit between affected motor field wire and seat switch. b. Check motor. If defective, repair or replace as required.

POWER RECLINING SEAT BACK (DRIVER OR PASSENGER SIDE) - Cadillac "C,E,K", Buick "B,C" Styles

The power reclining seat back system consists of a permanent magnet motor, a relay assembly and control switch. All components of the system are serviced as complete assemblies.

Reclining Seat Back Motor

The 12V permanent magnet motor is reversible and is protected by an internal circuit breaker. When voltage is applied to terminal no. 1 and ground to terminal no. 2, the output gear and cable rotate clockwise and the seat back moves forward.

When the polarity is reversed at terminals no. 1 and no. 2, the output gear and cable rotate counterclockwise and the seat back reclines.

NOTE: Reversing the polarity is accomplished through the relay assembly.

Relay Assembly

The relay assembly is a double pole, double throw relay that is externally grounded through the attaching screw and mounting bracket.

Control Switch

The control switch used with the power reclining seat back system is a three pin rocker type switch that is installed either on the front seat side panel or front door armrest depending on style.

Seat Back Forward Cycle

NOTE: Voltage is supplied to the control switch and relay from the fuse block via the orange/black wire.

When the control switch is pressed to the forward position, voltage is sent to one coil of the relay through the dark green wire. The coil is energized (relay is externally grounded) and contacts above the coil close. Voltage is provided from the orange/black stripe wire across the contact blade, through the coil

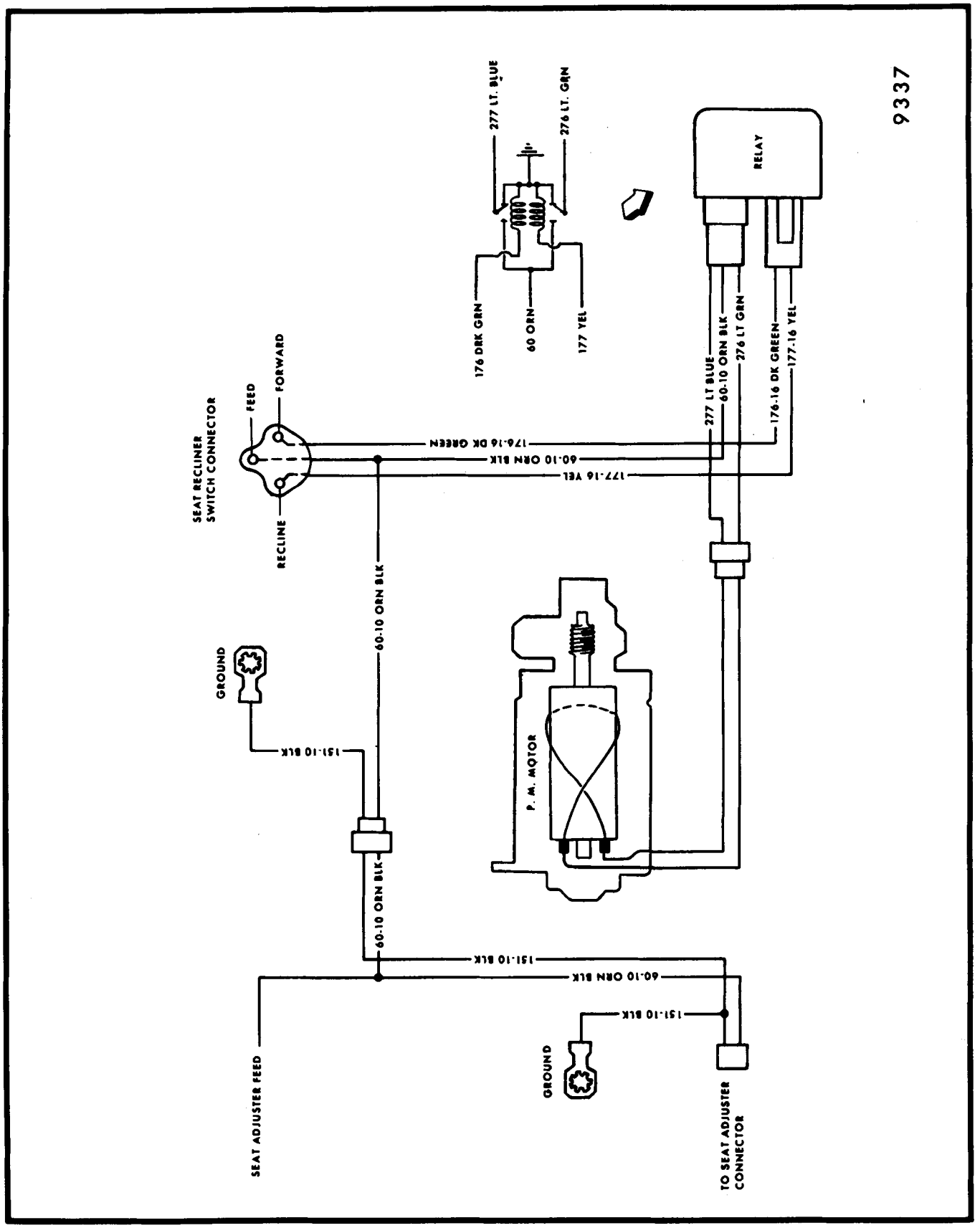


Fig. 10-32 - Power Reclining Seat Back Circuit Diagram Cadillac "C,E,K" and Buick "B,C" Styles

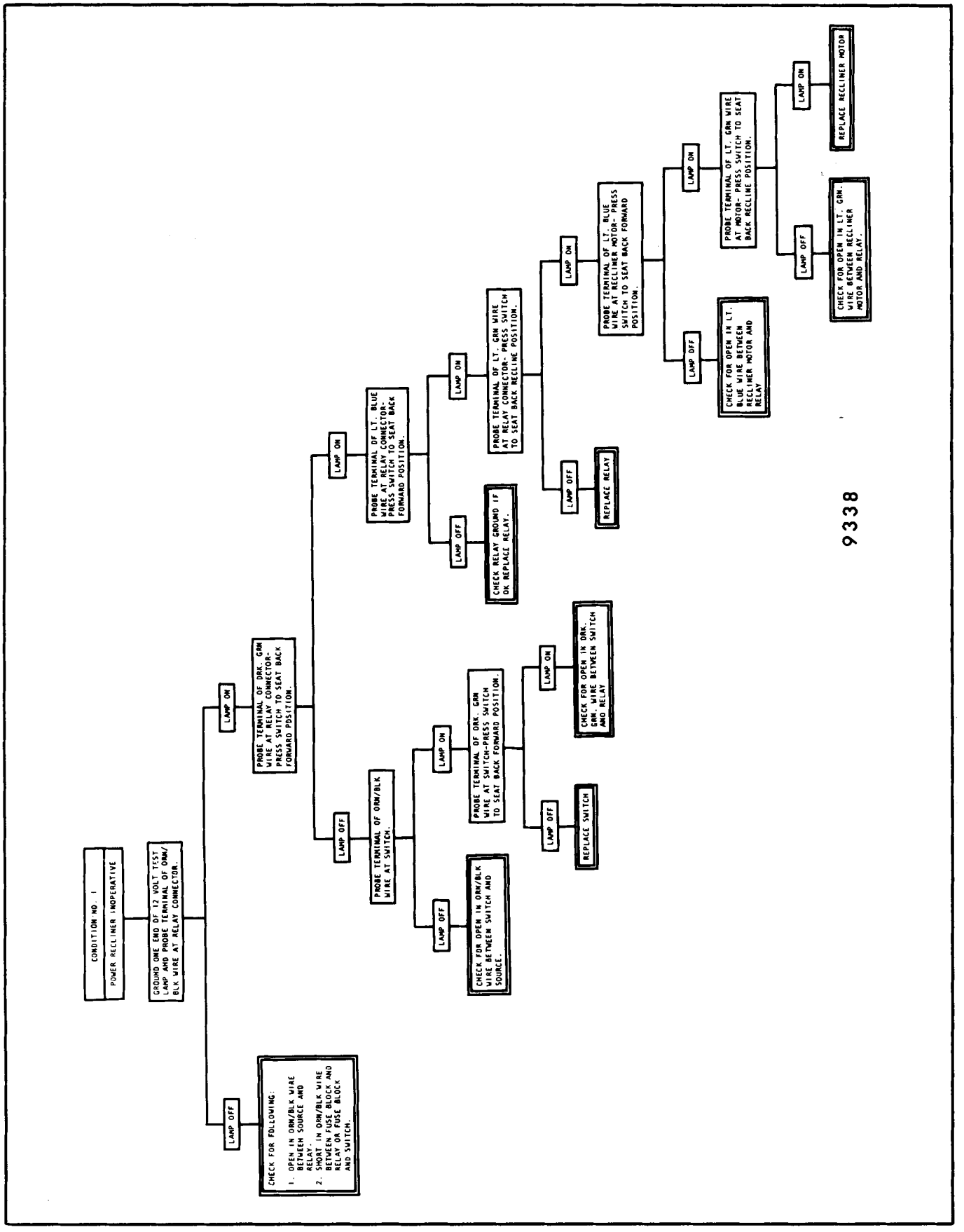


Fig. 10-33 - Condition No. 1

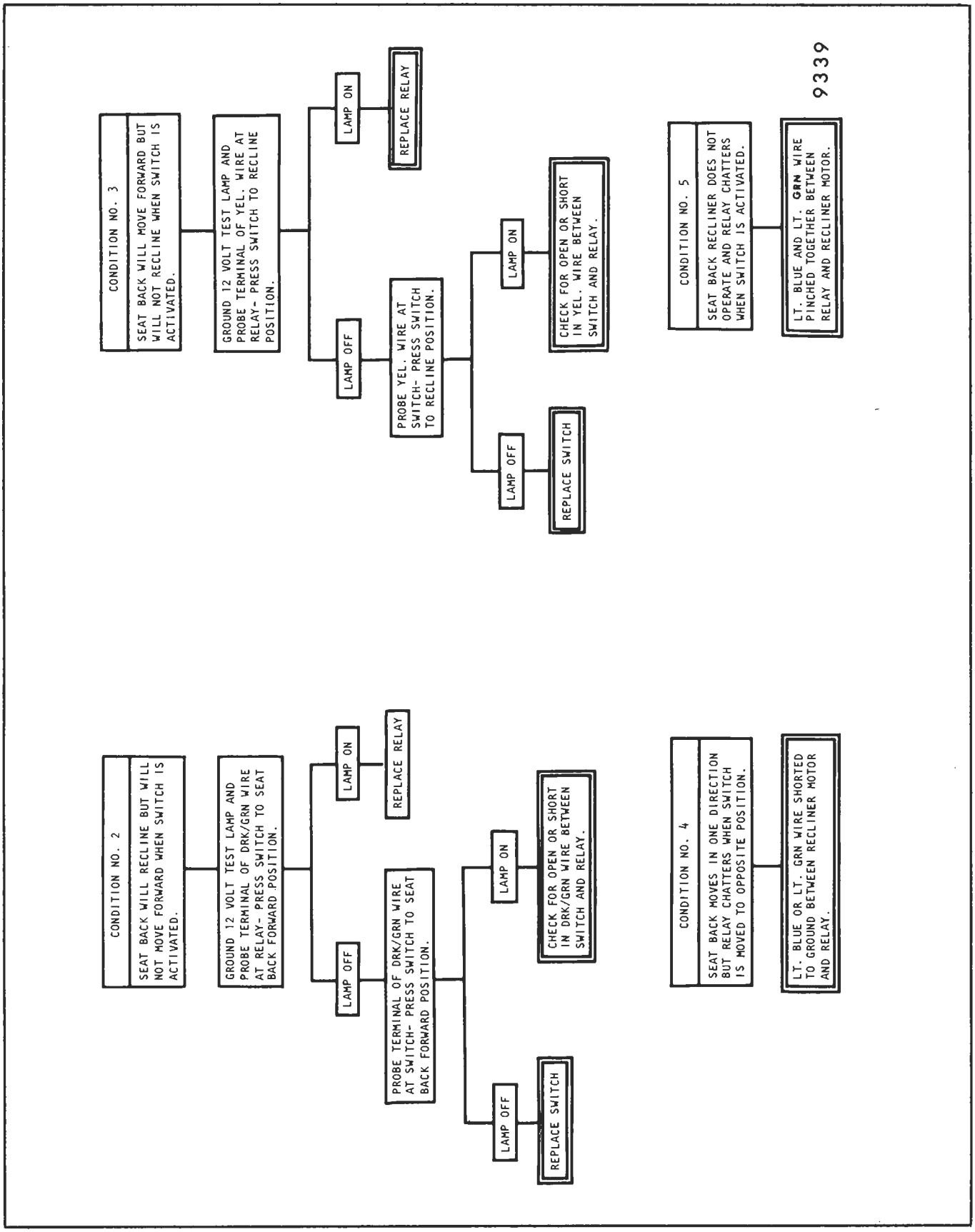


Fig. 10-34 - Condition No. 2, 3, 4, 5

pole piece to the P.M. motor windings through the light blue wire. The circuit is completed from the P.M. motor to ground through the light green wire, across normally closed contacts above the other relay coil. The motor output gear and cable rotates counterclockwise and the seat back moves forward.

Seat Back Recline Cycle (Polarity Reversed)

When the control switch is pressed to the seat back recline position, voltage is sent to the opposite coil of the relay through the yellow wire. The coil is energized (relay externally grounded) and contacts above the coil close. Voltage is again provided from the orange/black stripe wire across the contact blade through the coil pole piece to the P.M. motor windings through the light green wire. This circuit is completed from the P.M. motor to ground through the light blue wire, across normally closed contacts above the other relay coil. The motor output gear rotates clockwise and the seat back reclines.

Diagnostic Procedures - Power Reclining Seat Back (Figs. 10- 33, 10-34)

Diagnostic charts have been provided to assist in identifying and eliminating electrical failures that may occur with the reclining seat back system. Prior to using the charts, the manner in which the system is malfunctioning should be observed and the condition matched to the appropriate diagnosis chart.

NOTE: The power recliner feed circuit is protected by a 30 amp circuit breaker. The circuit breaker also protects the circuits for the power seats, power locks, seat back locks and the rear compartment closing unit on Cadillac styles. If the circuit breaker is open, it could be due to a short in one of these circuits rather than the power recliner system.

POWER OPERATED SUN ROOF - "A-37 and 57" Styles

DESCRIPTION

Power sun roofs are operated by a two-way 12 volt series wound motor, with an integral drive gear mechanism, and two flexible drive gear cables. The motor is mounted to the roof panel, forward of the sun roof opening near the center of the windshield header area.

Electrical power for the system is supplied from a fuse panel mounted 40 amp circuit breaker to an accessory junction block located on the reinforcement at the left shroud. The wiring is then routed from the junction block to an ignition relay also mounted on the left shroud panel (Fig. 10-39).

A relay is used in the circuit to prevent operation of the sun roof until the ignition switch is turned ON. A circuit breaker is used to protect the complete circuit.

NOTE: On styles equipped with power windows, the sun roof and windows use a common relay and circuit breaker (Fig. 10-39).

The wiring is then routed from the relay up the left pillar and across the header to a two position control switch located on the header pad.

POWER SUN ROOF CIRCUIT CHECKING PROCEDURE

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. Be sure to check the harness connectors for proper engagement and become familiar with the typical circuit diagrams (Fig. 10-39).

Checking Feed Circuit Continuity at Circuit Breaker

1. Connect one test light lead to battery side of circuit breaker and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.

2. To check circuit breaker, disconnect the output feed wire (the wire opposite the power source feed to the breaker) from the breaker and with test light, check terminal from which wire was disconnected. If tester does not light, circuit breaker is inoperative.

Checking Ignition Relay Assembly

1. With test light, check relay feed (orange/black wire). If tester does not light, there is an open or short circuit between relay and circuit breaker.

2. Turn ignition switch ON and with test light check output terminal of relay (red/white wire). If tester does not light:

   a. Put test light on ignition relay coil terminal (pink or orange).

b. If tester lights, replace ignition relay.

c. If tester does not light, locate short or open circuit along pink or orange wire (check fuse at dash panel).

Checking for Current at Control Switch

1. With ignition switch ON, connect one test light lead to the control switch feed terminal (red/white stripe) of the switch block and ground other test lead.

2. If tester does not light, there is an open or short circuit between the relay and control switch.

Checking Control Switch

1. Connect one end of a no. 12 gauge jumper wire to the red and white switch feed wire and other end to light green motor feed wire. Using a second jumper wire, connect the black motor feed wire with the black switch ground wire.

2. If the motor operates with the jumper wires, but does not operate with the switch, either the switch is improperly grounded or the switch is defective.

Checking Wires Between Control Switch and Motor

1. Disengage harness connectors from motor.

2. Connect one end of a test light to ground and insert other end into one of the two motor feed wires.

3. Actuate control switch, if test lamp does not light when switch is actuated, there is an open or short circuit between the control switch and motor connector.

4. Check other motor feed wire, as outlined in step 3.

Checking Sun Roof Motor

1. Disengage harness connector from motor.

2. Connect one end of a test light to ground and insert other end into one of the two motor feed wires.

3. Actuate control switch, if test lamp lights when switch is activated, either the control switch is improperly grounded or the motor is defective.

SUN ROOF DIAGNOSIS CHART

The following typical conditions and corrections have been listed as an aid for eliminating electrical problems in the power sun roof electrical circuit. It should be noted that multiple problems in the circuit may lead to a combination of conditions, each of which must be checked separately.

CONDITION	APPARENT CAUSE	CORRECTION
1. Sun roof will not operate with ignition switch on.	a. Short or open circuit in power feed circuit.	a. Check harness connectors. b. Check feed circuit wires for possible short or open circuit. c. Check ground at control switch.
	b. Defective circuit breaker.	a. Check circuit breaker operation.
	c. Defective ignition relay.	a. Check ignition relay operation.
	d. Defective control switch.	a. Check control switch operation.
	e. Defective motor.	a. Check motor operation.
	f. Possible mechanical failure and binds.	a. Refer to index for sun roof removal, installation and adjustment procedures.

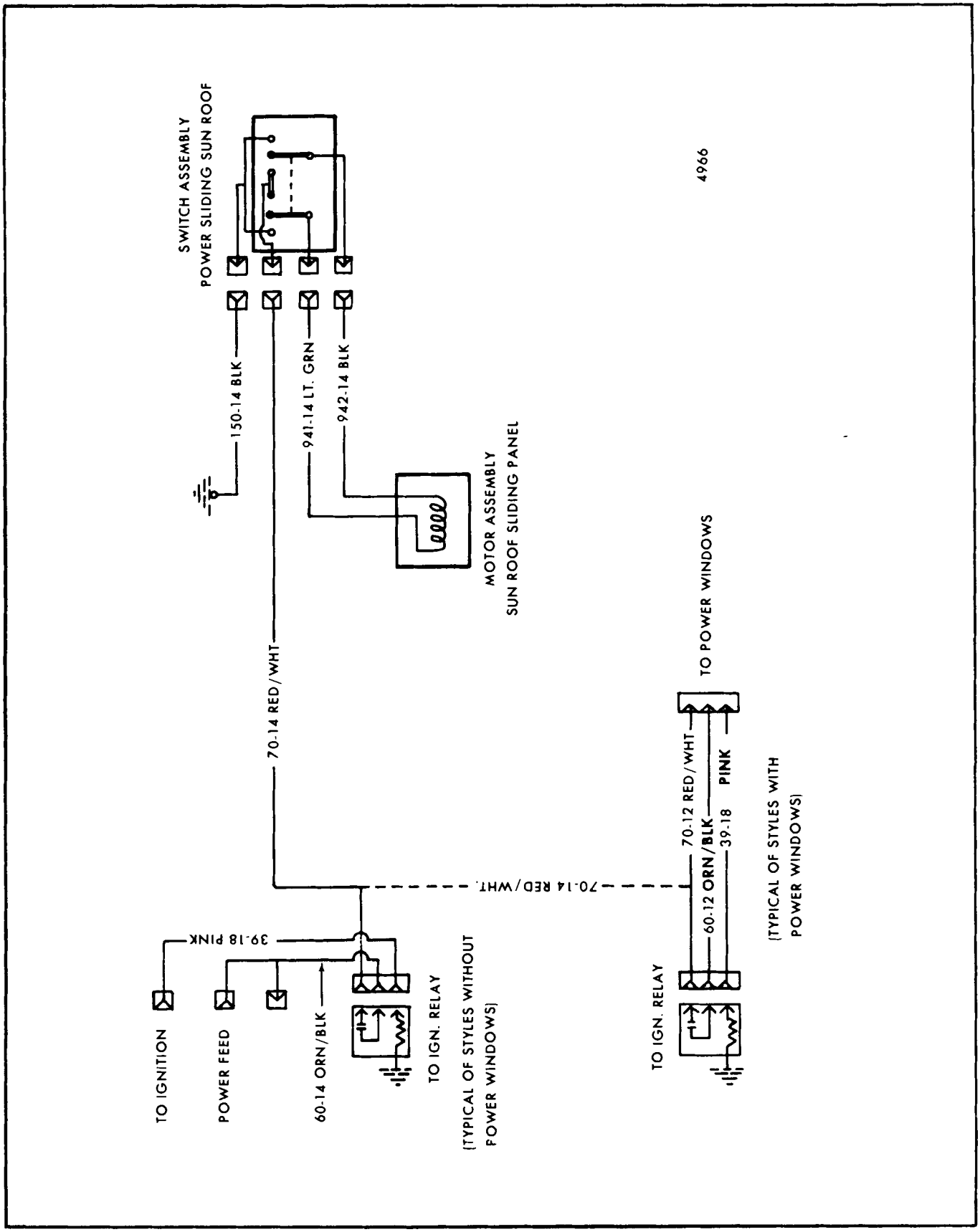


Fig. 10-39-Sun Roof Circuit Diagram - "A-37 and 57" Styles

EXTERIOR AND INTERIOR LAMPS

TAIL LAMPS AND SIDE MARKER LAMPS

NOTE: Refer to appropriate chassis service manual for complete circuit diagrams.

All styles incorporate rear quarter side marker lamps which operate in conjunction with the tail lamp circuit. On "H" styles, all rear lamps are grounded adjacent to the right rear marker lamp except the left rear marker lamp, which has a separate ground adjacent to the lamp.

DOME AND SAIL LAMPS

The dome lamp operates in conjunction with the door jamb switch and/or the headlamp switch. Feed current is present at the dome lamp at all times and a ground is established through one of the switches. The grounding type door jamb switches are located in the front body hinge pillars and on some styles in the center pillar. The dome lamp harness, which contains two solid core wires both color coded white, is connected to the front body harness aft connector.

On "H" styles, the two solid core wires are color coded gray and the jamb switch wiring is color coded white and black. These are connected to the front body front harness connector.

The jamb switch wiring and jamb switch on "F,X" styles, as well as the headlamp switch on all styles, are installed by the Motor Divisions. The portion of the dome lamp circuit contained in the main body harness is color coded (orange-feed wire and white-ground wire).

ILLUMINATED LOCK CYLINDER AND COURTESY LAMPS - Oldsmobile "B,C" and Cadillac "C,D,E" Styles

The optional illuminated door lock cylinder at each front door outside handle operates in conjunction with the interior courtesy lamps and door jamb switches.

Light source is provided from an in-line bulb on Oldsmobile styles and from the front door courtesy and warning lamps on Cadillac styles (Fig. 10-42 and Fig. 10-43).

On Oldsmobile styles, when the outside door handle push button (Fig. 10-41) is depressed or lifted, the in-line bulbs and interior lamps come on.

On Cadillac styles, the interior lamps (including front door courtesy and warning lamps) come on.

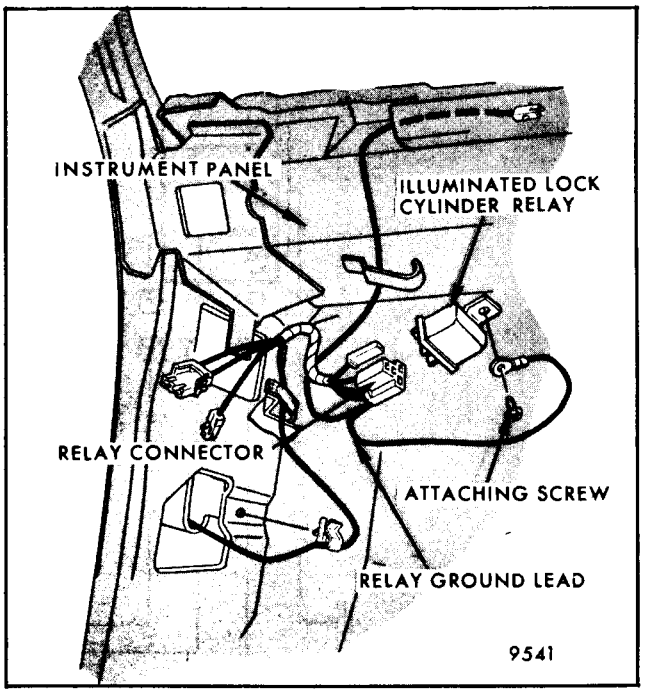


Fig. 10-40 - Illuminated Lock Cylinder Relay Assembly

The light is then transferred from the source through a fiber optic lead to a lens located above each front door lock cylinder. The light is then directed through the lens and illuminates the lock cylinder face.

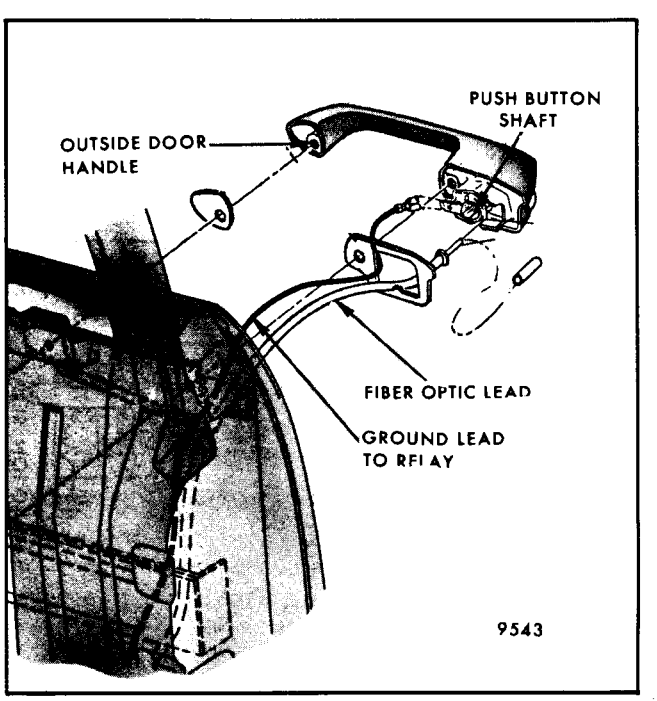


Fig. 10-41 - Illuminated Lock Cylinder Door Handle Push Button Assembly

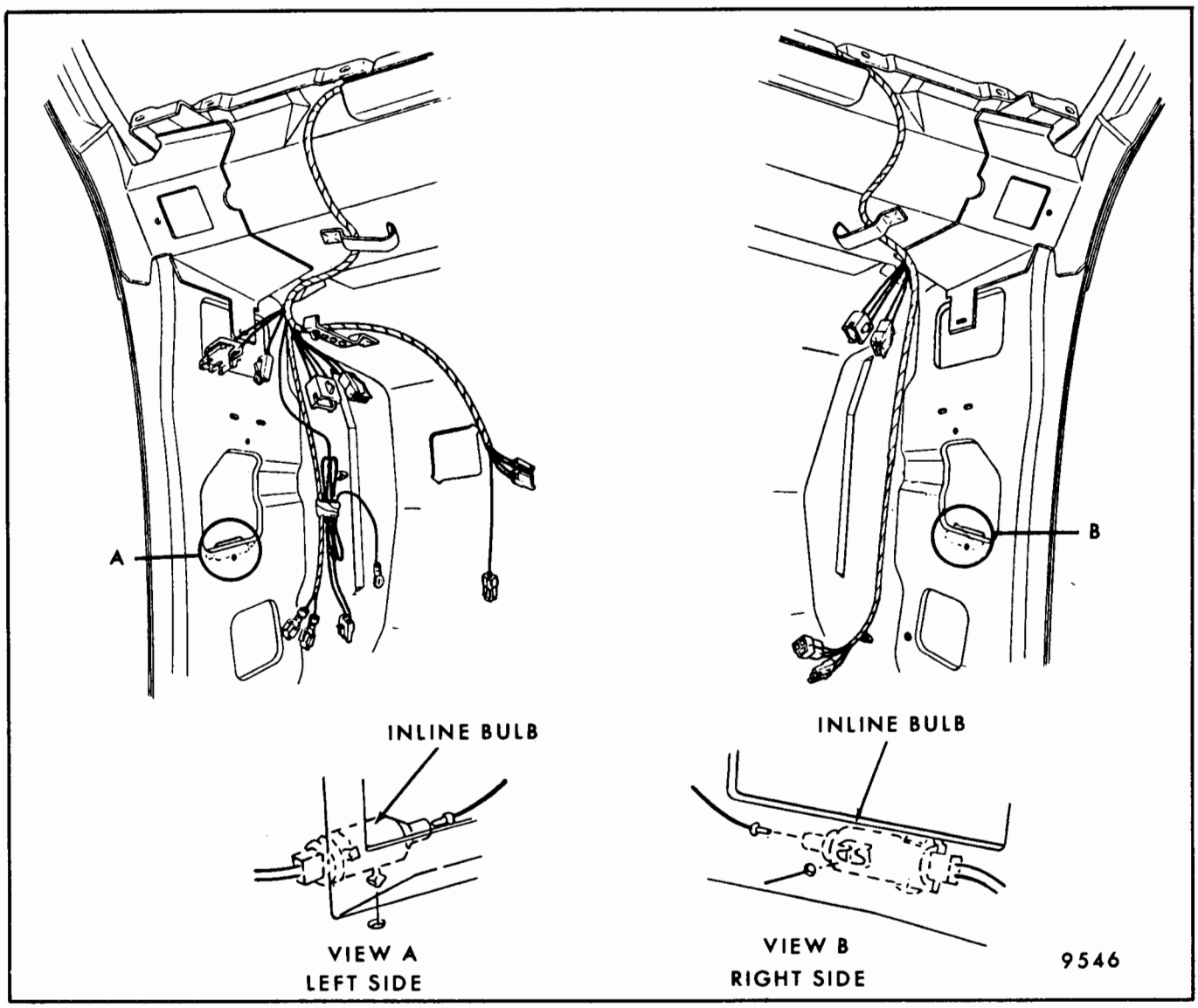


Fig. 10-42 - Illuminated Lock Cylinder In-line Bulbs - Oldsmobile Styles

Interior and lock cylinder lamps on all styles are controlled by a time delay relay which allows the lamps to remain on for a period of 30 seconds or until the ignition switch is turned on.

The feed circuit is protected by a 20 amp (courtesy lamp) fuse. Complete circuit diagrams are shown in Figures 10-44 and 10-45.

The relay assembly is attached beneath the left edge of the instrument panel as shown in Figure 10-40.

In-line bulbs on Oldsmobile styles are located in front of the right and left front door hinge pillar (Fig. 10-42).

The fiber optic lead is routed and clipped into the front door courtesy and warning lamp housing on Cadillac styles (Fig. 10- 43).

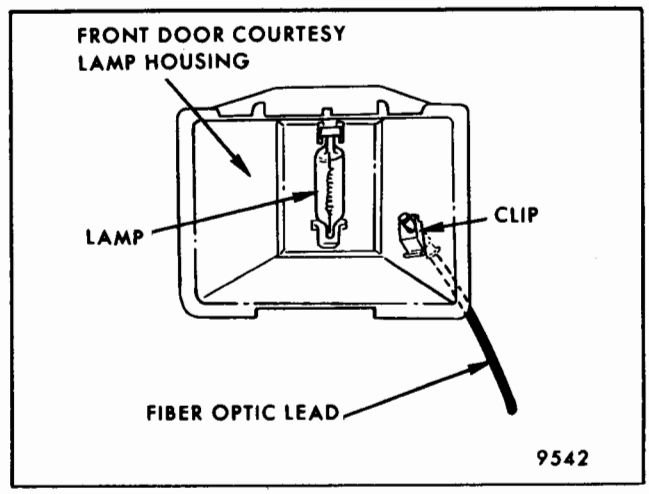


Fig. 10-43 - Illuminated Lock Cylinder Light Source - Cadillac Styles

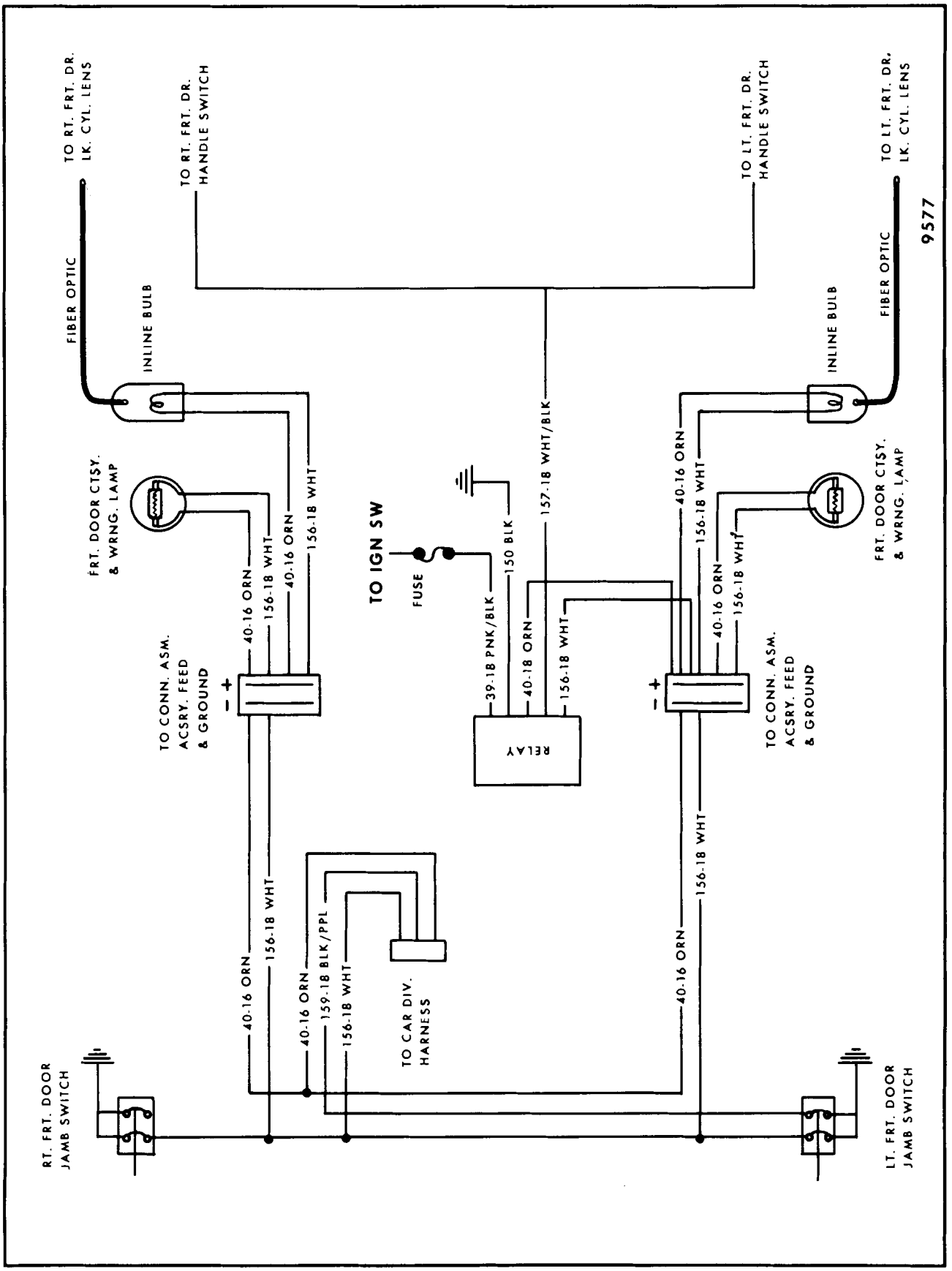


Fig. 10-44-Illuminated Lock Cylinder and Courtesy Lamp Circuit Diagram - Oldsmobile Styles

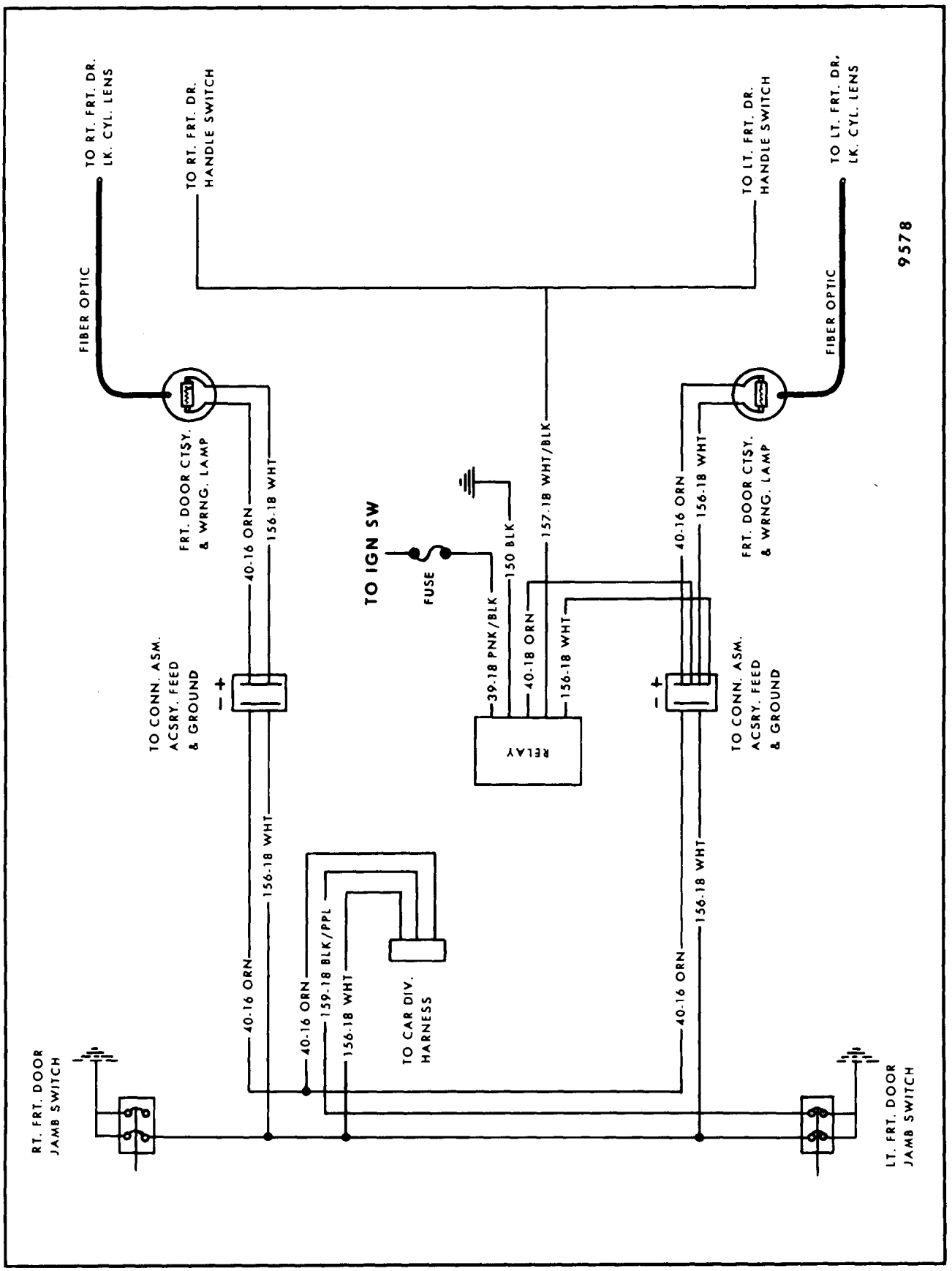


Fig. 10-45 - Illuminated Lock Cylinder and Courtesy Lamp Circuit Diagram - Cadillac Styles

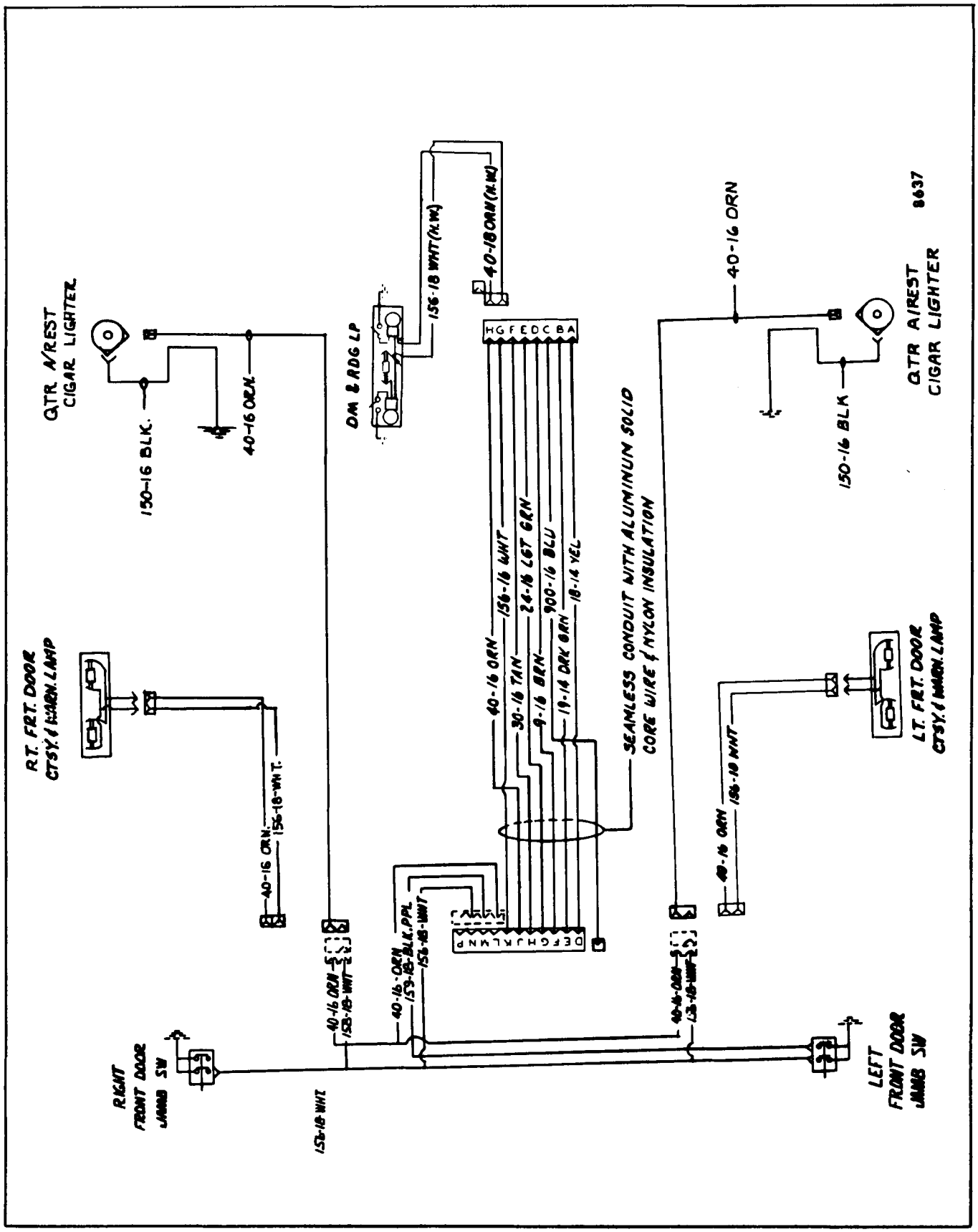


Fig. 10-46-Electronic Lamp Monitoring System - Front Harness Circuit Diagram - Oldsmobile "C" Styles

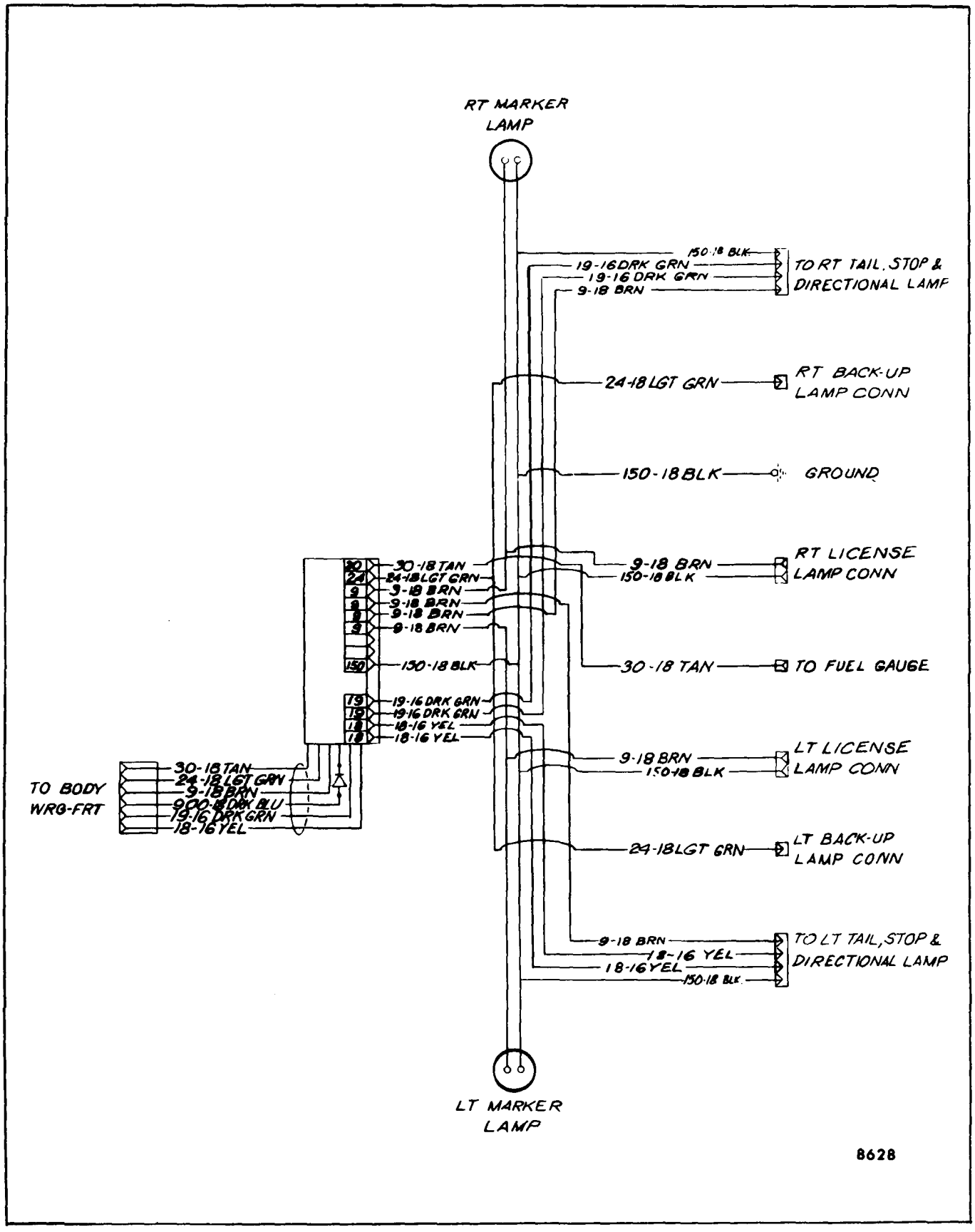


Fig. 10-47-Electronic Lamp Monitoring System - Rear Harness Circuit Diagram - Oldsmobile "C" Styles

ELECTRONIC LAMP MONITORING SYSTEM - Oldsmobile "C"

The optional electronic lamp monitor incorporates an instrument panel mounted indicator lamp, front and rear wire harness and monitoring unit (located in the rear compartment). In the event of an exterior lamp failure, the indicator lamp lights. A physical inspection is then required to determine the location of the failure. Refer to Figures 10-46 and 10-47 for the appropriate circuit diagram.

ELECTRIC DOOR LOCKS

ELECTRIC DOOR LOCKS (SOLENOID LOCK ACTUATORS) - "F,H,X" Styles

NOTE: Electric door locks for all other styles, including station wagon tailgate locks, are covered under electric door locks with permanent magnet motor lock actuators in this section.

The optional electric door lock system incorporates a solenoid for each door and a control for each front door except Pontiac "F" styles which have one instrument panel switch. All doors lock and unlock electrically from the control switch or manually from each door in the conventional manner. Each solenoid has an internal circuit breaker which (under extreme conditions) may require up to three minutes to reset.

The door lock harness is routed in the power window harness conduit.

Checking Procedure - All Except Pontiac "F" Styles

Before beginning electrical checks, be sure door lock mechanisms are free of mechanical binds. Refer to Figures 10-48 and 10-49 for circuit diagrams. The following checks are performed with a test lamp.

Junction Block Output - "F,H,X" Styles

1. Insert test prod into junction block output terminal.

   a. If lamp does not light, check power feed jumper to junction block.

   b. If lamp lights, check feed wiring for open or disconnect in circuit.

   c. If lamp blinks (circuit breaker clicking on and off), locate and repair short circuit in feed wiring.

   NOTE: Disconnect other options to isolate shorted circuit, if applicable.

2. Disconnect feed connector (orange/black, dark green and black wires) and insert test lamp prod feed (orange/black) terminal.

   If no light, locate and repair short or open in feed circuit.

Door Lock Control Switch

1. Insert test lamp prod into feed terminal of switch block.

   If lamp does not light, locate and repair open or short circuit in orange/black wire.

2. Insert jumper between feed and lock (unlock) terminals. If locks operate in both cycles, replace switch.

Front and/or Rear Door Lock Solenoid

1. Remove door trim panel.
2. Disconnect solenoid connector.
3. Insert test lamp prod into connector.

   a. If lamp lights at both terminals when switch is activated and solenoid is properly grounded, replace solenoid.

   b. If lamp does not light at both terminals, locate and repair open or short circuit in black or dark green wire.

Checking Procedure - Pontiac "F" Styles Only

Prior to beginning electrical checks, insure that no mechanical binds exist. The electric door lock circuit diagram is shown in Figure 10-50. The following electrical checks are performed with the test lamp.

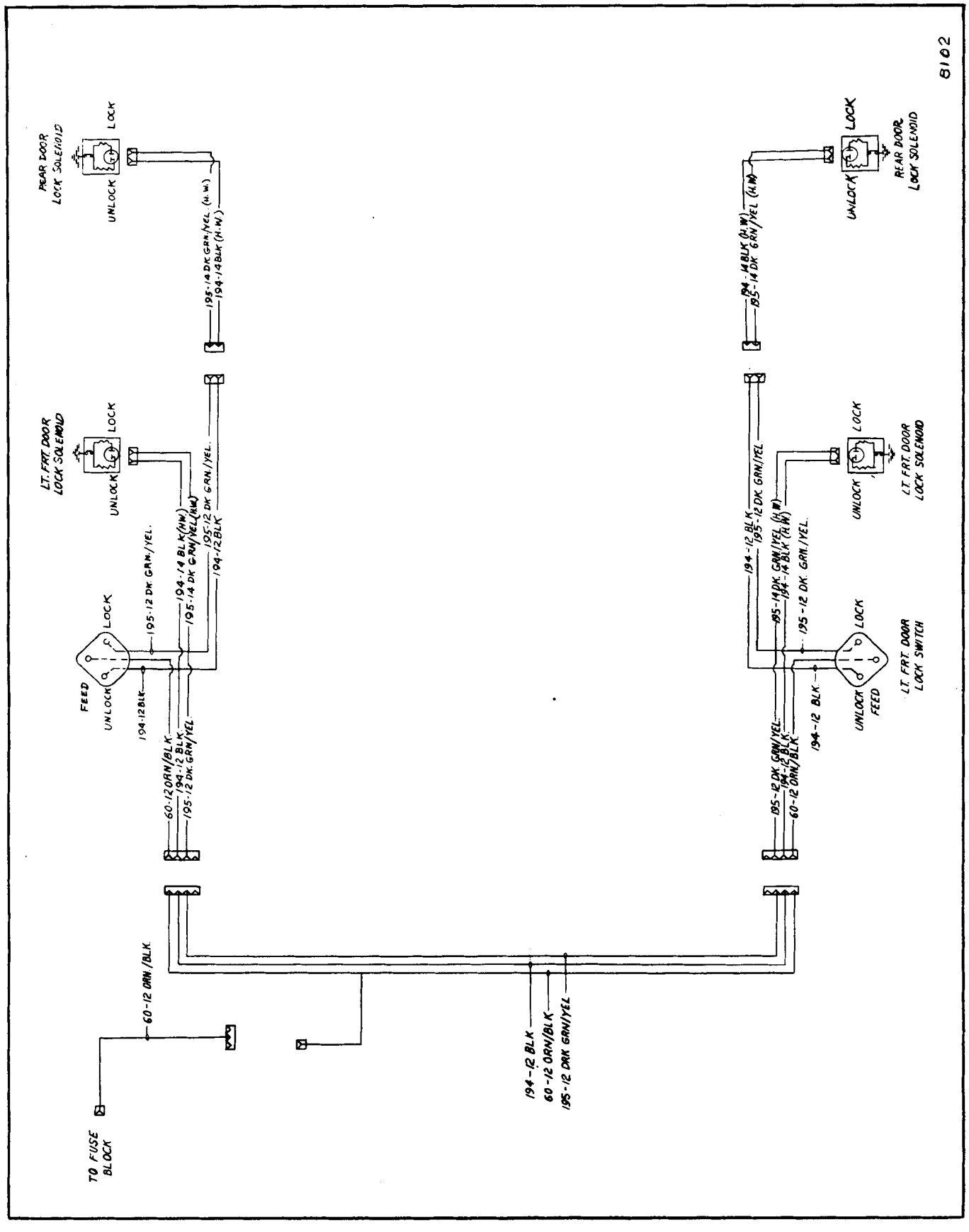


Fig. 10-48-"X" Style Electric Door Lock Circuit Diagram

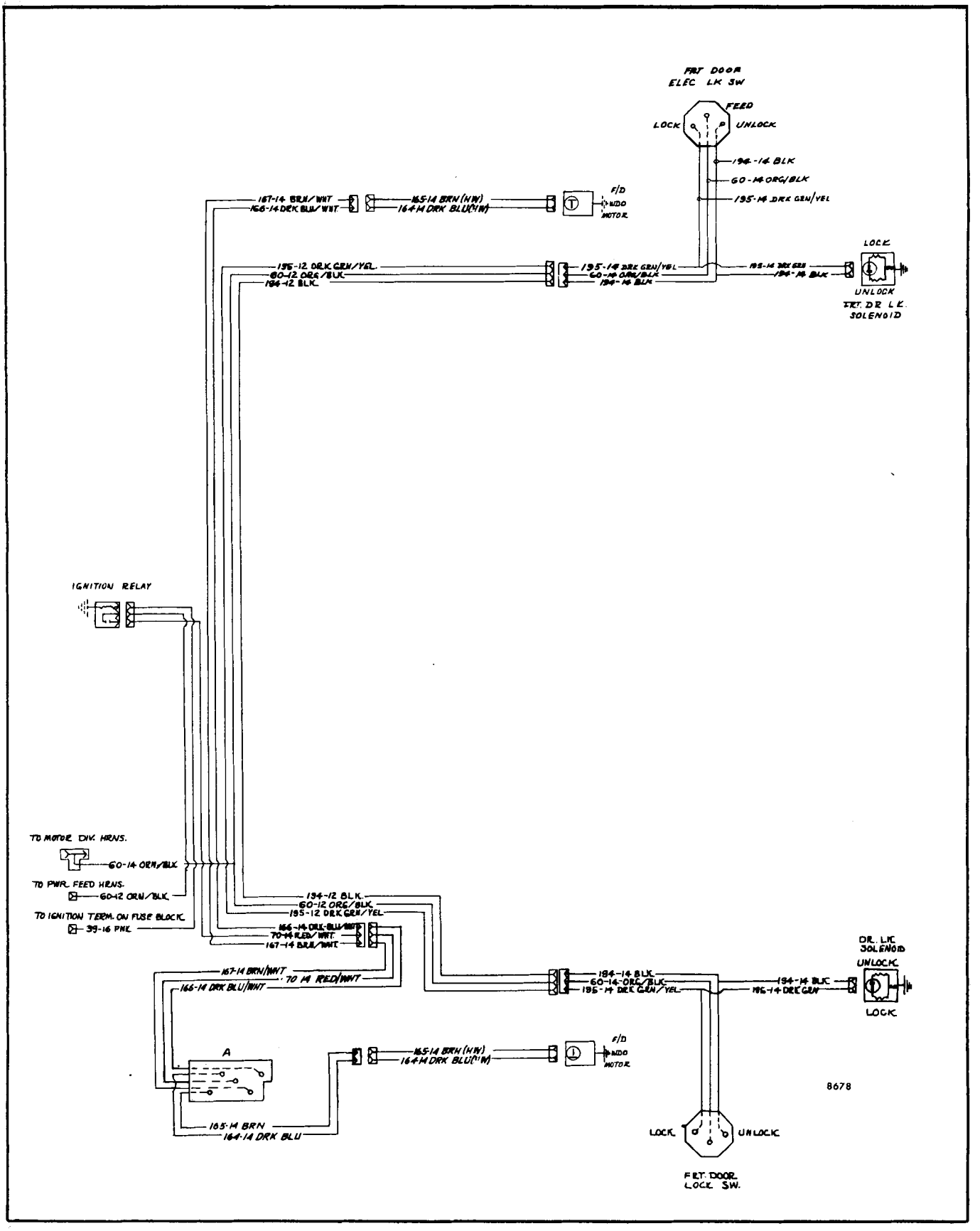


Fig. 10-49-Power Window and Electric Door Lock Circuit Diagram - Chevrolet "F" Style

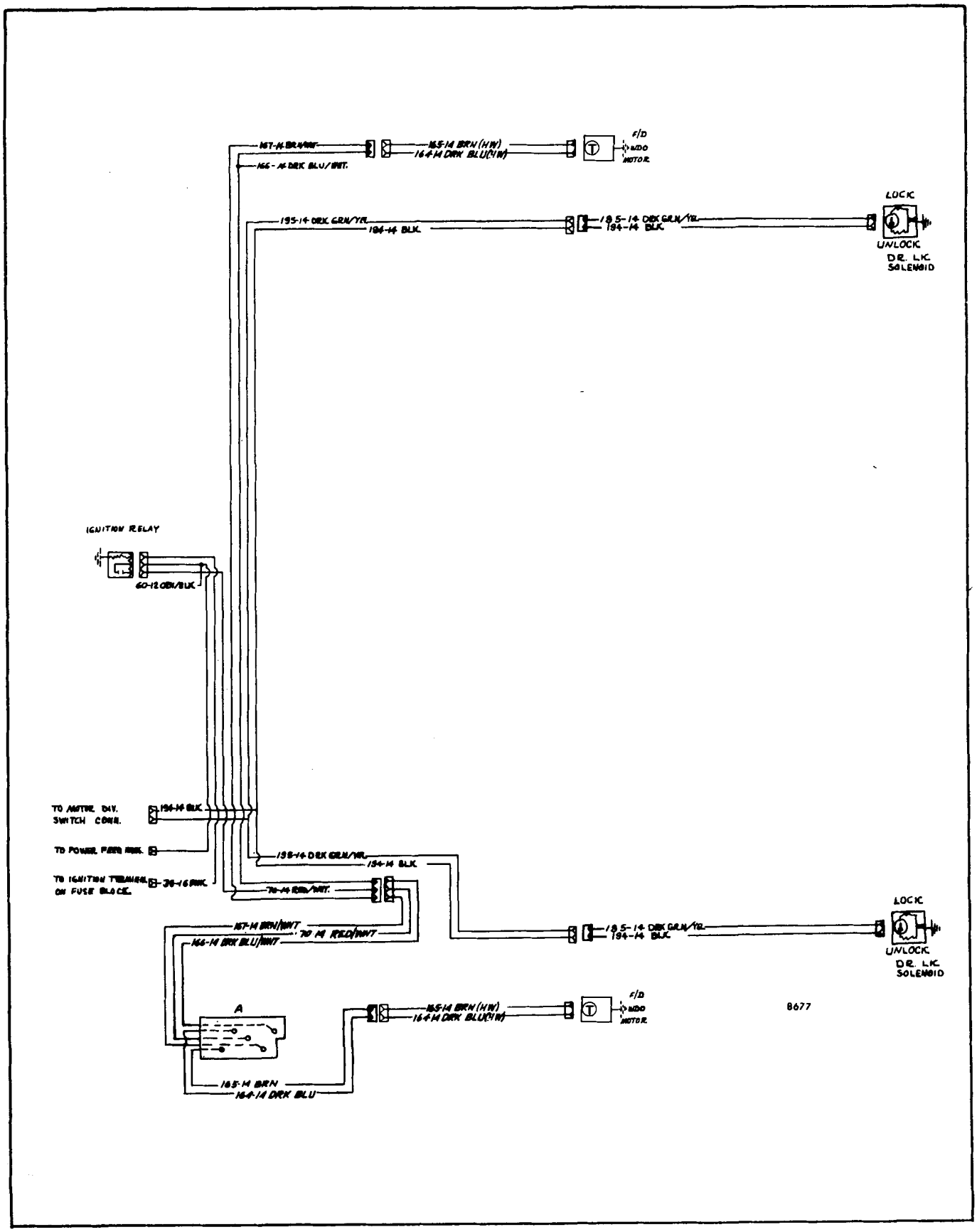


Fig. 10-50-Power Window and Electric Door Lock Circuit Diagram - Pontiac "F" Styles

Door Lock Control Switch

1. Insert test prod into feed wire insulation at switch base.

   If lamp does not light, locate and repair open in feed wire from circuit breaker.

2. Disengage door lock switch jumper harness connector (black and dark green wires) from door lock center harness connector.

3. Insert test lamp prod into each terminal of switch jumper harness connector (black wire-unlock and dark green wire-lock) and activate switch accordingly.

   If lamp does not light at both terminals, locate and repair open wire or replace switch.

Door Lock Center Harness

1. Remove left shroud side finishing panel and disengage door lock center harness from door lock solenoid harness.

2. Connect a jumper wire from the circuit breaker output at fuse block to door lock center harness feed connector.

3. Insert test lamp into corresponding terminal at left shroud side connector.

   a. If lamp does not light, locate and repair open or short circuit.

      NOTE: Circuit breaker will click open and closed if short circuit exists.

   b. If lamp lights, repeat steps 2 and 3 for other terminals.

4. If lamp lights at both terminals at left shroud, repeat steps 1, 2 and 3 at right shroud side panel.

Door Lock Solenoid and Solenoid Harness

1. Remove door trim pad and disengage solenoid harness from solenoid.

2. Connect a jumper wire from the circuit breaker output at fuse block to one terminal of solenoid. Repeat at other terminal.

   a. If solenoid operates in both functions, locate and repair open or short circuit in door lock solenoid harness.

   b. If solenoid does not operate in both functions and no mechanical binds exist, replace solenoid.

NOTE: Prior to solenoid replacement, insure that solenoid is properly grounded to body metal.

ELECTRIC DOOR LOCKS (PERMANENT MAGNET MOTOR LOCK ACTUATORS) - All Styles (Less "F, H, X")

The electric door locking system consists of a permanent magnet motor lock acutator assembly at each door, Figure 10-51, a relay and conventional control switches. All doors lock and unlock from the control switches or manually from each door inside locking knob. All components of the system are serviced as complete assemblies.

Permanent Magnet Motor Lock Actuator Assembly (Fig. 10-51)

The permanent magnet motor is a 12V reversible motor that is protected by an internal circuit breaker and is mounted to the door inner panel, door hinge pillar or tailgate inner panel depending on style (Figs. 10-52 and 10-53).

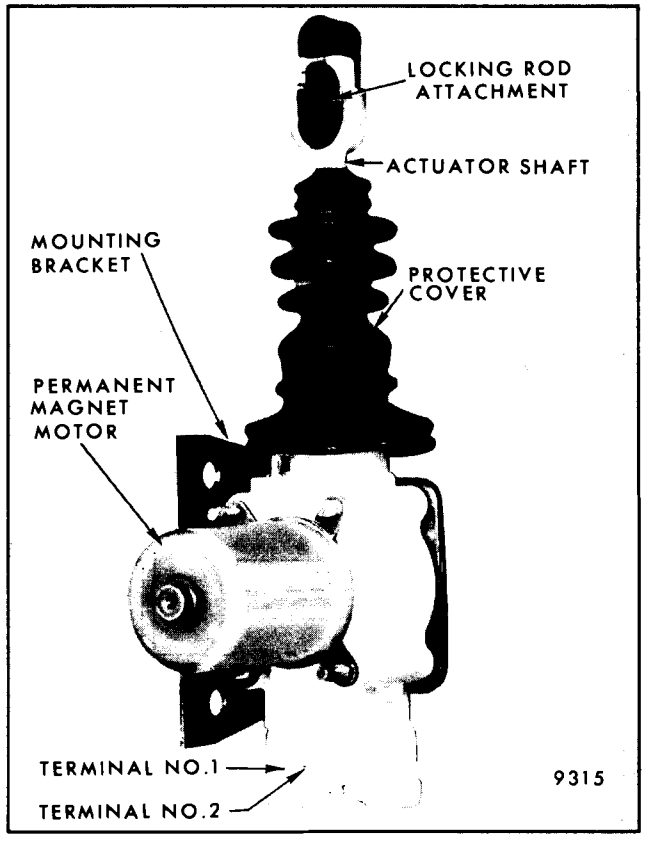


Fig. 10-51 - Permanent Magnet Motor Lock Actuator Assembly

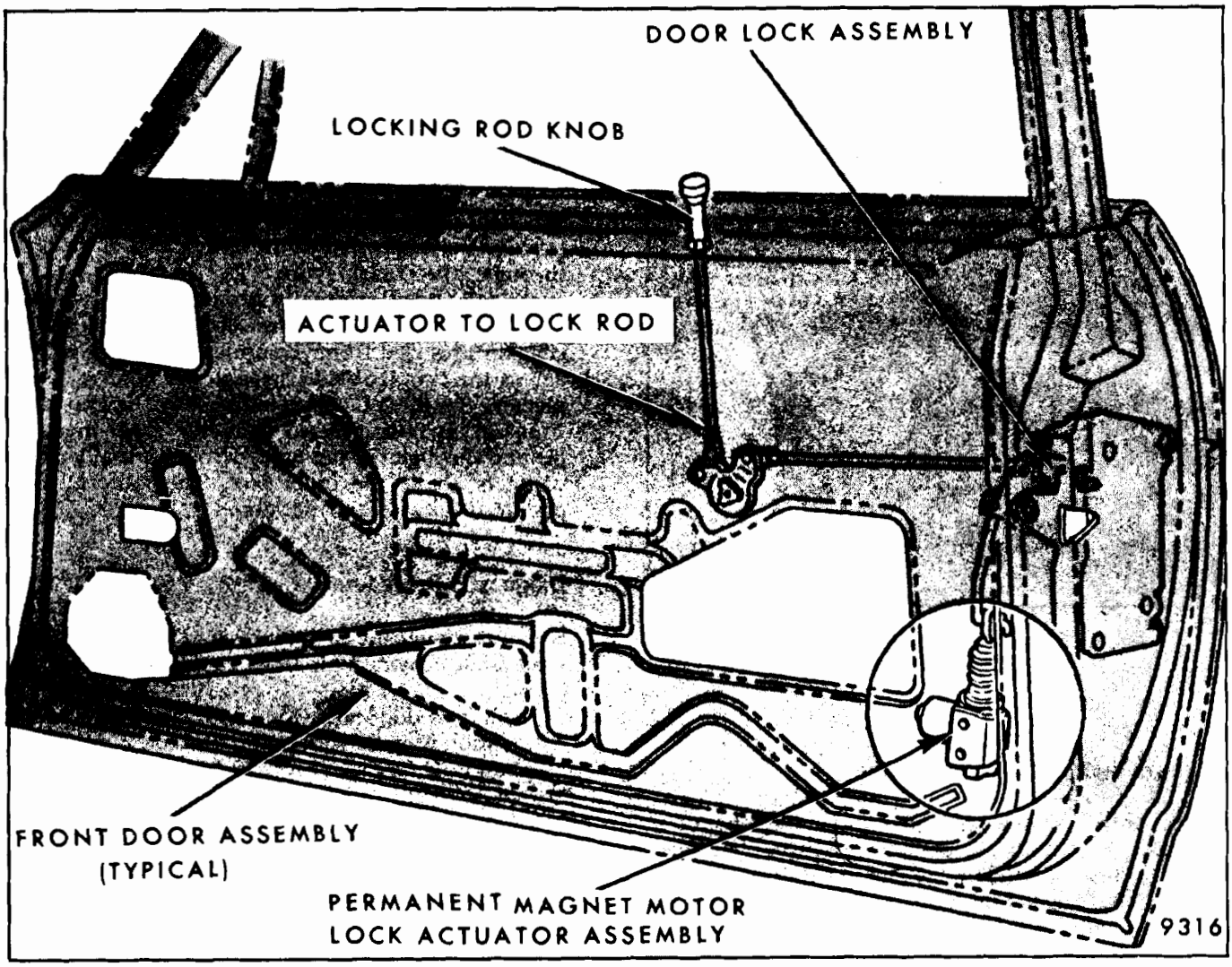


Fig. 10-52 - Permanent Magnet Motor Door Lock Actuator Location (Typical)

When voltage is applied to terminal no. 1 and ground to terminal no. 2 of the P.M. motor, the pinion and output gear rotates clockwise extending the shaft of the actuator which unlocks the doors. When the polarity is reversed, the pinion and output gear rotates counterclockwise retracting the shaft which locks the doors.

NOTE: Reversing the polarity is accomplished through the relay.

Relay Assembly (Fig. 10-54)

The relay assembly is a double throw, double pole, double coil relay that is externally grounded to body metal through the mounting bracket and attaching screw. It is installed beneath the shroud side trim panel on the right side of the vehicle.

NOTE: The relay is not used on Chevrolet, Oldsmobile and Pontiac station wagons with optional tailgate lock only.

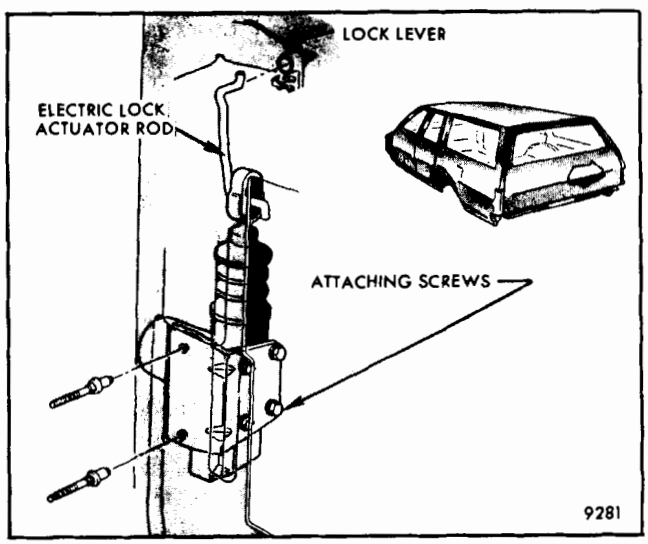


Fig. 10-53 - Permanent Magnet Motor Tailgate Lock Actuator Location (Typical)

Released by: www.78ta.com
Serial Number: 77BDY-001-10018

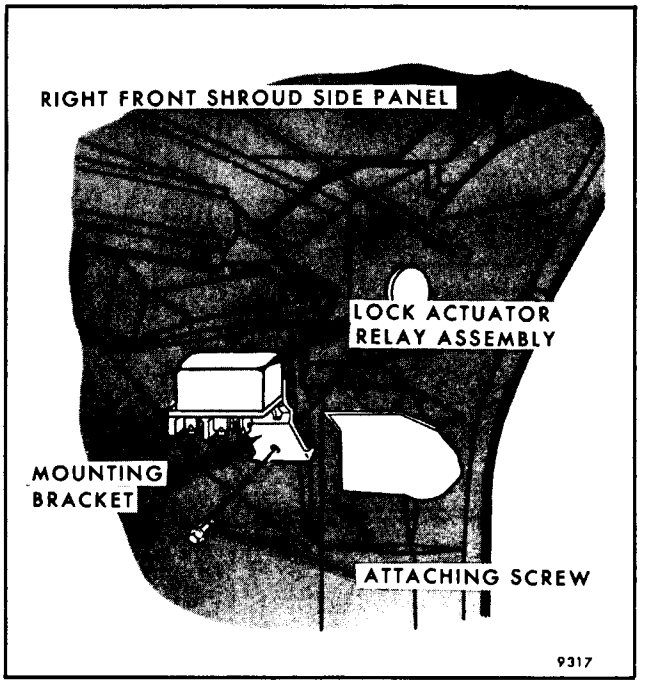


Fig. 10-54-Electric Door Lock Relay Assembly

Control Switches

The control switch mounted on either the door armrest or front door trim panel is a three pin rocker type. The instrument panel switch used on Chevrolet, Oldsmobile and Pontiac wagons equipped with the tailgate lock only is a double pole, double throw externally grounded switch.

NOTE: This system operates in the same manner as the system equipped with the relay except the polarity to the lock actuator motors is reversed by use of the instrument panel switch.

Locking Cycle

NOTE: Voltage is supplied to the control switches from the fuse block via the orange wire. This circuit is protected by a 20 amp (courtesy lamp) fuse. Voltage is supplied to the relay assembly via the orange/black stripe wire from the fuse block. This circuit is protected by a 30 amp circuit breaker.

When a control switch is pressed to the lock position, voltage is sent to one coil of the relay through the green/yellow wire. The coil is energized (relay is externally grounded) and contacts above the coil close. When the contact closes, voltage is provided from the orange/black stripe wire across the contact blade, through the coil pole piece to the P.M. motor windings via the tan wire. The circuit is completed from the P.M. motor to ground through the gray wire, across normally closed contacts above the opposite relay coil. The motor rotates counterclockwise and the doors lock.

Unlocking Cycle (Polarity Reversed)

When a control switch is pressed to the unlock position voltage is sent to the unlock coil of the relay through the black wire. The opposite coil is energized (relay externally grounded) and contacts above the coil close. When the contact closes, voltage is again provided from the orange/black stripe wire across the contact blade through the other coil pole piece to the P.M. motor windings via the gray wire. This circuit is completed from the P.M. motor to ground through the tan wire, across normally closed contacts above the other coil. The motor rotates counterclockwise and the doors unlock.

Diagnostic Procedures

Separate diagnostic procedures and circuit diagrams have been provided for units equipped as follows:

1. All two-door and four-door styles, including station wagons with both the electric door locks and tailgate lock (Figs. 10-55, 10-56, 10-57, 10-58, 10-59).

2. Buick station wagon - equipped with tailgate lock only, controlled from switch in armrest (Fig. 10-60, 10-61, 10-62, 10–63, 10-64).

3. Chevrolet, Oldsmobile, Pontiac station wagons equipped with tailgate lock only, controlled from instrument panel switch (Figs. 10-60 and 10-65).

Prior to using the diagnostic procedures, the manner in which the locking system is malfunctioning should be observed and then the condition matched to the appropriate diagnosis chart.

NOTE: Malfunction could be due to mechanical binds in the affected lock assembly.

The door lock feed circuit (orange/black wire) is protected by a 30 amp circuit breaker. The circuit breaker also protects the circuits for the power seats, seat back locks, seat back recliner and rear compartment closing units on Cadillac styles.

The feed circuit to the lock switches (orange wire) is protected by a 20 amp fuse. This fuse also protects the courtesy lamp circuit. If the circuit breaker is open or the 20 amp courtesy lamp fuse is blown, it could be due to a short in one of the other circuits rather than the door locking system.

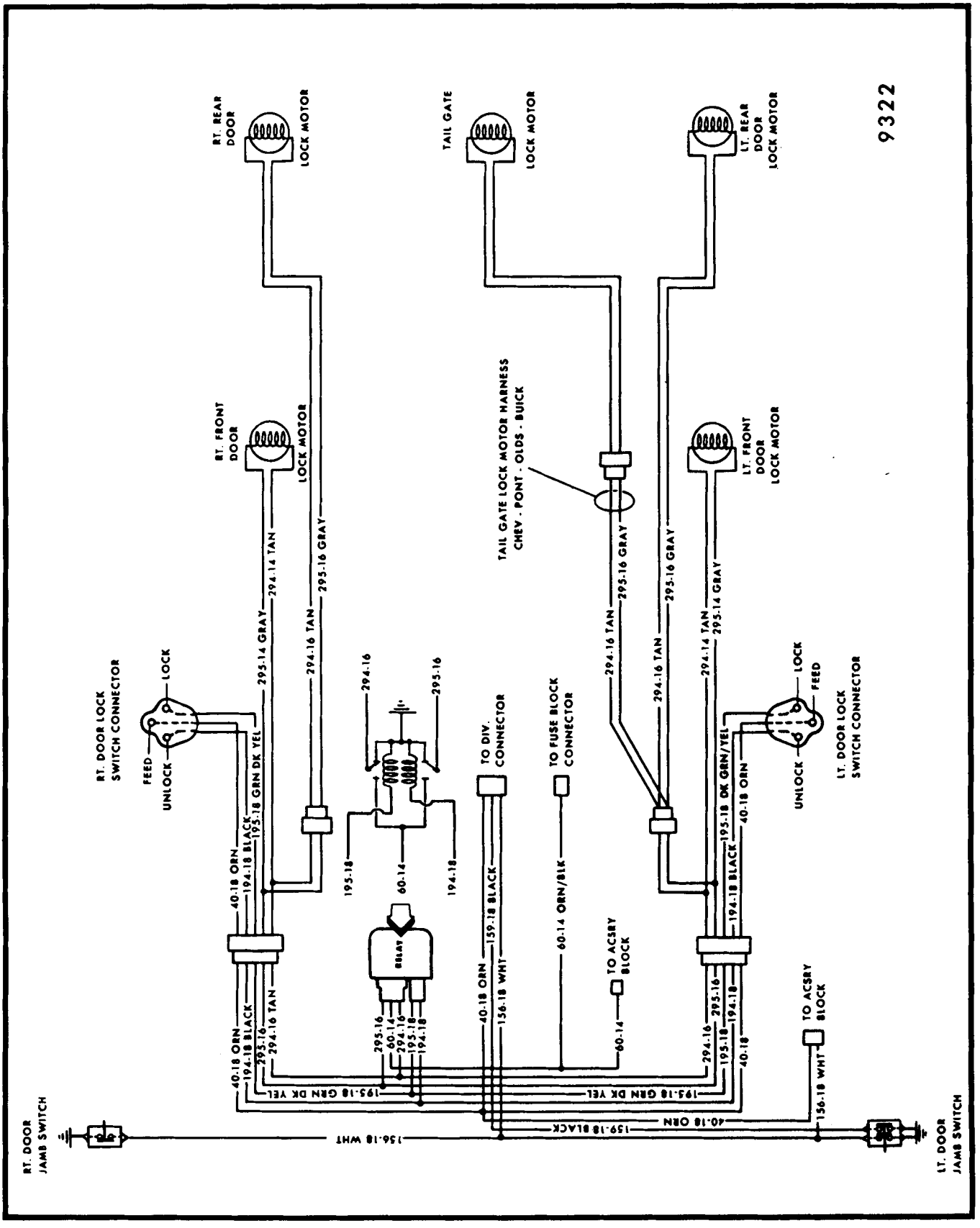


Fig. 10-55 - Electric Door Lock Circuit Diagram - All Styles Including Station Wagons with Both Electric Door and Tailgate Locks

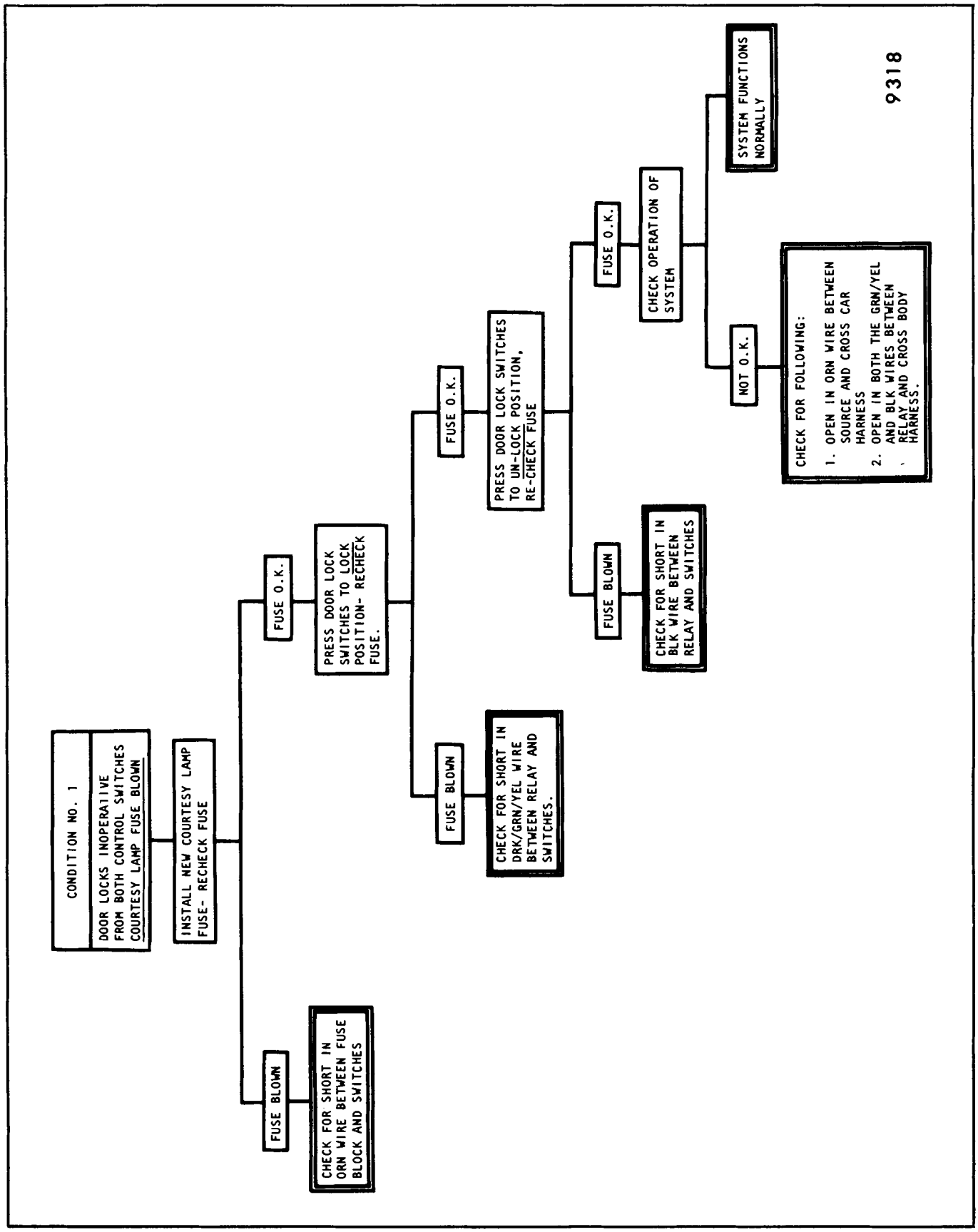


Fig. 10-56 - Electric Door Lock Diagnosis Chart - Condition No. 1

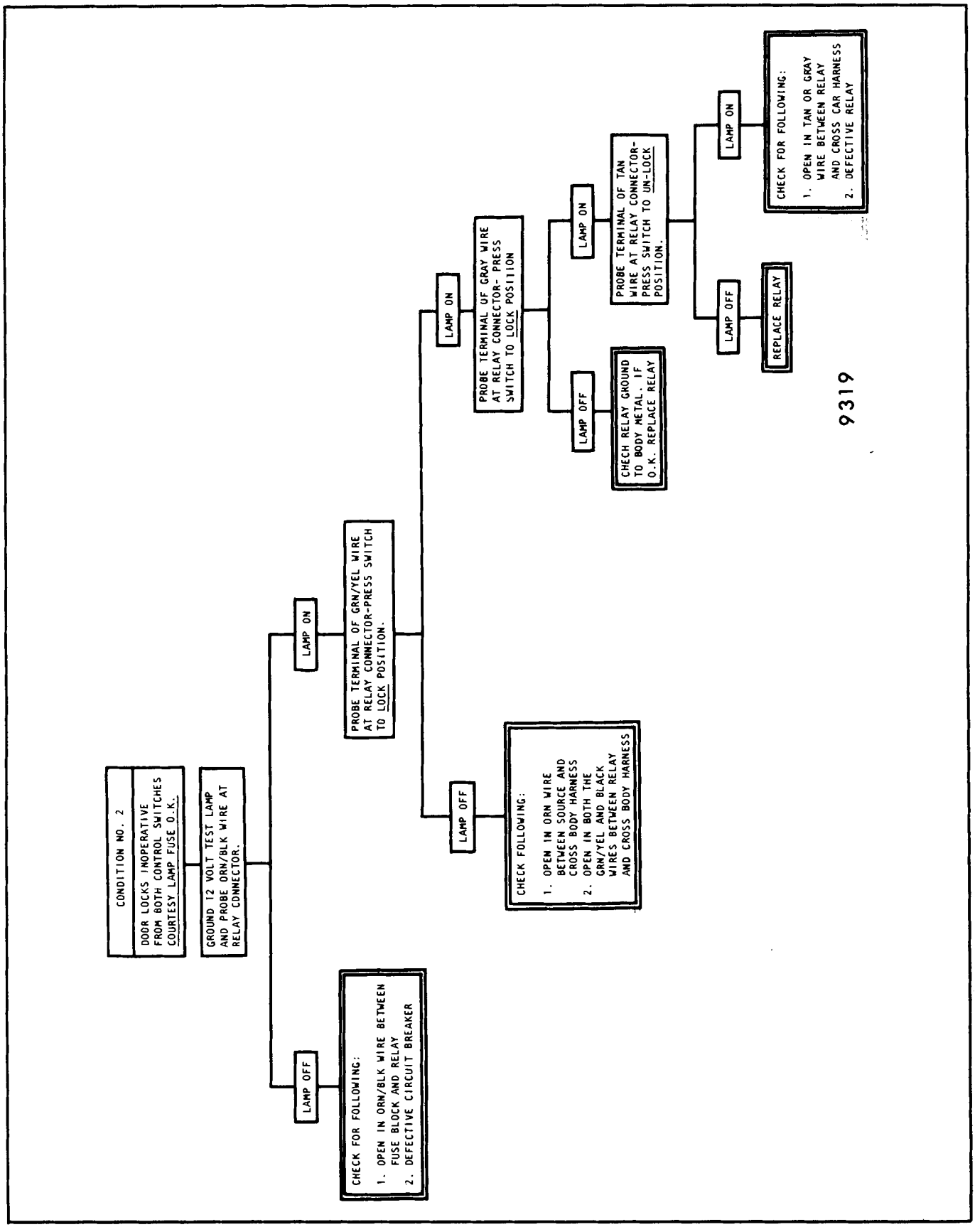


Fig. 10-57 - Electric Door Lock Diagnosis Chart - Condition No. 2

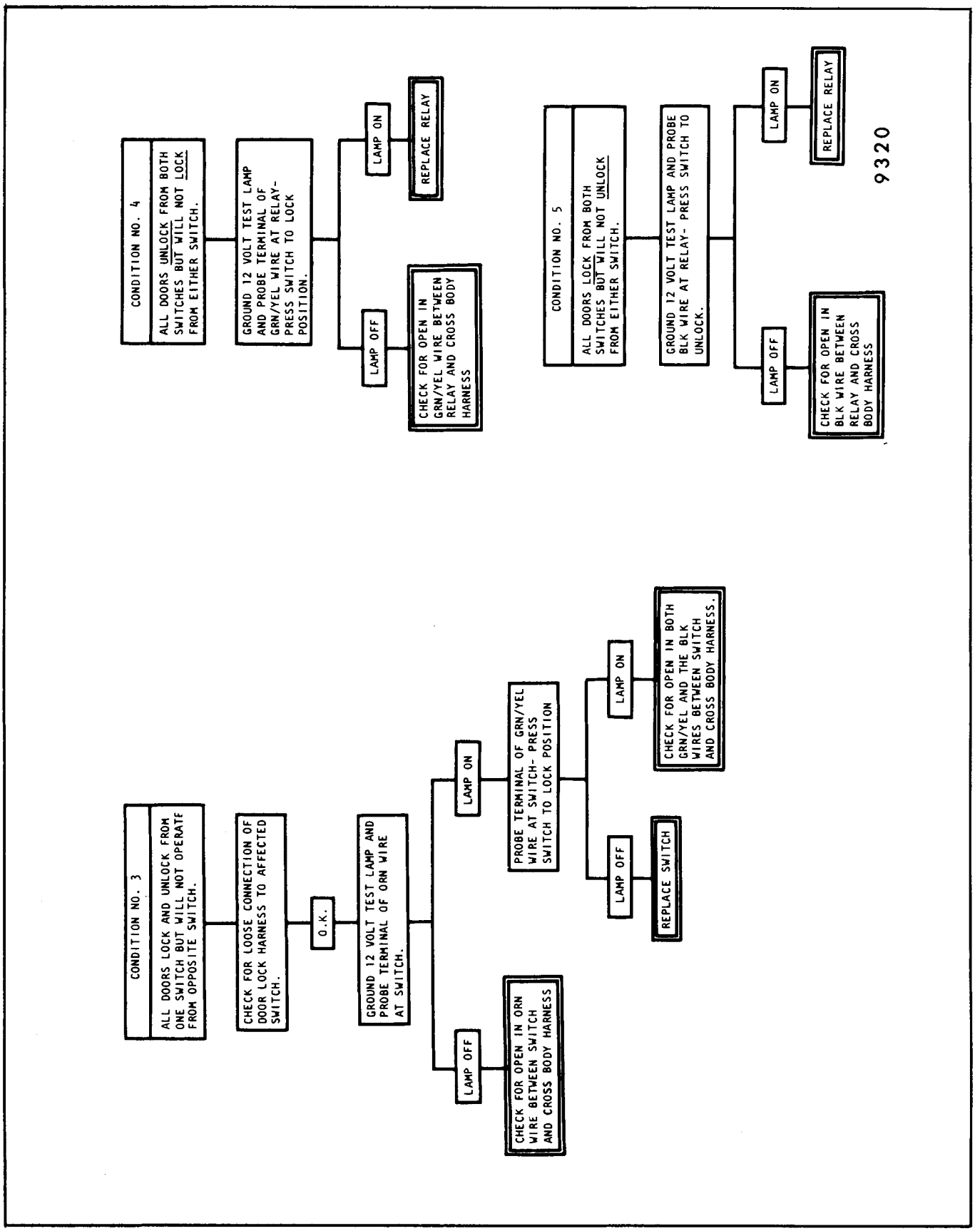


Fig. 10-58 - Electric Door Lock Diagnosis Chart - Condition No. 3, 4, 5

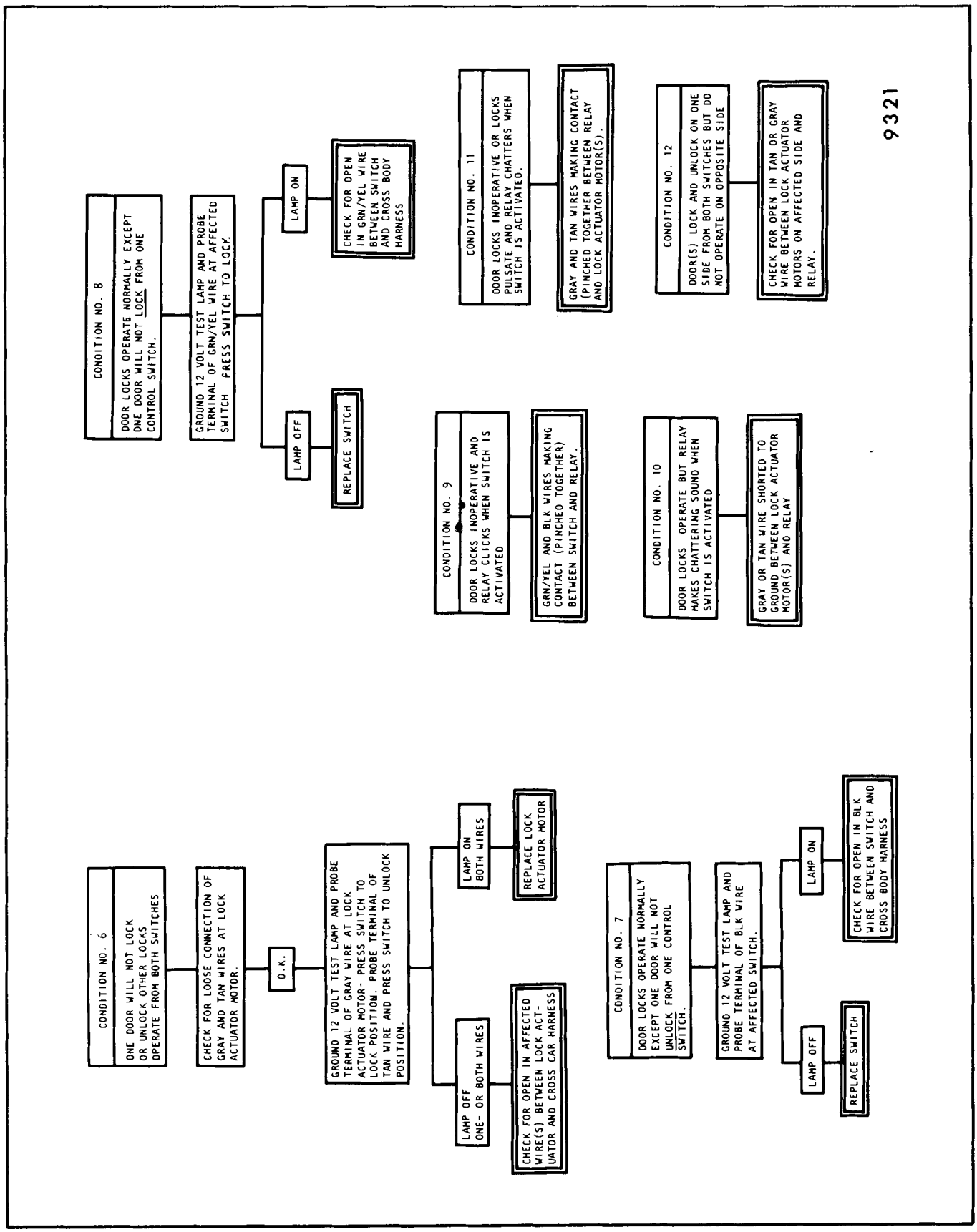


Fig. 10-59 - Electric Door Lock Diagnosis Chart - Condition No. 6, 7, 8, 9, 10, 11, 12

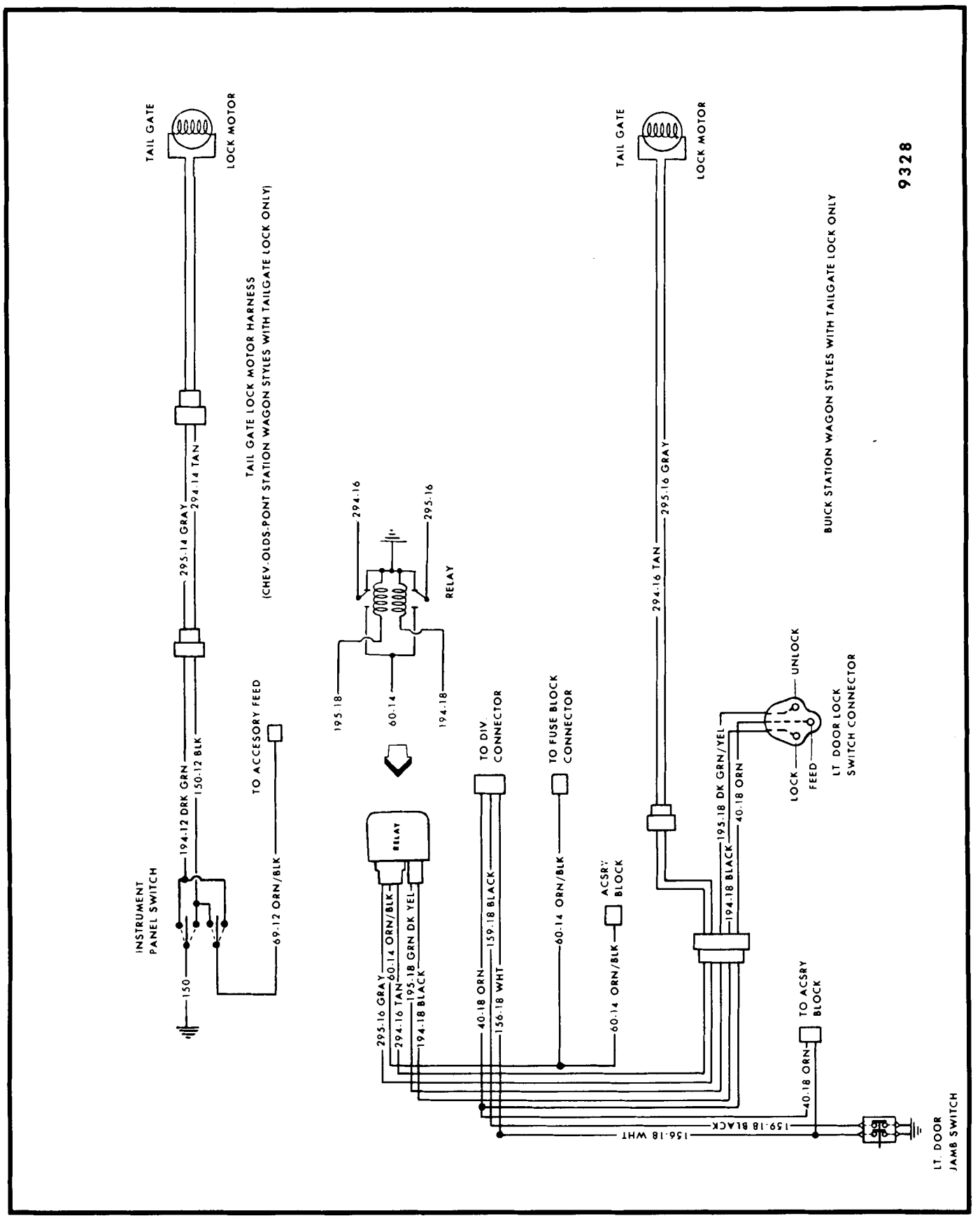


Fig. 10-60 - Electric Tailgate Lock Circuit Diagram - All Station Wagon Styles Equipped with Tailgate Lock Only

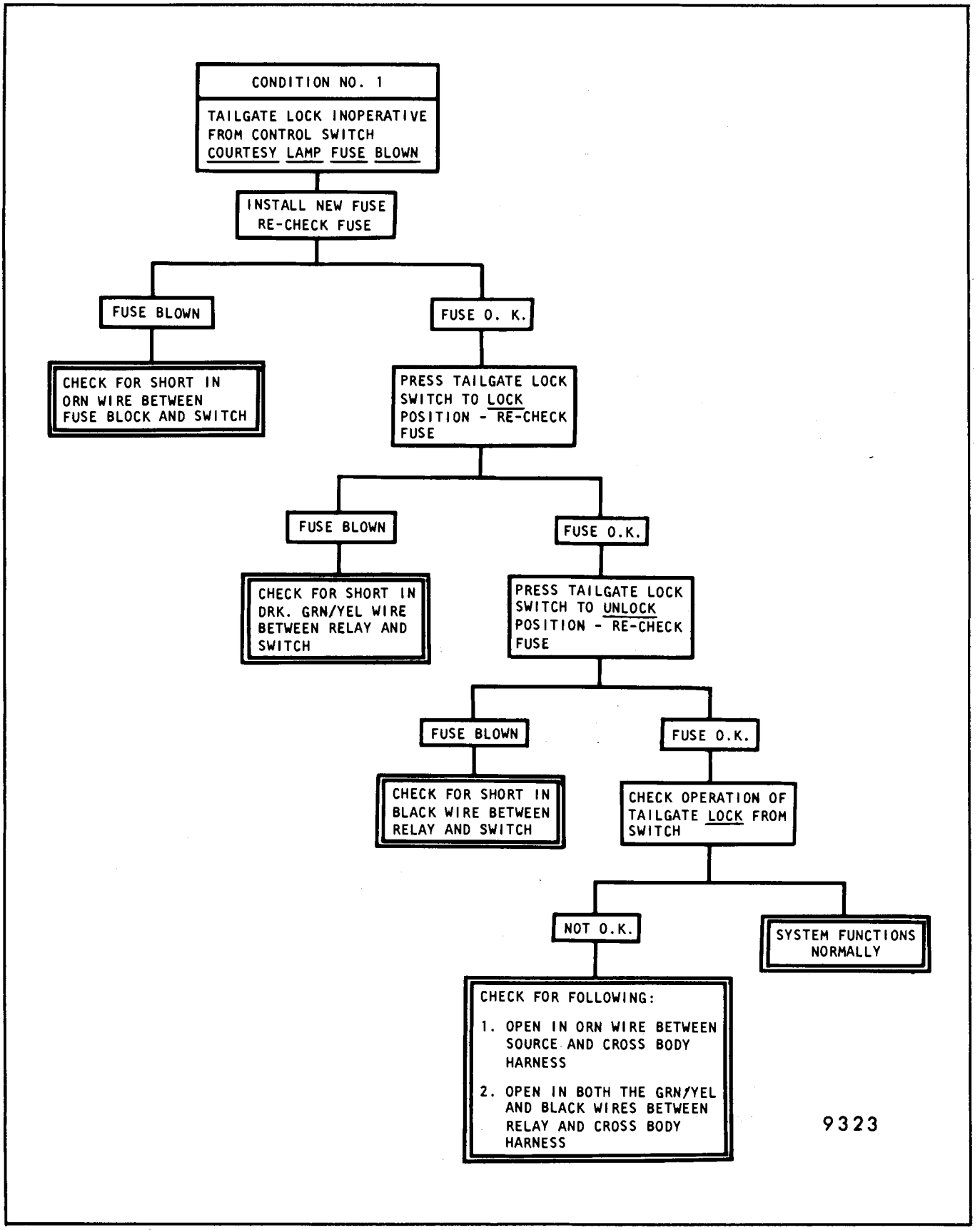


Fig. 10-61 - Buick Station Wagon Styles Equipped with Electric Tailgate Lock Only Diagnosis Chart - Condition No. 1

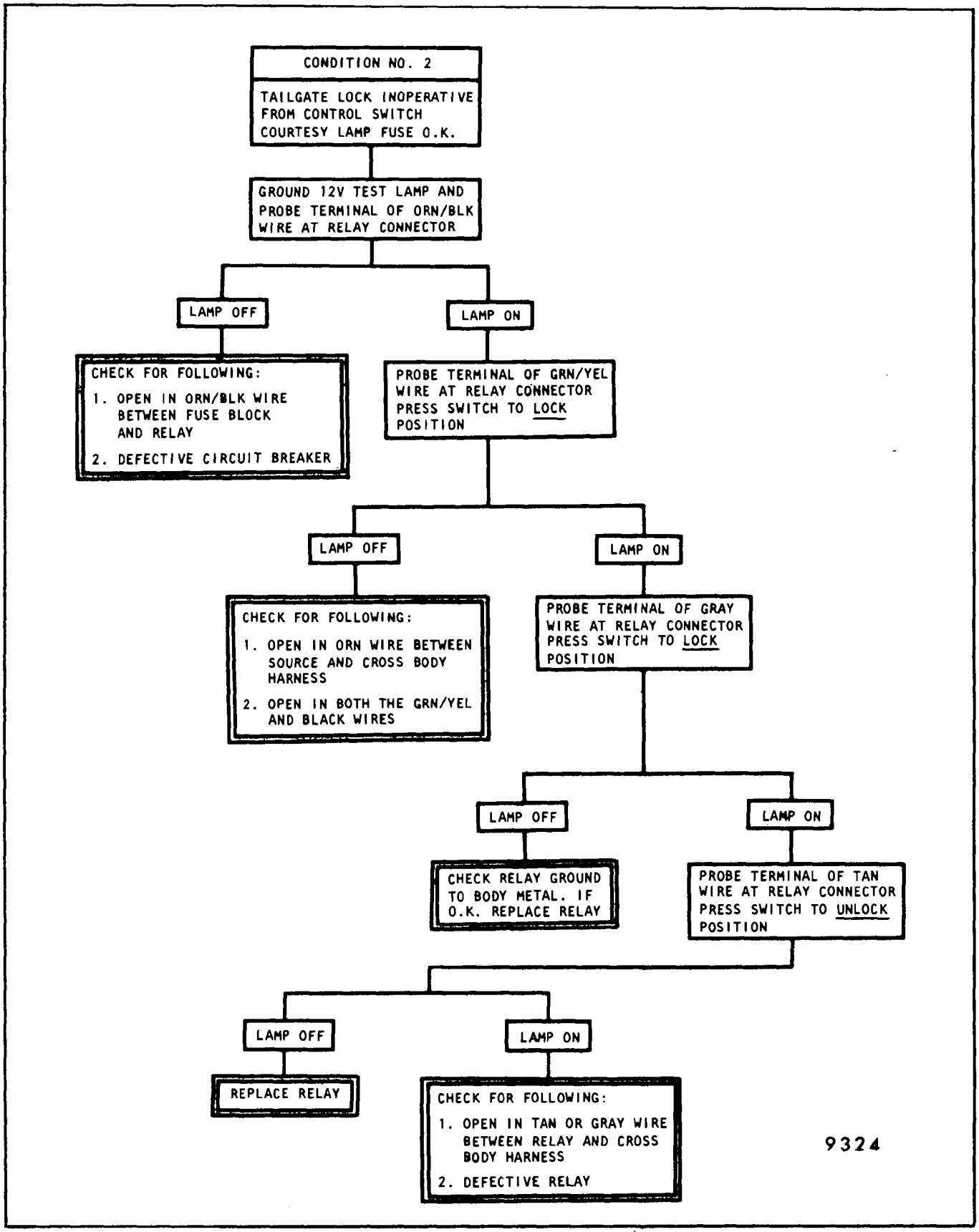


Fig. 10-62 - Buick Station Wagon Styles Equipped with Electric Tailgate Lock Only Diagnosis Chart - Condition No. 2

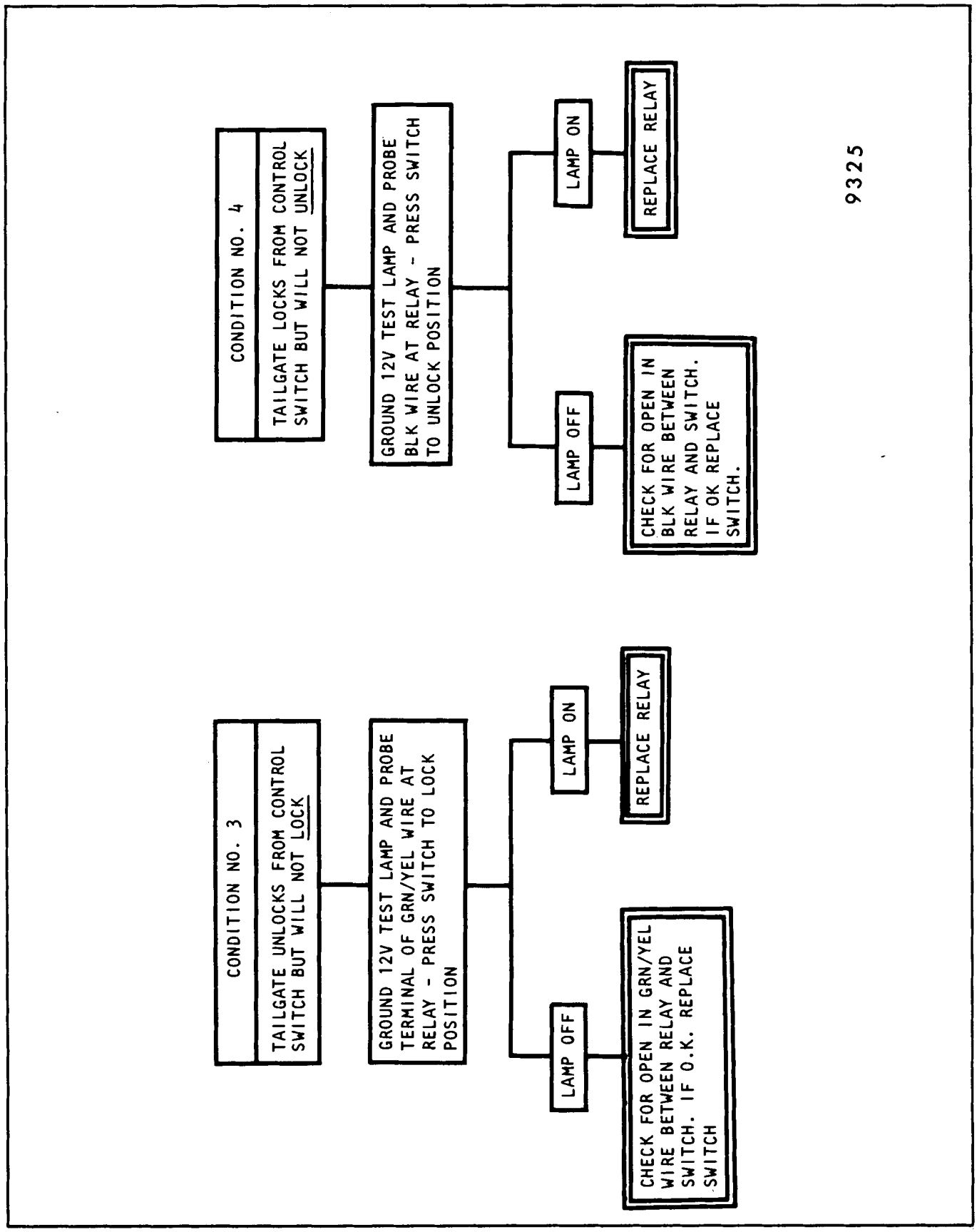


Fig. 10-63 - Buick Station Wagon Styles Equipped with Electric Tailgate Lock Only Diagnosis Chart - Condition No. 3, 4

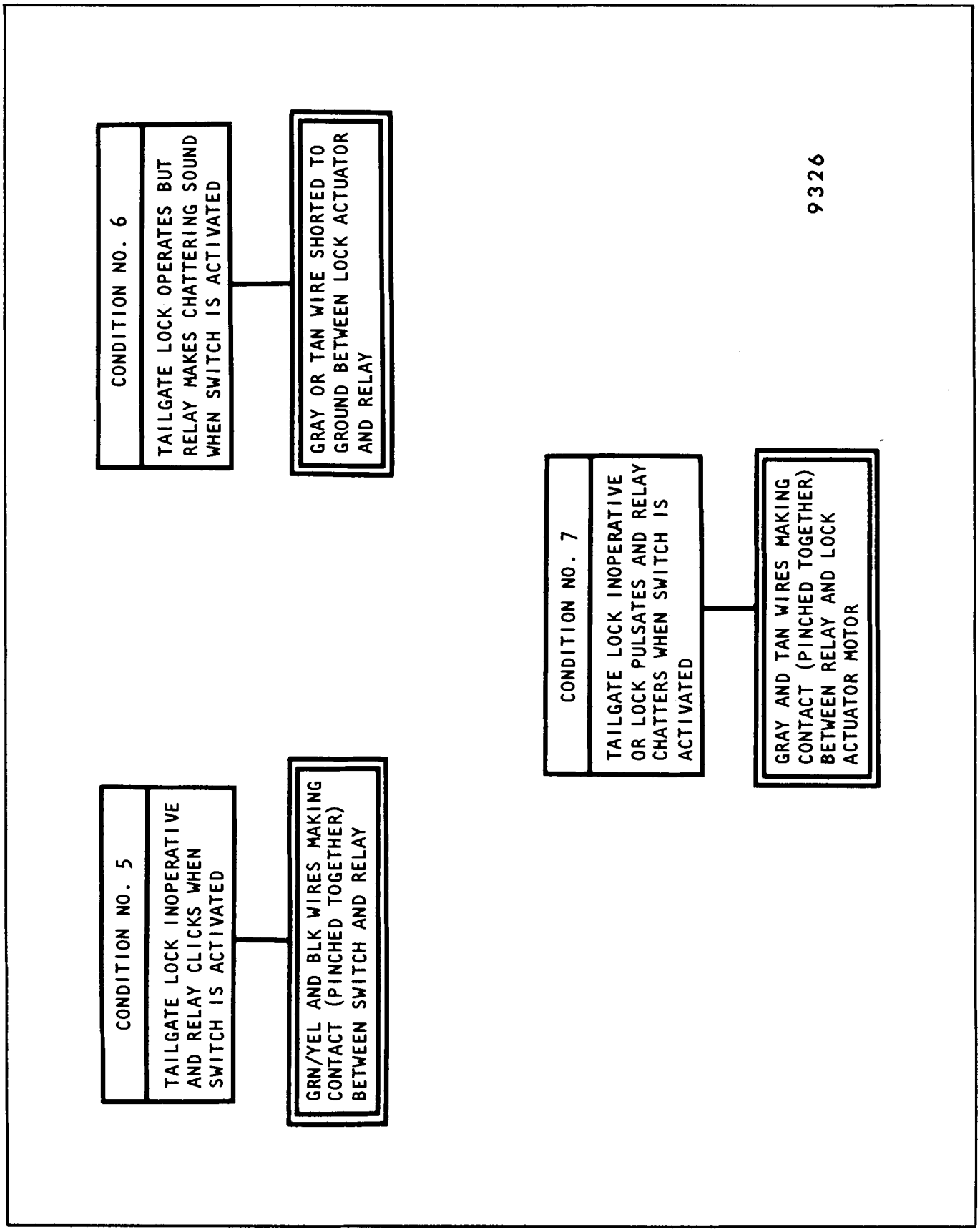


Fig. 10-64 - Buick Station Wagon Styles Equipped with Electric Tailgate Lock Only Diagnosis Chart - Condition No. 5, 6, 7

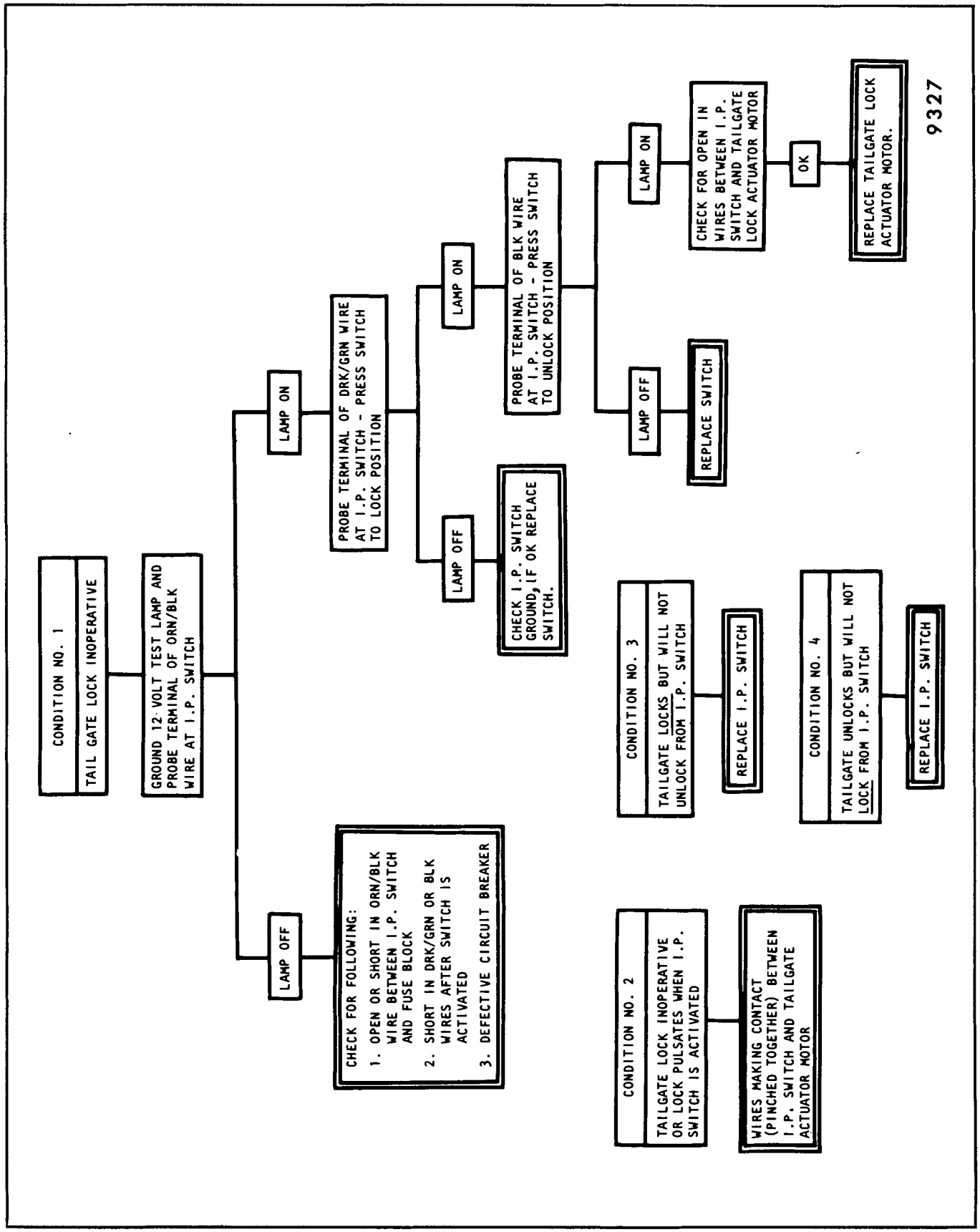


Fig. 10-65 - Chevrolet, Oldsmobile, Pontiac Station Wagon Styles Equipped with Electric Tailgate Lock Only Diagnosis Chart - Condition No. 1, 2, 3, 4

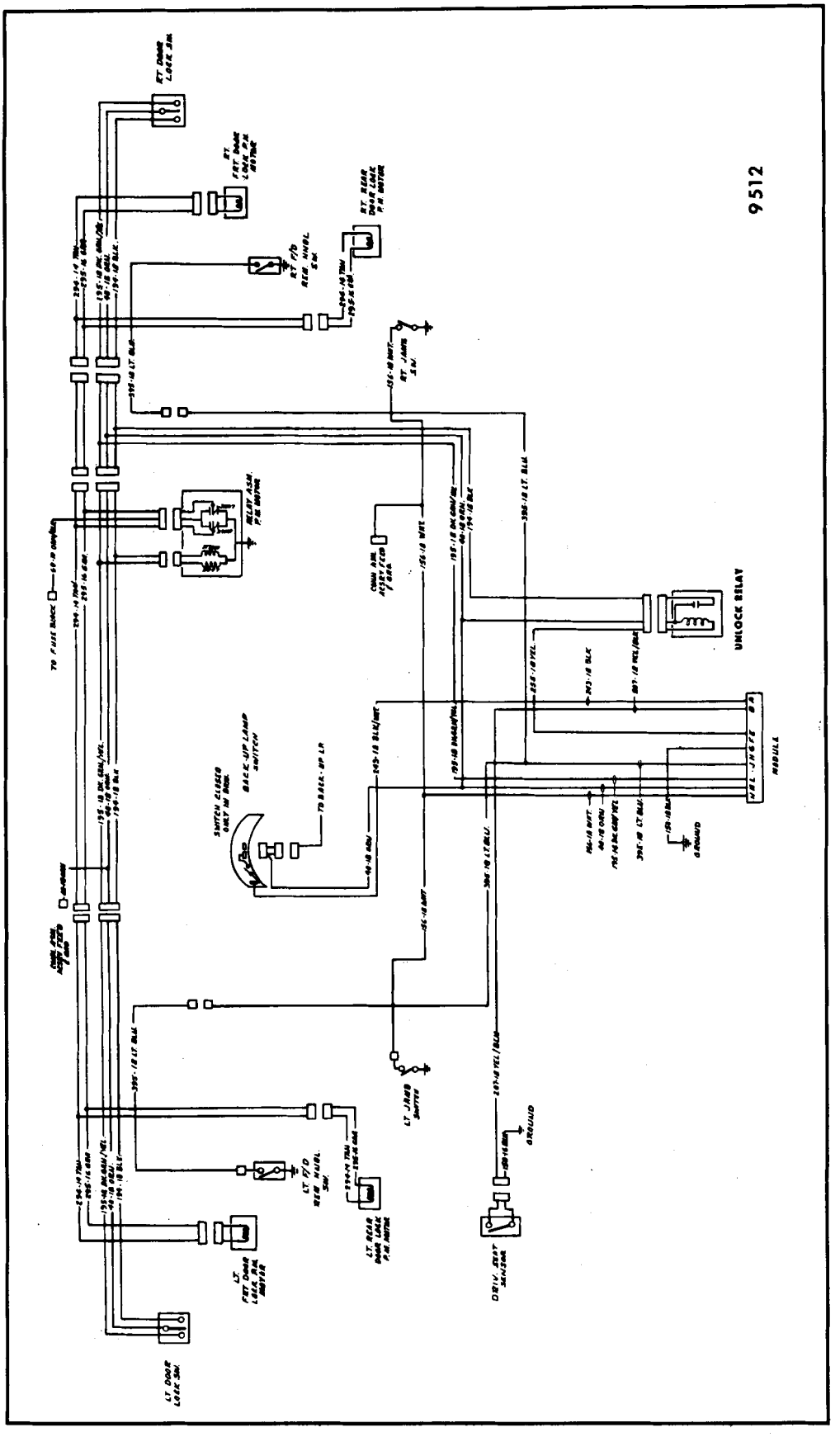


Fig. 10-66 - Automatic Door Lock Circuit Diagram (Cadillac Styles)

AUTOMATIC DOOR LOCKING SYSTEM (Cadillac Styles)

With all doors closed, courtesy lamps off and the ignition switch on, the automatic door locking system locks all doors when the driver is seated and the selector lever is moved to drive.

With the selector lever in park, neutral or reverse, all doors will automatically unlock when either inside door handle is pulled. Also, if the selector lever is in drive and a passenger unlocks any door manually or all doors from the control switch in the front door armrest, then exits the vehicle, all doors will automatically relock when the door is closed.

The automatic system consists of the following components which are interconnected with the regular electric door lock harnesses, permanent magnet motor lock actuators and switches (Fig. 10-66).

A. Electronic logic module

B. Unlock relay

C. Permanent magnet motor lock actuator relay

D. Back-up lamp switch

E. Right and left front door lock remote control handle switches

F. Seat sensor switch (driver's side only)

NOTE: On styles equipped with automatic door locks, the electric door locks operate in the conventional manner from the door armrest control switches.

Electronic Logic Module

The electronic module is attached to the right front shroud side panel (Fig. 10-67). The logic module is serviced as two separate assemblies: the module housing with harness and the printed circuit board.

NOTE: To gain access to the module assembly and permanent magnet motor lock actuator relay, remove side shroud trim panel and deadener. If it becomes necessary to detach the permanent magnet motor lock actuator relay, be sure to re-establish external ground for the relay before attempting any diagnosis.

> **CAUTION:** *Remove body fuse before disengaging printed circuit board from module housing to avoid shorting the printed circuits together.*

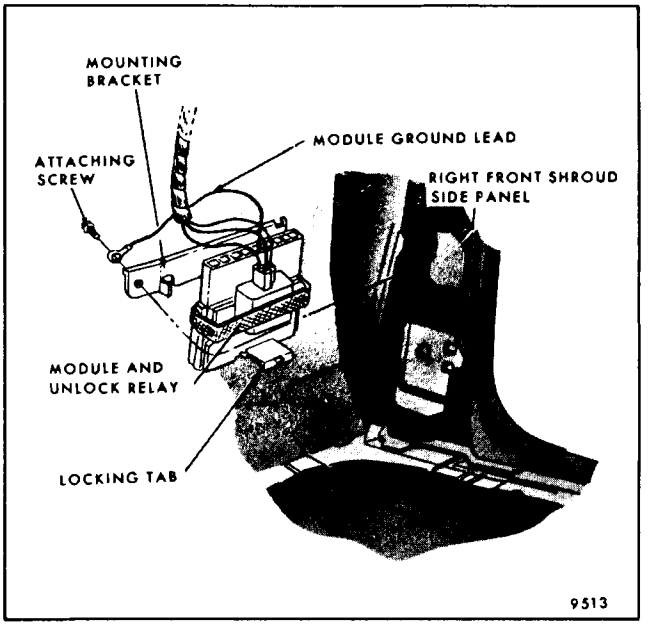


Fig. 10-67 - Automatic Door Lock Module and Unlock Relay Installation (Cadillac Styles)

To remove printed circuit board from module housing disengage locking tab on housing; then insert small screwdriver or awl into hole at edge of printed circuit board, and pry outward.

To install printed circuit board, insert into housing and carefully press inward until terminals are fully engaged into connector.

Unlock Relay

Unlock relay is taped to module housing as shown in Figure 10- 67. Also, the relay is serviced as an assembly only.

Permanent Magnet Motor Lock Actuator Relay

The permanent magnet motor lock actuator relay is attached to the right shroud inner panel as shown in Figure 10-68 and is serviced as an assembly.

Back-up Lamp Switch

The back-up lamp switch is attached to lower end of steering column. For service information, refer to chassis service manual.

Front Door Lock Remote Control Handle Switch

The front door lock remote control handle switch is installed at the base of the front door inside handle (Fig. 10-69).

NOTE: Remove upper and lower door trim panels to gain access to switches.

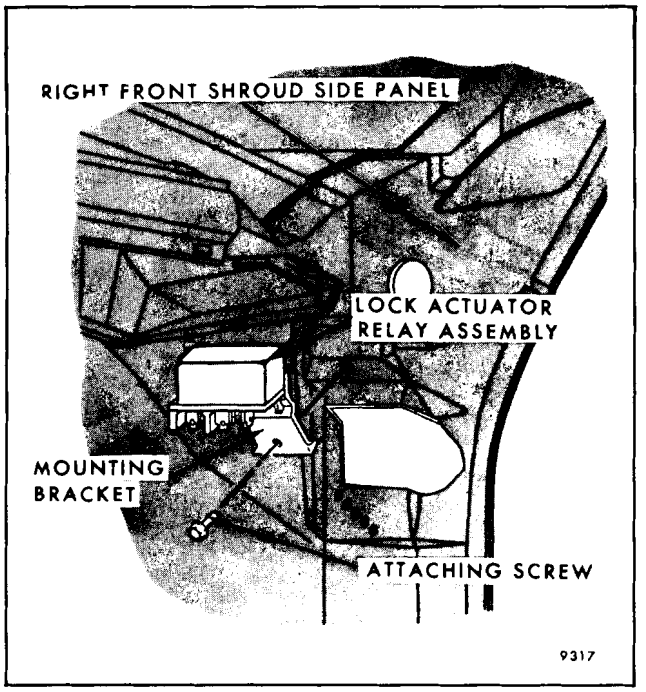


Fig. 10-68 - Permanent Magnet Motor Lock Actuator Relay

Seat Sensor Switch (Driver's side only)

A waffle type seat sensor switch is used with the automatic door locking system. It is installed beneath the front seat trim cover as shown in Figure 10-70.

Diagnostic Procedures

Diagnosis charts have been provided as an aid for eliminating problems in the Automatic Door Lock System. It should be noted that multiple problems

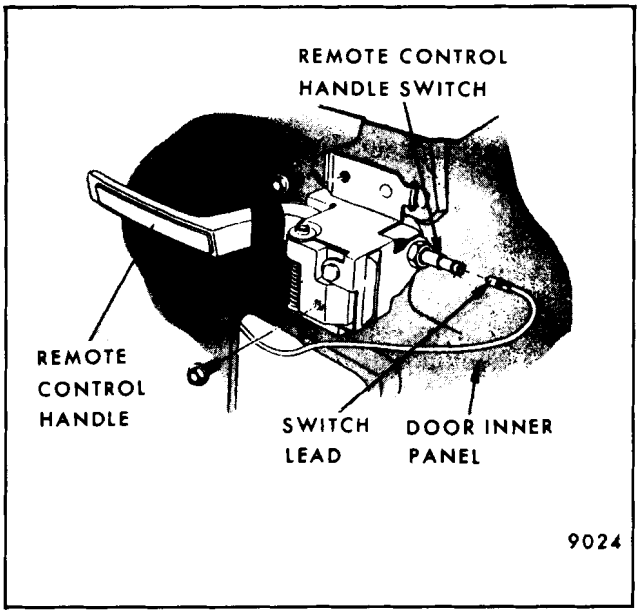


Fig. 10-69 - Automatic Door Lock Remote Control Switches (Cadillac Styles)

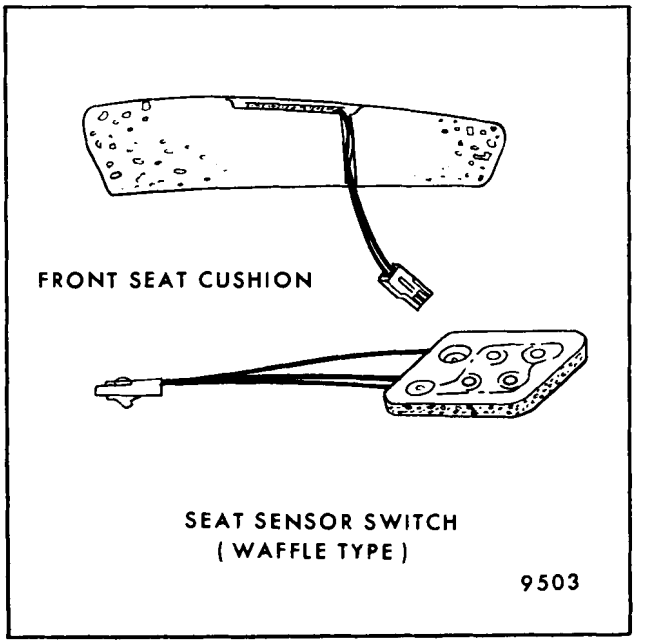


Fig. 10-70 - Automatic Door Lock Seat Sensor Switch (Cadillac Styles)

in the system may lead to a combination of conditions, each of which must be checked separately. Also, functional relay tests (Figs. 10-80 and 10-81) have been provided to determine if the relays are functioning normally.

The diagnostic procedures and relay functional tests are based on certain failure modes which result in a specific malfunction. Therefore, the manner in which the system is operating should be observed before referring to the conditions listed in the diagnosis chart index (Figure 10-73) and selecting the appropriate diagnosis procedure.

Two types of test lamps are used when diagnosing problems with the automatic door lock system (Fig. 10-71).

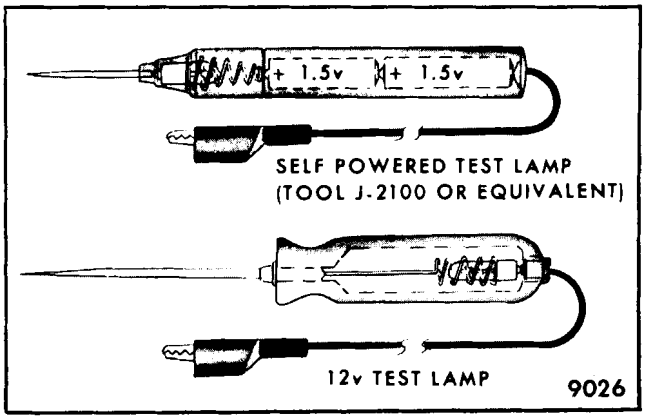


Fig. 10-71 - Test Lamps

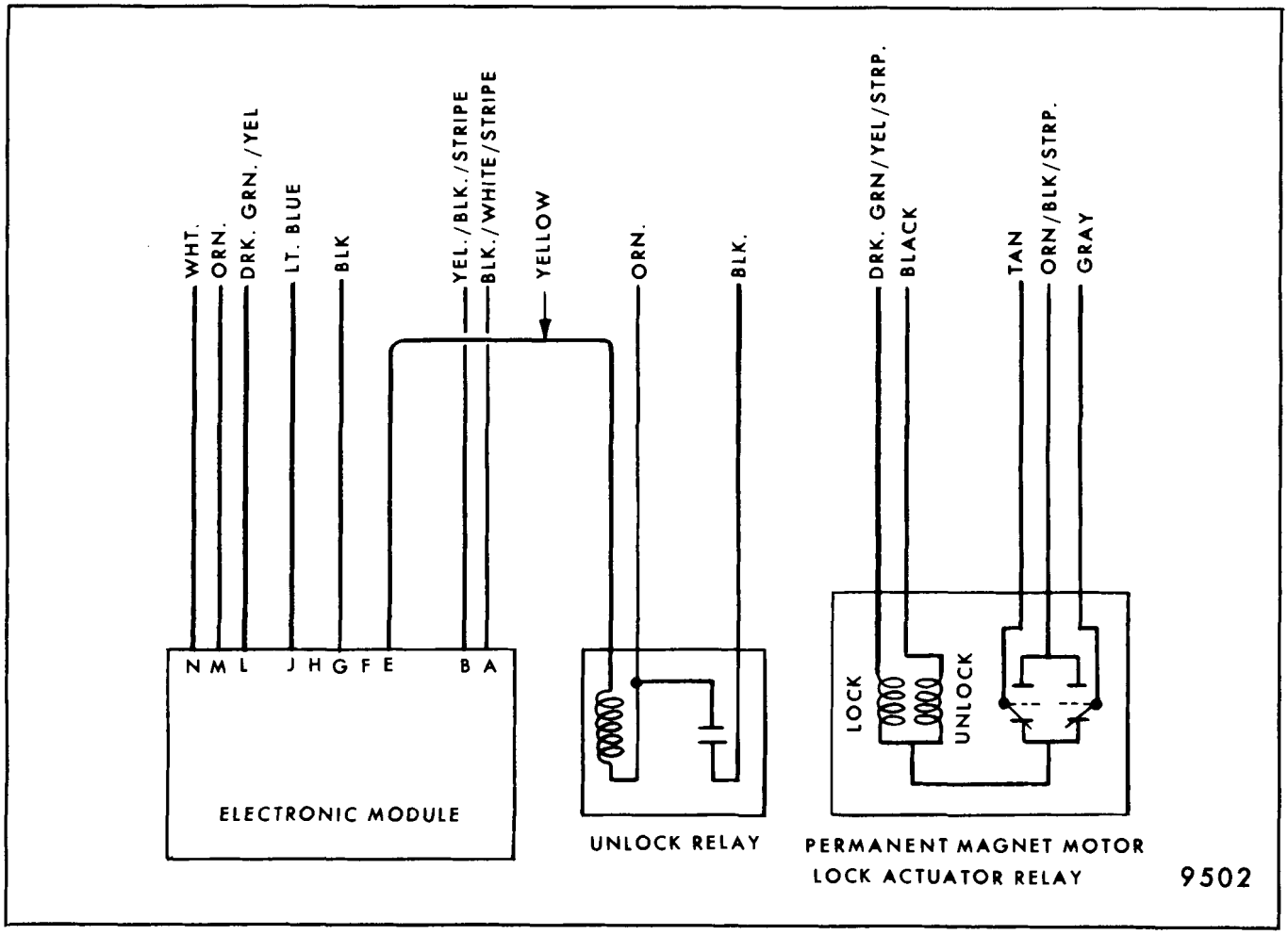


Fig. 10-72 - Module, P.M. Relay and Unlock Relay Assembly Wire Color Identification and Probe Locations

1. Self-powered 1.5 volt battery test lamp (tool J-2100 or equivalent).
2. Twelve volt continuity test lamp.

NOTE: It is important that the proper test lamp be utilized as indicated in the diagnosis charts when making continuity and operational checks of the module and relay assemblies. Figure 10- 72 has been provided as an aid for determing proper probe locations when performing these tests.

CONDITION	REFERENCE
1. Automatic door locks inoperative but doors lock and unlock from control switches in door armrests.	Fig. 10-74
2. Doors do not lock automatically when selector lever is moved to drive, but lock and unlock from switches in armrests. Also, all doors unlock automatically by actuating either remote control handle.	Fig. 10-75
3. Doors lock automatically, but doors do not unlock when actuating left or right door lock remote control handle.	Fig. 10-76
4. Doors lock and unlock automatically except doors do not unlock when one remote control handle is actuated.	Fig. 10-77
5. Doors lock automatically when driver's seat is not occupied and selector lever is moved to drive.	Fig. 10-78
6. Doors lock automatically with door(s) open when selector lever is moved to drive.	Fig. 10-79
7. Locks do not operate automatically or from switches in door armrests.	Fig. 10-79

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Fig. 10-73 - Automatic Door Lock Diagnosis Chart Index - Cadillac Styles

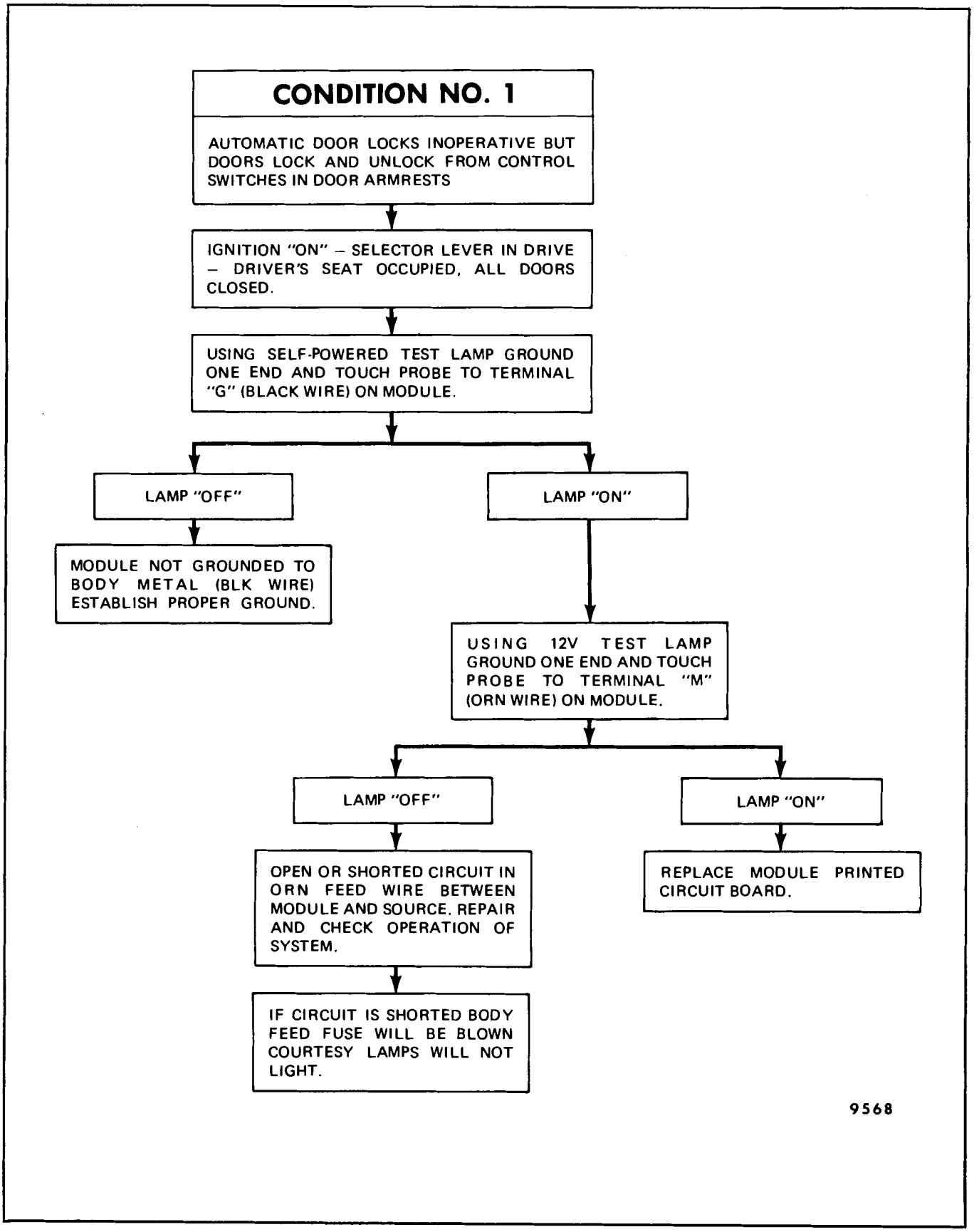


Fig. 10-74 - Automatic Door Lock Diagnosis Chart - Condition No. 1

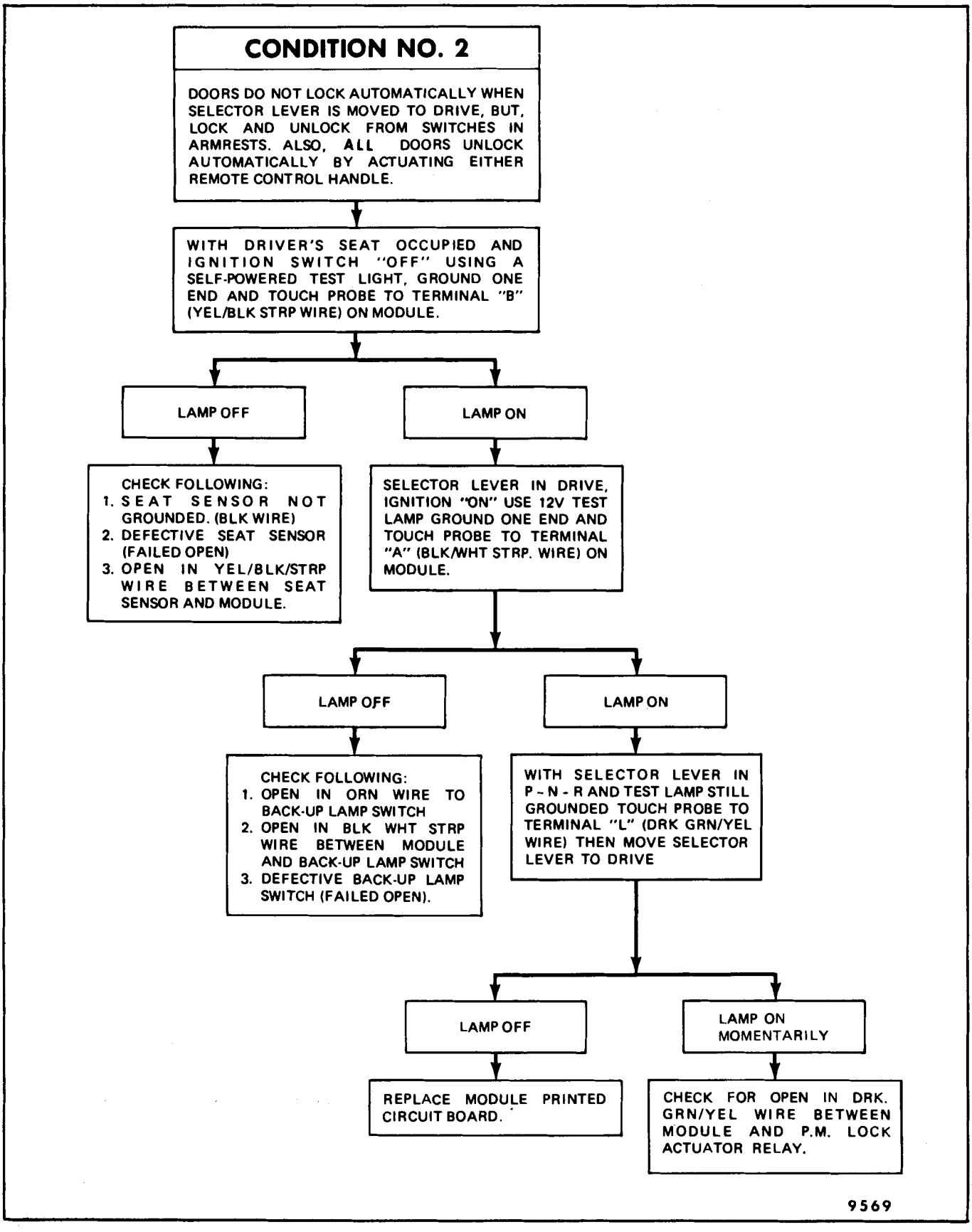


Fig. 10-75 - Automatic Door Lock Diagnosis Chart - Condition No. 2

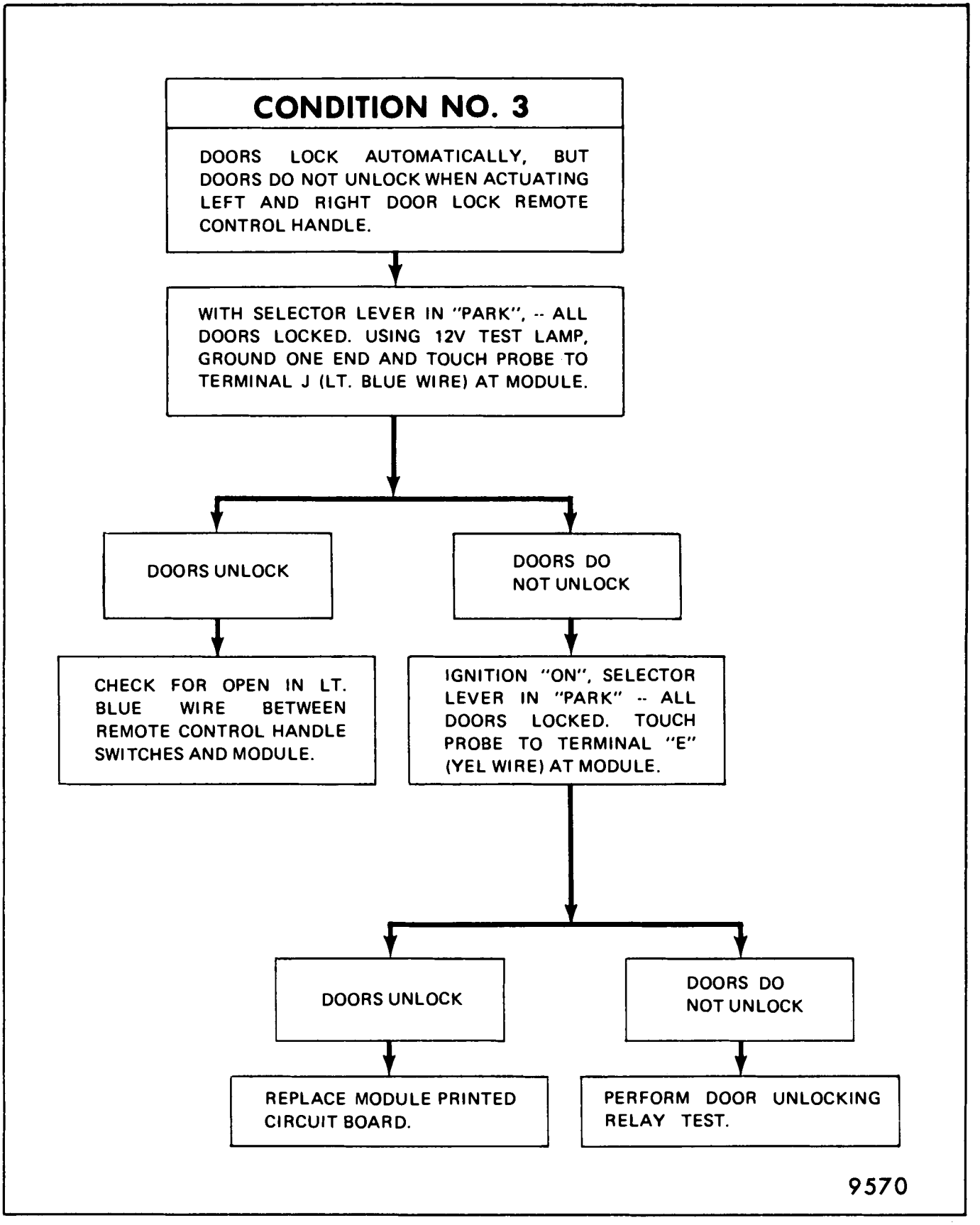


Fig. 10-76 - Automatic Door Lock Diagnosis Chart - Condition No. 3

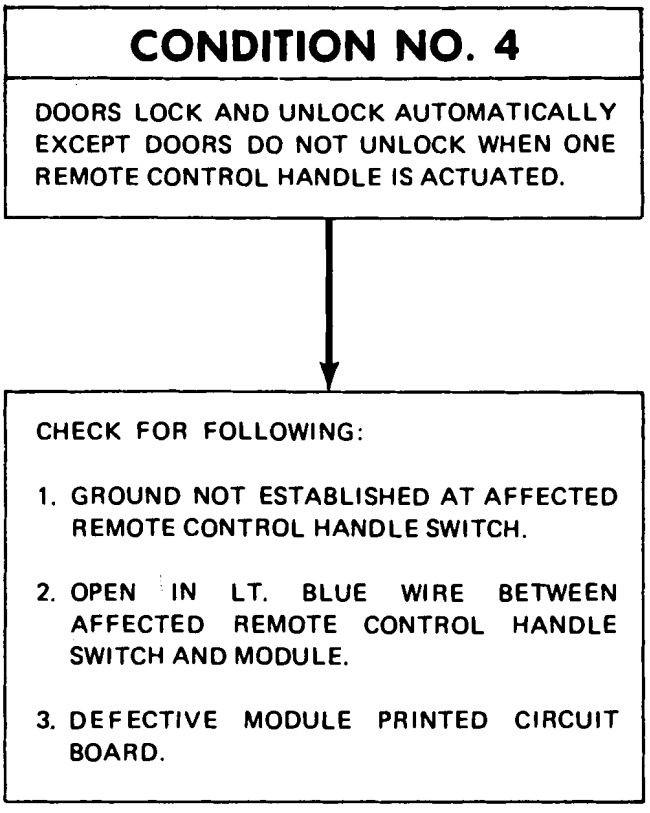


Fig. 10-77 - Automatic Door Lock Diagnosis Chart - Condition No. 4

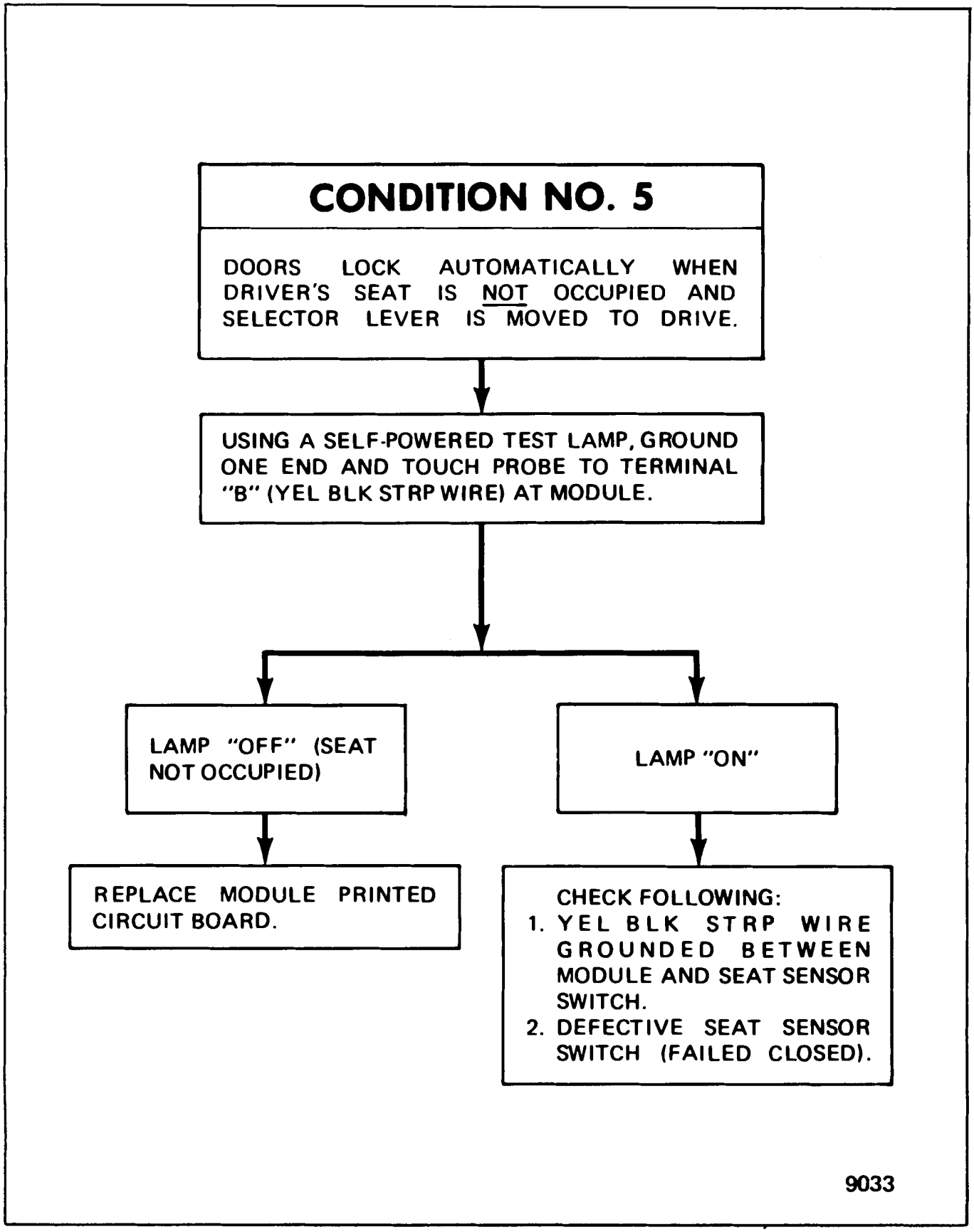


Fig. 10-78 - Automatic Door Lock Diagnosis Chart - Condition No. 5

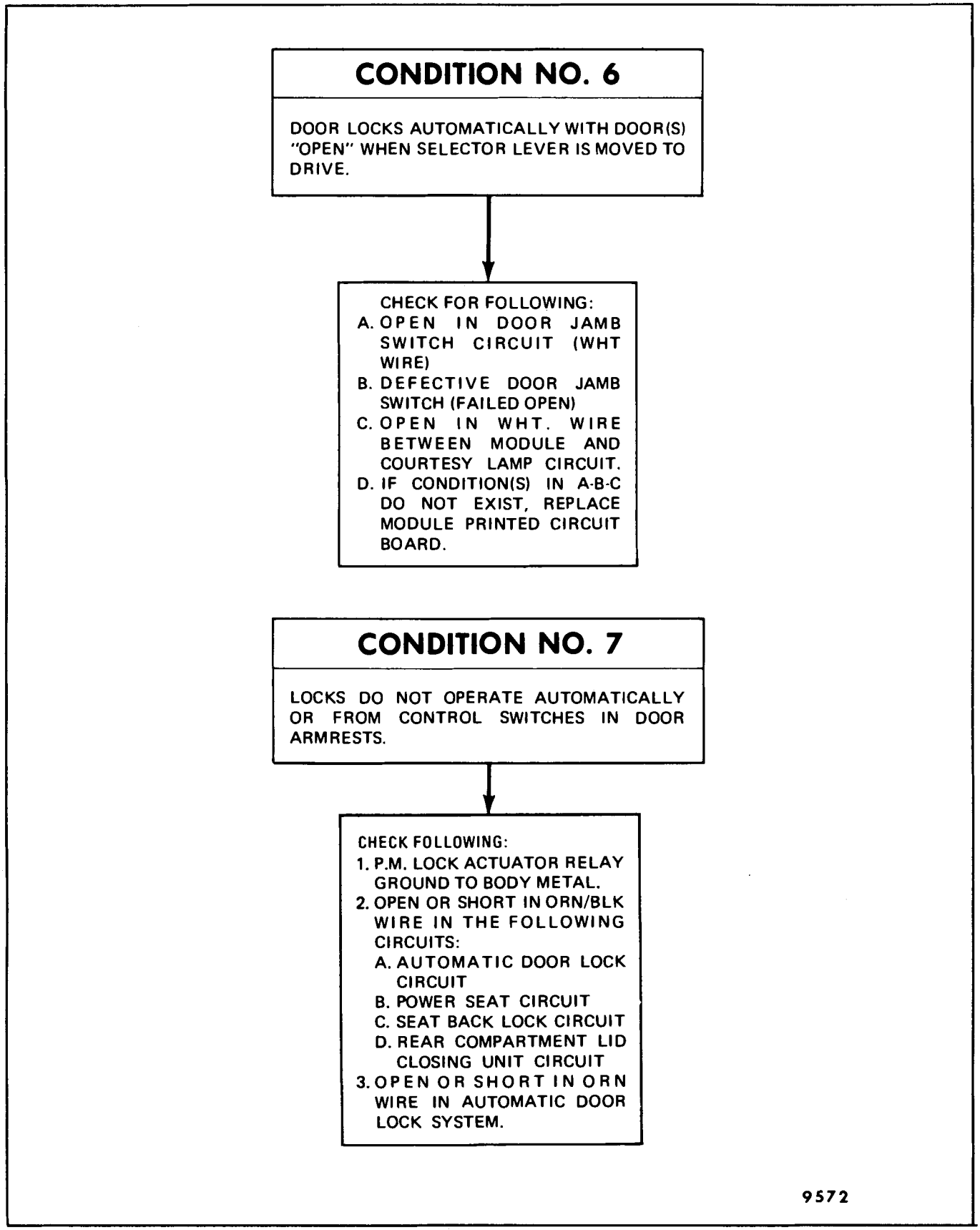


Fig. 10-79 - Automatic Door Lock Diagnosis Chart - Condition No. 6 and 7

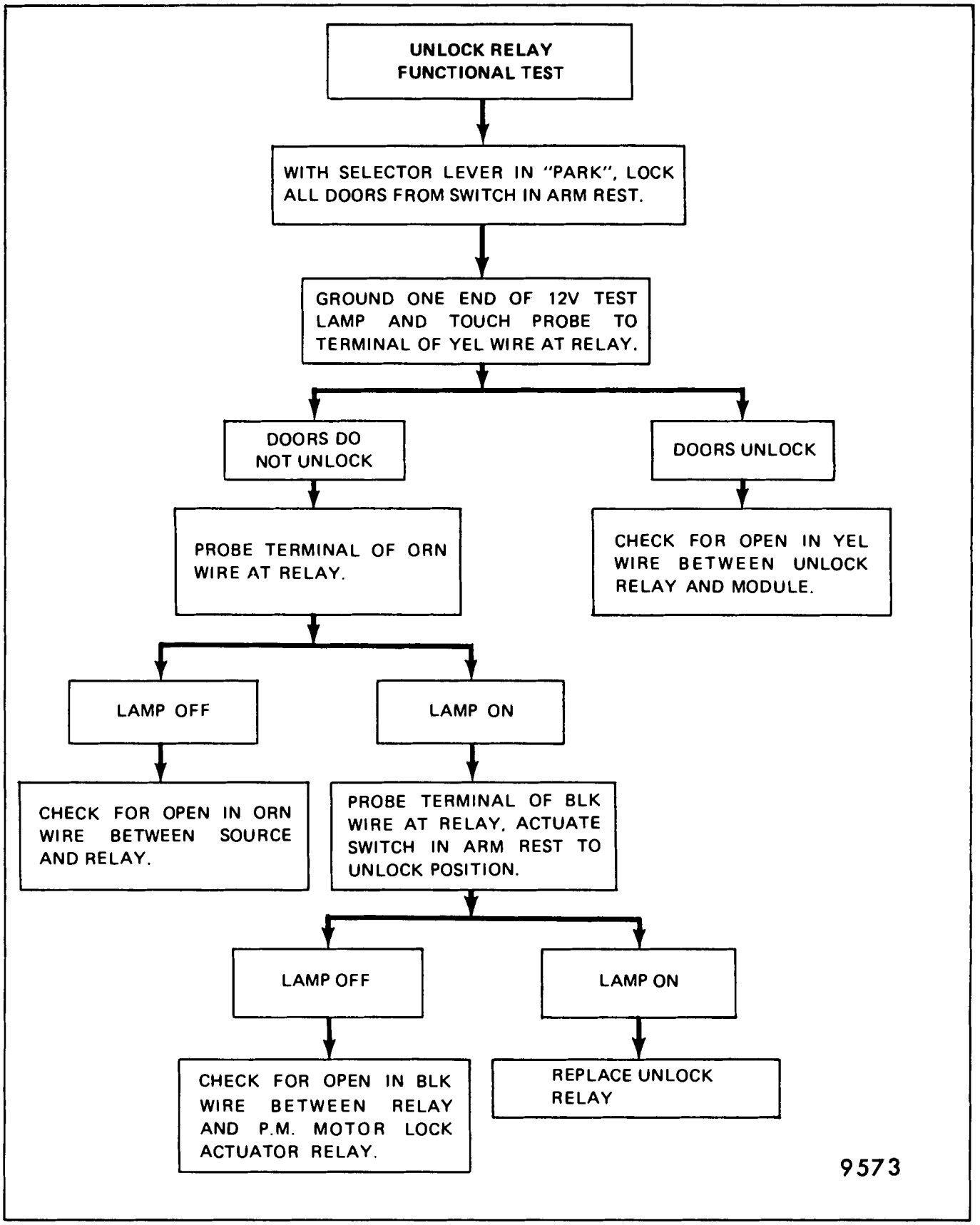


Fig. 10-80 - Automatic Door Lock System Unlock Relay Functional Test

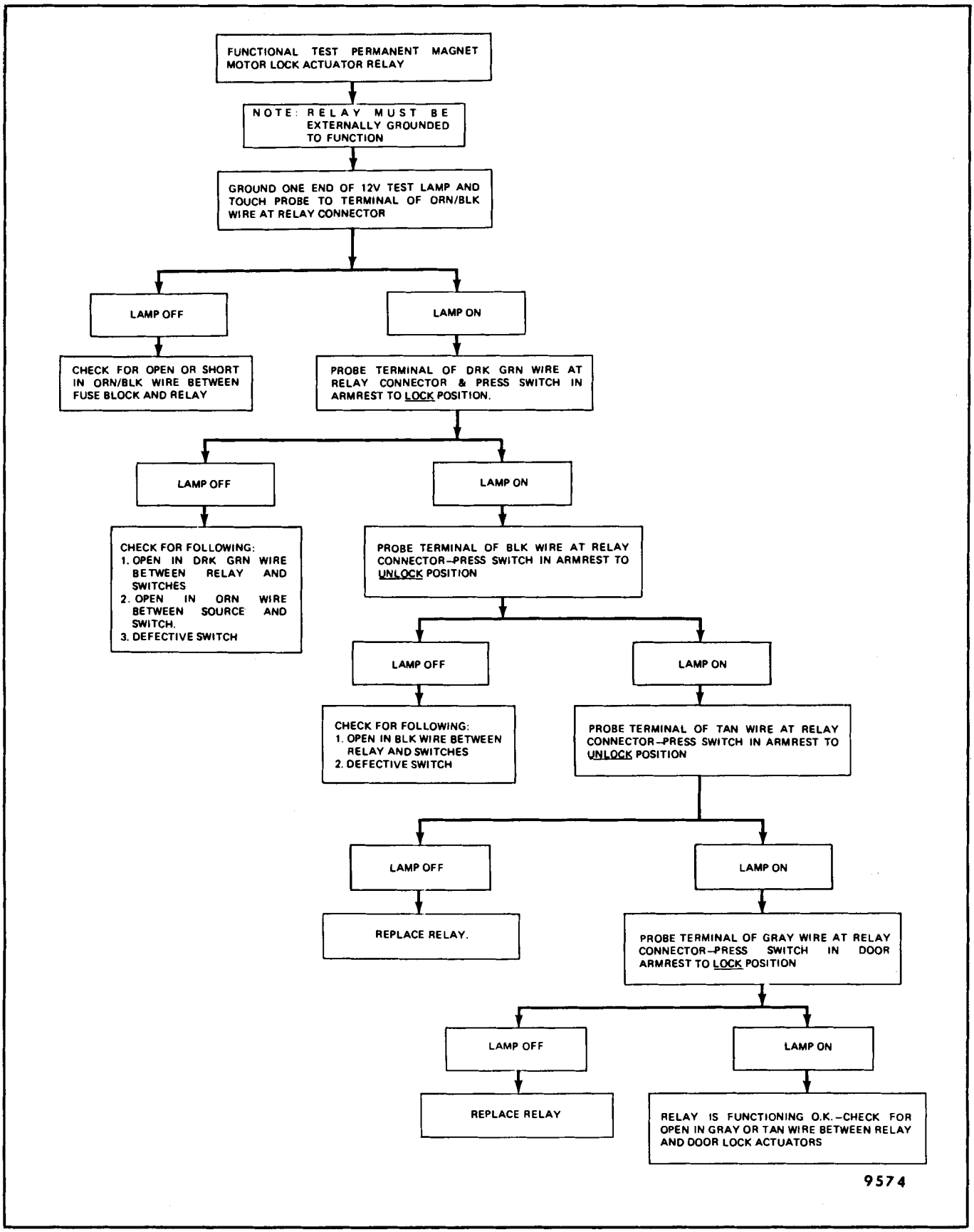


Fig. 10-81 - Automatic Door Lock System Permanent Magnet Motor Lock Actuator Relay Test

ELECTRIC SEAT BACK LOCK RELEASE

DESCRIPTION

Electric seat back lock release is optional on most 2-door styles equipped with electric door locks. The system utilizes two solenoids, one each for the driver's and passenger's seat backs and works individually in conjunction with insulated door jamb switches (Fig. 10-82).

The insulated "flow-through" type jamb switch completes the circuit, when the door is opened, from the power source to the respective internally grounded driver or passenger seat back lock solenoid, releasing the seat back lock.

Each solenoid incorporates both an unlock and a hold-in coil. These coils are stacked in tandem around a single plunger and are energized individually. The unlock coil draws approximately 18 amps of current and the hold-in coil approximately 0.6 amps. When the solenoid plunger reaches its full travel (approximately 1/4"), it trips an internal limit switch and opens the ground circuit for the unlock coil, leaving the hold-in coil energized.

When the door is closed the solenoid de-energizes and allows the seat back lock to return to the lock position. The seat backs incorporate a manual override release.

The flow-through type jamb switch used in conjunction with this system is attached to the front body hinge pillar by a threaded retainer (Fig. 10-82). It has a two prong female connector and is installed adjacent to the conventional jamb switch. Initial adjustment is made automatically by SLOWLY closing the door which positions the collar properly in the retainer. Further inward adjustment is accomplished in the same manner; however, after initial adjustment NO OUTWARD adjustment of jamb switch is possible.

NOTE: If REARWARD adjustment of either front door is made, replace the jamb switch and close the door to adjust as stated in the preceding paragraph. Confirm correct operation by opening the door and slowly closing it to the secondary lock position (first click). The seat back lock must then be locked (solenoid de-energized).

CIRCUIT CHECKING PROCEDURES

All electrical checks are performed with a test lamp on each individual door. Each seat back lock contains a separate circuit. Refer to Figure 10-83 for circuit diagram.

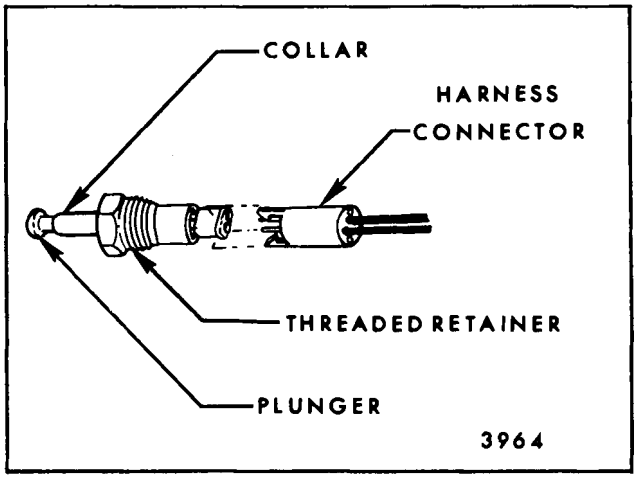


Fig. 10-82-Flow-Through Type Jamb Switch

Seat Back Lock Solenoid

1. Check feed current at solenoid jumper (black wire) at solenoid.
   a. If no light, locate and repair short between solenoid and power source.
   b. If lamp lights, provide an external solenoid ground. If solenoid still fails to operate and no mechanical binds exist, replace solenoid.

CAUTION: *On strato-seats the solenoid is replaced as part of the lock assembly for either a mechanical bind or solenoid failure.*

Circuit Breaker - All Styles

1. To Check Feed Circuit Continuity at Circuit Breaker - connect one test light lead to input side of circuit breaker (at left shroud) and ground other lead. If tester does not light, there is an open or short circuit in feed circuit to breaker.

2. To Check Circuit Breaker - connect test light lead to output side of breaker and ground other lead. If tester does not light, circuit breaker is inoperative.

Jamb Switch

Remove the jamb switch from the pillar and touch test lamp prod to the orange wire terminal.

1. If no light at orange wire, locate and repair open circuit.

2. Place jumper from orange to yellow wire, if system operates replace jamb switch.

   NOTE: Refer to flow-through jamb switch description for adjustment.

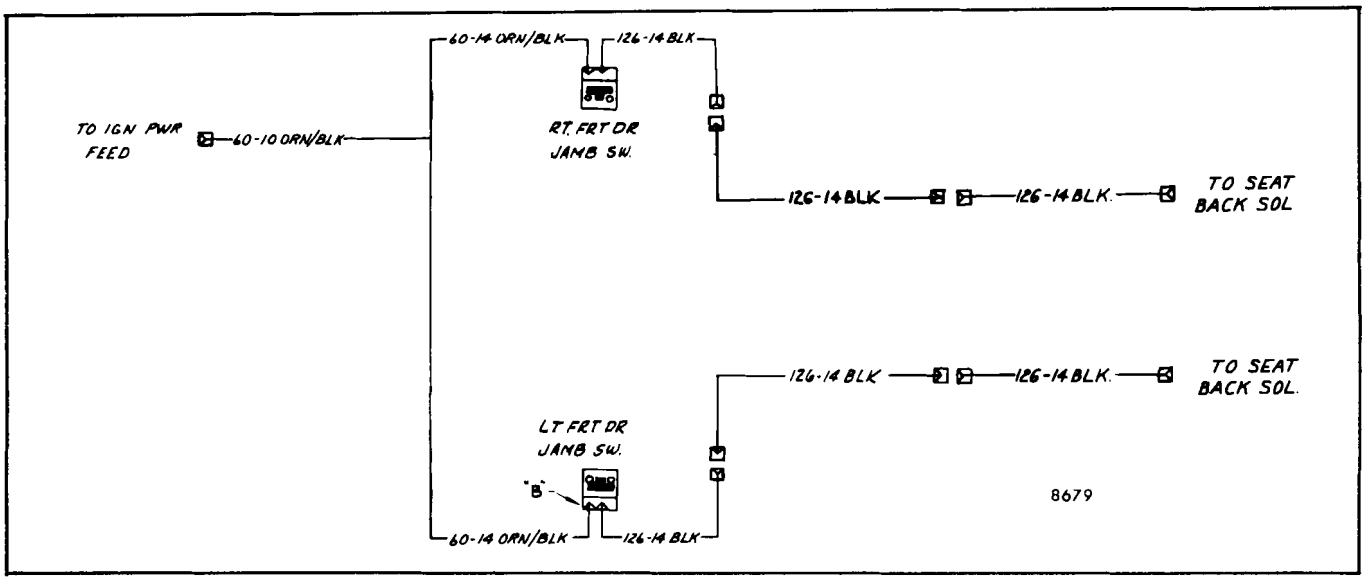


Fig. 10-83-Seat Back Lock Circuit Diagram - "B,C,E" Styles Shown ("A" Style Similar)

ELECTRIC BACK WINDOW GRID DEFOGGER

DESCRIPTION

The optional back window grid defogger system consists of a tinted glass that has a number of horizontal ceramic silver compound element lines and two vertical bus bars baked into the inside surface during the glass forming operation. Braided wire is soldered to the bus bars on each side of the glass except "B" style station wagon tailgate glass. The feed wire terminal on the tailgate glass is soldered to the bus bar at the left upper corner. The lead wires (stranded, round wire) are spliced to the braided wire and covered with an extruded plastic sleeve to insulate them from body metal.

The system operates on 12 volts with a current draw of 20 amps (plus or minus 2 amps) when glass is at 75 degrees F. Under some conditions, heat from the glass may not be detected by finger touch. The length of time required to remove interior fog from the back glass will vary with such conditions as vehicle speed, outside glass temperature, atmospheric pressure, number of passengers, etc.

This system utilizes an instrument panel mounted switch with an integral indicator lamp. Once the switch has been activated, the system will operate continuously until that switch or ignition is turned off. A relay is used in conjunction with the air conditioning system to regulate the blower motor speed when the heated back glass is in operation.

The system will operate for approximately ten minutes and automatically turn off through the use of an automatic timer. The system can be turned off during this operating period by turning either the instrument panel mounted switch or ignition switch to OFF.

Connector Location

The location of feed wire connectors differs on various styles. Figure 10-84 indicates location of lead wires and connectors.

NOTE: The ground wire screw on the rear seat back panel may in some cases be inaccessible from the rear compartment. If this condition is encountered, cut the lead as close as possible to the attaching point. To reinstall, use a new ring terminal and secure the terminal with a sheet metal screw to a convenient location on the seat back panel.

Testing Grid Lines

To locate inoperative grid lines, start engine and turn on the electric grid defogger system. Ground one test lamp lead and LIGHTLY touch the other prod to each grid line. Figure 10-85 illustrates the pattern of test lamp brilliance to be expected with a properly functioning grid.

NOTE: If test lamp bulb shows full brilliance at both ends of grid lines, check for loose ground wire contact to body metal.

STYLE	GROUND WIRE LOCATION	FEED WIRE LOCATION	CONNECTOR LOCATION	TRIM REMOVAL REQUIRED TO DISCONNECT WIRES FOR GLASS R & I
"A" STYLES	Right Side	Left Side	Rear Compartment at Rear Seat Back Panel	Disconnect in Rear Compartment - Lift Rear Corners of Rear Seat to Back Window Trim Panel to Pull Wire Through
"F" STYLE	Right Side	Left Side	Rear Compartment	Rear Seat Cushion and Back, Shelf Trim and Right Quarter Upper Trim Panel
"B-C-E" STYLES Except Station Wagons	Right Side to Rear Compartment Lid Hinge Box	Left Side	Rear Compartment Under Shelf	Rear Seat Cushion and Back and Shelf Trim
STATION WAGONS	Right Side	Left Side	Left Upper Corner on Glass	Standard Glass Removal Operation
"H-11" STYLES	Right Side to Rear Seat Back Panel	Left Side	Rear Compartment	Rear Seat Cushion and Back
"H" "07,15,77" STYLES	Right Side	Left Side	Left and Right Upper Corner of Glass	Standard Glass Removal Operation 9497

Fig. 10-84-Connector Location - Optional Rear Window Electric Grid Defogger

NOTE: The range of zones in Figure 10-85 may vary slightly from one glass to another; however, the bulb brilliance will decrease proportionately to the increased resistance in the grid line as the prod is moved from the left bus bar to the right.

All grid lines must be tested in at least two places to eliminate the possibility of bridging a break. For best results contact each grid line a few inches either side of the glass centerline. If an abnormal light reading is apparent on a specific grid line - place test lamp prod on that grid at the left bus bar and move prod toward the right bus bar until light extinguishes. This will indicate a break in the continuity of the grid line (Fig. 10-86).

Grid Line Repair

A durable repair may be accomplished using the Rear Window Electric Grid Defogger Repair Kit (Part No. 1051223 or equivalent) which consists of:

1. Plastic rectangular shaped mixing plate
2. Decal
3. Syringe of silver plastic
4. Syringe of hardener
5. Mixing stick
6. Instruction sheet

Repair Procedure

1. After the broken grid line has been located and marked (indicate break with a grease pencil on the outside surface of the glass), the system must be shut off.
2. Lightly buff grid line in area to be repaired with fine steel wool buffing approximately 1/4" on both sides of break. Thoroughly wipe with a clean cloth dampened in alcohol. It is necessary that all contaminants be removed from the repair area.
3. Use the decal supplied in the kit or apply two strips of electrician's plastic tape above and below the damaged grid line in order to control the width of repair material. Proper tape positioning may be checked from outside the vehicle.

   NOTE: If the decal is used, be sure that the die-cut metering slot is the same width as the grid line to be repaired. If the slot is too narrow or too wide, use tape as described in step 3.

4. Lay the plastic rectangular shaped mixing plate on a flat surface and dispense the silver color material in a circular ring on the mixing plate by pushing syringe plunger to the bottom.

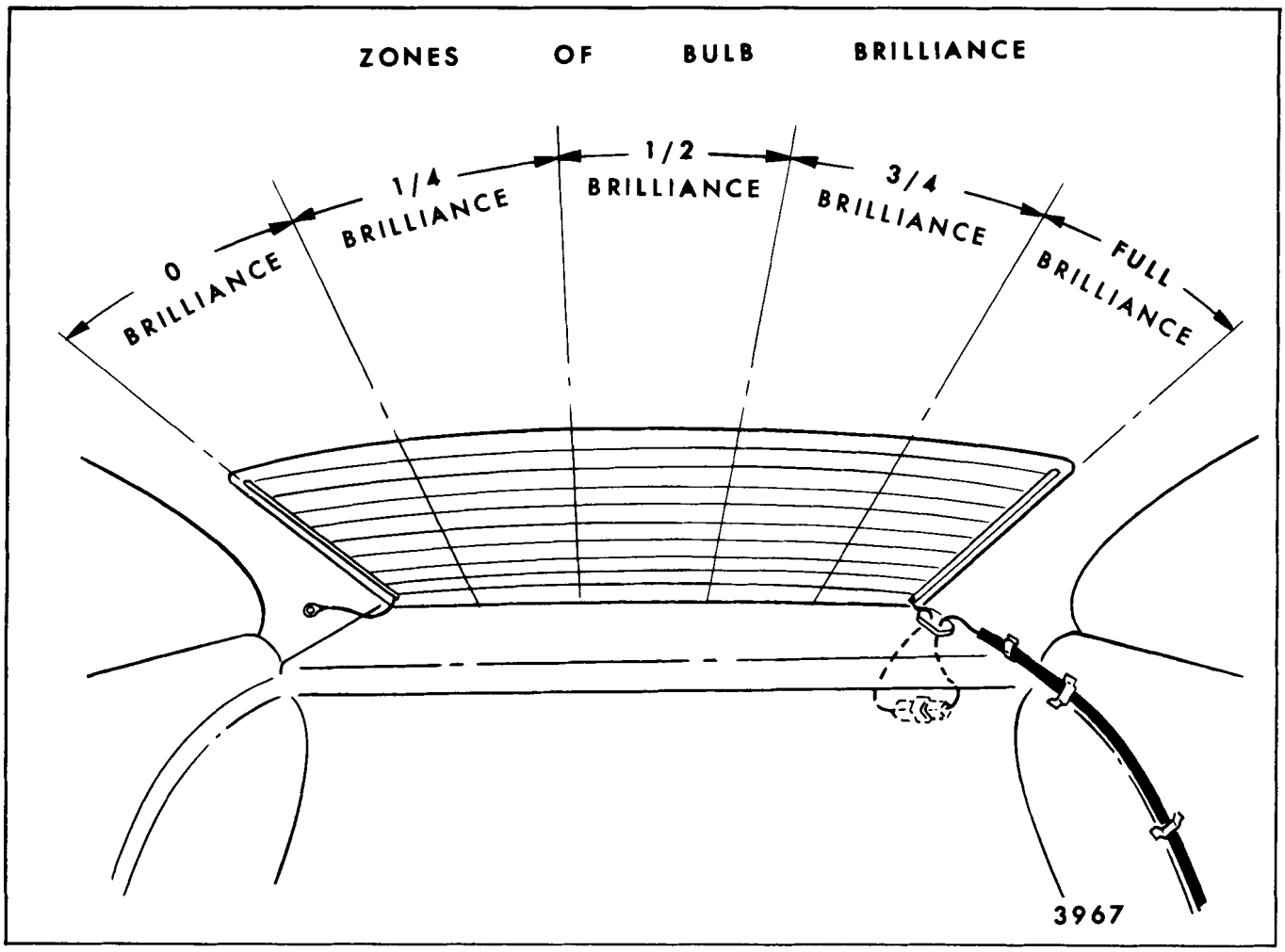


Fig. 10-85-Test Lamp Bulb Brilliance Zones - Normal Operating Electric Grid Defogger

5. Dispense dark hardener in the center of the circle by pushing dispenser plunger to the bottom.

   NOTE: If hardener has crystallized, heat container at 108 degrees F until hardener is liquified.

6. Mix the dark hardener into the silver plastic by blending the material with the mixing stick.

7. With the glass at room temperature, apply the repair material with the small wooden mixing spatula, slightly overlapping the existing grid line either side of the break (Fig. 10-87).

8. Carefully remove the decal or tape.

9. Apply a constant stream of hot air directly to the repaired area with a heat gun (preferably 500 degrees F to 700 degrees F range) for 1 to 2 minutes. Heat gun nozzle should be held approximately 1" from repair (minimum of 300 degrees F is essential for establishing conductivity) see Figure 10-88.

   CAUTION: *In order for the repaired area to reach the desired level of electrical conductivity, the repair material must be cured with heat. When working close to interior trim, it may be necessary to protect the trim that is immediately adjacent to the stream of heat.*

   NOTE: If back window electric grid defogger grid line appears off- color after performing the repair, use a fine brush or pipe cleaner and apply a coat of tincture of iodine on approximately 1" on either side of the repaired area. Allow iodine to dry for about thirty seconds and carefully wipe off excess with lint free cloth.

10. Retest grid lines to insure proper operation.

    NOTE: Although grid defogger is operational, additional air dry time is required to effect a complete cure; therefore, the area of repair must not be physically disturbed for 24 hours.

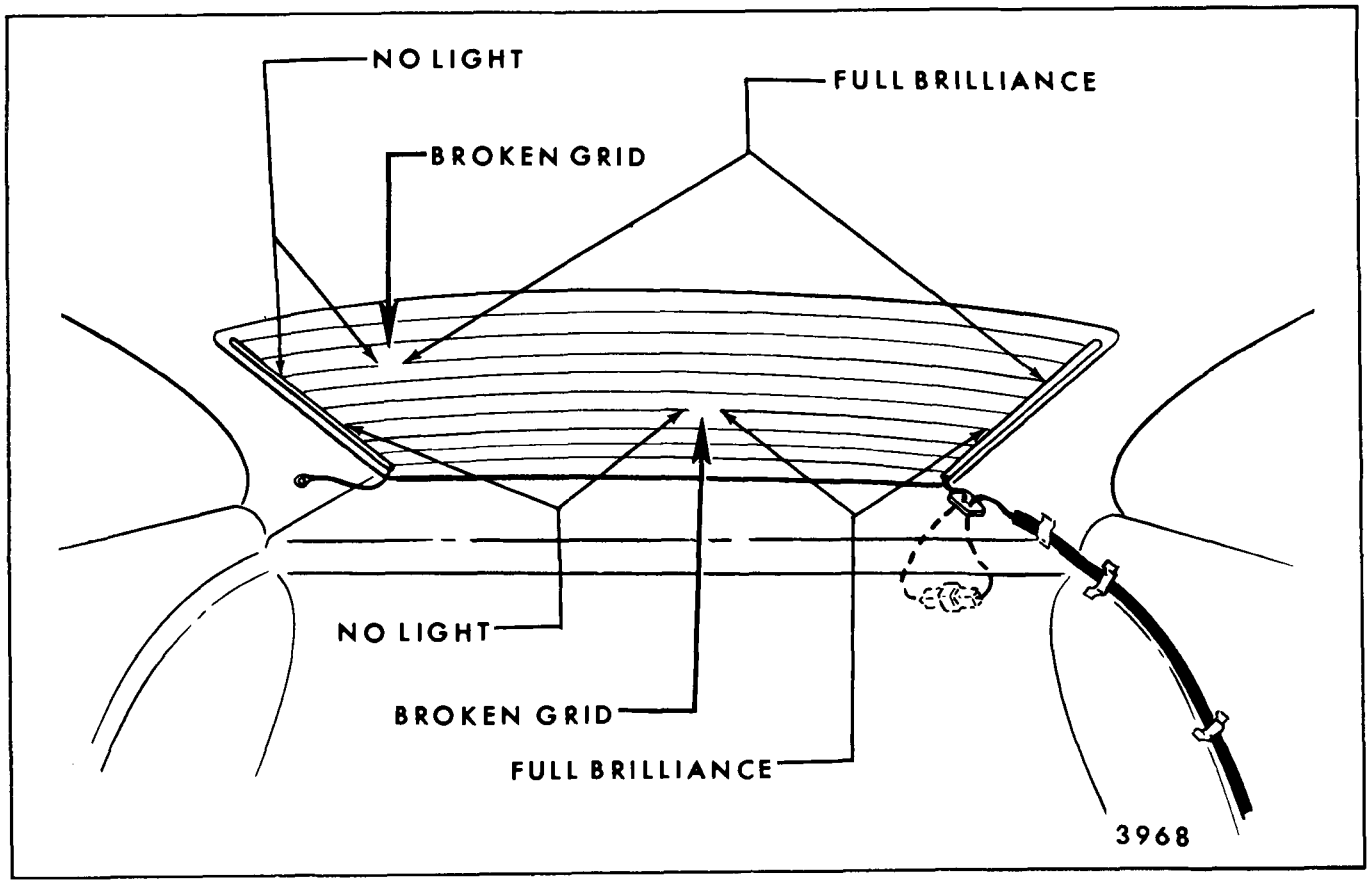


Fig. 10-86-Test Lamp Bulb Brilliance with Broken Grid Lines

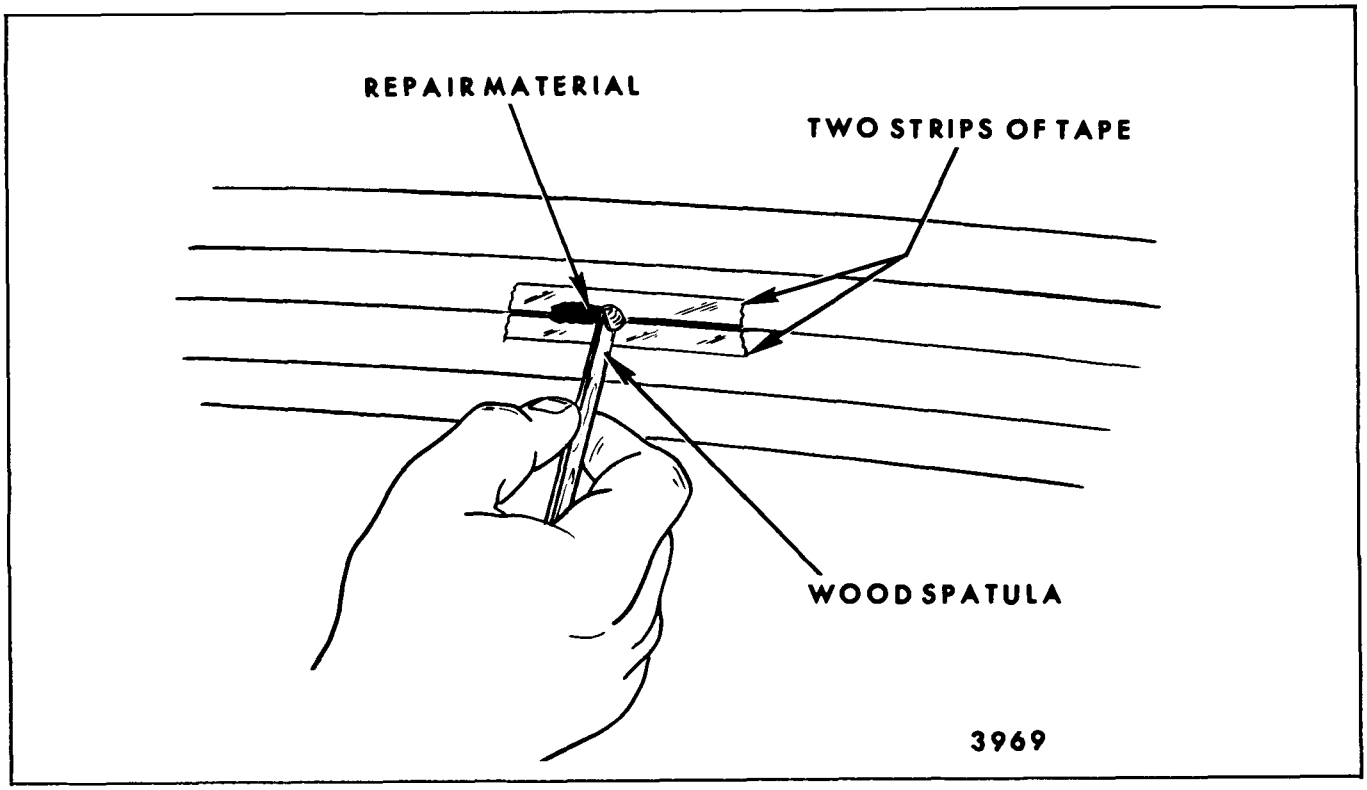


Fig. 10-87-Applying Repair Material to Broken Grid

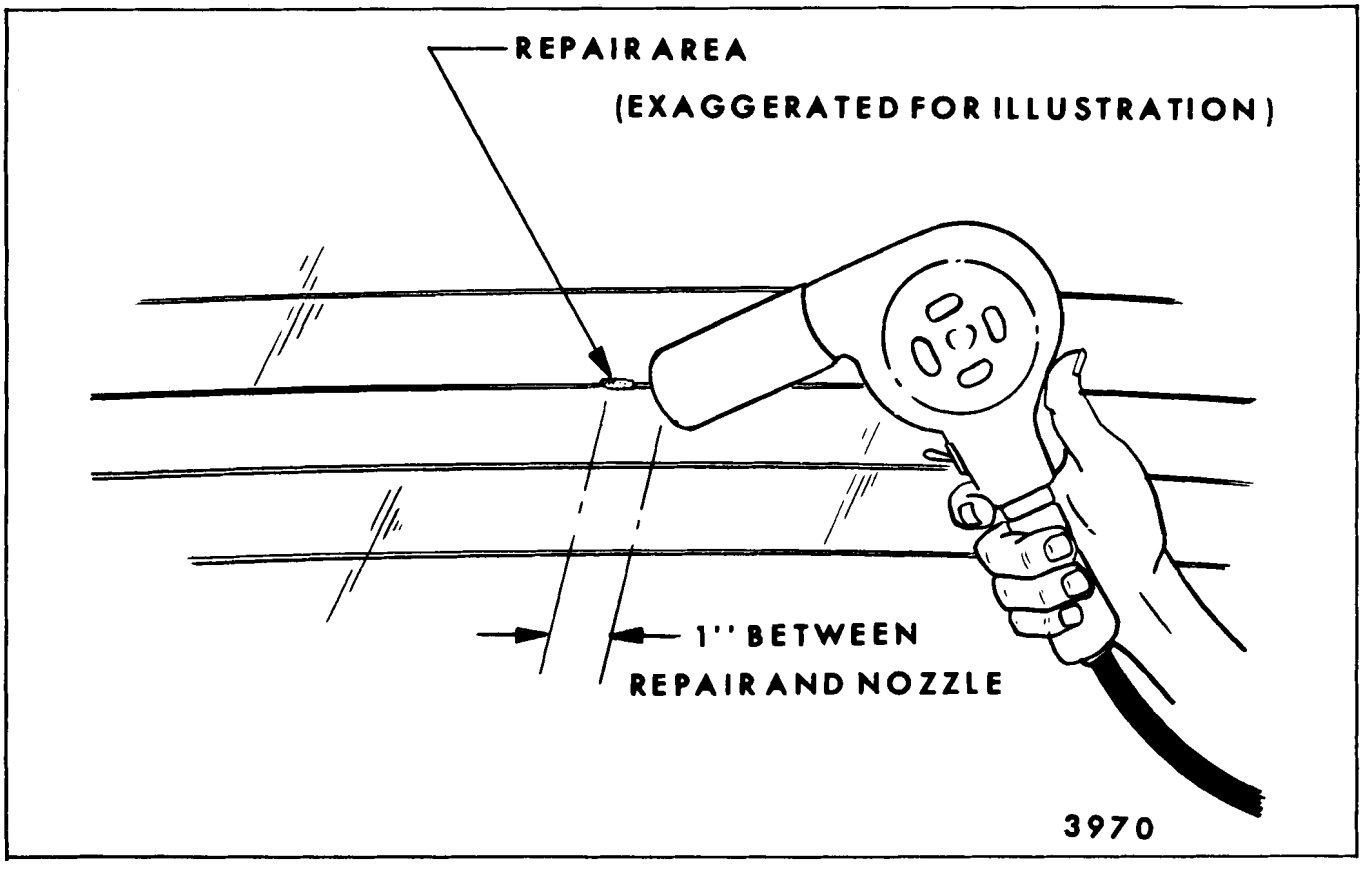


Fig. 10-88-Applying Heat to Grid Line Repair

Braided Lead Wire Repair

Repair of bus bar braided lead wire may be accomplished by resoldering with 3 per cent silver solder and rosin flux paste in the following manner:

1. Lightly buff the bus bar in the area to be repaired with fine steel wool to remove oxide coating formed during glass firing.
2. Brush a small amount of flux paste on bus bar.
3. Coat the tip of a small soldering iron with 3 per cent silver solder and draw across the bus bar depositing a thin coating of solder.

   NOTE: Only enough heat to melt solder (to start flowing) is recommended. Contact bus bar for as short a time as possible.
4. Repeat the procedure for the braided lead.
5. Position the braided lead on the bus bar and apply heat to complete soldering operation.

BACK WINDOW DEFOGGER (BLOWER TYPE)

DESCRIPTION

The defogger is designed to operate at either high or low speed. Air is drawn into the defogger blower and directed against the rear window through a blower outlet.

CIRCUIT CHECKING PROCEDURES

It may be necessary to use only one or all of the procedures outlined to locate an electrical failure in the circuit. If the location of the failure is evident, follow only the steps required to check the affected wire or component. If the location of the failure is not evident, follow the procedure as outlined. For circuit diagrams, refer to Figures 10-89 through 10-92.

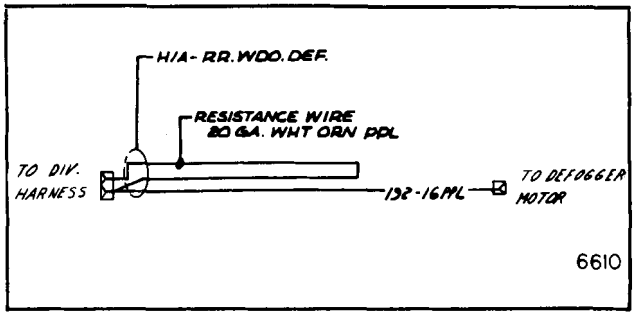


Fig. 10-89-Defogger Circuit Diagram - "A,B,C,E" Styles

Checking Blower Control Switch

Refer to chassis service manual.

Checking Blower Motor

1. Check blower motor ground wire for proper ground.
2. Disconnect blower motor feed wire.

   NOTE: A resistor is used in the circuit to provide the difference between high and low speeds. If there is only one output feed wire at the switch connector, the resistor is located in the switch. If two output feed wires are found at the switch connector, the resistance is included in the low speed wire harness.

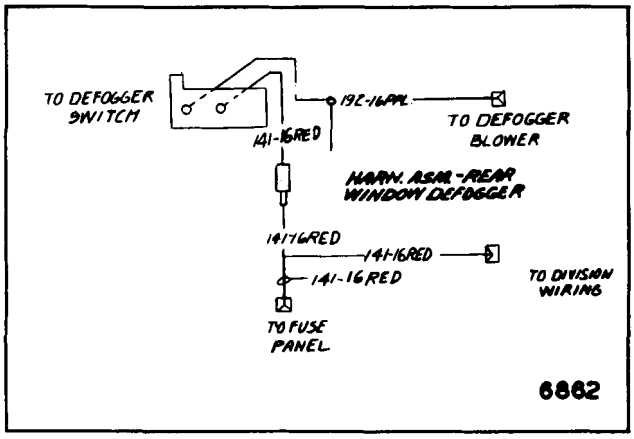


Fig. 10-90-Defogger Circuit Diagram - "X" Styles

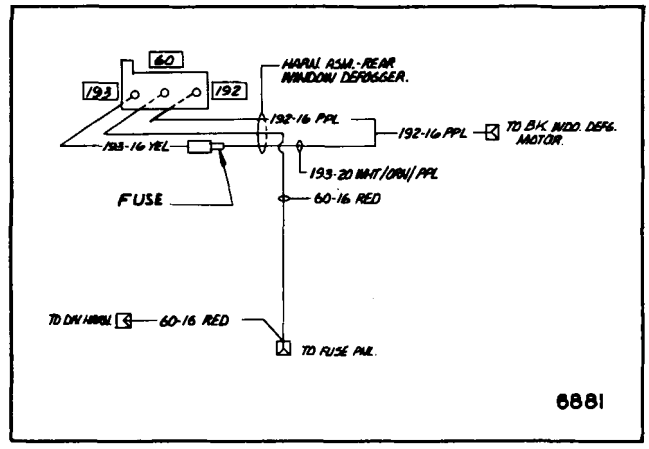


Fig. 10-91-Defogger Circuit Diagram - Chevrolet "F" Styles

3. Using a 12 volt power source, connect the negative lead to the blower motor ground wire and the positive lead to the motor feed wire. If the blower does not operate, replace the blower as an assembly.

   NOTE: If blower operates but air does not come out of outlet grille, check for obstructions at air inlet and outlet.

4. If the blower motor and switch operate satisfactorily when checked, but the blower will not operate, or will not give both high and low speeds, locate and repair open or short circuit in feed wire(s) between switch connector and motor.

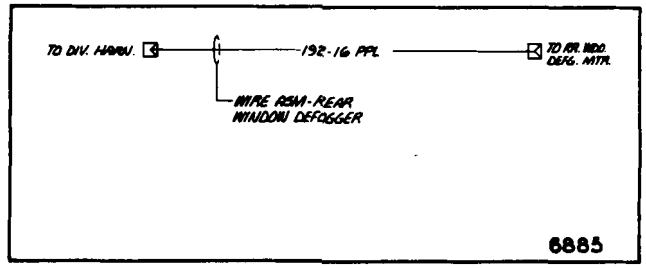


Fig. 10-92-Defogger Circuit Diagram - Pontiac "F" Styles

SECTION 11

STATIONARY GLASS

TABLE OF CONTENTS

SUBJECT	PAGE
Glass Polishing	11-1
Metal Reveal Moldings - Stationary Glass	11-2
Stationary Glass	11-4
Stationary Quarter and Tailgate Window	11-11
Tailgate Window Rubber Channel	11-14
Bonded Rear View Mirror Support	11-15

GLASS POLISHING

REMOVAL OF MINOR SCRATCHES AND ABRASIONS

Description

Minor glass scratches and abrasions can be effectively removed or substantially reduced by utilizing the procedure and precautions presented in this section. The phases of glass polishing discussed in this section include required equipment.

There are two basic types of automotive glass: (1) laminated safety plate (all windshield glass) and (2) solid tempered plate (all side and back glass).

A major concern in glass polishing is preventing double vision from developing in areas that will distort occupant vision. For this reason, less polishing can be done on windshield in occupant's line of vision than in other areas. Distortion is most likely to result when attempting to remove deep scratches.

Glass polishing is an operation that must be performed with reasonable care.

> **CAUTION:** *This operation must not be performed on inside surface of rear window glass equipped with rear window electric grid defogger (heating elements in glass).*

The equipment and procedures recommended here were developed using cerium oxide compound (No. 12 Rareox or equivalent). Follow manufacturer's directions when using any type of polishing compound.

The following equipment is recommended for glass polishing:

1. Low speed (600-1300 RPM) Rotary polisher (Skil Model No. 570 or equivalent).
2. Wool felt rotary-type polishing pad, approximately three inches in diameter and two inches thick.
3. Powdered cerium oxide (No. 12 Rareox or equivalent) mixed with water as the abrasive compound.
4. Wide mouth container to hold the polish.

Glass Polishing Procedure

1. Mix two parts of polishing compound (No. 12 Rareox or equivalent) with one part water to obtain a creamy consistency.
2. Agitate mixture occasionally to maintain a

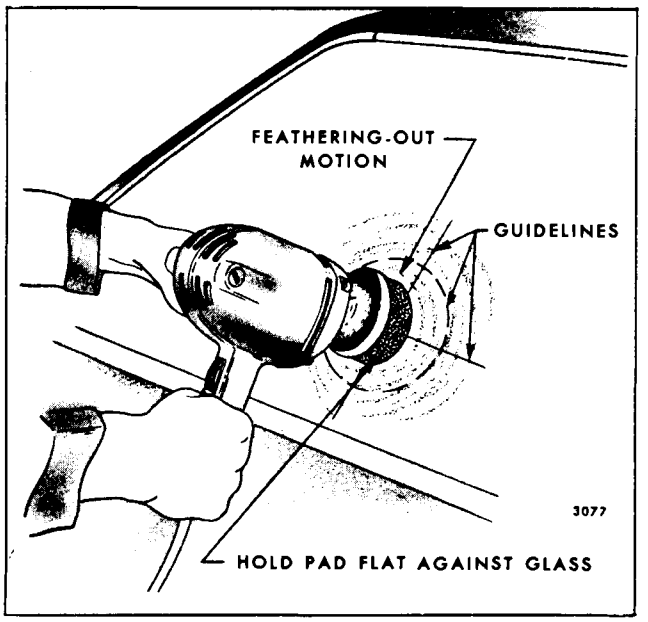


Fig. 11-1-Minor Glass Scratch Removal

creamy consistency. Powdered cerium oxide is insoluble in water and tends to separate.

3. Draw circle around scratches on opposite side of glass with marking crayon or equivalent. Draw other lines directly behind scratches to serve as guides in locating scratch during polishing (Fig. 11-1).

4. Use masking paper where needed to catch drippings or spattered polish.

5. Dip felt pad attached to polisher into mixture several times to insure that pad is well saturated.

NOTE: Never submerge or allow pad to stay in mixture as it may loosen bond between pad and metal plate.

6. Using moderate, but steady, pressure, hold pad flat against scratched area of glass, and with a feathering-out motion, polish affected area as shown in Figure 11-1.

CAUTION: *Avoid excessive pressure. It does not speed-up operation and may cause overheating of glass.*

7. Cover sufficient area around scratch with a feathering-out motion as shown in Figure 11-1, to eliminate any possibility of a bull's-eye.

CAUTION: *Never hold tool in one spot or operate tool on the glass any longer than 30 to 45 seconds at a time. If glass becomes hot to touch, let it air cool before proceeding further. Cooling with cold water may crack heated glass.*

8. Dip pad into mixture about every fifteen seconds to insure that wheel and glass are always wet during polishing operation. A dry pad causes excessive heat to develop.

9. After removing scratch or abrasion, wash glass with water and wipe body clean of any polish.

10. Clean polishing pad.

NOTE: Care should be taken during polishing and storage to keep pad free of foreign material such as dirt, metal fillings, etc.

METAL REVEAL MOLDINGS - STATIONARY GLASS

DESCRIPTION

Metal reveal moldings around adhesive caulked or rubber channel glass installations are retained by clips which are attached to the body opening by weld-on studs or screws. A projection on the clip engages the reveal molding flange, retaining the molding between the clip and body metal (View "A and B", Fig. 11-2). To disengage a molding from retaining clips, use appropriate tool shown in Section 1 of this manual. The quarter window reveal moldings on some Buick and Cadillac "C" styles with vinyl roof covers are underneath the vinyl material. To gain access to these moldings requires removal of the vinyl around the window opening (refer to Section 8 of this manual). Some styles also include a bright finishing molding around the quarter window opening which must be removed prior to vinyl roof cover material removal. Windshield side reveal moldings on "D, E and F" styles are retained by barbed clips (View "C", Fig. 11-2).

NOTE: To remove the side windshield reveal moldings on "D, E and F" styles, a thin flat-bladed tool (putty knife) must be inserted from opposite windshield side of molding to disengage barbed clips while lifting molding.

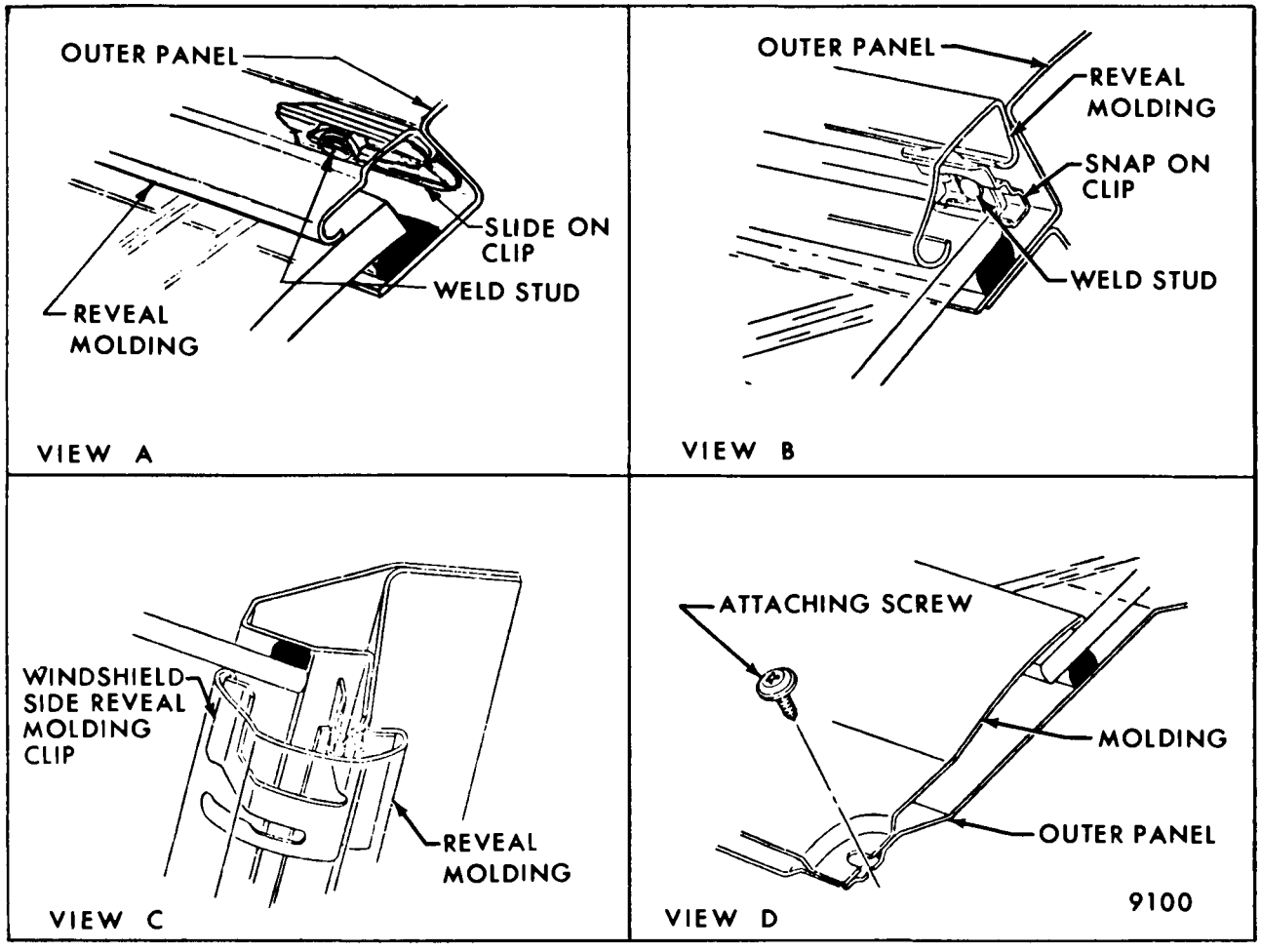


Fig. 11-2 - Reveal Molding Attachments

MOLDING CLIP REPLACEMENT

If a weld stud becomes damaged or broken, use the following repair procedure:

1. Drill a small hole in the panel adjacent to original weld stud installation.
2. Insert a self-sealing screw through original clip and into outer panel, or replace damaged weld stud with self-sealing screwtype weld stud.

If a weld stud, attaching screw, or molding clip becomes damaged or broken and must be replaced in a windshield, back window or quarter window opening, use the following procedure:

1. Drill a small hole in the corner of the glass opening rabbet adjacent to original weld stud or screw installation.
2. Insert a self-sealing screw through alternate replacement clip and into panel (Fig. 11-3).

CAUTION: *Avoid contact with edge of glass during drilling operation and when installing clip.*

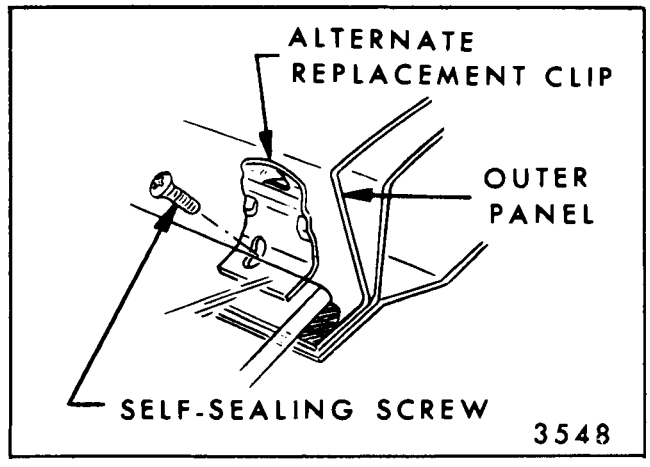


Fig. 11-3 - Reveal Molding Clip Alternate Replacement

STATIONARY GLASS

DESCRIPTION

The windshield on all styles is bonded to body opening with self-curing urethane adhesive.

Station wagon back windows and quarter windows that are retained with rubber channels are described later in this section. Quarter windows on coupe and sedan styles that are not retained with rubber channels are bonded to the body opening with urethane adhesive or butyl tape.

To replace a window installed with urethane adhesive requires either partial or complete replacement of the adhesive material. Partial replacement of material is referred to as short method. Complete material replacement is known as extended method.

The short method can be used in those situations where original adhesive material remaining on window opening pinchweld flanges after glass removal can serve as a base for the new glass. This method would be applicable in cases of cracked windshields or removal of windows that are still intact. In these situations, the amount of adhesive that is left in window opening can be controlled during glass removal.

The extended method is required when the original adhesive material remaining in window opening after glass removal cannot serve as a base for replacement glass. Examples of this latter situation would be in cases requiring metal work or paint refinishing in the opening, or where there is a considerable loss of adhesion between original adhesive material and body metal. In these cases, original material is removed and replaced with fresh material during window installation.

NOTE: To replace a window installed with butyl tape, the extended method must be used. Butyl tape can be readily identified after molding or trim removal by absence of rubber dam and that it remains soft and does not cure to a rubber type material.

ADHESIVE SERVICE KIT

Adhesive Kit No. 9631000 (urethane adhesive) or equivalent contains some of the materials needed to remove and replace a urethane adhesive installed glass using short method or any adhesive installed glass using extended method. This kit can be obtained through the service parts system as well as other materials that may be required.

The components of glass adhesive kit (urethane) no. 9631000 or equivalent are as follows:

1. One tube of urethane adhesive material.
2. One dispensing nozzle (cut for short method but can be notched- out for extended method).
3. Steel music wire.
4. Primer.
5. Filler strip (for use on windshield installations on styles equipped with embedded windshield antenna).
6. Primer applicator.

Additional material required:

1. Solvent for cleaning edge of glass (preferably alcohol).
2. Adhesive dispensing gun No. J-24811 or a standard household cartridge type gun reworked as follows:
   a. Widen end slot to accept dispensing end of adhesive material tube.
   b. Reduce diameter of plunger disc on rod so that disc can enter large end of adhesive material tube.
3. Commercial type razor knife (for cutting around edge of glass).
4. Hot knife No. J-24709-1 or equivalent, cold knife No. J-24402 or equivalent or two pieces of wood for wire handles.

   NOTE: Recent improvements for hot knife No. J-24709 or equivalent, reduce the effort required to cut out a urethane installation. These improvements are a new pull handle, tool J-24709-5 or equivalent and new blade J-24709-6 or equivalent. These changes are incorporated in hot knife No. J-24709-1 or equivalent.
5. Black weatherstrip adhesive.
6. Two side support spacers.
7. Lower support spacers - for short and extended method installations.

   NOTE: When glass is originally installed, a rubber sealing strip dam is used around edges

of window to prevent excessive squeeze-out of adhesive material. Service installations do not utilize this part. By applying masking tape around inner perimeter of glass prior to urethane application, excess squeeze-out is picked up and removed with tape.

WINDOW REMOVAL

The window removal procedure is the same for both the short and extended installation methods with one exception. If the short method installation is to be used, more care must be used during removal to make certain that an even, uniform bead of adhesive material remains on window opening to serve as a base for replacement glass. Also, make certain that glass lower support spacers are not disturbed.

1. Place protective coverings around area where glass is being removed.

2. Remove all trim and hardware immediately adjacent to glass being removed. Depending on the glass involved, this could involve reveal moldings, garnish moldings or finishing lace, and windshield wiper arms.

3. On styles equippped with optional rear window electric grid defogger (heating elements in glass), disconnect wire harness connectors from glass. If quarter upper trim removal is required to service connectors, refer to Section 6. If glass is to be reinstalled, tape leads to inside surface of glass to protect them during handling.

4. On styles equipped with radio antenna built into windshield glass, disconnect antenna lead at lower center of windshield. If glass is to be reinstalled, fold and tape lead wire back onto outer surface of windshield to protect it during glass removal and installation.

5. Using edge of glass as a guide, cut adhesive material paddled on side edge of glass with a commercial grade razor knife. Cut material completely around perimeter of glass.

6. To complete removal of original urethane adhesive installation, use hot knife No. J-24709-1 or equivalent or cold knife No. J- 24402 or equivalent. To remove original butyl installation, use cold knife No. J-24402 or equivalent or the following steps.

   a. Secure one end of steel music wire to a piece of wood that can serve as a handle. Using long nose pliers, insert other end of wire through adhesive material at edge of glass, then secure that end of wire to another wood handle (Fig. 11-4).

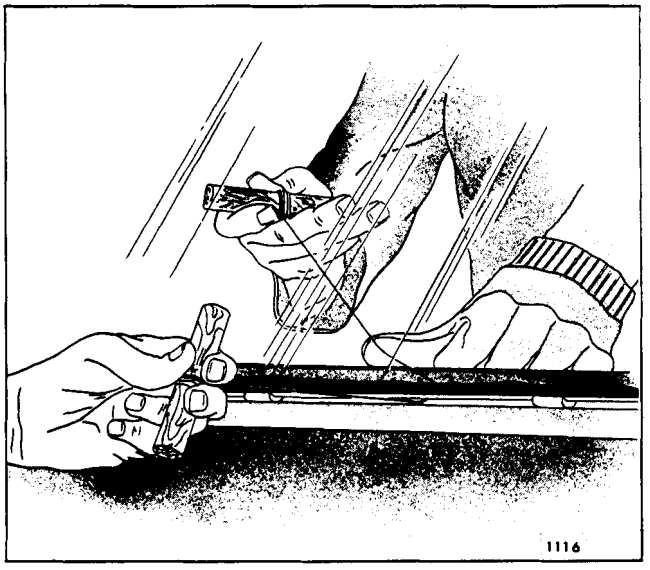


Fig. 11-4 - Cutting Adhesive Material

   b. With aid of helper, carefully cut (pull wire) through adhesive material around entire perimeter of window. If short method will be used to install new glass, hold wire or cutting tool close to inside plane of glass to prevent cutting an excessive amount of adhesive material from window opening. Keep tension on wire throughout cutting operation to prevent wire from kinking and breaking (Fig. 11-4).

   NOTE: Glass removal with wire can be performed by one man. To do so, insert one end of wire through adhesive material at inner upper edge of glass and other end of

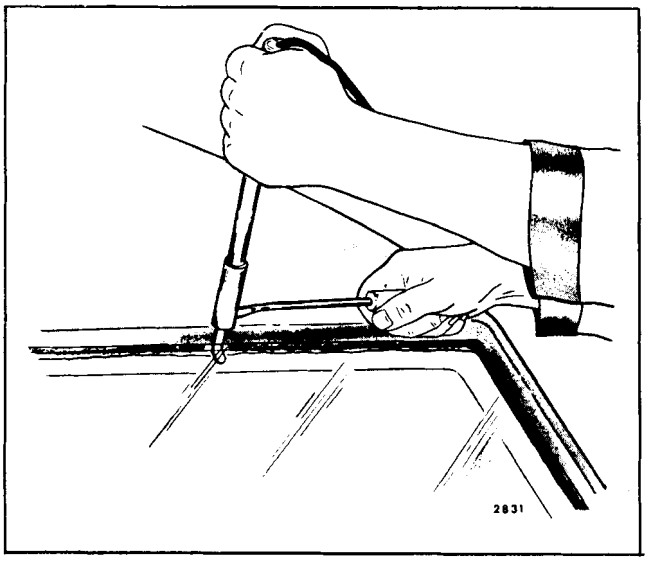


Fig. 11-5-Electric Hot-Knife Removal Method

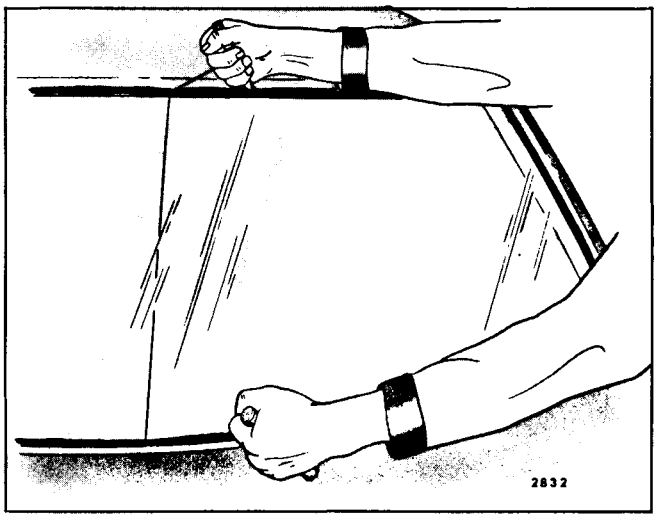


Fig. 11-6 - One Man Wire Removal Method

wire through adhesive material at inner lower edge. Attach handles to both wire ends outside of body (Figs. 11-5 and 11-6).

7. If original glass is to be reinstalled, place it on a protected bench or holding fixture; remove old material using a razor blade or sharp scraper. Any remaining traces of adhesive material can be removed with denatured alcohol or lacquer thinner dampened cloth.

   CAUTION: *When cleaning windshield glass, avoid contacting edge of plastic laminate material (on edge of glass) with volatile cleaner. Contact may cause discoloration and deterioration of plastic laminate by wicking action. DO NOT use a petroleum base solvent such as kerosene or gasoline. The presence of oil will prevent adhesion of new material.*

Installation - Short Method

NOTE: Short method installation is intended for original urethane installations only. Butyl tape installations and other installations of unknown material must be replaced using the extended method.

1. Inspect reveal molding retaining clips. Replace or reshape clips which are bent away from body metal 2 mm (1/16") or more.

2. Locate lower support spacers No. 7694478 or equivalent as indicated in Figure 11-9 ("A" location) and position glass in the window opening. If new glass is being installed, check relationship of glass to adhesive material on pinchweld flange. Gaps in excess of 3 mm (1/8") must be corrected by shimming or by applying more adhesive material than specified in step 7.

3. With glass in proper position in opening, apply piece of masking tape over each side edge of glass and adjacent body pillar. Slit tape vertically at edge of glass. During installation, tape on glass can be aligned with tape on body to guide window into desired position. When replacing windshield equipped with embedded antenna, perform the following steps:

   a. On styles with butyl strip at bottom center of windshield (at antenna lead pigtail), mark location of each end of strip at edge of glass with tape or grease pencil. After glass removal, replace original butyl strip with new strip provided in kit. Stretch or cut new strip as required to fill existing gap on body.

   b. On styles without butyl strip at bottom center of windshield opening, measure 100 mm (4") both sides of body centerline and using tape or grease pencil, mark location on both glass edge and body. After windshield removal, cut original adhesive material from between marks and insert filler strip provided in kit on body.

      NOTE: On styles without embedded windshield antenna, butyl strip is not required.

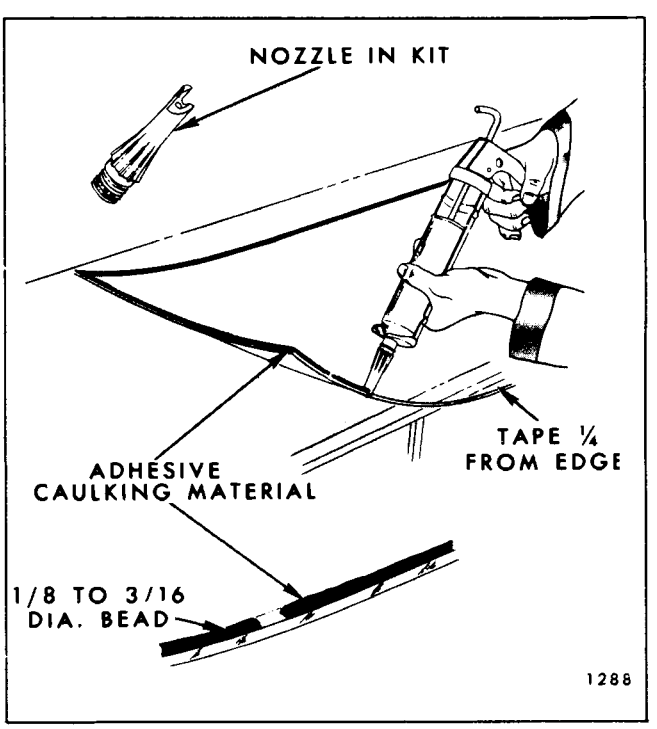


Fig. 11-7 - Adhesive Material Application - Short Method

4. Remove glass from opening. If desired, apply masking tape to inside of glass 6 mm (1/4") inboard from edge of glass, across top and down each side to facilitate clean-up after installation.

5. Thoroughly clean surface of glass to which adhesive material will be applied (around edge of inside surface) by wiping with a clean, alcohol dampened cloth. Allow to air dry.

6. Apply primer provided in Urethane Adhesive Kit No. 9631000 or equivalent as follows:

   NOTE: Primer must be thoroughly stirred and agitated prior to application to glass.

   a. On windshields equipped with embedded antenna, apply primer around periphery of glass as shown in Figure 11-11. Do not apply primer between marks established in step 3. Allow primer to dry 5 minutes.

   b. On windshields without embedded antenna and other stationary glass, apply primer around entire perimeter of glass edge and 6 mm (1/4") inboard on inner surface as in partial application of primer as shown in Figure 11-11. Allow primer to dry 5 minutes.

7. Apply smooth continuous bead of adhesive material over entire inside edge of glass where primed in step 6. Material should be 3 mm (1/8") to 5 mm (3/16") in diameter (Fig. 11-7). On windshields with embedded antenna, omit adhesive caulking 100 mm (4") both sides of antenna lead pigtail.

8. With aid of helper, lift glass into window opening. On back window installations it will be necessary to use suction cups to position glass in opening. Windshield glass can be positioned without aid of carrying devices. As shown in Figure 11-8, carry glass with one hand on inside of glass and one hand on outside. At window opening, put glass in horizontal position. While one man holds glass in this position, second man can reach one arm around body pillar and support glass while other man assumes same position. Quarter window glass can be installed in same manner.

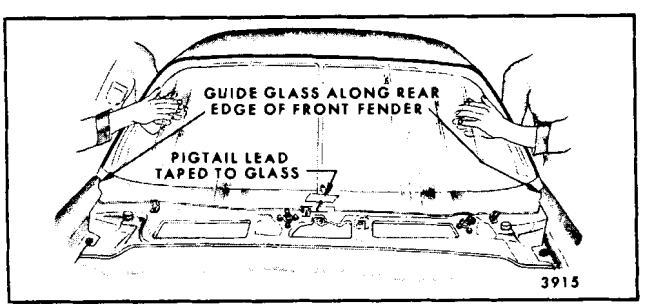


Fig. 11-8-Glass Installation

9. With glass centered at opening, place glass on lower supports and use tape guides applied in step 3 to carefully place glass in proper position.

10. Press glass firmly to wet-out and set adhesive material. Use care to avoid excessive squeeze-out which would cause an appearance problem. Using small disposable brush or flat-bladed tool, paddle material around edge of glass to ensure watertight seal. If necessary, paddle additional material to fill voids in seal. On windshields equipped with embedded antenna, paddle additional material at edges of butyl strip, if required, using care to avoid area near antenna lead pigtail.

11. Watertest car immediately using soft spray. Use warm or hot water if available. Do not direct hard stream of water at fresh adhesive material. If any leaks are encountered, paddle in extra adhesive material at leak point using a small disposable brush or flat-bladed tool.

12. Cement a rubber spacer between both right and left side of glass body metal to assure that glass will remain centered in opening while adhesive material is curing.

13. Install window reveal moldings. Remove clean-up masking tape from inner surface of glass and install remaining parts.

14. On windshield installations, vehicle must remain at normal room temperature for six hours to complete proper cure of adhesive material.

Installation - Extended Method

If original adhesive material is butyl tape or material remaining in window opening after window removal is damaged, or must be removed to permit refinishing of window opening, or has insufficient adhesion to body metal to serve as a base for replacement glass, it will be necessary to use extended installation method.

1. Using sharp scraper or chisel, remove major portion of old adhesive material from window opening flanges around entire opening. On butyl tape installations or installations of unknown material, it will be necessary to remove all traces of material. On urethane installations, it is not necessary that all traces of material be removed, but there should not be any mounds or loose pieces left.

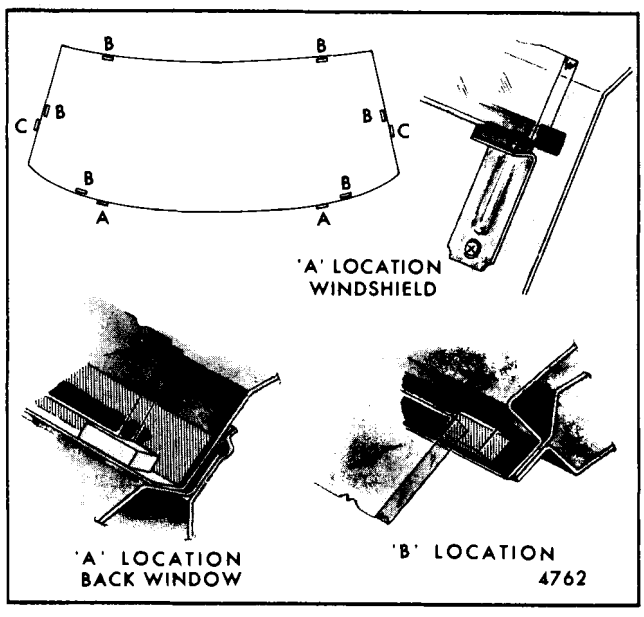


Fig. 11-9-Glass Spacer Installation

NOTE: If refinishing or painting operations are required, or painted surface is exposed during removal of material, kit primer should be applied as indicated in step 13c.

2. Inspect reveal molding retaining clips. If upper end of clip is bent away from body metal more than 0.8 mm (1/32"), replace or reform clip.

3. Using black weatherstrip adhesive or adhesive material, cement flat rubber spacers no. 4459429 or equivalent to window opening pinchweld flanges. As shown in Figure 11-9, location "B", spacers should be positioned to provide equal support around entire perimeter of glass.

   CAUTION: *If weatherstrip adhesive is used, apply sufficient material to obtain watertight seal beneath spacer; however, do not allow excessive squeeze-out. Weatherstrip adhesive is not compatible with replacement adhesive material and waterleaks may develop at locations where these two materials are used together to form seal.*

4. Figure 11-9, location "A", illustrates rectangular spacers positioned in typical back window installation. Reinstall metal supports at lower edge of windshield glass (in lieu of two lower "A" spacers indicated in back window installation).

5. With aid of helper, lift glass into window opening. On back window installations it will be necessary to use suction cups to position glass in opening. The windshield glass can be positioned without aid of carrying devices as described in step 6 (Fig. 11- 8).

6. With one hand on each side of glass, put window in vertical position and support it on lower glass support spacers. While one man holds glass in position, second man can reach one arm around body pillar and support glass while other man assumes the same position. Quarter window glass can be installed in same manner.

7. With glass positioned in opening, check relationship of glass to pinchweld flange around entire perimeter. Overlap of pinchweld flange should be equal with minimum overlap of 5 mm (3/16"). Overlap across top of windshield may be corrected by repositioning lower metal support spacers. Overlap across top of back window may be varied by shimming or shaving lower glass support spacers.

   The following spacers are available as service parts.

   a. Part no. 4459429 or equivalent, stand off spacers for maintaining glass 5 mm (3/16") from body opening - see location "B", Figure 11-9.

   b. Part no. 1651601 or equivalent, lower and side support spacers - see locations "A" and "C", Figure 11-9.

   c. Part no. 1651608 or equivalent, lower and side support spacers - see locations "A" and "C", Figure 11-9.

   d. Part no. 4459429 or equivalent, lower and side support spacers - see locations "A" and "C", Figure 11-9.

   e. Part no. 1651604 or equivalent, back glass "H-11" styles.

   f. Part no. 1704380 or equivalent, "X" windshield and quarter glass.

8. Check relationship of glass contour to body opening. Gap space between glass and pinchweld flange should be no less than 3 mm (1/8") nor more than 6 mm (1/4"). If difficulty is encountered staying between these limits, correction can be made by any one of the following methods:

   a. Reposition flat spacers.

   b. Apply more caulking material than is specified at excessive gap areas. Material can

be applied to pinchweld flange or by allowing bead on glass to exceed 9 mm (3/8") height at gap areas.

c. Change glasses - another glass may fit opening better.

d. Rework pinchweld flange.

9. After final adjustments have been made and glass is in proper position, apply pieces of masking tape over edges of glass and body, slit tape at edge of glass. Tape on glass can be aligned with tape on body to guide glass into opening during installation. Remove glass from opening. When replacing windshield equipped with embedded antenna, position new filler strip provided in kit on bottom center of windshield inner surface as shown in Figure 11- 11.

NOTE: On styles without embedded windshield antenna, butyl strip is not required.

10. If desired, apply masking tape around inner surface of glass 6 mm (1/4") inboard from outer edge. On windshield installations, apply tape to top and sides only. Do not use tape across bottom. Removal of tape after glass installation will aid in clean-up and give a smooth, even edge to adhesive material (Fig. 11-10).

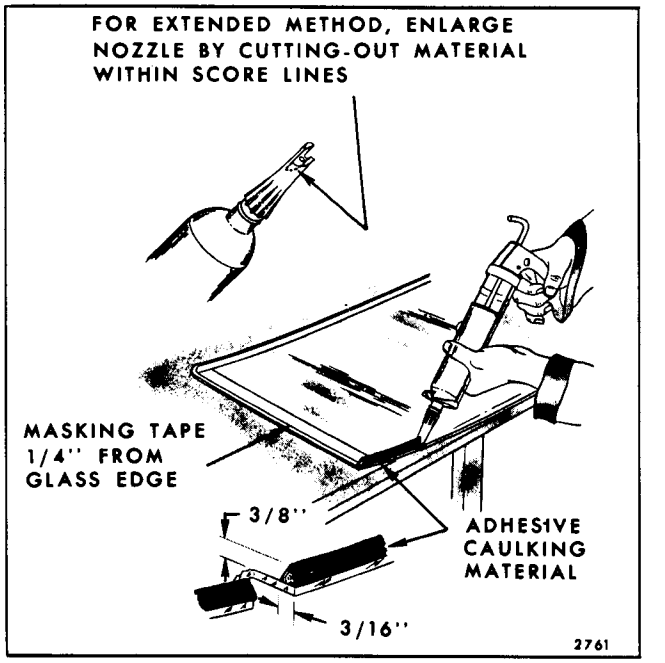


Fig. 11-10 - Adhesive Material Application - Extended Method

11. Nozzle furnished in kit is designed for short method. For extended method, enlarge nozzle opening by removing material within score lines as indicated in Figure 11-10. Do not notch nozzle beyond score lines.

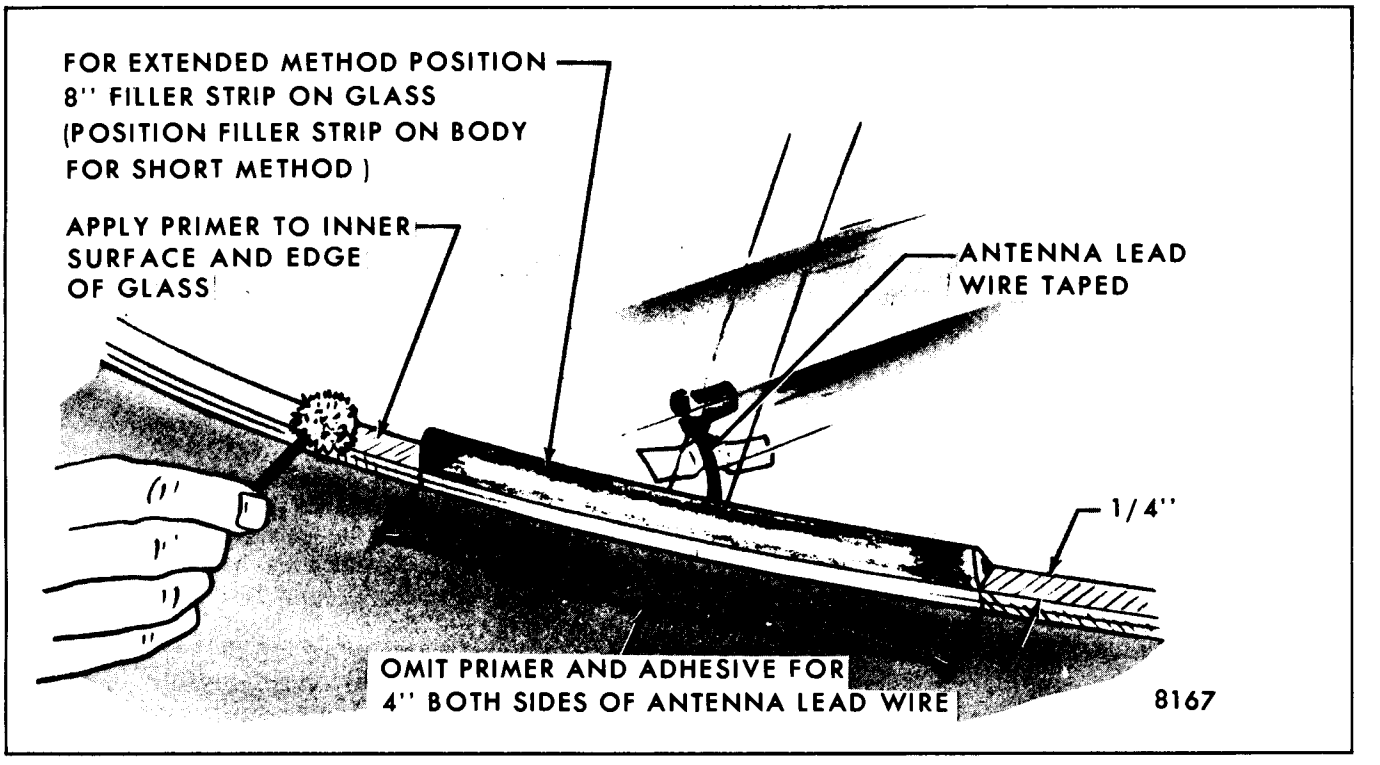


Fig. 11-11-Embedded Windshield Antenna Installation

12. Thoroughly clean surface of glass to which bead of adhesive material will be applied (around edge of inside surface of glass) by wiping with a clean, alcohol dampened cloth. Allow to air dry.

13. Apply primer provided in Urethane Adhesive Kit No. 9631000 or equivalent as follows:

    NOTE: Primer must be thoroughly stirred and agitated prior to application.

    a. On windshield equipped with embedded antenna, apply primer around periphery of glass as shown in Figure 11-11. Do not apply primer at location of filler strip applied in step 9. Allow primer to dry 5 minutes.

    b. On windshields without embedded antenna and other stationary glass, apply primer to entire perimeter of glass edge and 6 mm (1/4") inboard on inner surface as shown in Figure 11-11. Allow primer to dry for 5 minutes.

    c. Apply primer to any portion of glass opening that required refinishing and painting operations, or any portion that was cleaned of former adhesive sufficiently to expose the painted surface. Allow primer to dry for 5 minutes.

14. With caulking gun and nozzle positioned as illustrated in Figure 11-10, carefully apply smooth continuous bead of adhesive material 9 mm (3/8") high by 5 mm (3/16") wide at base completely around inside edge of glass.

15. With glass centered at opening, place glass on lower supports and use tape guides applied in step 9 to carefully place glass in proper position. On windshield installation, guide lower outer surface of glass along rear edge of front fenders to avoid smearing fresh adhesive material on instrument panel (Fig. 11-8). Make certain glass is properly aligned to tape guides on pillars, and positioned on lower metal supports. Apply light hand pressure to wet-out adhesive material and obtain bond to body opening. Using small disposable brush or flat-bladed tool, paddle material around edge of glass to ensure watertight seal. If necessary, paddle additional material to fill voids in seal. On windshields equipped with embedded antenna, paddle additional material at edges of butyl strip, if required, using care to avoid area near antenna lead pigtail.

16. Watertest immediately using soft spray. Use warm or hot water if available. Do not direct stream of water at fresh adhesive material. Allow water to spill over edges of glass. If waterleak is encountered, use flat-bladed tool to work in additional adhesive material at leak point.

17. Cement a rubber spacer between both right and left side of glass and body metal to assure that glass will remain centered in opening while adhesive material is curing.

18. Install window reveal moldings. Then carefully remove masking tape from around inner periphery of window. Pull tape toward center of glass to give a clean-cut edge to adhesive material and to prevent excess squeeze-out material on tape from creating an additional clean-up problem.

19. Install all other previously removed parts and clean up.

20. On windshield installations, vehicle must remain at normal room temperature for six hours to complete proper cure of adhesive material.

WATERLEAK CORRECTION

Description

Urethane adhesive glass installation waterleaks can be corrected without removing and reinstallaing glass.

Procedure

NOTE: The following procedure is applicable only with use of adhesive material furnished in kit no. 9631000 or equivalent.

1. Remove reveal moldings in area of leak. In some cases, it may become necessary to remove garnish moldings or finishing lace to locate source of leak.

2. Mark location of leak(s).

   NOTE: Carefully push outward on glass in area of leak to determine extent of leak. This operation should be perfomed while water is being applied to leak area. Mark extent of leak area.

3. From outside body, clean any dirt or foreign material from leak area with water; then dry area with air hose.

4. Using a sharp knife, trim off uneven edge of

adhesive material (see operation "A", Fig. 11-12) at leak point and 3 to 4 inches on both sides of leak point or beyond limits of leak area.

5. Prime affected area, as shown in operation "B", Figure 11-12, with primer supplied in kit. Thoroughly agitate primer prior to use. Allow primer to dry 5 minutes.

6. Apply adhesive material, as shown in operation "C", Figure 11- 12, at leak point and 3 to 4 inches on both sides of leak point or beyond limits of leak area.

7. Immediately after performing step 6, use flat stick or other suitable flat-bladed tool to work adhesive material well into leak point and into joint of original material and body to effect watertight seal along entire length of material application (see operation "D", Fig. 11-12).

8. Using warm or hot water, spray test to assure that leak has been corrected. DO NOT run heavy stream of water directly on freshly applied adhesive material.

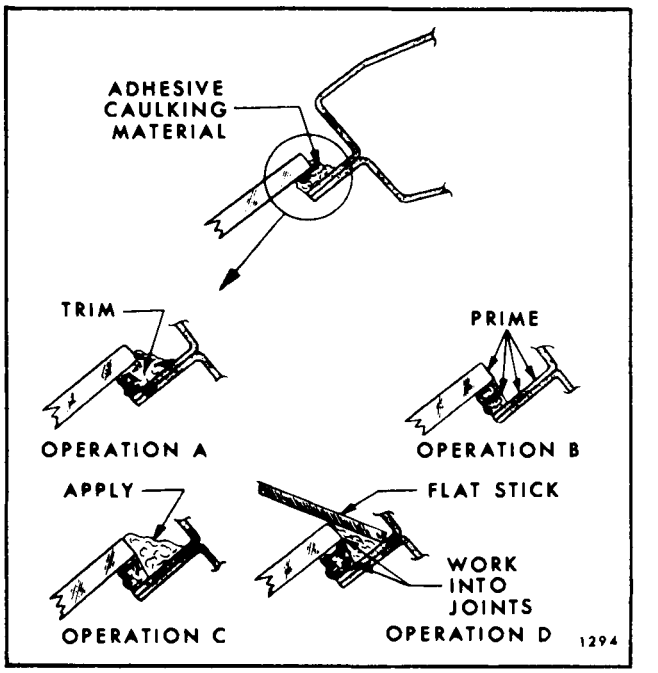


Fig. 11-12 - Adhesive Glass Waterleak Correction

STATIONARY QUARTER AND TAILGATE WINDOW

Description

The stationary quarter and tailgate window is made of solid tempered safety plate glass and is retained in the opening by either a rubber channel, urethane adhesive or buytl tape. A rubber channel installed glass includes sealer within glass and and pinchweld cavities. When removing a glass retained by a rubber channel, a bead of medium bodied sealer is required in each cavity prior to loading assembly to glass opening. On "A" styles, butyl tape is used on quarter glass which is loaded from inside the body. This would include those styles which have a louver or formal frame. When servicing "A" style inside loaded assemblies, it is recommended that urethane adhesive be used in place of butyl tape. This would require complete removal of old butyl and utilizing the extended method previously described in this section. Urethane installed glass is serviced from outside the body and requires removal of reveal molding as previously described in this section. Installation is accomplished utilizing the short method. All "B" style quarter windows use rubber channels which are installed to the glass and loaded from inside the body. The "C" styles differ in that those styles with vinyl roof covers use a rubber channel installed to the glass and loaded from outside the body. The quarter window on "C" styles without a vinyl roof cover is installed from outside the body with urethane adhesive. The tailgate window rubber channel on "A and H" styles includes a locking strip which closes the glass sealing lip when installed.

STATIONARY QUARTER WINDOW - URETHANE OR BUTYL

Removal

1. On inside butyl loaded glass, remove quarter trim as described in Section 6 of this manual.

2. Remove quarter retaining clips or glass support strips.

3. Carefully cut butyl tape between glass edge and inboard surface of glass opening pinchweld flange.

4. On styles with louver or formal frame, remove attaching screws and remove complete assembly from opening. Prior to installation, apply medium body sealer to the body contact surface of the louver or frame assembly and reverse removal procedure.

5. On urethane installed glass (outside loaded),

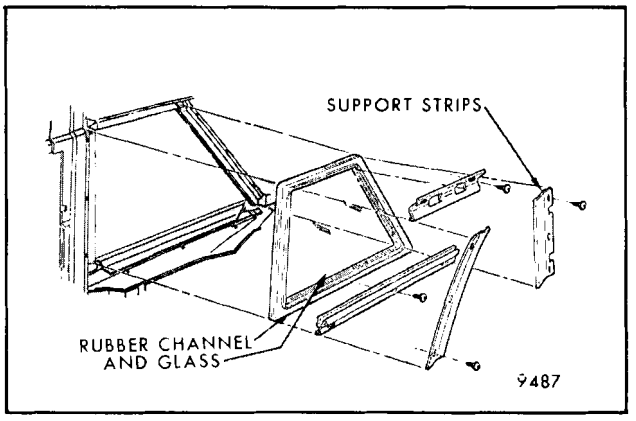


Fig. 11-13 - Inside Loaded Quarter Window and Rubber Channel - "B" Styles Typical

remove the reveal moldings as described in the front portion of this section.

6. Follow the removal and installation procedure for urethane installed glass as described previously in this section.

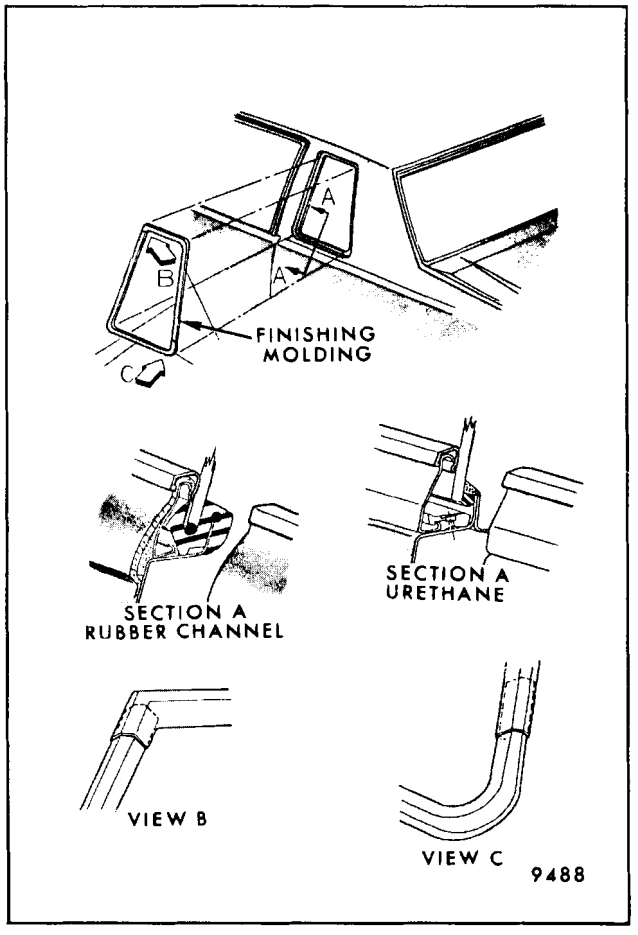


Fig. 11-14 - Outside Loaded Quarter Window - "C" Styles Typical

STATIONARY QUARTER WINDOW - RUBBER CHANNEL

Removal

1. To remove the inside loaded quarter window, remove rear quarter trim as described in Section 6 of this manual.

2. Remove screw retained quarter window support strips (Fig. 11- 13).

3. Using a flat-bladed tool, carefully break seal between inner lip of rubber channel and pinchweld flange around entire window opening.

4. On outside loaded glass with vinyl roof cover, the glass and channel are removed outboard which requires prior removal of quarter window reveal moldings and sealing material between the channel and glass opening (Fig. 11-14).

Installation

1. Scrape major portion of old sealer from rubber

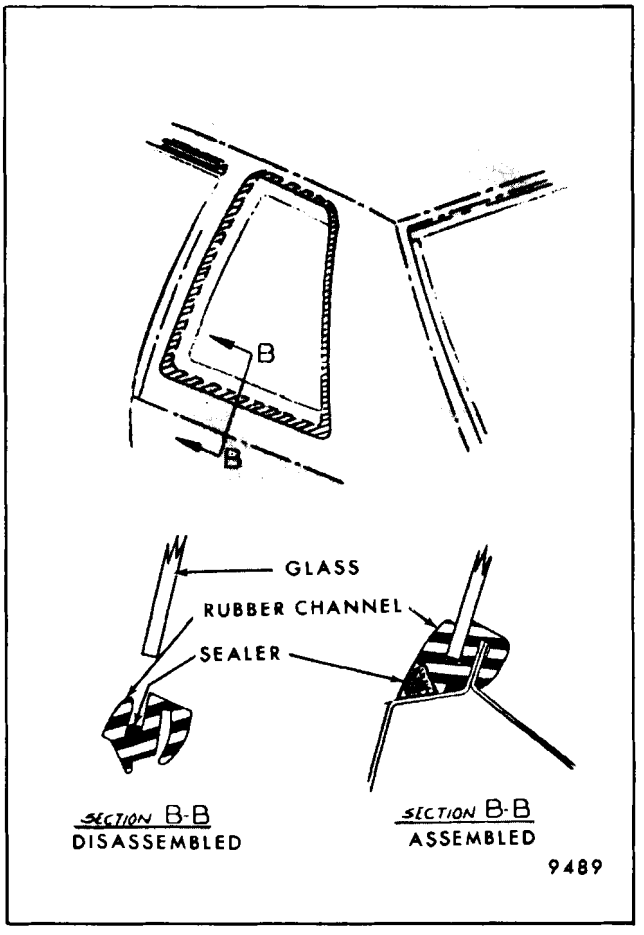


Fig. 11-15 - Outside Loaded Rubber Channel Sealing - "C" Styles Typical

channel and window opening and install rubber channel to glass. Install applicable moldings in rubber channel (Fig. 11-15).

2. On glass loaded from outside, insert a strong cord into pinchweld cavity of rubber channel completely around window assembly. Install cord so that ends of cord overlap at bottom center of window; then tape ends to inside surface of glass.

3. To hold glass, rubber channel and moldings together while loading them into window opening, tie a cord in a vertical plane around the complete assembly.

4. Apply a continuous bead of medium body sealer approximately 6 mm (1/4") in diameter to window opening pinchweld flange ("1" in Fig. 11-16) completely around window opening.

5. Apply a second continuous bead of medium body sealer to window opening ("2" in Fig. 11-16) to seal outboard lip of rubber channel.

6. With a helper holding window in position in body opening, carefully remove cord holding rubber channel to glass.

7. While helper is applying pressure to outside surface of glass, on inside of body, grasp both ends of cord previously inserted in pinchweld

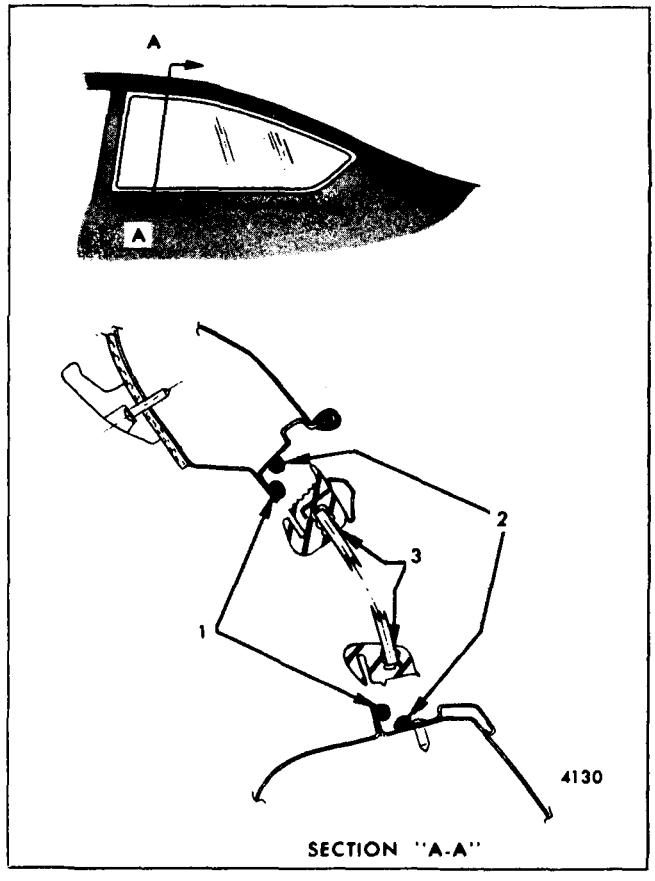


Fig. 11-16-Stationary Quarter Window Installation

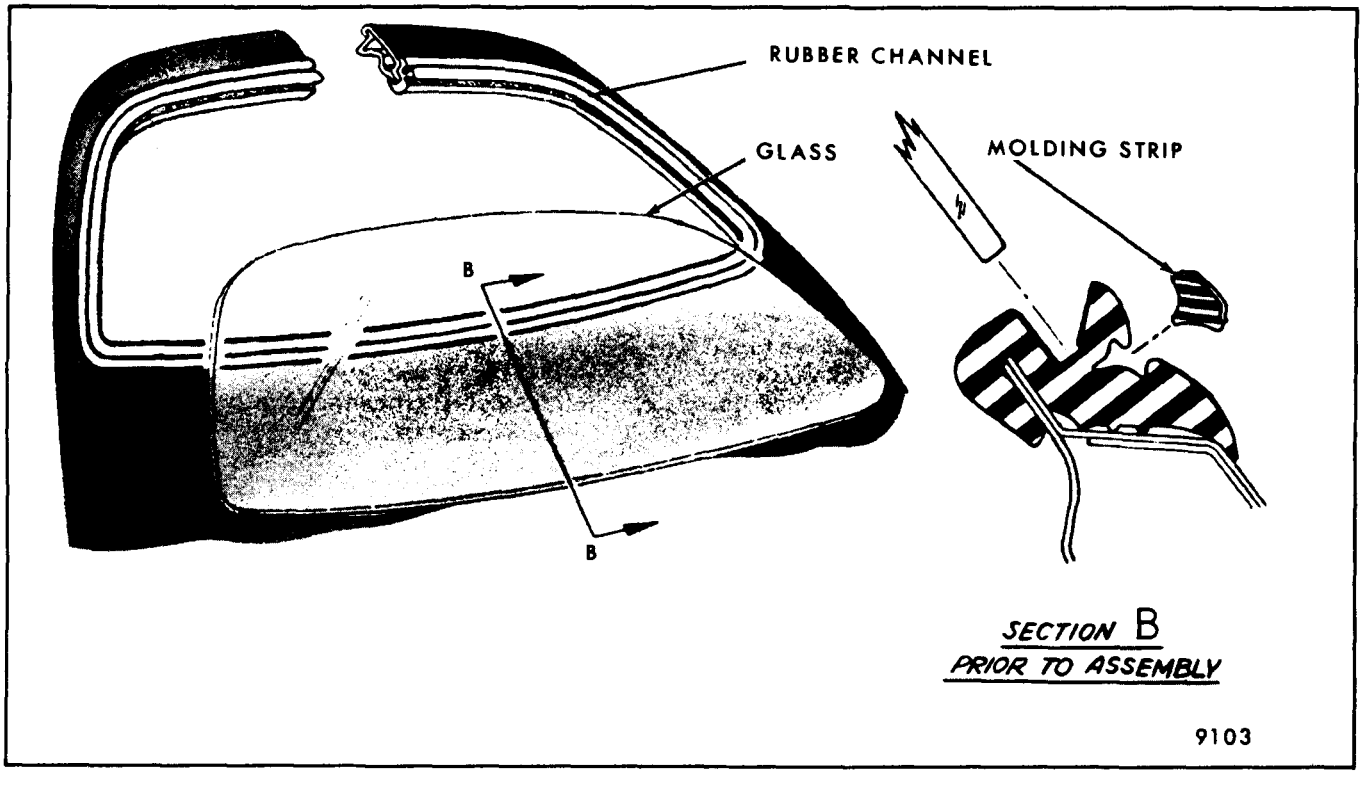


Fig. 11-17-Stationary Tailgate Window Assembly

cavity of rubber channel. Slowly pull ends of cord straight inboard to seat inner lip of rubber channel over pinchweld flange.

8. Using a pressure type applicator, apply black weatherstrip adhesive between outer lip of rubber channel and glass completely around rubber channel ("3" in Fig. 11-16).

9. Clean off excess sealer and install previously removed parts.

BACK WINDOW TRIM RING ASSEMBLY

Description

On Buick Riviera and some Cadillac "C" and all Cadillac "K" styles which do not have exposed back window reveal moldings, the back window has a trim ring assembly installed with rivets. The vinyl cover and foam pad material are cemented over the ring and tucked between the glass and trim ring around the window opening. To remove the glass requires prior removal of the vinyl roof, foam pad and trim ring.

Removal and Installation

1. Carefully remove vinyl roof and foam pad around back window to expose trim ring (refer to Section 8 of this manual).

2. Drill out all trim ring to body attaching rivets and remove complete trim ring.

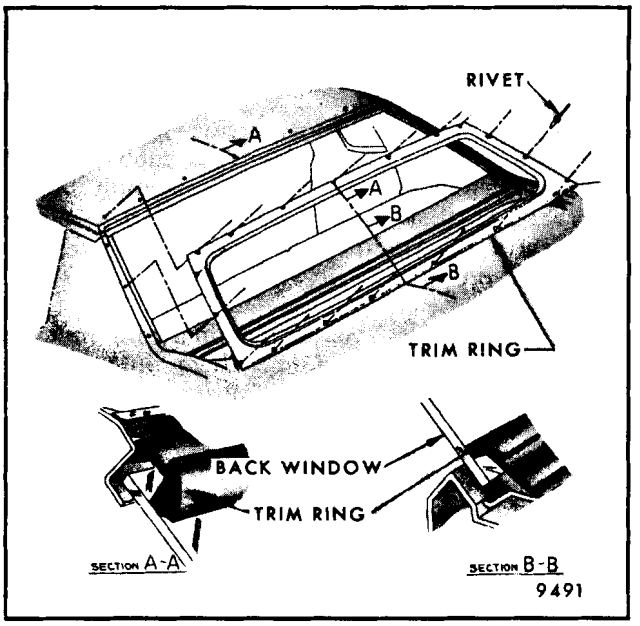


Fig. 11-18 - Back Window Trim Ring Assembly

3. The back window glass (urethane installed) is removed and installed as described previously in this section.

4. To reinstall the trim ring, position ring in location and install rivets at all designated locations (Fig. 11-18). Apply and smooth a small amount of medium body sealer at all rivet locations.

5. Reposition previously removed foam pad and vinyl roof cover material as described in Section 8 of this manual.

TAILGATE WINDOW RUBBER CHANNEL

DESCRIPTION

The tailgate window on "A and H" station wagon styles is retained in the opening by a rubber channel. The channel provides a cavity on the outer surface to which a molding strip is installed. Once the molding is secure within the cavity, the rubber to glass sealing lip is closed.

Removal

1. Using a flat-bladed tool, slide the molding strip escutcheon to expose the molding joint.

2. Pull one end of molding strip from cavity and continue removing from complete periphery of rubber channel.

3. From inside surface of glass, carefully disengage one upper corner of glass from rubber channel.

4. Continue step 3 until sides and top edge of glass are free from rubber. Carefully lift glass from lower cavity of channel.

NOTE: Once glass is removed from rubber channel, the channel can be removed from the glass opening.

Installation

1. If rubber channel was removed, apply a bead of medium body sealer to pinchweld flange and glass cavity in channel and reinstall to pinchweld flange around glass opening.

2. Position glass in rubber channel bottom horizontal cavity (Fig. 11-17).

3. Using a thin piece of wood or plastic, overlap

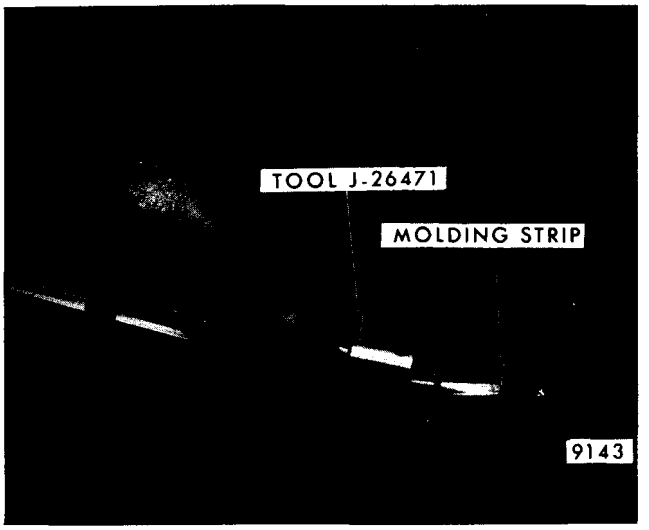


Fig. 11-19-Tailgate Window Molding Installation

the sealing lip of rubber channel over entire edge of glass.

4. Using liquid soap, lubricate the molding strip cavity in the rubber channel.

5. Insert one end of molding strip through tool J-26471 (or equivalent) and the inserter eye.

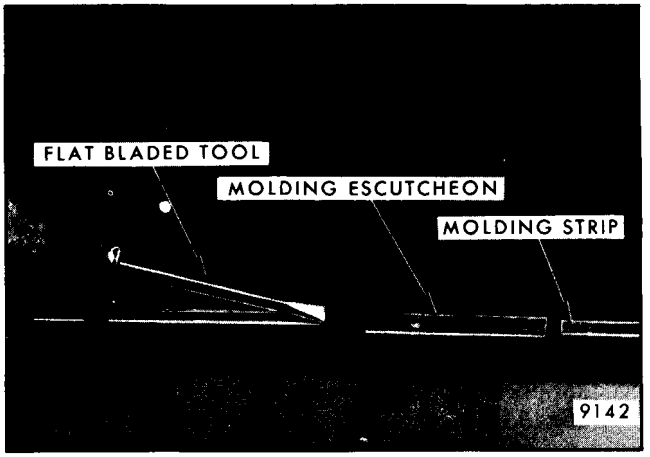


Fig. 11-20-Tailgate Window Molding Escutcheon Installation

6. Starting at bottom center of channel, insert end of molding strip into cavity.

7. Keeping the inserter eye in the cavity, draw the tool and continue to feed the molding strip into place (Fig. 11-19).

8. Install complete molding strip into rubber channel and using a flat-bladed tool, slide escutcheon over molding joint (Fig. 11- 20).

BONDED REAR VIEW MIRROR SUPPORT

DESCRIPTION

The rear view mirror is attached to a support which is secured to the windshield glass. This support is installed by the glass supplier using a plastic-polyvinyl butyral adhesive.

Service replacement windshield glass incorporates the mirror support as part of the glass assembly. In the event that the mirror support becomes detached from the glass, installation can be accomplished using Loctite Minute-Bond Adhesive 312, Catalog No. 33-25, available through Loctite distributors, or an equivalent.

To install a detached mirror support or install a new part, the following materials are recommended:

1. Loctite Minute-Bond Adhesive 312 two component pack, Catalog No. 33-25, or equivalent.

2. Replacement rear view mirror support, Service Part No. 9831062 (or equivalent), or original mirror support, prepared per steps 3 and 4 of installation procedure.

3. Wax marking pencil or crayon.

4. Rubbing alcohol.

5. Clean paper towels.

6. Fine grit emery cloth or sandpaper (no. 320 or no. 360).

7. Clean toothpick.

Installation

1. Determine rear view mirror support position on windshield. Support is located at center of glass at one of following dimensions from base of glass to base of support (dimension "A", Fig. 11-21):

   a. 574 mm (22-5/8") all "B, C" styles

   b. 18-7/8" - "K" styles

   c. 20-7/8" - "F" styles

   d. 21-1/4" - "D-23 and 33" styles

e. 19-3/4" - all "A" body styles

f. 18-3/16" - all "X" body styles

g. 9" - "H-ll-l5" body styles

h. 21-3/16" - "H-07 and 27" styles

i. 18-3/8" - "H-77" style

2. When location is determined, mark location on outside of glass with wax pencil or crayon. Also make larger diameter circle around the mirror support circle on the outside glass surface (see Fig. 11-21).

3. On inside glass surface, clean large circle with paper towel and domestic scouring cleanser, glass cleaning solution or polishing compound. Rub until area is completely clean and dry. When dry, thoroughly clean area with an alcohol saturated paper towel to remove any traces of scouring powder or cleaning solution from this area.

4. With piece of fine grit (no. 320 or no. 360) emery cloth or sandpaper, completely sand bonding surface of new rear view mirror support, part no. 9831062 (or equivalent), or factory installed support.

   CAUTION: *If original rear view mirror support is to be reused, ALL traces of factory installed adhesive must be removed prior to reinstallation.*

5. Wipe sanded mirror support with clean paper towel saturated with alcohol and allow to dry.

6. With spray can of accelerator material provided in Loctite Kit (or equivalent), lightly spray minute-bond accelerator to bonding surfaces of mirror support and windshield glass and allow to dry completely.

   NOTE: Due to rapid bond of adhesive, the following steps must be performed without hesitation.

7. When both bonding surfaces have dried, apply two drops of adhesive to mirror support, and with toothpick quickly distribute adhesive evenly over entire bonding surface of mirror support.

8. Properly position support to its premarked location, with rounded end pointed upward; press support against glass for 30 to 60 seconds, exerting steady pressure against glass. After five minutes, any excess adhesive may be removed with an alcohol moistened paper towel or glass cleaning solution.

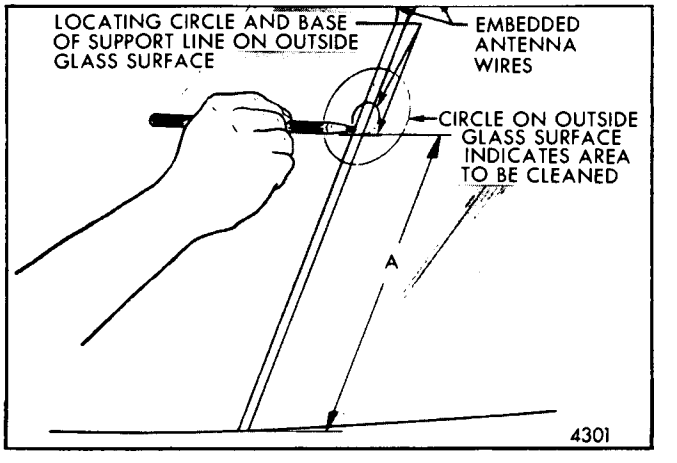


Fig. 11-21 - Locating Bonded Rear View Mirror Support on Glass

Section 12
INDEX

Subject	Page
A	
ABS and Polypropelene Plastic Test	1-14
Actuator Switch–Electric Closing and Release Unit	7-29
Adhesive Body Side Molding	1-8
Adhesive Service Kit–Stationary Glass	11-4
Adjustable Front Seat Back Assembly (Driver's Side)	9-52
Adjuster Locking Wire Adjustment Full Width Manually Operated Seats	9-15
Alignment Checking–Underbody	3-1
Aluminum Wiring (Front Body Wiring Harness Only)	10-6
Armature–Modified Pulse Wiper	2-63
Armature–Round Wiper Motor	2-32
Armrest–Rear Quarter Two–Door Styles	6-1
Assembling and Coding Lock Cylinders	1-6
Automatic Door Locking System Cadillac	10-63
Auxiliary Seat Adjustment–Limousine	9-74
Auxiliary Seat–Limousine Styles	9-74
Auxiliary Seat Lower Support Limousine	9-75
Availability of Colors for Painting Interior Plastic Parts	1-16
B	
Back Body Opening Finishing Strip, Tailgate	7-68
Back Body Opening Weatherstrip, Tailgate	7-67
Back Body Pillar Upper Trim Panel– "B-35" Styles	6-20
Back Door, Station Wagon	7-62
Back-up Lamp Switch–Cadillac	10-63
Back Window Defogger (Blower Type) in Back Panel	7-41
Back Window Defogger (Blower Type) in Quarter Panel	6-22
Back Window Defogger Motor (Blower Type)	10-79
Back Window Lower Garnish Molding	9-79
Back Window Trim Ring Assembly	11-14
Back Window Upper Garnish Molding	8-23
Blade–Two Speed Rectangular Motor	2-7
Body Front End Panel	4-17
Body Lock Pillar Applique	8-26
Body Number Plate	1-4
Body Sealing	1-14
Body Series Number	1-4
Body Side Door Hinge Straps–"H"	5-75
Body Side Hinge Strap–"X"	5-71
Body Ventilation	4-1
Body Wiring Repair Procedures	10-6
Bonded Rear View Mirror Support	11-15
Braided Lead Wire Repair– Electric Back Window	10-79
Brush Plate and Circuit Breaker– Modified Pulse Wiper	2-62
Brush Plate & Circuit Breaker– Round Wiper Motor	2-32
Bucket Seats	9-5
C	
Cable–Hood Latch Release	4-11
Cables–Six-Way Seats	9-34
Cam–Door Lower Sash Channel	5-36
Cam–Inner Panel	5-36
Case and Field Assembly–Modified Pulse Wiper	2-63
Case and Field Assembly–Round Wiper Motor	2-32
Center Pillar Trim	5-16
Chart–Model Identification	1-2
Checking and Body Wiring Repair	10-4
Checking an Inoperative Switch	10-4
Circuit Checking Procedures–Six-Way Seat	10-27
Circuit Checking Procedure–Sun Roof	10-35
Clip Replacement–Window Reveal Molding	11-3
Coding Lock Cylinders	1-5
Color Availability–Interior Plastic Parts	1-16
Compartment Floor Panel (At Kick-Up)	9-91
Compartment Lock–Luggage	9-93
Connecting Rods, Push Rods, Bell Cranks–Front and Rear Doors	5-26
Control Arm Knob–Manual Seat Adjuster	9-15
Control Assembly–Hood Latch Release	4-14
Control Switches–Wipers	2-1
Control Switch–Sun Roof	8-63
Copper Wiring (All Harnesses Except Front Body Wiring Harness)	10-6
Counterbalance Support Anchor Plate, Tailgate	7-79
Counterbalance Support, Tailgate	7-77
Custom Bucket Reclining Seat Back	9-50
Custom Bucket Seat	9-50
Custom Bucket Seat Back Panels	9-50
Custom Comfort Seat Back Reclining Control	9-52
Cutting Keys	1-6
Cylinder, Tailgate Lock	7-69
D	
Defective Electrical Components	10-4
Deflector, Inner Panel–Water	5-25
Defogger–Blower Type, Back Window–Electrical	10-79
Defogger–Blower Type, Back Window–Rear End	7-41
Defogger–Blower Type, Back Window– Rear Quarters	6-22
Defogger–Electric Back Window Grid	10-75
Defogger, Tailgate Window	7-74
Diagnosis Chart–Pulse Control	2-2
Diagnosis Chart–Round Motor Washer System	2-69

Subject	Page
Diagnosis Chart–Wiper off Car–Two Speed Rectangular	2-6
Diagnosis Chart–Wiper off Car–Two Speed Round Motor	2-21
Diagnosis Chart–Wiper on Car–Two Speed Rectangular	2-5
Diagnosis Chart–Wiper on Car–Two Speed Round Motor	2-20
Diagnosis Procedure–Jar Mounted Washer Pump	2-65
Diagnosis–Wiper on Car	2-3
Diagnostic Procedures–Modified Pulse Washer System	2-77
Dome and Sail Lamps	10-38
Dome Lamps	8-13
Door Adjustment–All Except "H and X"	5-68
Door and Center Pillar Trim	5-2
Door Armrests	5-4
Door Hardware Lubrication	5-47
Door Inner Panel Cam	5-36
Door Inside Handles and Cover Plate	5-7
Door Inside Pull Handles	5-2
Door Installation	5-68
Door Jamb Switches	10-2
Door Locks	5-31
Door Lock Striker	5-30
Door Outside Mirror Remote Controls and Escutcheon	5-5
Door Removal and Installation–All Except "H and X"	5-68
Door Removal and Installation–"H"	5-72
Door Removal and Installation–"X"	5-69
Door Side Hinge Strap–"X"	5-70
Door Side Hinge Straps–"H"	5-73
Door Trim Assemblies	5-11
Door Trim Panel Moldings and Appliques	5-15
Door Window Assembly–"A"	5-76
Door Window Assembly–"B, C"	5-79
Door Window Assembly–"E"	5-80
Door Window Assembly–"F"	5-83
Door Window Guides–"F"	5-90
Door Window Guide Tube, Upper and Lower Sash Guides–"E"	5-90
Door Window Regulator–"A-37, 57, 80"	5-87
Door Window Regulator–"B, C"	5-87
Door Window Regulator–"E"	5-88
Door Window Regulator Electric Motor	5-38
Door Window Regulator–"F"	5-88
Door Window Regulator–"H"	5-89
Doors–Front	5-47
Doors–Rear	5-91
Drain Hoses, Sun Roof	8-61
Drive Gear–Modified Pulse Wiper	2-57
Drive Gear–Two Speed Round	2-34
Drive Motor and Relay–Rear Compartment Lid	7-22
Drive Motor Gear Reduction and Relay Assembly	7-18
Drive Motor–Rear Compartment Electric Closing and Release Unit	7-28

E

Subject	Page
Electric Back Window Grid Defogger	10-75
Electric Closing and Release Unit–Cover and Housing Assembly	7-30
Electric Closing and Release Unit–Rear Compartment Lid	7-25
Electric Door Locks (P.M. Motor Lock Actuator)	10-48
Electric Door Locks (Solenoid Lock Actuators)	10-44
Electric Motor–Six-way Seat Adjusters	9-32
Electric Seat Back Lock Diagnosis Chart	9-56
Electric Seat Back Lock Release	10-74
Electric Seat Belt Retractor Diagnosis Chart	9-139
Electric Window Control Door Pull Handle and Escutcheon Assembly–"K" Style	5-15
Electrical	10-1
Electrical Diagnosis Chart–Horizontal Seat	10-26
Electrical Diagnosis Chart–Six-Way Seat	10-31
Electrical Diagnosis Chart–Sun Roof	10-36
Electrical Tailgate Window Circuit	10-16
Electrical Window Diagnosis Chart	10-15
Electronic Lamp Monitoring System	10-44
Electronic Logic Module–Cadillac	10-63
Emblems, Name Plates and Moldings–Rear Compartment	7-1
Emblems; Roof Panel	8-25
Exterior and Interior Lamps	10-38
Exterior Lamp Sealing–Rear End	7-47
Exterior Lamps–Rear End	7-47
Exterior Moldings–Doors	5-17
Exterior Moldings–Rear Quarters	6-23
Exterior Moldings–Roof	8-24
Exterior Name Plates and Emblems	4-17

F

Subject	Page
Fabric Roof Cover	8-26
Fabric Roof Cover Foam Pad Installation	8-44
Fabric Roof Cover Installation–Without Foam Pad	8-40
Fabric Roof Cover Removal–Without Foam Pad	8-40
Fabric Cover–Sun Roof Sliding Panel	8-48
Fabric Roof Cover Repair	8-51
Fabric Roof Cover with Foam Pad–Installation	8-46
Fabric Roof Cover with Foam Pad–Removal	8-44
Fender–Front	4-15
Fiber Optic Monitor System–Rear End	7-44
Finishing Panel–Rear Quarter Trim, Four-Door and "A-80"	6-6
Floor Carpet	3-22
Floor Pan Insulators	3-14
Folding Rear Seat and Load Floor Panels–"H and X"	9-75
Folding Rear Seats and Floor Panels–Station Wagon	9-85
Folding Seats and Load Floor Panels–"B"	9-94
Folding Second Seat Back and Filler Panel	9-95
Folding Second Seat Back Linkage–A	9-93
Folding Second Seat Back Lock–"A"	9-94
Folding Second Seat Back Lock–"B"	9-95
Folding Second Seat Back Trim, Foam Pad and Wire Frame	9-94

Subject	Page
Folding Second Seat Back Trim Panel and Linkage–"A"	9-83
Folding Third Seat Back–"B"	9-99
Folding Third Seat Back Lock and Pivot–"A"	9-88
Folding Third Seat Back Lock–"B"	9-99
Folding Third Seat Back Panel–"A"	9-88
Folding Third Seat Back Trim–"A"	9-88
Folding Third Seat Cushion–"A"	9-88
Footrest Assembly	9-65
Front and/or Rear Vertical Gearnut–Seat Adjusters	9-33
Front and Rear Doors	5-21
Front and Rear Door Weatherstrips	5-21
Front Door Hinges (All Except "H" and "X")	5-68
Front Door Hinges–"H"	5-72
Front Door Hinges–"X"	5-69
Front Door Lock	5-31
Front Door Lock Remote Control Handle Switch–Cadillac	10-63
Front Door Window Assembly–"A" Styles	5-76
Front Door Window Assembly–"B-C" Styles	5-79
Front Door Window Assembly–"H & X"	5-85
Front Door Window Assembly–"K"	5-85
Front Door Window Rear Guide–"A"	5-90
Front Door Window Regulator–"A-29, 35"	5-86
Front Door Window Regulator–"B and C"	5-87
Front Door Window Regulator–"K"	5-89
Front Door Window Regulator–"X"	5-86
Front Doors	5-47
Front End	4-1
Front End Sheet Metal	4-12
Front Fender	4-15
Front Glass Run Channel Retainer–"B, C, K"	5-90
Front Panel, Rear Compartment	7-39
Front Seat Adjuster Assembly–(Except Swivel Bucket)	9-21
Front Seat Adjustment	9-14
Front Seat Assembly	9-16
Front Seat Back Assembly Four-Door Style Full Width Seat	9-41
Front Seat Back Assembly–Two-Door and Four-Door Style Full Width Seat	9-37
Front Seat Back Assist Strap and Back Panel Assembly	9-37
Front Seat Back Assist Strap and Panel Assembly–Cadillac	9-37
Front Seat Back Electric Lock Solenoid	9-59
Front Seat Back–Four-Door Full Width Seat	9-36
Front Seat Back Head Restraint	9-35
Front Seat Back Head Restraint Guide Tube	9-60
Front Seat Back Head Restraint Lock and Escutcheon Assembly	9-36
Front Seat Back Lock	9-57
Front Seat Back Manual Lock Control	9-58
Front Seat Back Power Reclining Actuator	9-45
Front Seat Back Reclining Unit	9-44
Front Seat Back–Standard Bucket Seats	9-49
Front Seat Belt Warning and Electric System–Cadillac	9-138
Front Seat Belt Warning System	9-133
Front Seat Center Armrest	9-60
Front Seat Center Armrest and Curtain Assembly–Notch Down Seat Back	9-62
Front Seat Center Armrest, Curtain and Linkage–Full Width Seat	9-61
Front Seat Dealer Relocation–"A"	9-13
Front Seat Dealer Relocation–"B & C"	9-8
Front Seat Reclining Back–Chev. and Cad.	9-43
Front Seat Reclining Back–Eldorado 50-50 Seat	9-43
Front Seats	9-1
Front Wheelhouse Trim Cover, Left–"A" Station Wagon	6-19
Full Width, Front Seats	9-2

G

Subject	Page
Gearbox Disassembly and Assembly–Modified Pulse Wiper	2-57
Gearbox Disassembly and Assembly–Two Speed Round Motor	2-33
Gearbox Disassembly–Two Speed Rectangular	2-11
Gearbox Reassembly–Two Speed Rectangular	2-12
Gearbox Relay–Modified Pulse	2-38
General Body Construction	3-1
General Information	1-1
Glass Alignment–"A" Styles	5-77
Glass Alignment–"E"	5-81
Glass Alignment–"F"	5-83
Glass Alignment–Rear "A-29, 35"	5-102
Glass Installation–Extended Method	11-7
Glass Installation–Short Method	11-6
Glass Polishing	11-1
Glass Run Channel–"B, C, K & X"	5-91
Glass Run Channel Retainer, Rear Door–"B, C"	5-107
Glass Scratch Removal	11-1
Grid Line Repair–Electric Back Window	10-76
Guide–Door Window–"F"	5-90
Guide–Front Door Window Rear–"A"	5-90
Guide–Rear Door Window Lower Sash Upper and/or Lower, "A-29, 35"	5-107
Guide Tube–Door Window–"E"	5-90
Guide Tube–Rear Door Window–"A-29, 35"	5-107
Guide Tube–Three Way Tailgate	7-92

H

Subject	Page
Halo Moldings	8-26
Handle–Inside Remote	5-26
Handle–Tailgate Outside Pull	7-70
Handles–Door Inside	5-7
Handles–Door Outside	5-27
Hardware Attachment Thread Locking	5-47
Hatchback Lid Gas–Operated Support Assembly	7-7
Hatchback Lids	7-5
Headlining–Cloth and Vinyl Coated (Soft)	8-1
Headlining, One-Piece Formed	8-6
Headlining Panel, Sun Roof	8-63

Subject	Page
Headlining–Styles with Sun Roof	8-4
Head Restraint–Front Seat Back	9-35
Hinge Removal and Installation–All Except "H" and "X"	5-68
Hinge, Tailgate	7-79
Hinges–Front Door (All Except "H" & "X")	5-68
Hinges–Front Door–"H"	5-72
Hinges–Front Door–"X"	5-69
Hinges–Rear Door	5-100
Hood Assembly	4-12
Hood Latch Assembly	4-13
Hood Latch Auxiliary Release Tool	4-14
Hood Latch Release	4-14
Hood Latch Release Cable	4-11
Hood Latch Striker	4-12
Horizontal Actuator–Seat Adjusters	9-32
Horizontal and Vertical Drive Cables–Six-Way Seats	9-34
Horizontal Jackscrew and/or Gearnut–Two-Way Seat	9-31
Horizontal Power Seats	10-25
Horizontal Underbody Dimensions–"F" Bodies	3-2
Horizontal Underbody Dimensions–"H-11-15-77" Styles	3-5
Horizontal Underbody Dimensions–"H-07-27" Styles	3-9
Horizontal Underbody Dimensions– "K" Body	3-13
Horizontal Underbody Dimensions–"X" Bodies	3-4

I

Illuminated Lock Cylinder and Courtesy Lamps	10-38
Improper Electrical Ground	10-4
Inner Cover Panel, Tailgate	7-69
Inner Panel Access Hole Cover, Single Acting Tailgate	7-83
Inner Panel Water Deflector	5-25
Inside Locking Rod	5-26
Inside Remote Handle	5-26
Insulators–Floor Pan	3-14
Integral Padded Fabric Roof Cover Repair	8-60
Integral Padded Fabric Roof Cover With Foam Pad	8-43
Interior Plastic Trim Parts Finishing	1-14

J

Jamb Switch–Tailgate Warning Light	7-72
Jar Mounted Washer System	2-64

K

Key Cutting	1-6
Key Identification and Usage	1-5

L

Lamp, Exterior–Rear End	7-47
Lamp–Opera	7-47
Lamp–Rear Compartment Front Panel	7-47
Lamp, Side Marker–Rear End	7-47
Lamp Switch–Back-Up–Cadillac	10-63
Lamp–Tail	7-47
Lamps–Dome	8-13
Lamps–Exterior and Interior	10-38
Lamps–Tail and Side Marker	10-38
Lap and Shoulder Belts	9-102
Latch and Support–"H" and "X"	6-29
Latch and Support–Swing Out Quarter Vent–"A-35"	6-28
Latch Striker, Tailgate	7-86
Latch, Tailgate	7-85
Lid Lock Cylinder, Rear Compartment	7-14
Lid Lock, Rear Compartment	7-15
Lid Lock Striker, Rear Compartment	7-17
Lid, Rear Compartment	7-3
Lids, Hatchback	7-5
Lock Assembly, Tailgate	7-72
Lock Cover, Tailgate	7-69
Lock Cylinder Assembly	5-28
Lock Cylinder Coding	1-5
Lock Cylinder–Door	5-28
Lock Cylinder Emblem, Rear Compartment	7-10
Lock Cylinder Replacement	1-6
Lock Cylinder, Tailgate	7-71
Lock Cylinder Assembling and Coding	1-6
Lock–Front Door	5-31
Lock–Front Seat Back	9-57
Lock–Inertia–"B & C"	9-39
Lock–Rear Door	5-31
Lock Relay–Cadillac P.M. Motor	10-63
Lock Release Solenoid, Tailgate	7-71
Lock Remote Control, Tailgate	7-85
Lock, Station Wagon Back Door	7-62
Lock Striker, Tailgate	7-73
Lock, Tailgate	7-72
Louver–Pressure Relief	4-9
Lower or Upper Channel and Plastic Slides–Seat Adjusters	9-33
Lower Sash Channel Cam–Doors	5-36
Lower Weatherstrip, Tailgate	7-68
Low–Level Air Duct Outlet, Door and Grille	4-2
Lubrication	1-13
Lubrication–Sun Roof	8-69
Lubrication, Tailgate	7-82
Luggage Compartment and Folding Third Seat Module–"B" Wagons	9-97
Luggage Compartment Front Filler Panel–"X-17"	9-76
Luggage Compartment Lock Cylinder	9-93
Luggage Compartment Panel	9-88
Luggage Compartment Panel–"B"	9-95
Luggage Compartment Panel and Hinge	9-76

M

Manual Description	1-1
Manual Seat–Diagnosis Chart	9-6
Manually Operated Seat Adjuster Control Arm Knob	9-15

Subject	Page
Metal Replacement Parts Finishing	1-14
Metric Fastener Identification	1-5
Metric Fastener Usage	1-5
Metric Specifications and Notation	1-5
Mirror–Door Outside, Remote Controls and Escutcheons	5-5
Mirror–Outside, Remote Control	5-74
Mirror–Outside, Standard	5-75
Mirror Support (Bonded) Rear View	11-15
Model Identification Chart	1-2
Modified Pulse Wiper System	2-37
Modified Pulse Wiper Washer System	2-71
Molding–Back Window Lower Garnish	9-79
Molding–Back Window Upper Garnish	8-23
Molding Clip Replacement–Doors	5-21
Molding Clip Replacement–Rear Quarter	6-26
Molding–Roof Drip Scalp	8-24
Molding–Upper Body Lock Pillar Finishing	8-25
Molding–Windshield Upper Garnish	8-17
Moldings–Adhesive Body Side	1-8
Moldings and Appliques–Door Trim Panel	5-15
Moldings, Emblems and Name Plates–Rear Compartment	7-1
Moldings–Exterior Doors	5-17
Moldings, Halo	8-26
Moldings–Quarter Belt	8-26
Moldings–Side Roof Rail Garnish	8-19
Moldings–Upper Roof, Landau	8-25
Monitor System, Fiber Optic Rear	7-44
Monitoring System–Electronic Lamp	10-44
Motor and Drive Gear Assembly, Sun Roof	8-63
Motor Disassembly and Assembly–Modified Pulse Wiper	2-61
Motor Disassembly and Assembly–Two Speed Round Motor	2-32
Motor Disassembly–Two Speed Rectangular	2-13
Motor–Door Window Regulator	5-38
Motor Operation–Modified Pulse	2-38
Motor Reassembly–Two Speed Rectangular	2-14
Motor–Two-Way Seat	9-29

N

Subject	Page
Name Plates, Moldings and Emblems–Rear Compartment	7-1

O

Subject	Page
One-Piece Formed Headlining	8-6
Open Electrical Circuits	10-4
Opera Lamp	7-47
Outside Handles–Doors	5-27
Outside Mirror Remote Controls and Escutcheon–Door	5-5
Outside Pull Handle, Tailgate	7-70
Outside Remote Control Mirror	5-74
Outside Standard Mirror	5-75

P

Subject	Page
Page and Figure Numbers	1-1
Painting Polypropylene Plastic Parts	1-15
Painting Rigid or Hard ABS Plastic Parts	1-15
Painting Vinyl and Flexible (Soft) ABS Plastic Parts	1-15
Plastic Identification Test	1-14
Plastic Interior Trim Parts Finishing	1-14
Plastic Slides–Two-Way Seat Adjusters	9-32
Plate–Body Number	1-4
Polypropelene and ABS Plastic Test	1-14
Power Door Lock System	5-36
Power Operated Six-Way Seat Adjuster Diagnosis Chart	9-7
Power Operated Sun Roof	10-35
Power Operated Tailgate Window–"B" Styles	10-16
Power Operated Two-Way Seat Adjuster	9-29
Power Reclining Seat Back	10-31
Power Seat Adjuster Horizontal Actuator Adjustment	9-15
Power Seat Back Diagnosis Chart	9-8
Power Sun Roof Circuit Checking Procedure	10-35
Power Window Circuit Checking Procedures	10-8
Power Windows	10-6
Pressure Relief Louver	4-9
Pressure Relief Valve	4-9
Pulse Control–Wipers	2-1
Pulse Relay Coil Circuit	2-41
Pulse Relay–Modified Pulse	2-40
Push Button Handle Disassembly	5-28

Q

Subject	Page
Quarter Belt Moldings	8-26
Quarter Trim	6-1
Quarter Vent Division Channel Garnish Molding–"A-35" Styles	6-20

R

Subject	Page
Rear Compartment	7-1
Rear Compartment Front Panel	7-39
Rear Compartment Front Panel Lamps	7-47
Rear Compartment Lid	7-3
Rear Compartment Lid Ajar Jamb Switch	7-30
Rear Compartment Lid Electric Closing and Release Unit	7-25
Rear Compartment Lid Electric Closing Unit	7-18
Rear Compartment Lid Lock	7-15
Rear Compartment Lid Lock Cylinder	7-14
Rear Compartment Lid Lock Striker	7-17
Rear Compartment Lock Cylinder Emblem	7-10
Rear Compartment Torque Rods	7-34
Rear Compartment Weatherstrip	7-37
Rear Door Adjustment	5-100
Rear Door Hinges	5-100
Rear Door Lock	5-31

Subject	Page
Rear Door Removal and Installation	5-100
Rear Door Stationary Vent Division Channel and Window	5-104
Rear Door Window–"A-29, 35"	5-101
Rear Door Window–"B and C"	5-103
Rear Door Window–"K"	5-103
Rear Door Window–"X-69"	5-104
Rear Door Window Glass Run Channel–"B, C, K, X"	5-108
Rear Door Window Glass Run Channel Retainer–"B, C"	5-107
Rear Door Window Guide Tube–"A-29, 35"	5-107
Rear Door Window Lower Sash Upper and/or Lower Guide–"A-29, 35"	5-107
Rear Door Window Regulator "A-29, 35"	5-105
Rear Door Window Regulator–"B and C"	5-106
Rear Door Window Regulator–"K"	5-106
Rear Door Window Regulator–"X-69"	5-107
Rear Doors	5-91
Rear Floor Side Filler Panel	9-86
Rear Guide and Cable Assembly, Sun Roof	8-65
Rear Quarter Armrest–Styles	6-1
Rear Quarter Exterior Moldings	6-23
Rear Quarter Front Wheelhouse Trim Cover (Left Side)–"A" Station Wagon	6-19
Rear Quarter Lock Pillar Finishing Lace–"A, B & C" Two-Door Styles	6-7
Rear Quarter Rear Wheelhouse Trim Cover (Left Side)–"A" Station Wagon	6-19
Rear Quarter Trim–"A, F, H and X"	6-3
Rear Quarter Trim–Two-Door Styles	6-3
Rear Quarter Trim Finishing Panel–All Four-Door and "A-80"	6-6
Rear Quarter Upper Trim and/or Quarter Sail Trim (Above Belt) All Styles	6-7
Rear Quarter Wheelhouse and Body Lock Pillar Covers–"B-35" Styles	6-14
Rear Quarters	6-1
Rear Seat Back Center Armrest	9-69
Rear Seat Back Assembly	9-69
Rear Seat Back Filler Panel and Hinge	9-76
Rear Seat Back Lock	9-76
Rear Seat Back "X and H" Folding Rear	9-76
Rear Seat Cushion "A"	9-69
Rear Seat Cushion–Except "A" and Station Wagons	9-66
Rear Seat Cushion (Folding Seat Back)	9-75
Rear Seat to Back Window Panel Trim	9-80
Rear Shroud Side Trim Panel–Right Side–"K" Styles	4-8
Rear Speakers–Rear Quarters	6-21
Rear Speakers–Seats	9-76
Rear Wheelhouse Trim Cover, Left "A" Station Wagon	6-19
Reclining Back Bucket Seats	9-5
Regulator–Door Window, "A-37, 57, 80"	5-87
Regulator–Door Window, "B, C"	5-87
Regulator–Door Window, "F"	5-88
Regulator–Door Window, "H"	5-89
Regulator–Front Door Window, "A-29, 35"	5-86
Regulator–Front Door Window–"E"	5-88
Regulator–Front Door Window–"F"	5-88
Regulator–Front Door Window–"K"	5-89
Regulator–Front Door Window–"X"	5-86
Regulator–Rear Door Window–"A"	5-105
Regulator–Rear Door Window–"B & C"	5-106
Regulator–Rear Door Window–"K"	5-106
Regulator–Rear Door Window–"X"	5-107
Relay Switch and Terminal Board–Modified Pulse Wiper	2-57
Relay Switch and Terminal Board–Two Speed Round	2-33
Release Tool–Hood Latch	4-14
Removing Wrinkles–Fabric Roof Cover	8-49
Repair–Fabric Roof Cover	8-51
Repair Procedure (Grid Line)–Electric Back Window	10-76
Repair Procedure w/Plastic Graining Die–Fabric Roof Cover	8-56
Repair Procedure w/Teflon Coated Graining Tool–Fabric Roof Cover	8-53
Replacement Lock Cylinders	1-6
Reveal Moldings–Stationary Glass	11-2
Roof Cover Repair–Integral Padded Fabric	8-57
Roof Cover Repair (Foam Pad)	8-58
Roof Drip Scalp Moldings	8-24
Roof Panel Emblems	8-25
Round Motor Washer System	2-67
Run Channel–Front Door Window–"B, C, K and X"	5-91
Run Channel, Rear Door Window–"B C, K and X"	5-108

S

Subject	Page
Seat Adjuster Manual–Diagnosis Chart	9-6
Seat Adjuster–Power Operated Six Way Diagnosis Chart	9-7
Seat, Auxiliary Limousine	9-74
Seat Back Assist Straps	9-37
Seat Back Electric Lock Solenoid and Support Assembly	9-59
Seat Back Inertia Lock–"B & C"	9-39
Seat Back Lock Solenoid	10-74
Seat Back Lock Striker and Stop–Bucket Seats	9-54
Seat Back Reclining Actuator Unit–Power	9-45
Seat Belt Guide Loop	9-17
Seat Sensor Switch (Driver's Side Only)–Cadillac	10-64
Seat Torque Specifications	9-5
Seats–Front	9-1
Second Seat Back Filler Panel	9-91
Second Seat Cushion–"A" Station Wagon	9-92
Second Seat Cushion–"B" Station Wagon	9-94
Servicing Lap and Shoulder Belts	9-102
Short Electrical Circuits	10-5
Short Tester Checking Procedure	10-5
Shoulder Belt Guide Loop	9-17
Shroud Center Duct High–Level Air Outlet and Door–"A & E"	4-2
Shroud Center Duct High Level Air Outlet and Door–"F" Styles	4-4,

Subject	Page
Shroud Duct Panel and Door Assembly–Right Side	4-8
Shroud Side Finishing Panel	4-4
Shroud Side Trim Panel–Right and Left Sides–"K" Styles	4-7
Side Marker Lamps and Tail Lamps	10-38
Side Marker Lamps–Rear End	7-47
Side Roof Rail Garnish Moldings	8-19
Side Roof Rail Weatherstrip and Retainer	5-23
Single Acting Tailgate	7-83
Six-Way Power Seats	10-27
Six-Way Seat Adjuster	9-32
Solenoid–Seat Back Lock	10-74
Solenoid–Tailgate Lock Release	7-62
Spare Tire Cover Station Wagon	6-16
Special Body Tools	1-17
Spring Clips–Door Locking Rod	5-25
Stationary Glass	11-4
Stationary Quarter and Tailgate Window	11-11
Stationary Quarter Window Rubber Channel	11-12
Stationary Quarter Window–Urethane or Butyl	11-11
Stationary Rear Quarter Window	6-29
Station Wagon Back Door	7-62
Station Wagon Folding Rear Seats and Floor Panels	9-85
Station Wagon Tailgate	7-66
Striker–Door Lock	5-30
Striker–Hood Latch	4-12
Striker Pull Down Unit–Rear Compartment Lid	7-22
Striker–Tailgate Lock	7-73
Sun Roof	8-59
Sun Roof Adjustments	8-62
Sun Roof Diagnosis Chart	8-61
Sun Roof, Headlining	8-4
Sun Roof Housing Assembly	8-68
Sun Roof Housing Drain Hose Replacement	8-66
Sun Roof Lubrication	8-69
Sun Roof Opening Weatherstrip	8-66
Sun Roof Panel	8-64
Sun Roof Panel Weatherstrip	8-68
Support Assembly, Hatchback Lid Gas-Operated	7-7
Support Cable, Tailgate	7-83
Swing-Out Quarter Vent Window–"A-35"	6-26
Swing-Out Quarter Window–"H-11, 77" and "X-17, 27"	6-28
Switch–Back-up Lamp–Cadillac	10-63
Switch–Door Jamb	10-2
Switch–Rear Compartment Lid Ajar Jamb	7-30
Switch–Seat Sensor–Cadillac	10-64
Switch–Tailgate Warning Light Jamb	7-72
Swivel Bucket Seat	9-5
Swivel Shell Bucket Seat	9-28

T

Subject	Page
Tailgate Adjustments	7-86
Tailgate Alignment	7-81
Tailgate Assembly–"A-35"	7-75
Tailgate Assembly–Single Acting	7-83
Tailgate Assembly–Single Acting–"A-80"	7-84
Tailgate Assembly–Three Way Tailgate, R & I and Adjustment	7-106
Tailgate Glass Blockout Switch–Three Way Tailgate	7-96
Tailgate Hinge Assembly–"A-80"	7-83
Tailgate Left Lower Hinge–Three Way Tailgate	7-104
Tailgate Left Upper Hinge and Striker, Body Side–Three Way Tailgate	7-105
Tailgate Left Upper Hinge Lock, Gate Side–Three Way Tailgate	7-103
Tailgate Lock Cylinder–Three Way Tailgate	7-96
Tailgate Lock Remote Control–Three Way Tailgate	7-96
Tailgate Outside Handle–Three Way Tailgate	7-96
Tailgate P.M. Motor Lock Actuator–Three Way Tailgate	7-95
Tailgate Right Lower Lock–Three Way Tailgate	7-101
Tailgate Right Upper and Lower Striker–Three Way Tailgate	7-105
Tailgate Right Upper Lock–Three Way Tailgate	7-96
Tailgate Torque Rod and Link–Three Way Tailgate	7-106
Tailgate Window Assembly–Three Way Tailgate	7-92
Tailgate Window Guide Tube–Three Way Tailgate	7-92
Tailgate Window Regulator Electric Motor–Three Way Tailgate	7-94
Tailgate Window Regulator–Three Way Tailgate	7-93
Tailgate Window Rubber Channel	11-14
Tail Lamps	7-47
Tail Lamps and Side Marker Lamps	10-38
Test for Propropylene and ABS Plastic	1-14
Test for Vinyl Plastic	1-15
Testing Grid Lines–Electric Back Window	10-75
Test for Plastic Identification	1-14
Third Seat Back Cushion–"B"	9-99
Third Seat Back Lock Remote Control Handle–"B"	9-99
Three-Way Tailgate	7-88
Three-Way Tailgate Lock and Synchronization Check Procedure	7-108
Tools–Special Body	1-17
Torque Rods, Rear Compartment	7-34
Torque Rods, Station Wagon Back Door	7-65
Transfer–Wood Grain	1-11
Transmission–Seats	9-34
Trim Assemblies–Door	5-11
Trim–Center Pillar	5-16
Trim–Door and Center Pillar	5-2
Two-Speed Rectangular Wiper Motor	2-2
Two-Speed Round Motor	2-14
Two-Way Seat Adjuster, Power Operated	9-29

U

Subject	Page
Underbody Alignment	3-1
Unlock Relays–Cadillac	10-63
Upper Body Lock Pillar Finishing Molding	8-25
Upper Roof Moldings–Landau	8-25

Subject	Page
V	
Valve–Pressure Relief	4-9
Vanity Mirror and Lamp Assembly	8-15
Vehicle Identification Number	1-4
Vertical Underbody Dimensions–"F" Bodies	3-3
Vertical Underbody Dimensions–"H-11-15-77" Styles	3-8
Vertical Underbody Dimensions–"H-07-27" Styles	3-11
Vertical Underbody Dimensions–"K" Body	3-13
Vertical Underbody Dimensions–"X" Bodies	3-5
Vinyl Plastic Test	1-15
Vinyl Roof Cover	8-26
Vista Vent	8-70
W	
Warning Light Jamb Switch, Tailgate	7-72
Washer Pump–Modified Pulse	2-72
Washer Systems	2-64
Water Deflector–Inner Panel	5-25
Waterleak Correction–Stationary Glass	11-10
Weatherstrip and Retainer–Side Roof Rail	5-23
Weatherstrip–"A-35"	6-28
Weatherstrip–Front and Rear Door	5-21
Weatherstrip–Quarter Vent–"H" and "X"	6-29
Weatherstrip, Rear Compartment	7-37
Weatherstrip, Station Wagon Back Door	7-63
Weatherstrip–Sun Roof Opening	8-66
Weatherstrip–Sun Roof Panel	8-68
Weatherstrip, Three Way Tailgate	7-91
Wheelhouse Trim Cover–"X-17"	6-14
Wheelhouse Trim and Stowage Pocket Assembly, Left Side–"B" Station Wagon	6-16
Wheelhouse Trim, Right–Station Wagon	6-14
Windlace or Finish Molding–Lock Pillar	6-14
Window Assembly, Door–"A"	5-76
Window Assembly, Door–"B, C"	5-79
Window Assembly, Door–"F"	5-83
Window Assembly, Door–"H" & "X"	5-85
Window Assembly–Three Way Tailgate	7-92
Window Belt Sealing Strips	5-23
Window Defogger, Tailgate	7-74
Window, Front Door–"B, C"	5-79
Window Garnish Molding, Tailgate	7-69
Window Stationary–Quarter–Rubber Channel Retained	11-12
Window–Rear Door–"A-29, 35"	5-101
Window–Rear Door–"B & C"	5-103
Window–Rear Door–"X-69"	5-104
Window Regulator, Front Door–"A" Styles	5-86
Window Regulator, Front Door–"B, C"	5-87
Window Regulator, Front Door–"E"	5-88
Window Regulator, Front Door–"F"	5-88
Window Regulator, Front Door–"H"	5-89
Window Regulator, Front Door–"K"	5-89
Window Regulator, Front Door–"X"	5-86
Window Regulator Motor	5-38
Window Regulator, Rear Door–"A"	5-105
Window Regulator, Rear Door–"B, C"	5-106
Window Regulator, Rear Door–"K"	5-106
Window Regulator, Rear Door–"X"	5-107
Window Removal–Stationary Glass	11-5
Windshield Upper Garnish, Molding	8-17
Windshield Wiper System	2-1
Windshield Wiper System Tester	2-89
Wiper Arm–Two Speed Rectangular	2-7
Wiper Arm–Two Speed Round	2-28
Wiper Blade–Two Speed Rectangular	2-7
Wiper Blade–Two Speed Round	2-30
Wiper Motor Adjustments–Two Speed Round	2-37
Wiper Motor–Two Speed Rectangular	2-7
Wiper Motor–Two Speed Round	2-25
Wiper System–Windshield	2-1
Wiper Transmission–Two Speed Rectangular	2-10
Wiper Transmission–Two Speed Round	2-31
Wood Grain Transfers	1-11
Wrinkle Removal–Fabric Roof Cover	8-49

(1.0 in = 25.4 mm)
(0.1 in = 2.54 mm)

DECIMAL INCHES TO MILLIMETRES

In.	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	In.
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
—		2.5	5.1	7.6	10.2	12.7	15.2	17.8	20.3	22.9	—
1	25.4	27.9	30.5	33.0	35.6	38.1	40.6	43.2	45.7	48.3	1
2	50.8	53.3	55.9	58.4	61.0	63.5	66.0	68.6	71.1	73.7	2
3	76.2	78.7	81.3	83.8	86.4	88.9	91.4	94.0	96.5	99.1	3
4	101.6	104.1	106.7	109.2	111.8	114.3	116.8	119.4	121.9	124.5	4
5	127.0	129.5	132.1	134.6	137.2	139.7	142.2	144.8	147.3	149.9	5
6	152.4	154.9	157.5	160.0	162.6	165.1	167.6	170.2	172.7	175.3	6
7	177.8	180.3	182.9	185.4	188.0	190.5	193.0	195.6	198.1	200.7	7
8	203.2	205.7	208.3	210.8	213.4	215.9	218.4	221.0	223.5	226.1	8
9	228.6	231.1	233.7	236.2	238.8	241.3	243.8	246.4	248.9	251.5	9
10	254.0	256.5	259.1	261.6	264.2	266.7	269.2	271.8	274.3	276.9	10
11	279.4	281.9	284.5	287.0	289.6	292.1	294.6	297.2	299.7	302.6	11
12	304.8	307.3	309.9	312.4	315.0	317.5	320.0	322.6	325.1	327.7	12

(1mm = 0.03937 in)

MILLIMETRES TO DECIMAL INCHES

mm	0	1	2	3	4	5	6	7	8	9	mm
	in	in	in	in	in	in	in	in	in	in	in
—		.04	.08	.12	.16	.20	.24	.28	.31	.35	—
10	.39	.43	.47	.51	.55	.59	.63	.67	.71	.75	10
20	.79	.83	.87	.91	.94	.98	1.02	1.06	1.10	1.14	20
30	1.18	1.22	1.26	1.30	1.34	1.38	1.42	1.46	1.50	1.54	30
40	1.57	1.61	1.65	1.69	1.73	1.77	1.81	1.85	1.88	1.93	40
50	1.97	2.01	2.05	2.09	2.13	2.17	2.20	2.24	2.28	2.32	50
60	2.36	2.40	2.44	2.48	2.52	2.56	2.60	2.64	2.68	2.72	60
70	2.76	2.80	2.83	2.87	2.91	2.95	2.99	3.03	3.07	3.11	70
80	3.15	3.19	3.23	3.27	3.31	3.35	3.39	3.43	3.46	3.50	80
90	3.54	3.58	3.62	3.66	3.70	3.74	3.78	3.82	3.86	3.90	90
100	3.94	3.98	4.02	4.06	4.09	4.13	4.17	4.21	4.25	4.29	100
110	4.33	4.37	4.41	4.45	4.49	4.53	4.57	4.61	4.65	4.69	110
120	4.72	4.76	4.80	4.84	4.88	4.92	4.96	5.00	5.04	5.08	120
130	5.12	5.16	5.20	5.24	5.28	5.31	5.35	5.39	5.43	5.47	130
140	5.51	5.55	5.59	5.63	5.67	5.71	5.75	5.79	5.83	5.87	140
150	5.91	5.94	5.98	6.02	6.06	6.10	6.14	6.18	6.22	6.26	150
160	6.30	6.34	6.38	6.42	6.46	6.50	6.54	6.57	6.61	6.65	160
170	6.69	6.73	6.77	6.81	6.85	6.89	6.93	6.97	7.01	7.05	170
180	7.09	7.13	7.17	7.20	7.24	7.28	7.32	7.36	7.40	7.44	180
190	7.48	7.52	7.56	7.60	7.64	7.68	7.72	7.76	7.80	7.83	190
200	7.87	7.91	7.95	7.99	8.03	8.07	8.11	8.15	8.19	8.23	200

(1 in = 25.4 mm)
(1/8 in = 3.175 mm)

FRACTIONAL INCHES TO MILLIMETRES

In.	0	1/8	1/4	3/8	1/2	5/8	3/4	7/8	In.
	mm	mm	mm	mm	mm	mm	mm	mm	
	—	3.2	6.4	9.5	12.7	15.9	19.1	22.2	
1	25.4	28.6	31.7	34.9	38.1	41.3	44.5	47.6	1
2	50.8	54.0	57.2	60.3	63.5	66.8	69.9	73.0	2
3	76.2	79.4	82.6	85.7	88.9	92.1	95.2	98.4	3
4	101.6	104.8	108.0	111.1	114.3	117.5	120.7	123.8	4
5	127.0	130.2	133.4	136.5	139.7	142.9	146.1	149.2	5
6	152.4	155.6	158.8	161.9	165.1	168.3	171.5	174.6	6
7	177.8	181.0	184.2	187.3	190.5	193.7	196.9	200.0	7
8	203.2	206.4	209.6	212.7	215.9	219.1	222.3	225.4	8
9	228.6	231.8	235.0	238.1	241.3	244.5	247.7	250.8	9
10	254.0	257.2	260.4	263.5	266.7	269.9	273.1	276.2	10
11	279.4	282.6	285.8	288.9	292.1	295.3	298.5	301.6	11
12	304.8	308.0	311.2	314.3	317.5	320.7	323.9	327.0	12

POUND FEET TO NEWTON-METRES

ft-lb	0	1	2	3	4	5	6	7	8	9	ft-lb
	N·m	N·m	N·m	N·m	N·m	N·m	N·m	N·m	N·m	N·m	
--		1.3558	2.7116	4.0675	5.4233	6.7791	8.1349	9.4907	10.8465	12.2024	--
10	13.5582	14.9140	16.2698	17.6256	18.9815	20.3373	21.6931	23.0489	24.4047	25.7605	10
20	27.1164	28.4722	29.8280	31.1838	32.5396	33.8954	35.2513	36.6071	37.9629	39.3187	20
30	40.6745	42.0304	43.3862	44.7420	46.0978	47.4536	48.8094	50.1653	51.5211	52.8769	30
40	54.2327	55.5885	56.9444	58.3002	59.6560	61.0118	62.3676	63.7234	65.0793	66.4351	40
50	67.7909	69.1467	70.5025	71.8584	73.2142	74.5700	75.9258	77.2816	78.6374	79.9933	50
60	81.3491	82.7049	84.0607	85.4165	86.7724	88.1282	89.4840	90.3898	92.1956	93.5514	60
70	94.9073	96.2631	97.6189	98.9747	100.3305	101.6863	103.0422	104.3980	105.7538	107.1096	70
80	108.4654	109.8213	111.1771	112.5329	113.8887	115.2445	116.6003	117.9562	119.3120	120.6678	80
90	122.0236	123.3794	124.7353	126.0911	127.4469	128.8027	130.1585	131.5143	132.8702	134.2260	90
100	135.5818	136.9376	138.2934	139.6493	141.0051	142.3609	143.7167	145.0725	146.4283	147.7842	100

NEWTON-METRES TO POUND FEET

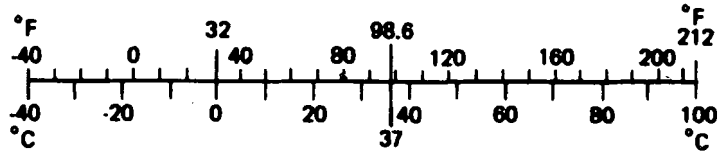
N·m	0	1	2	3	4	5	6	7	8	9	N·m
	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	ft-lb	
--		.7376	1.4751	2.2127	2.9502	3.6878	4.4254	5.1692	5.9005	6.6381	--
10	7.3756	8.1132	8.8507	9.5883	10.3258	11.0634	11.8010	12.5385	13.2761	14.0136	10
20	14.7512	15.4888	16.2264	16.9639	17.7015	18.4390	19.1766	19.9142	20.6517	21.3893	20
30	22.1269	22.8644	23.6020	24.3395	25.0771	25.8147	26.5522	27.2898	28.0274	28.7649	30
40	29.5025	30.2400	30.9776	31.7152	32.4527	33.1903	33.9279	34.6654	35.4030	36.1405	40
50	36.8781	37.6157	38.3532	39.0908	39.8283	40.5659	41.3035	42.0410	42.7786	43.5162	50
60	44.2537	44.9913	45.7288	46.4664	47.2040	47.9415	48.6791	49.4167	50.1542	50.8918	60
70	51.6293	52.3669	53.1045	53.8420	54.5796	55.3171	56.0547	56.7923	57.5298	58.2674	70
80	59.0050	59.7425	60.4801	61.2176	61.9552	62.6928	63.4303	64.1679	64.9055	65.6430	80
90	66.3806	67.1181	67.8557	68.5933	69.3308	70.0684	70.8060	71.5435	72.2811	73.0186	90
100	73.7562	74.4938	75.2313	75.9689	76.7064	77.4440	78.1816	78.9191	79.6567	80.3943	100

DECIMAL AND METRIC EQUIVALENTS

Fractions	Decimal In.	Metric MM.	Fractions	Decimal In.	Metric MM.
1/64	.015625	.39688	33/64	.515625	13.09687
1/32	.03125	.79375	17/32	.53125	13.49375
3/64	.046875	1.19062	35/64	.546875	13.89062
1/16	.0625	1.58750	9/16	.5625	14.28750
5/64	.078125	1.98437	37/64	.578125	14.68437
3/32	.09375	2.38125	19/32	.59375	15.08125
7/64	.109375	2.77812	39/64	.609375	15.47812
1/8	.125	3.1750	5/8	.625	15.87500
9/64	.140625	3.57187	41/64	.640625	16.27187
5/32	.15625	3.96875	21/32	.65625	16.66875
11/64	.171875	4.36562	43/64	.671875	17.06562
3/16	.1875	4.76250	11/16	.6875	17.46250
13/64	.203125	5.15937	45/64	.703125	17.85937
7/32	.21875	5.55625	23/32	.71875	18.25625
15/64	.234375	5.95312	47/64	.734375	18.65312
1/4	.250	6.35000	3/4	.750	19.05000
17/64	.265625	6.74687	49/64	.765625	19.44687
9/32	.28125	7.14375	25/32	.78125	19.84375
19/64	.296875	7.54062	51/64	.796875	20.24062
5/16	.3125	7.93750	13/16	.8125	20.63750
21/64	.328125	8.33437	53/64	.828125	21.03437
11/32	.34375	8.73125	27/32	.84375	21.43125
23/64	.359375	9.12812	55/64	.859375	21.82812
3/8	.375	9.52500	7/8	.875	22.22500
25/64	.390625	9.92187	57/64	.890625	22.62187
13/32	.40625	10.31875	29/32	.90625	23.01875
27/64	.421875	10.71562	59/64	.921875	23.41562
7/16	.4375	11.11250	15/16	.9375	23.81250
29/64	.453125	11.50937	61/64	.953125	24.20937
15/32	.46875	11.90625	31/32	.96875	24.60625
31/64	.484375	12.30312	63/64	.984375	25.00312
1/2	.500	12.70000	1	1.00	25.40000

SI METRIC-CUSTOMARY CONVERSION TABLE

Multiply	by	to get equivalent number of:
LENGTH		
Inch	25.4	millimetres (mm)
Foot	0.304 8	metres (m)
Yard	0.914 4	metres
Mile	1.609	kilometres (km)
AREA		
$Inch^2$	645.2	$millimetres^2$ (mm^2)
	6.45	$centimetres^2$ (cm^2)
$Foot^2$	0.092 9	$metres^2$ (m^2)
$Yard^2$	0.836 1	$metres^2$
VOLUME		
$Inch^3$	16 387.	mm^3
	16.387	cm^3
	0.016 4	litres (l)
Quart	0.946 4	litres
Gallon	3.785 4	litres
$Yard^3$	0.764 6	$metres^3$ (m^3)
MASS		
Pound	0.453 6	kilograms (kg)
Ton	907.18	kilograms (kg)
Ton	0.907	tonne (t)
FORCE		
Kilogram	9.807	newtons (N)
Ounce	0.278 0	newtons
Pound	4.448	newtons
TEMPERATURE		
Degree Fahrenheit	(°F-32) ÷ 1.8	degree Celsius (C)



Multiply	by	to get equivalent number of:
ACCELERATION		
$Foot/sec^2$	0.304 8	$metre/sec^2$ (m/s^2)
$Inch/sec^2$	0.025 4	$metre/sec^2$
TORQUE		
Pound-inch	0.112 98	newton-metres (N-m)
Pound-foot	1.355 8	newton-metres
POWER		
Horsepower	0.746	kilowatts (kW)
PRESSURE OR STRESS		
Inches of mercury	3.377	kilopascals (kPa)
Pounds/sq. in.	6.895	kilopascals
ENERGY OR WORK		
BTU	1 055.	joules (J)
Foot-pound	1.355 8	joules
Kilowatt-hour	3 600 000. or 3.6×10^6	joules (J = one W's)
LIGHT		
Foot candle	10.764	$lumens/metre^2$ (lm/m^2)
FUEL PERFORMANCE		
Miles/gal	0.425 1	kilometres/litre (km/l)
Gal/mile	2.352 7	litres/kilometre (l/km)
VELOCITY		
Miles/hour	1.609 3	kilometres/hr. (km/h)

Fisher Body

GM