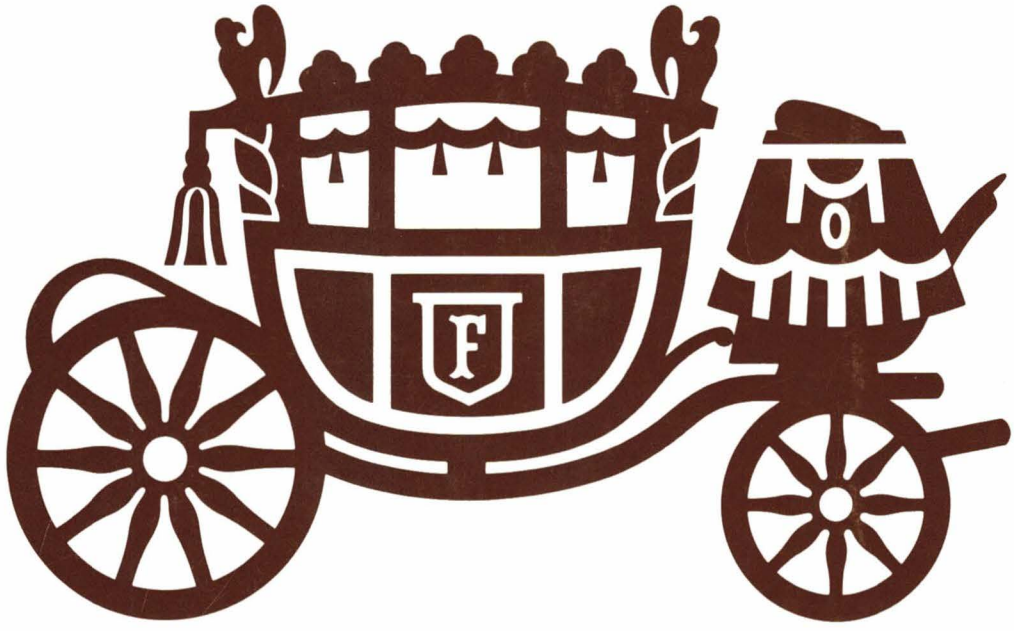

Fisher Body

SERVICE MANUAL '82

DAISY DELL ENTERPRISES
M. P. O. BOX 843
SPRINGFIELD, MO 65801

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 CAUTIONS and NOTICES 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. It also in important to understand that these CAUTIONS and NOTICES 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 the vehicle will be jeopardized by the service method he selects.

NOTICE

1982 vehicles contain parts dimensioned in the metric system. Many fasteners are metric and some are very close in dimension to familiar customary measurements in the inch system. It is important to note that, during any vehicle maintenance procedures, replacement fasteners must have the same measurements as those removed, whether metric or customary. Mismatched or incorrect fasteners can result in vehicle damage or malfunction, or possibly personal injury. Therefore, fasteners removed from the vehicle should be saved for re-use whenever possible. Where the fasteners are not satisfactory for re-use, care should be taken to select a replacement that matches the original.

Additional information concerning the identification of metric fasteners is contained in Section 1 of this manual.

1982 FISHER BODY SERVICE MANUAL

FOR

B, C, D, E, G AND K BODY STYLES

This publication contains the essential removal, installation, adjustment and maintenance procedures for servicing all U.S. and Canadian built 1982 Fisher Body Styles except A, F, J, T and X Bodies, which are covered in separate chassis manuals. 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.

TABLE OF CONTENTS

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

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PART NO. 9636072

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7-1-81

MANUAL SERVICE BODY

1985

SECTION 1

GENERAL INFORMATION

CONTENTS

Manual Description 1-1
Model Identification Chart 1-1
Model Identification
  Body Series Number 1-2
  Body Number Plate 1-2
  Vehicle Identification Number 1-2
Metric Parts and Specifications 1-3
Lock Cylinder Coding 1-6
Adhesive Body Side Moldings 1-8
Wood Grain Transfer 1-9
Lubrication 1-10
Waterleak Diagnosis and Repair 1-10
Anticorrosion Treatment 1-15
Chip Resistant Plastisol Material 1-19
Metal Replacement Parts Finishing 1-20
Interior Plastic Trim Parts Finishing 1-20
Special Tools 1-21

MANUAL DESCRIPTION

This publication contains essential removal, installation, adjustment and maintenance procedures for servicing 1982 Fisher Body B,C,D,E,G and K 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 black tab which corresponds with the table of contents page.

TEXT

Unless noted otherwise, 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 next to the accompanying text and should be used as part of the text.

MODEL IDENTIFICATION CHART

Sales Name	Body Type	Series	Styles
CHEVROLET			
Impala	B	1BL	35-69
Caprice Classic	B	1BN	35-47-69
Malibu Classic	G	1GW	35-69
El Camino	G	1GW	80
Monte Carlo	G	1GZ	37
PONTIAC			
Grand Prix Brougham	G	2GJ	37
Bonneville	G	2GN	35-69
OLDSMOBILE			
Delta 88	B	3BL	69
Delta 88 Royale	B	3BN	37-69
Custom Cruiser	B	3BP	35
Delta 88 Royale Brougham	B	3BY	37-69
Ninety-Eight Regency Brougham	C	3CW	69
Ninety-Eight Regency	C	3CX	37-69
Toronado Broughham	E	3EZ	57

Cutlass Cruiser Brougham	G	3GH	35
Cutlass Calais	G	3GK	47
Cutlass Supreme Brougham	G	3GM	47-69
Cutlass Supreme	G	3GR	47-69
BUICK			
LeSabre	B	4BN	37-69
LeSabre Limited	B	4BP	37-69
LeSabre Estate Wagon	B	4BR	35
Electra Estate Wagon	B	4BV	35
Electra Park Avenue	C	4CW	37-69
Electra Limited	C	4CX	37-69
Riviera T Type	E	4EY	57
Riviera	E	4EZ	57
Regal	G	4GJ	47-69
Regal Estate Wagon	G	4GJ	35
Regal Sport Coupe	G	4GK	47
Regal Limited	G	4GM	47
CADILLAC			
Fleetwood Broughham	C	6CB	47-69
DeVille	C	6CD	47-69
Fleetwood Limousine	D	6DF	23
Fleetwood Formal Limousine	D	6DF	33
Eldorado	E	6EL	57
Seville	K	6KS	69
GM of CANADA			
Parisienne	B	7BL	35-47-69
Parisienne Broughham	B	7BN	35-47-69
Grand LeMans	G	7GF	35-69
Grand LeMans Brougham	G	7GR	69
GM TRUCK			
Caballero	G	5GW	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. 1B, Chevrolet B Body; 4B, Buick B Body, etc.).
3. Third Position - Division Series (ex. 1BL, Chevrolet B Body Impala; 2GP, Pontiac G Body Grand Prix, etc.).
4. The last two digits of the body series number indicate body style type as follows:

Style	Description
23	4-Door Limousine with Auxiliary Seat
35	4-Door Station Wagon - 2 Seat
37	2-Door Coupe - Notchback
47	2-Door Coupe - Notchback
57	2-Door Coupe - Notchback
69	4-Door Sedan - 4 Window Notchback
80	2-Door Pick-Up Delivery

BODY NUMBER PLATE

The body number plate identifies the model year, build date code, car division, series, style, body assembly plant, body number, trim combination, paint color codes, type of paint, modular seat code and roof option. On all bodies except G and K styles, the I.D. plate is located on the upper horizontal surface of the shroud. On K bodies, the plate is located on the front vertical surface of the shroud. On G styles, the plate is located on the front upper tie bar.

VEHICLE IDENTIFICATION NUMBER

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

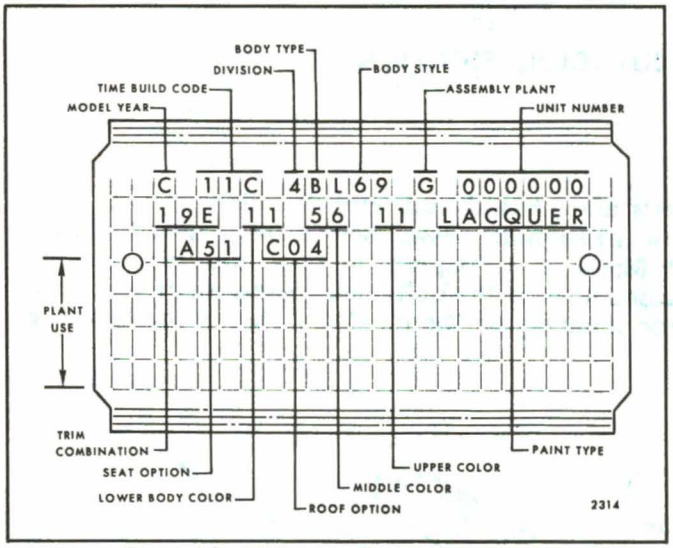


Fig. 1-1-Body Number Plate - U.S. Plants

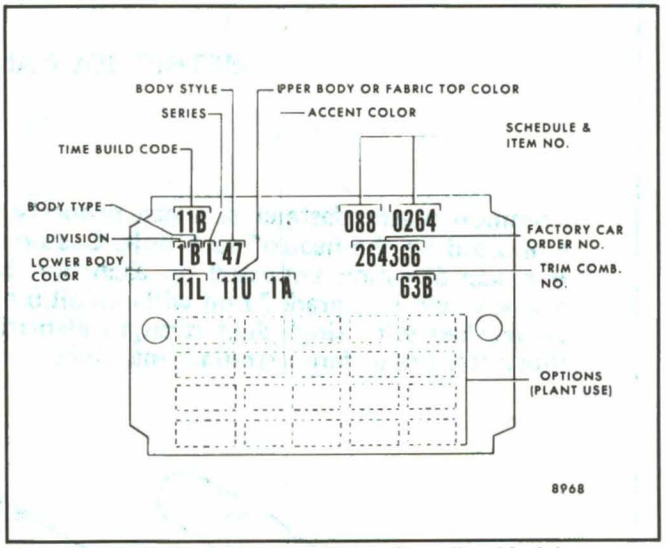


Fig. 1-2-Body Numler Plate - Canadian Models

METRIC PARTS AND SPECIFICATIONS

METRIC SPECIFICATIONS AND NOTATION

In this manual, metric specifications (with customary units in brackets) will be shown for all body styles. Metric specifications with corresponding customary specifications have been rounded off to practical working levels. Precise conversions may be obtained from the Metric and Fastener Information at the back of this manual or from other readily available conversion charts and formulas.

METRIC AND CUSTOMARY NUTS, BOLTS AND SCREWS

Some of the 1982 model cars present special service requirements to the technician due to the use of both metric and customary (inch) type nuts, bolts and screws on the same car. Many are metric and some are very close in dimension to customary nuts, bolts and screws in the inch system. Mismatched or incorrect nuts, bolts and screws can result in damage, malfunction or possible personal injury. Nuts, bolts and screws removed from the car should be saved for reuse whenever possible. If they are not reusable, care should be taken to taken to select a replacement that matches the original.

General Motors Engineering Standards have adopted a portion of the standard metric fastener sizes defined by SI (Systeme International). This was done to reduce the number of sizes used and yet retain the best strength characteristics in each thread size. For example, the customary 1/4-20 and 1/4-28 screws are replaced by the metric M6 and M6.3 x 1 screw which has nearly the same diameter and 25.4 threads per inch. The thread pitch is in between the customary coarse and fine thread pitches.

Metric and customary thread notation differ slightly. The difference is illustrated below.

- Metric - M6 and M6.3 (thread major diameter in millimeters) x 1 (distance between threads in millimeters)
- Customary - 1/4 (thread major diameter in inches) x 20 (number of threads per inch)

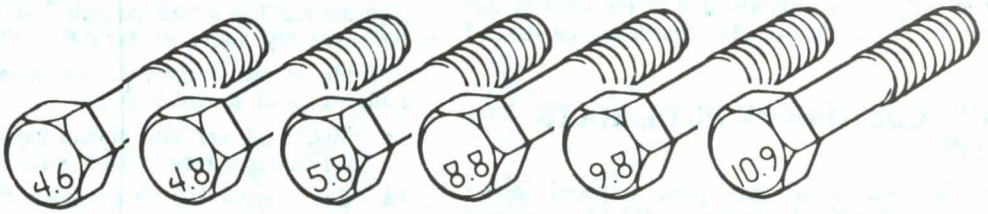
Care should be taken when servicing the car to guard against cross threading or improper retention due to interchanged metric and inch nuts and bolts.

When obtaining metric or customary nuts, bolts and screws locally for servicing the car, care must be exercised in selecting parts that are equivalent to the original parts in dimensions, strength and pitch of thread.

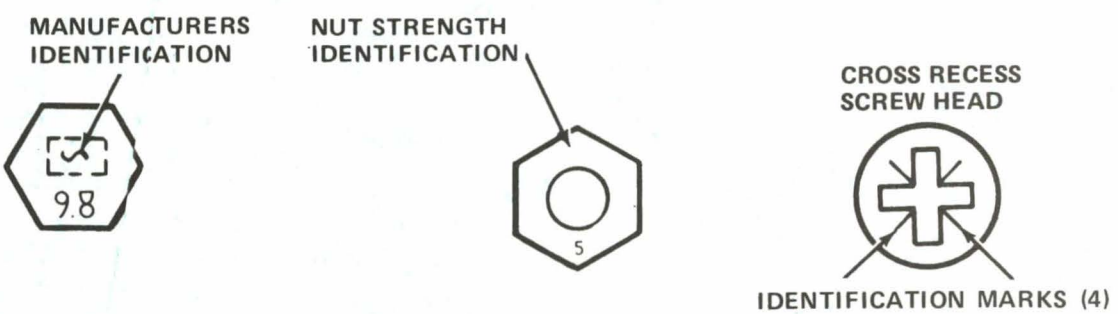
METRIC BOLT AND NUT IDENTIFICATION

Common metric fastener strength property classes are 9.8 and 10.9 with the class identification embossed on the head of each bolt. Customary (inch) strength classes range from grade 2 to 8 with line identification embossed on each bolt head. Markings correspond to two lines less than the actual grade (i.e. grade 7 bolt will exhibit 5 embossed lines on the bolt head). Some metric nuts will be marked with single digit strength identification numbers on the nut face. The following figure illustrates the different strength markings.

Customary (inch) bolts - Identification marks correspond to bolt strength - Increasing numbers represent increasing strength.



Metric Bolts - Identification class numbers correspond to bolt strength - Increasing numbers represent increasing strength.



1943

Fig. 1-3-Metric Bolt and Nut Identification

REUSE OF PREVAILING TORQUE NUT(S) AND BOLT(S)

PREVAILING TORQUE NUTS ARE THOSE NUTS WHICH INCORPORATE A SYSTEM TO DEVELOP AN INTERFERENCE BETWEEN NUT AND BOLT THREADS INTERFERENCE IS MOST COMMONLY ACHIEVED BY DISTORTING TOP OF ALL-METAL NUT, BUT ALSO MAY BE ACHIEVED BY DISTORTING AT MIDDLE OF HEX FLAT, BY NYLON PATCH ON THREADS, BY NYLON WASHER INSERT AT TOP OF NUT AND BY NYLON INSERT THROUGH NUT.

PREVAILING TORQUE BOLTS ARE THOSE BOLTS WHICH INCORPORATE A SYSTEM TO DEVELOP AN INTERFERENCE BETWEEN BOLT AND NUT OR TAPPED HOLE THREADS. INTERFERENCE IS ACHIEVED BY DISTORTING SOME OF THE THREADS (SEVERAL METHODS EXIST), BY APPLYING A NYLON PATCH OR STRIP OR BY ADHESIVE COATING ON THREADS.

PREVAILING TORQUE NUTS

TOP LOCK MANY TYPES

CENTER LOCK

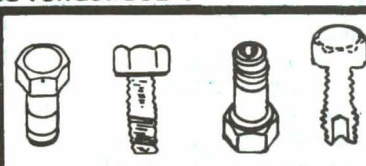
NYLON INSERT

NYLON PATCH

NYLON WASHER INSERT

PREVAILING TORQUE BOLTS

DRY ADHESIVE COATING



OUT OF ROUND THREAD AREA

NYLON STRIP OR PATCH

THREAD PROFILE DEFORMED

RECOMMENDATIONS FOR REUSE

A. CLEAN, UNRUSTED PREVAILING TORQUE BOLTS AND NUTS MAY BE REUSED AS FOLLOWS:

1. CLEAN DIRT AND OTHER FOREIGN MATERIAL OFF NUT AND BOLT.
2. INSPECT BOLT AND NUT TO ASSURE THERE ARE NO CRACKS, ELONGATION OR OTHER SIGNS OF ABUSE OR OVERTIGHTENING. LIGHTLY LUBRICATE THREADS. (IF ANY DOUBT, REPLACE WITH NEW PREVAILING TORQUE FASTENER OF EQUAL OR GREATER STRENGTH.)
3. ASSEMBLE PARTS AND START BOLT OR NUT.
4. OBSERVE THAT BEFORE FASTENER SEATS, IT DEVELOPS PREVAILING TORQUE PER CHART BELOW. (IF ANY DOUBT, INSTALL NEW PREVAILING TORQUE FASTENER OF EQUAL OR GREATER STRENGTH).
5. TIGHTEN TO TORQUE SPECIFIED IN SERVICE MANUAL.

B. BOLTS AND NUTS WHICH ARE RUSTY OR DAMAGED SHOULD BE REPLACED WITH NEW PARTS OF EQUAL OR GREATER STRENGTH.

METRIC SIZES

		6 & 6.3	8	10	12	14	16	20
NUTS AND ALL METAL BOLTS	N·m	0.4	0.8	1.4	2.2	3.0	4.2	7.0
	In. Lbs.	4.0	7.0	12	18	25	35	57
ADHESIVE OR NYLON COATED BOLTS	N·m	0.4	0.6	1.2	1.6	2.4	3.4	5.6
	In. Lbs.	4.0	5.0	10	14	20	28	46

INCH SIZES

		.250	.312	.375	.437	.500	.562	.625	.750
NUTS AND ALL METAL BOLTS	N·m	0.4	0.6	1.4	1.8	2.4	3.2	4.2	6.2
	In. Lbs.	4.0	5.0	12	15	20	27	35	51
ADHESIVE OR NYLON COATED BOLTS	N·m	0.4	0.6	1.0	1.4	1.8	2.6	3.4	5.2
	In. Lbs.	4.0	5.0	9.0	12	15	22	28	43

1944

Fig. 1-4-Reuse of Prevailing Torque Nut(s) and Bolt(s)

LOCK CYLINDER CODING

KEY IDENTIFICATION AND USAGE

The lock cylinder keyway is designed 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, 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.

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 1-5.

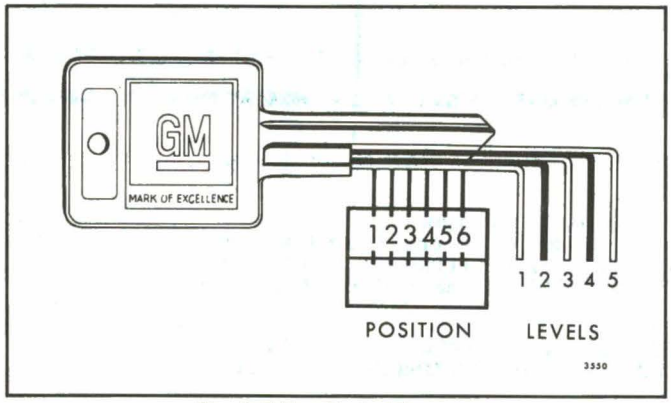


Fig. 1-5-Key Code Diagram

CUTTING KEYS

After the special code has been determined, either from code list or key code diagram (Fig. 1-5), 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 as outlined below.

ASSEMBLING AND CODING LOCK CYLINDERS

All Lock Cylinders Except Instrument Panel Compartment

Tumblers for all locks except instrument panel compartments are shaped exactly alike with the exception of notch position on one side. As the key is inserted in lock cylinder, tumblers are lowered to correct height so that notches on each tumbler are at same level. When the notches on all six tumblers line up, the side bar is pushed into the notches by two small springs which allow the 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. Find 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. If a code list is not available, proceed as follows:
   a. Lay key on key code diagram (Fig. 1-5) with key outlined by diagram.
   b. Starting at head of key blade, find 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 follows.
2. Starting at open end (head) of cylinder, insert tumblers in their proper slots in the order called for by the code (Fig. 1-6).
3. Pull out side bar with fingers so that tumblers will drop completely into place (Fig. 1-6).

   NOTICE: If the springs become tangled, do not pull them apart - unscrew them or part may be damaged.

   Insert one tumbler spring in space provided above each tumbler.
4. Insert spring retainer so that two end prongs slide into the slots at either end of cylinder. Press retainer down (Fig. 1-7).

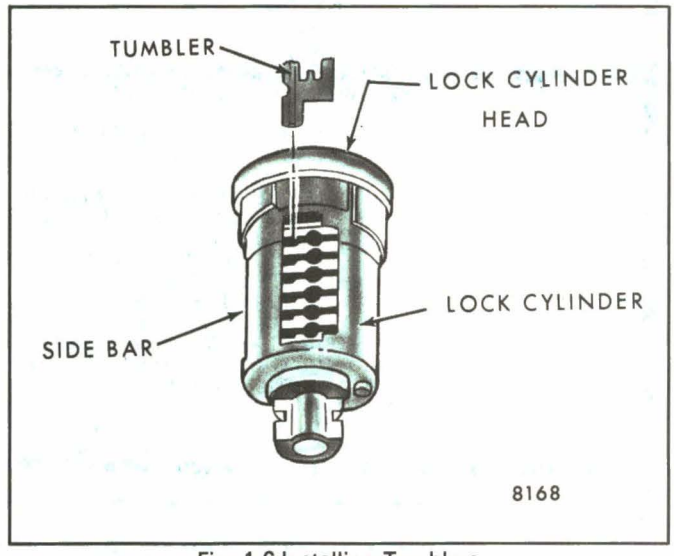


Fig. 1-6-Installing Tumblers

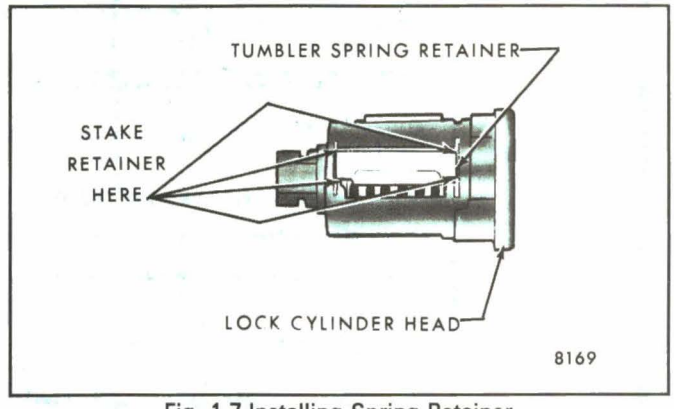


Fig. 1-7-Installing Spring Retainer

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.

5. To check 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.

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

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.
7. Using suitable staking tool, stake spring retainer securely in place by staking cylinder metal over retainer at each end (Fig. 1-7).
8. Lubricate cylinder with WD-40, 3M 4-way No. 8902 or equivalent spray lubricant.

Instrument Panel Compartment Lock Cylinder, All Except E Styles

All except E styles use a lock cylinder with snap-in tumblers for instrument panel 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 instrument panel compartment. Therefore, lock cylinder components, including cylinders, tumblers, retainer tumblers and tumbler springs are not interchangeable for any other lock cylinder application. Individual components for servicing the snap-in cylinder are available separately through the service parts system.

1. Find 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. If a code list is not available, proceed as follows:
   a. Lay key on key code diagram (Fig. 1-5) with key outlined by diagram.
   b. Starting at head of key blade, find 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 determined by code (Fig. 1-8).
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 1-9.
5. Lubricate cylinder with WD-40, 3M 4-way No. 8902 or equivalent spray lubricant.

Instrument Panel Compartment Lock Assembly, E Styles

The instrument panel compartment door has a slide bar type latch and lock assembly. To unlatch, the slide bar knob is moved to the right. To lock, the oval head key is inserted into key slot (teeth pointing left) and knob is moved to the left. The key can then be removed. To unlock, key is inserted into key slot (teeth pointing left) and knob is moved to the right.

The following parts of this assembly are serviceable (Fig. 1-10).

- Cover Plate
- Lock Cylinder Assembly (includes cylinder and slide bar knob)
- Cylinder Return Spring
- Case Assembly (includes lock bolt, bolt return spring, roll pin and case)

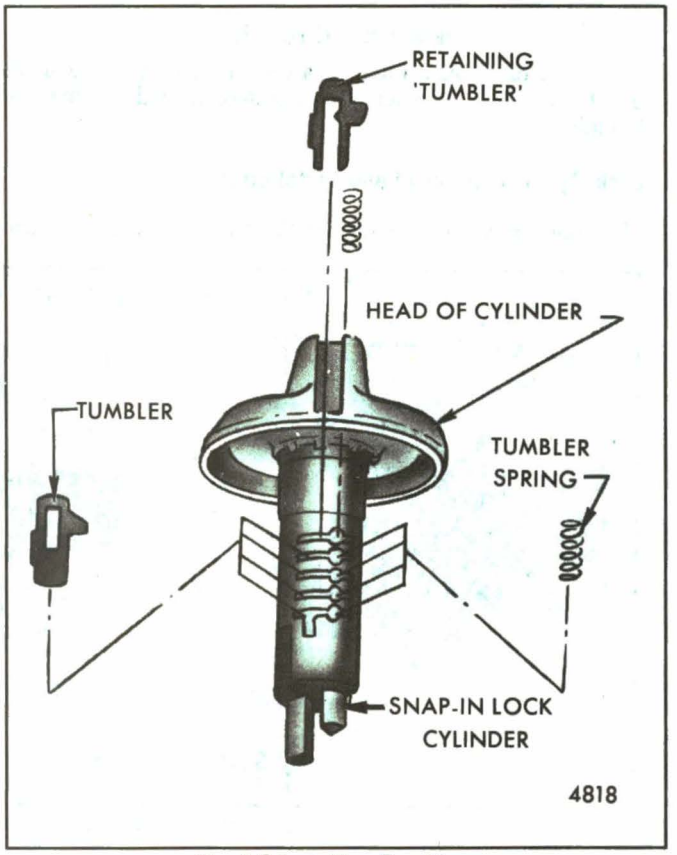


Fig. 1-8-Installing Tumblers

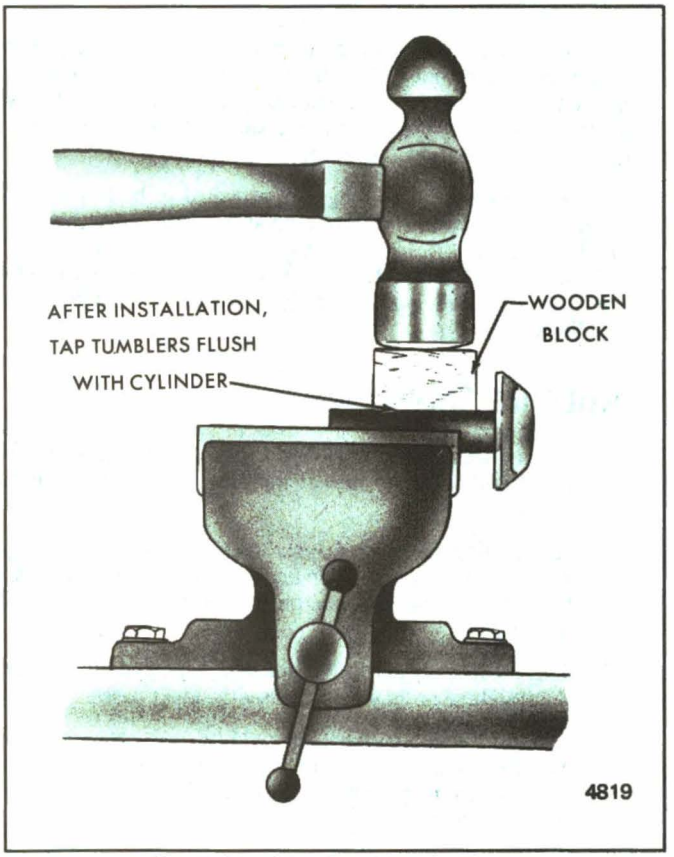


Fig. 1-9-Locking Tumblers in Place

- Tumblers (Fig. 1-6)
- Tumbler Springs

- Tumbler Spring Retainer (Fig. 1-7)

The lock cylinder tumblers are serviced in the same manner as all other lock cylinders (see Assembling and Coding Lock Cylinders).

Lock Cylinder Removal and Installation

1. Remove screws retaining lock assembly to instrument panel compartment and remove lock.
2. Remove cover plate (Fig. 1-10) by pushing on cone shaped extensions using a flat tool or eraser end of pencil.
3. Remove lock cylinder assembly from case (Fig. 1-10).
4. To install, reverse removal procedure. Cylinder is installed between lock bolt and cylinder return spring (Fig. 1-10).

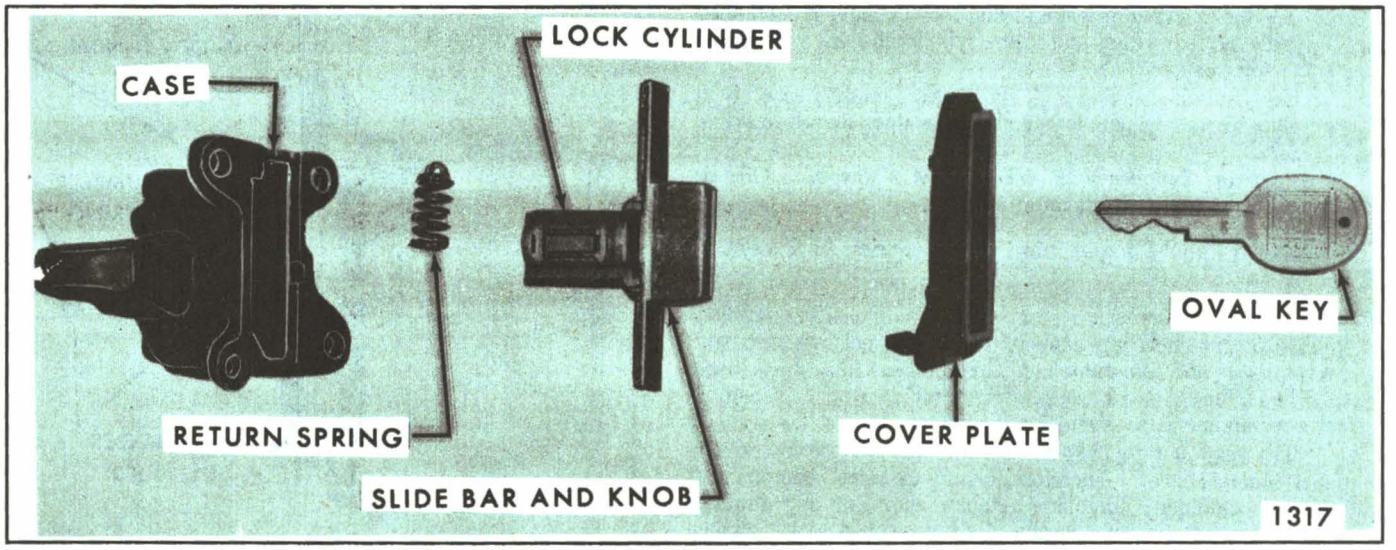


Fig. 1-10-Instrument Panel Compartment Lock Assembly

ADHESIVE BODY SIDE MOLDING

Some body side moldings are bonded to the body panels with a urethane and hot-melt adhesive system. The listed repair methods 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.

Most body side moldings are attached to body panels with butyl adhesive tape. To insure a good molding replacement (new or old moldings), the panel surface should be warm (21 to 32°C or 70 to 90°F), clean and free of any wax or oily film. Two methods are listed to attach loose molding ends and completely removed moldings.

MOLDING END LOOSE

1. Wash affected area with soap and water and wipe dry. Wipe panel and adhesive side of molding with clean naphtha or alcohol.

   If molding has pulled loose from adhesive backing (tape remains on body panel), do not remove tape from body. Clean back of molding and tape on body with naphtha or alcohol and proceed with step 3.
2. If needed, apply a length of masking tape as a molding guide. A straightedge may also be used in most cases.
3. Apply adhesive to back of molding and press in place. If Loctite 414 adhesive (part no. 1052283) or equivalent is used, apply constant pressure to molding for 30 seconds or until a firm bond has been made.

MOLDING COMPLETELY REMOVED

1. Wash affected panel area with soap and water and wipe dry. Remove all traces of adhesive from body panel and back of molding using oil-free naphtha or alcohol.
2. Mark proper alignment position of molding with a length of masking tape. Use adjacent moldings as a guide, if applicable (Fig. 1-11).
3. If body is below 21°C (70°F) due to shop temperature or prior outside temperature, warm body panel with heat lamp or heat gun while proceeding with step 4.
4. Apply 3M Neoprene Foam Tape, part no. 06377 or 06378, or equivalent to molding.
5. Align molding to previously installed tape guideline and press firmly in place.

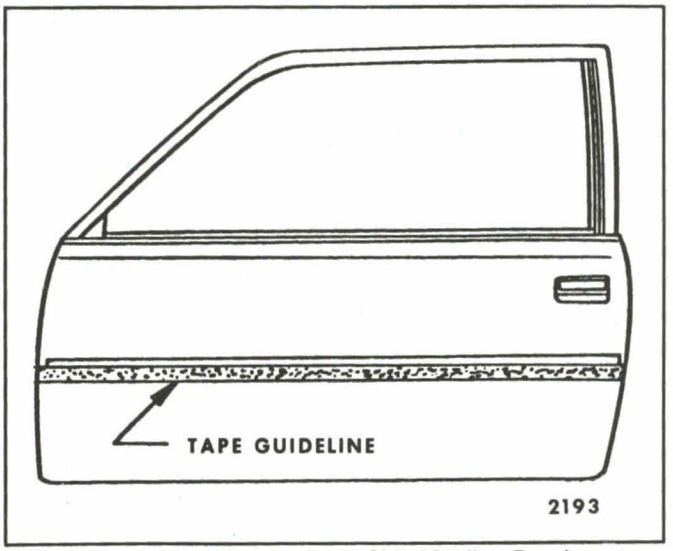


Fig. 1-11 - Adhesive Body Side Molding Repair

WOOD GRAIN TRANSFERS

Wood grain transfers possess a 50 degree or semi-gloss finish and are of all vinyl construction designed to secure to an acrylic painted surface by means of a pressure sensitive adhesive.

Service replacement transfers are available through service warehouses in roll stock form of suitable size. When placing orders for transfers, indicate division, model year, body style and applicable car panel usage.

The use of a wetting solution aids the repairman in lifting and positioning the transfer during installation. A wetting solution also ensures a better bond between transfer and panel(s).

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

For quality results, the temperature of transfer, panel surface and work room should be at least 18°C (65°F) or warmer. Transfers lose workability features in colder temperatures and may crack.

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 across the transfer as shown in Figure 1-12. 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 the transfer are secured. Heat softens and stretches the transfer.

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

1. Wetting solution - prepare by mixing 7.4 ml (1/4 oz) of liquid detergent (Joy, Vel or equivalent) to one gallon of water and mix.
2. Wax and silicone remover - Prep-Sol, Pre-Kleano, Acryli-Clean or equivalent.
3. 3M Vinyl Trim Adhesive or equivalent; brush or spray can.
4. Squeegee - 76 mm to 102 mm (3" to 4") wide, plastic or hard rubber. Deburr any sharp or rough edges to prevent scratching.
5. Water bucket and sponge or spray bottle.
6. Sandpaper, no. 360 or no. 400, wet-or-dry type.
7. Heat gun or infrared heat lamp and extension cord.
8. Clean wiping rags or paper towels.
9. Sharp knife.
10. Scissors.
11. Fine pin or needle.
12. Marking pencil.

Removal

1. Remove necessary moldings. For molding removal procedures, refer to the following section of this manual:
   a. Doors - Section 5
   b. Rear Quarters - Section 6
   c. Rear End - Section 7
   d. 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.

NOTICE: To avoid gouging underlying paint finish, do not use pointed or sharp instruments for removal of transfer from panel(s).

4. Remove affected transfer by starting at one edge and peeling transfer as a sheet from panel surface. Application of heat to affected transfer at point of removal aids removal operation.
5. Remove all traces of adhesive residue from painted surfaces with a silicone, wax and grease removing solvent such as Prep-Sol, Acryli-Clean, Sher-Will-Clean or equivalent.
6. Wipe panel surface with a clean, lint-free cloth while solvent is still wet and allow to dry.

Installation

1. Clean acrylic painted surface with a wax and silicone remover, such as Prep-Sol, Pre-Kleano, Acryli-Clean, Sher-Will-Clean or equivalent. Wipe surface with a clean cloth and allow to dry.
2. Scuff-sand acrylic painted surface with no. 360 or no. 400 sandpaper by dry sanding. Freshly painted surfaces must be allowed to dry thoroughly before sanding. Residual solvents in fresh paint can lead to subsequent blistering problems if transfer is applied before paint is dry.
3. Reclean panel. Wipe surface with a clean, lint-free cloth and allow to dry.
4. Make a template to be used as a guide for transfer installation to panel surface using the following procedures.
   a. Tack-tape a suitable sheet of paper at the top to panel, aligning top of paper with transfer on adjacent panel(s). This represents the final upper trim line.
   b. With template flush to panel, mark front, rear and bottom edges of panel on template.
   c. Remove template from panel and place on a clean flat surface, draw lines outboard of front, rear and bottom of panel 16 mm to 19 mm (5/8" to 3/4") from edges. Cut excess paper beyond front, rear and bottom drawn lines.
   d. Punch small hole at front vertical edge of template to denote front. Also make a mark to denote the underside of template.
5. Unroll and position service transfer on a clean flat surface with backing side up and wood grain pattern running from left to right.
6. Position prepared template on service transfer and mark perimeter cut lines on backing of service transfer. Make sure that underside of template is up and that wood grain pattern runs from left to right and is face down before marking trim line on service transfer.
7. Cut out service transfer along trim line as required.
8. Position and center transfer on panel for proper vertical and lateral alignment. Center-mark transfer and panel (Fig. 1-12).
9. Lay transfer on a clean table and peel off paper backing.
10. Soak sponge in wetting solution or using spray bottle filled with wetting solution, apply an ample amount to adhesive side of transfer and to panel surface.
11. Center and align upper edge of transfer with transfers on adjacent panel(s), then press down lightly across the top. Squeegee transfer firmly at center for distance of 76 mm to 102 mm (3" to 4"), width of squeegee. Then squeegee upward over same spot.
12. Raise one side of transfer from panel up to secured area at top center. Working from center, squeegee transfer into place, using firm, short, overlapping strokes. Squeegee laterally first and then up when working across top. Complete securing opposite upper edge of transfer in a similar fashion.
13. With one hand, lift unsecured lower area of transfer from panel. If transfer sticks prematurely, break bond with fast, firm pull. Reposition lower section of transfer at center of panel and squeegee laterally toward each end of panel.

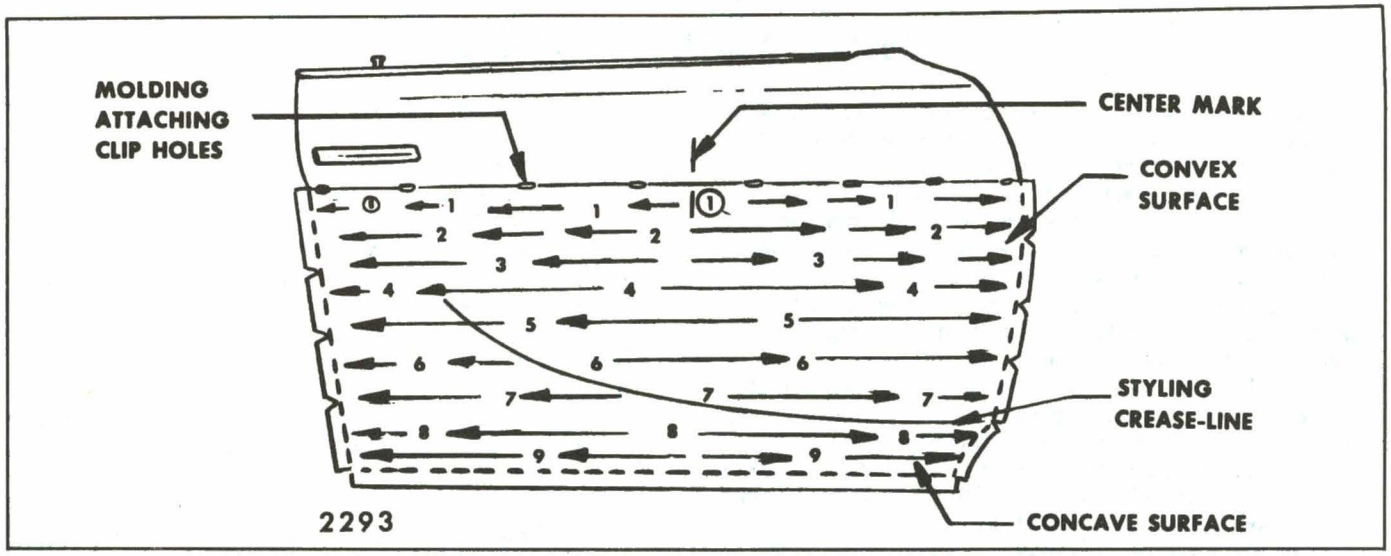


Fig. 1-12-Transfer Installation Sequence (Right Front Door Shown)

Continue bonding transfer to panel with firm, overlapping strokes. Example of squeegee progression is shown in Figure 1-12.

14. Apply soapy wetting solution periodically to panel to ease raising and positioning transfer during squeegee operations.
15. Work downward in small increments across transfer as shown in Figure 1-12.
16. Cut 90 degree notches in transfer edges at lower corners as required. Cut V notches in transfer sides where necessary.
17. 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.
18. With heat gun or heat lamp, heat inboard side of door hem flanges (or body lock pillar facing, etc.) and edges of transfer film (to about 32°C or 90°F).
19. 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.
20. Apply heat to transfer at door handle holes, side marker lamps and other recessed areas. Press transfer into recessed areas to obtain firm bond.
21. With sharp knife, carefully cut out excess transfer at side marker lamps, door handle holes and other openings in panel.
22. 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.
23. Install previously removed parts and clean car as required.

LUBRICATION

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 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 as this may cause improper roller operation.
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 part no. 1052196, Lubriplate Auto-Lube A, part no. 1052349, Lubriplate Spray-Lube A, 3M Lithium Spray Lube no. 8915 or equivalent.
3. The lubrication requirements for seat mechanism, door 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 No. 8902 or equivalent spray lubricant.

WATERLEAK DIAGNOSIS AND REPAIR

GM vehicles are designed to operate under normal environmental conditions. The design criteria for sealing materials and components takes into consideration the sealing forces required to withstand the natural elements. These specifications do not, and cannot, take into consideration all artificial conditions such as may be encountered in some high pressure car washes.

The watertest method has been correlated to the natural elements and will determine the ability of a vehicle to perform under normal operating conditions.

To repair body waterleaks is a problem of proper testing, diagnosis and repair through adjustment of misaligned components and/or application of proven repair materials. The first step in waterleak diagnosis is finding the conditions under which the leak occurs. For example, leak noticed only when parked on an inclined drive or muddy water in trunk after long drive in rain.

If the general leak area can be found, the exact entry point can be quickly isolated by use of a localized test such as a water hose or air hose. If the leak source is not obvious, the generalized testing method using watertest equipment such as the watertest stands shown in Figures 1-13, 1-14 and 1-15 should be used. This test is advised because it applies a large volume of water to a general area without going over the sealing limitations of side glass, door, rear compartment or tailgate opening weatherstrips. Also, the use of the test stands or similar watertest equipment is advised for retest to confirm repair and see if any other leaks may be adding to the original condition.

WATERLEAK DIAGNOSIS AND REPAIR

Generalized Testing

If watertesting of a broad area is needed for leak detection or for the purpose of checking a repair, the test stands or similar watertest equipment should be set up as shown in Figures 1-13 and 1-14 in order to provide enough coverage. Specifications for watertest stand construction are shown in Figure 1-15.

If the specified water pressure of 155 kPa (22 psi) cannot be obtained because of a local situation, both stands may be repositioned toward body until water spray overlap can be obtained.

Localized Testing (Spot Test)

When making localized tests with either water or air hose, begin test at the base of the joint, seam or section and move slowly upward until leak is found. It is very important to pinpoint the leak area before any repair is tried because random repair may only temporarily restrict water entry and make future diagnosis and repair more difficult.

Continue to use localized testing in the same general area to confirm that all leaks have been located. (Example: If a leak is found in the lower section of the windshield pillar, keep moving water or air hose upward on the pillar to find any more leaks in the same area.)

Front End

1. When testing a specific area such as the windshield pillar as shown in Figure 1-16, use an unrestricted water flow (no nozzle) and begin test at the base of the test area and move upward. A helper inside the vehicle can detect the actual leak point.

   When using an air hose and bubble solution (liquid soap) as shown in Figure 1-17, air pressure should not exceed 205 kPa (30 psi).

   Windshield sealant leaks can be repaired with adhesive caulking kit no. 9636067 or equivalent as described in the stationary glass section of this manual.

   Windshield pillar drip molding or weatherstrip retainer leaks can be repaired by removing the retainer and/or molding and resealing beneath each component with 3M Auto Bedding and Glazing Compound or equivalent.

2. Shroud area leaks can be found by the use of watertest equipment arranged as shown in Figure 1-13 and watching for leak entry point from under the instrument panel. Proper diagnosis in this area is simply a matter of removing enough trim or components to disclose the actual leak point.

   To repair sealing discrepancies in the front end, apply a brushable seam sealer (which can be painted) into metal joint leak area (Fig. 1-23). In some cases, it will be necessary to loosen the front fender to gain access for proper sealing. To re-establish a seal for applied components, such as ventilation ducts, use 3M Auto Bedding and Glazing Compound or equivalent.

   Water entry through the high level ventilation ducts may be due to poor sealing of hood lace clip holes, fender bolt holes, etc., immediately above the ventilation duct. For proper diagnosis, observe whether water entry is from around the duct or through the duct opening.

   Leaks in the center duct panel (within the plenum chamber) can be sealed with a rubberized airless spray coating. Hard-to-reach areas within the plenum chamber can be reached by fitting a length of flexible plastic hose to the nozzle of the applicator gun specified for use with rubberized airless spray coating. Use care not to spray directly into the air duct assemblies.

Side Roof Rail and Stationary Quarter Window

The side roof rail and stationary quarter window can be tested using a moderate spray from a garden hose as shown in Figure 1-18.

This test is not to be used to test any side glass to weatherstrip sealing. Use the hose test only for weatherstrip retainer, drip molding and stationary quarter window sealing. To test door glass to weatherstrip sealing, use the watertest stands or similar water spray equipment with specified pressure, distance and angle of spray.

Water entering through the weatherstrip retainer and drip molding attaching screw slots can enter the roof panel and travel rearward into the rear compartment. Leaks of this nature can be found by using a flashlight and observing from the rear compartment.

To seal weatherstrip retainer and/or drip molding, remove component and apply a continuous bead of nonhardening, water resistant, medium-bodied sealer the entire length of the component.

The methods needed to seal stationary quarter window leaks will depend upon the type of installation.

1. Seal outside loaded glass with adhesive caulk kit no. 9636067 or equivalent, as described in Section 11 of this manual.
2. Inside loaded quarter window leaks can be sealed from outside the car by removing the moldings and applying liquid butyl to the leak area. Prior to installing the moldings, apply a thin bead of 3M Strip Calk or equivalent to the cavity of the moldings to effect a seal when installed.

   Some quarter windows will have to be removed in order to correct waterleaks (refer to Section 11).

Rear Compartment

1. Metal panel joint leaks at the back window opening and back window sealant leaks in the lower corner are often confused. To diagnose a sealant leak, remove reveal molding and pour bubble solution (liquid soap) on suspect area while applying low pressure air, 205 kPa (30 psi) maximum, to the same area from inside the car (Fig. 1-19). To find out if metal joint is adding to leak, apply air pressure from inside the rear compartment as in Figure 1-20.

   Seal small cracks or pin holes in metal joints with 3M Drip-Chek sealer or equivalent. Larger holes or voids can be sealed with 3M All-Around Autobody Sealant, #8500, or equivalent.

   If panel joint leak is under fabric roof cover, peel cover back to seal joint and recement fabric cover with Hughes HC 4183, 3M 8046 or equivalent.

   Back window sealant leaks can be repaired with adhesive caulking kit no. 9636067 or equivalent.

2. Cracks or voids in sealer at panel joints can be tested using the air hose and bubble solution technique shown in Figure 1-21. Access to some areas is limited, therefore, it may be helpful to attach a length of copper tubing to the end of the air gun. 3M Drip-Chek sealer or equivalent should be used to seal small cracks. Gaps or voids in panel joints should be packed with 3M All-Around Autobody Sealant, #8500, or equivalent. Paint should be applied over repair in an exposed area.
3. Tail lamps, quarter extensions and similar applied components can be tested by applying water from an unrestricted hose around the periphery of the component. Air hose pressure, 205 kPa (30 psi) maximum, and bubble solution may be used if leak is not easily detected.

   Use 3M Window Weld or equivalent to seal gasket or applied component to the body. Seal lens to lamp housing with 3M Auto Bedding and Glazing Compound or equivalent and gasket to housing with 3M Super Weatherstrip Adhesive or equivalent. Seal around bolts, studs and screws with 3M Strip-Calk or equivalent.

4. Wheelhouse leaks may result in muddy water in the rear compartment. In order to simulate the force of water thrown up into this area by the rear tires, a nozzle or heavy thumb pressure on the end of a water hose is required (Fig. 1-22). It may be necessary to remove the rear wheel assembly to thoroughly test wheelhouse area.

   Panel configuration may prevent detection from inside the rear compartment, therefore, an air gun with an extension fabricated onto the end may be more helpful. Apply air, 205 kPa (30 psi) maximum, to the seams from inside the rear compartment and detect from outside the body in the wheelhouse area.

   To repair, apply a brushable seam sealer into cracks and open seams from outside the body and cover repair area with a rubberized undercoating.

   Upon completion of any waterleak repair, the general leak area should be retested using watertest equipment such as the watertest stands shown in Figures 1-13, 1-14 and 1-15.

   Do not use air hose or water hose to test a repaired area as the repair material may be dislodged under abnormal pressure.

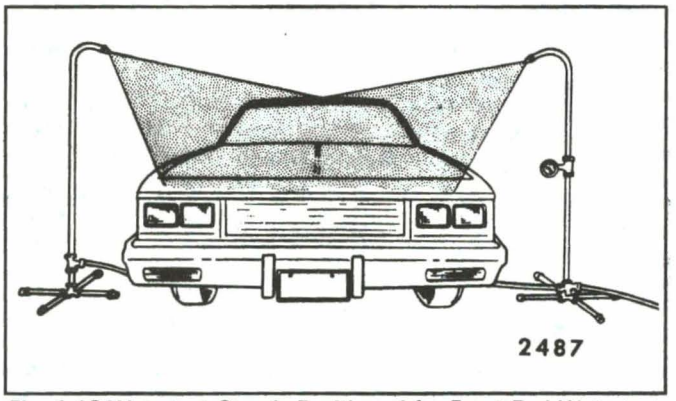


Fig. 1-13-Watertest Stands Positioned for Front End Watertest

WATERTEST STAND SPECIFICATIONS

Type of Nozzle - Full cone spray with 60° included angle - "Full Jet" Spray Nozzle No. 1/2 GG-25 or equivalent.

Nozzle Height - Approximately 1 600 mm (63") from floor

Volume of Flow - 14 liters (3.7 gallons) per minute

Pressure - 155 kPa (22 psi) measured at nozzle

Windshield and Front Body Pillar - approximately 30 degrees down, 45 degrees towards rear and aimed at corner of windshield.

Side - approximately 30 degrees down, 45 degrees towards rear and aimed at center of rear door or rear quarter.

Back Window and Rear Compartment Lid - approximately 30 degrees down, 30 degrees towards front and aimed approximately 600 mm (24") from corner of back window.

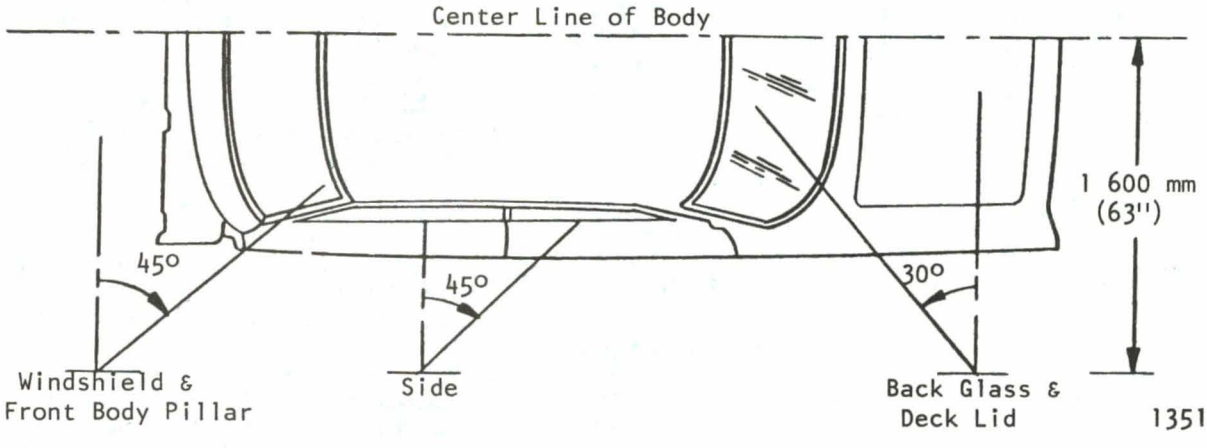
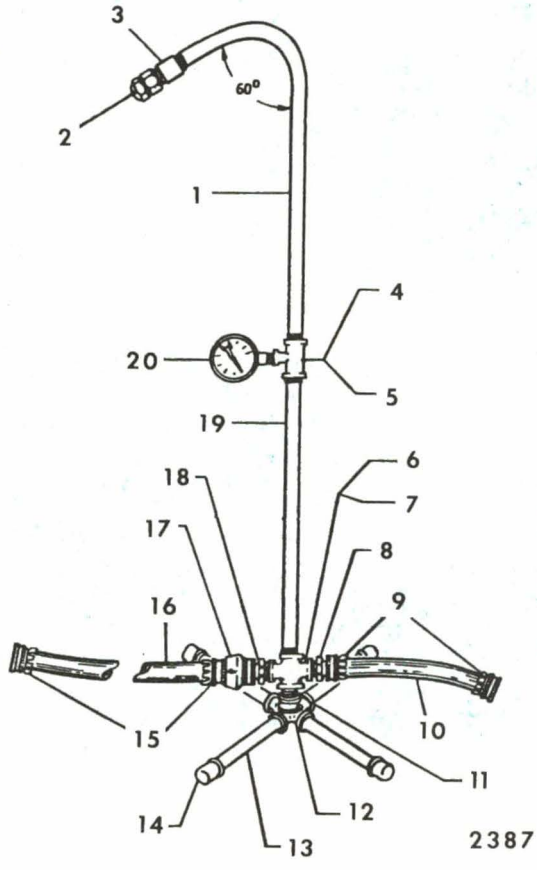


Fig. 1-14-Watertest Stand Specifications



1. 1/2" x 36" Pipe
2. Full-Jet Spray Nozzle #1/2GG-25 or Equivalent Nozzle Height - 64" to Floor
3. 1/2" Coupling
4. 1/2" x 1/2" x 1/4" Reducing Tee (Right Only)
5. 1/2" Coupling (Left Only)
6. 1/2" Cross (Right Only)
7. 1/2" Tee (Left Only)
8. 1/2" Pipe to Hose Nipple (Right Only)
9. 5/8" Female Hose Coupling
10. 2' Input Hose (5/8" Dia.) Right Only
11. 1/2" Close Nipple
12. 1/2" Cross with Weld-On 1/2" Cap
13. 1/2" x 12" Nipple
14. 1/2" Cap
15. 5/8" Female Hose Coupling
16. 12' Cross Hose (5/8" Dia.)
17. Hose Quick Connect
18. 1/2" Pipe to Hose Nipple
19. 1/2" x 30" Pipe (Straight)
20. Water Pressure Gage (Right Side)

Fig. 1-15-Watertest Stand

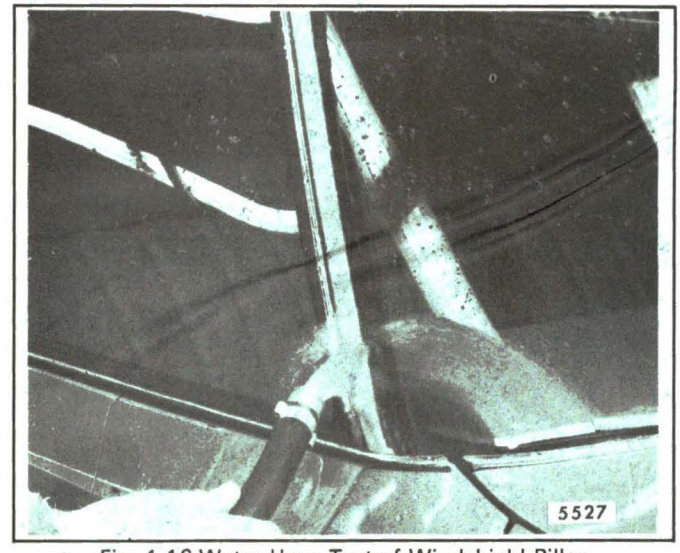


Fig. 1-16-Water Hose Test of Windshield Pillar

Fig. 1-17-Air Hose and Bubble Solution Test of Windshield Glass Sealant

Fig. 1-18-Watertesting Stationary Quarter Glass with Water Hose

Fig. 1-19-Air Gun and Bubble Solution Test for Back Window Sealant

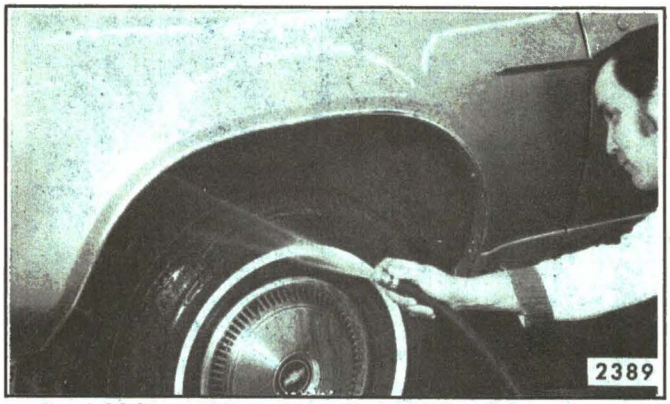


Fig. 1-22-Forced Water Hose Test of Wheelhouse Seams

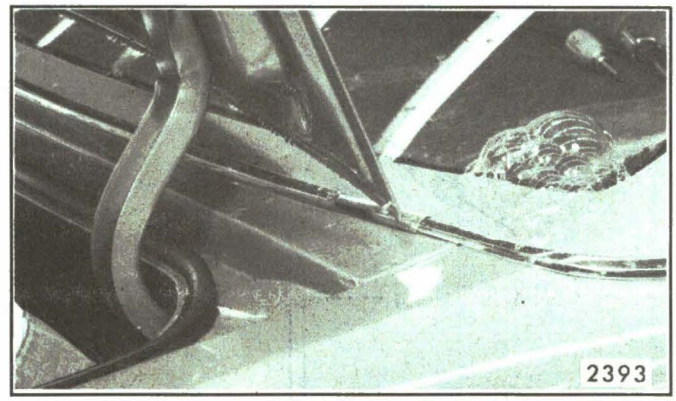


Fig. 1-20-Air Gun and Bubble Solution at Back Window Opening

Fig. 1-21-Air Gun and Bubble Solution of Panel Joints

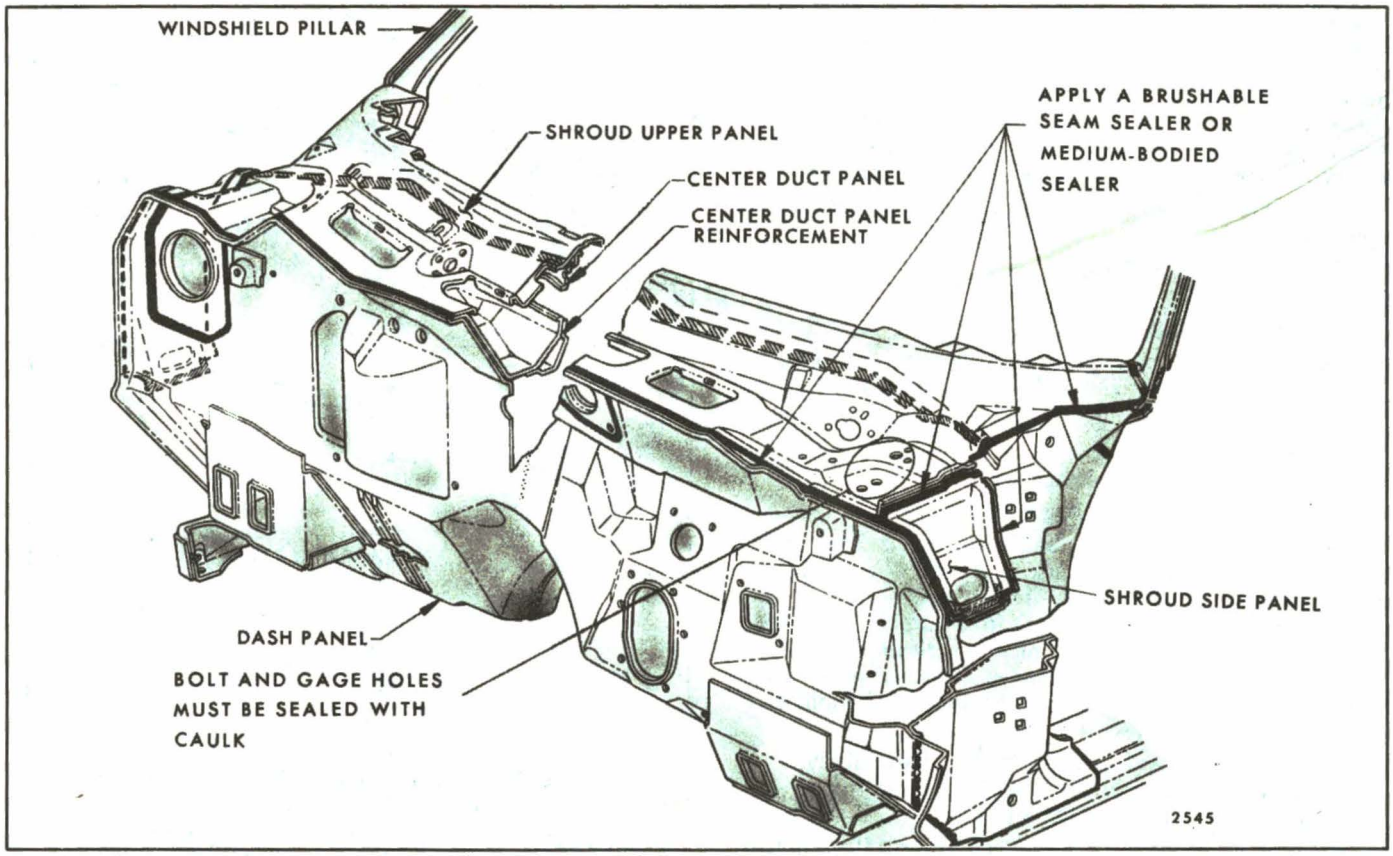


Fig. 1-23-Sealing Front End

ANTICORROSION TREATMENT

To provide for rust resistance, special anticorrosion materials are used on interior and exterior surfaces of metal panels. These materials include special metals such as one-sided and two-sided galvanized, zincrometal and zinc-iron alloy steels, These specially treated metals are used on components such as fenders, doors, quarter panels, rocker panels, lids, floor pans, wheelhousings and other critical parts.

Special metal conditioners and primers are used on interior and exterior surfaces along with protective waxes on interior surfaces in areas where moisture might accumulate. Sealers are applied along exposed joints and moisture-repelling asphaltic sound deadeners are applied inside wheel wells and doors and on some underbody components. Figures 1-23 through 1-32 illustrate typical production and field usage of these materials.

Any procedure that disturbs these special treatments, such as panel replacement or collision damage repair operations, may leave the metal unprotected resulting in corrosion. Therefore, proper recoating of these surfaces with service-type anticorrosion material is essential.

Metal conditioners and primer coatings are applied to all metal panels at the time of vehicle manufacture. After repair and/or replacement parts are installed, all accessible bare metal surfaces must be treated with metal conditioner and reprimed using an acrylic chromate material. This operation is to be performed prior to the application of sealers, waxes, deadeners and antirust compounds.

Sealers are applied to specific joints during manufacture. These sealers are intended to prevent water and dust from entering the vehicle and also perform as anticorrosion barriers. Sealers are applied to such areas as door and rear compartment lid hem flanges, wheelhousing, quarter outer, floor, cowl, roof and various other panel-to-panel attaching points. The originally sealed joints are obvious and any damage to these sealed locations should be corrected by resealing. Attaching points of new replacement panels should be resealed. Replacement lids and doors will also require sealing in the hem flange areas.

Flanged joints, overlap joints and seams should be sealed using a quality sealer of medium-bodied consistency. Sealer used must retain its flexible characteristics after curing and be paintable.

Open joints which require bridging of sealer to close a gap should be sealed using a heavy-bodied caulking material. Follow label directions for material selected.

Color application may be required to restore repaired areas such as hood, fenders, doors, quarters, lid, roof, engine compartment, underbody and inner panels to original appearance. When this is necessary, conventional refinishing preparation, undercoat build-up and color application techniques should be followed.

Deadener materials (spray-on type) are used on various metal panels to provide corrosion resistance, joint sealing and control the general noise level inside the passenger area of the vehicle. When deadeners are disturbed because of damage, removed during repair operations, or a new replacement panel is installed, the deadener material must be replaced by a service equivalent material. The application pattern and location of deadener materials can be determined by observing the original production installation.

Anticorrosion compounds are light-bodied materials designed to penetrate between metal-to-metal surfaces, such as pinch-weld joints, hem flanges, and integral panel attaching points where metal surfaces are difficult to coat with conventional undercoating materials, and are inaccessible for painting. One material especially suited for this type application is Anti-Corrosion Compound (Part No. 1052290) or equivalent.

Conventional undercoating using Guard-Mor or equivalent protective material is recommended to coat large areas such as replacement door and quarter outer panels, floor pan sections, lids, hoods, fenders, etc.

During undercoating operations, care should be taken to prevent the material from being sprayed into door and quarter hardware mechanisms such as door locks, glass run channels, window regulators and seat belt retractors. On the underbody, the material should not be applied to any moving or rotating part, energy absorbing bumper components or shock absorbers. After undercoating, make sure that all body drain holes are open.

Sequence of application steps for anticorrosion materials is as follows:

1. Clean and prepare metal.
2. Apply primer (acrylic chromate).
3. Apply sealers (at all previously sealed joints).
4. Apply color in areas where color is required, such as hem flanges, exposed joints and underbody components.
5. Apply deadeners (as indicated by original application pattern).
6. Apply anticorrosion compounds.
7. Apply underbody rustproofing material.

Cleaning of interior and underbody panel surfaces is necessary when original galvanized or other anticorrosion materials have been burned off during welding or heating operations. Removal of the residue left from burning will require additional care in such areas as interior surfaces of box-type construction and when configurations of the metal panels limit accessibility to interior surfaces. One or more of the following methods will remove the residue.

CAUTION: Standard shop practices, particularly eye protection, should be followed during these operations to avoid personal injury.

- Where access is possible, scraping can be used. If a standard putty knife or scraper will not fit into the affected area, consider fabricating a small, flexible scraper from a narrow piece of sheet metal.
- A jet of compressed air will remove most residue and could be most effective in limited-access areas. Eye protection is absolutely necessary in an operation of this type.
- Sandblasting is most effective and should be used when the equipment is available and accessibility to the area is good. Sandblasting is an excellent method for cleanup and preparation of open joints, underbody components and hem flange areas.
- Wire brushing (power and by hand).
- When accessibility is good, sandpaper and steel wool can be used.

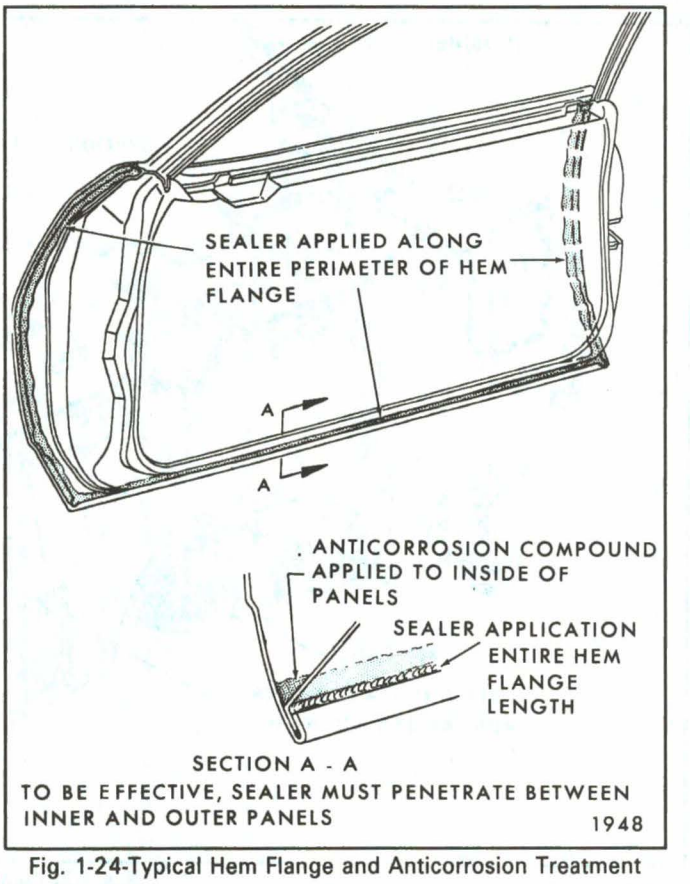


Fig. 1-24-Typical Hem Flange and Anticorrosion Treatment

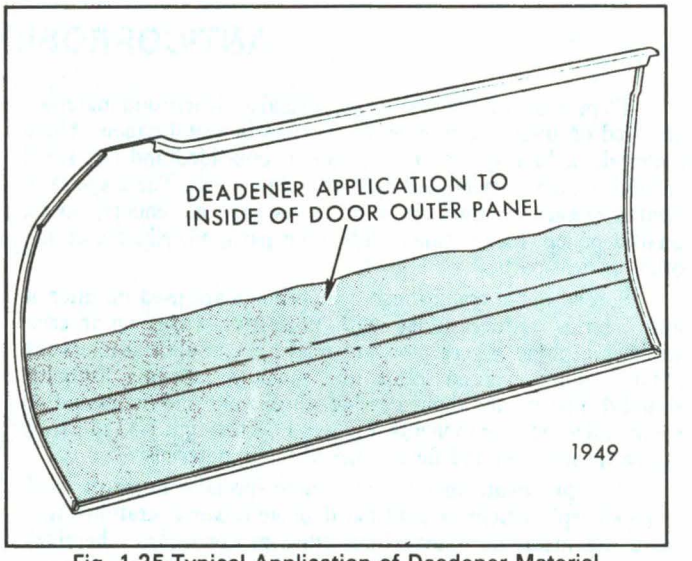


Fig. 1-25-Typical Application of Deadener Material

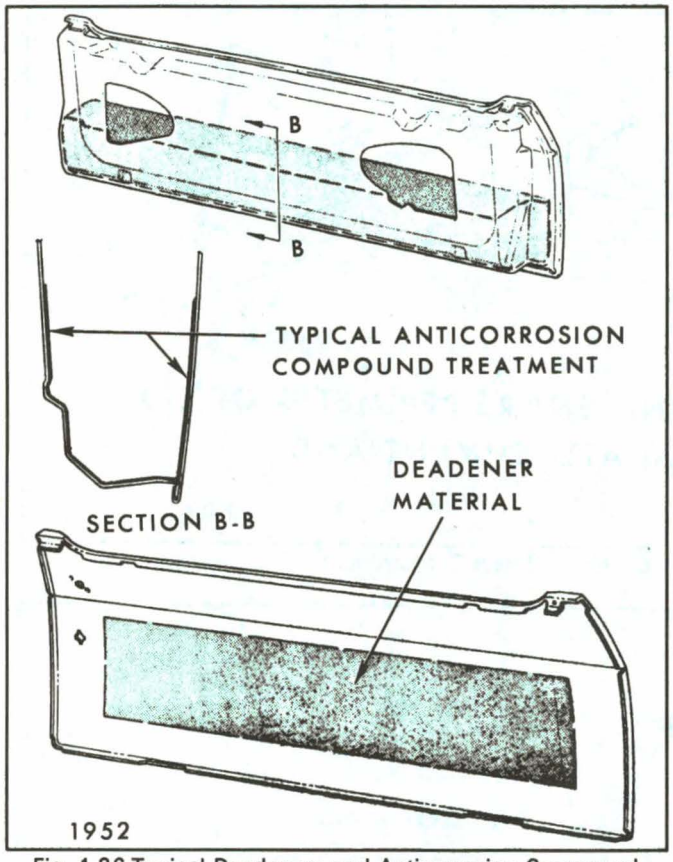


Fig. 1-26-Typical Deadeners and Anticorrosion Compound Treatment

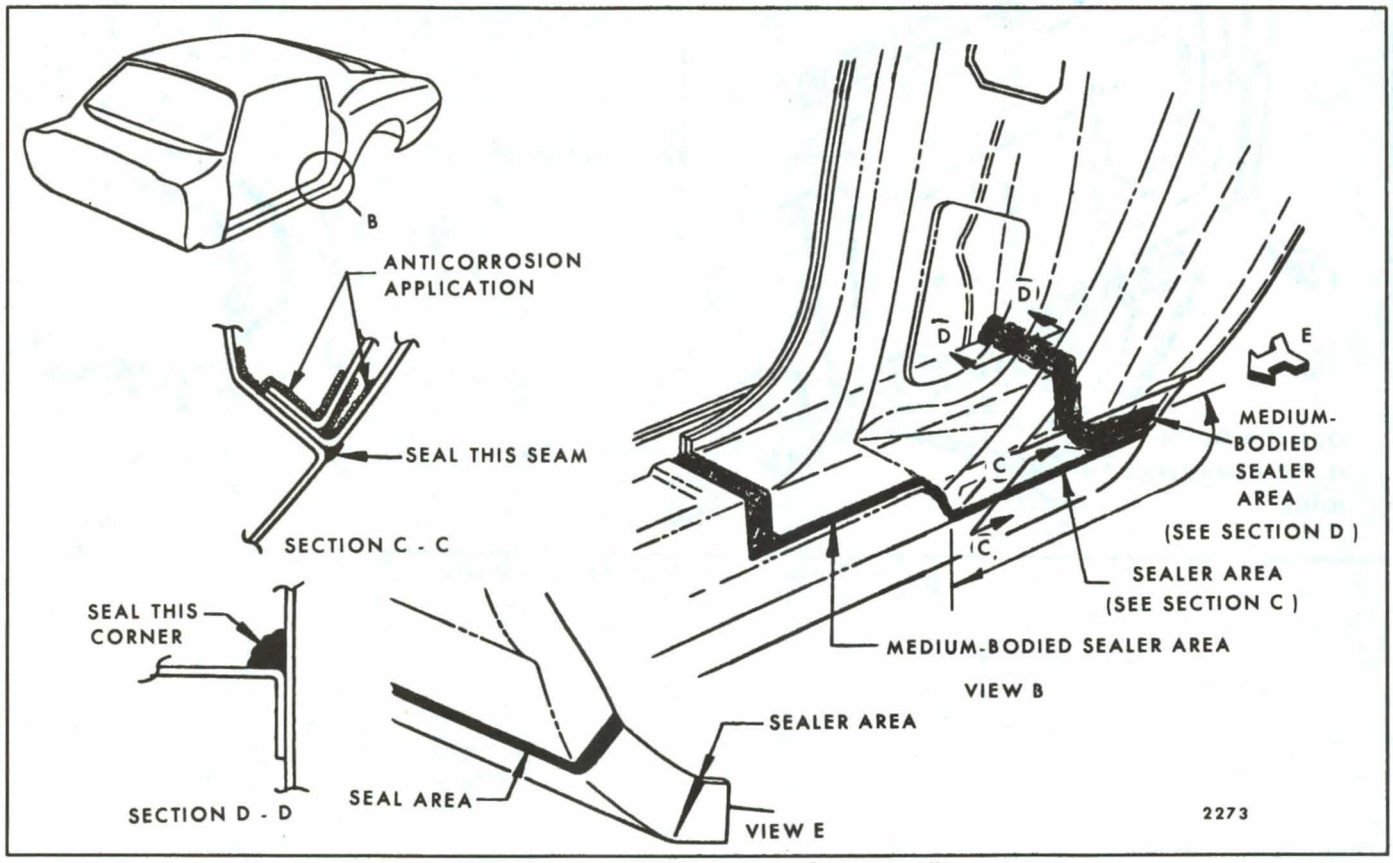


Fig. 1-27-Typical Sealer and Anticorrosion Compound Treatment

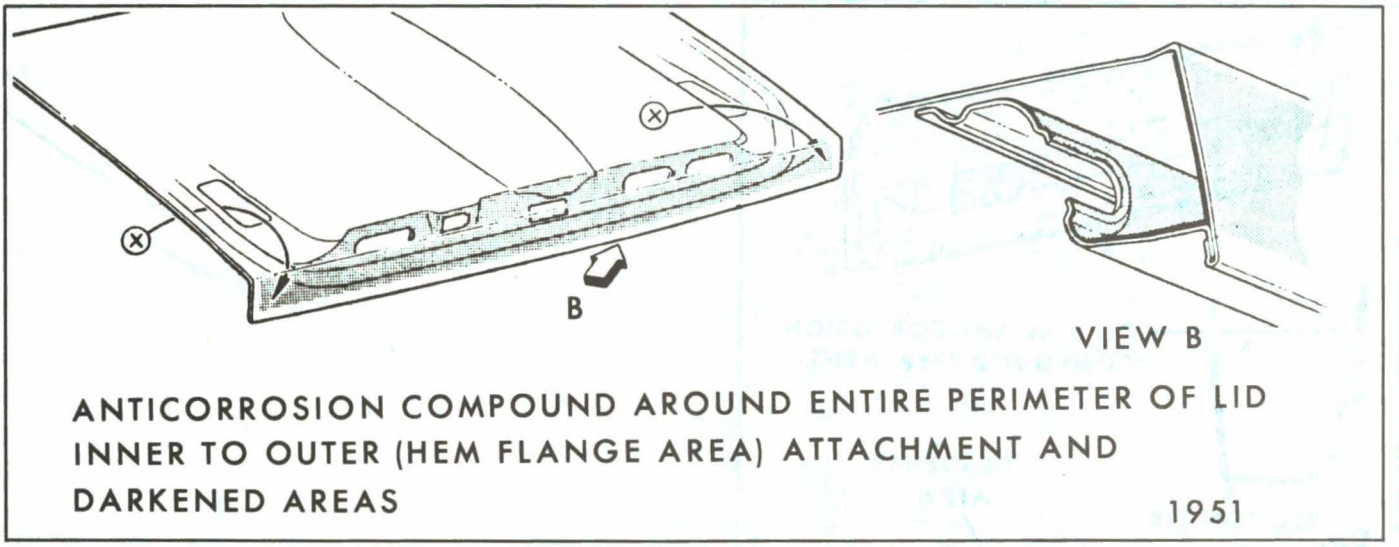


Fig. 1-28-Typical Anticorrosion Treatment to Interior of Rear Compartment

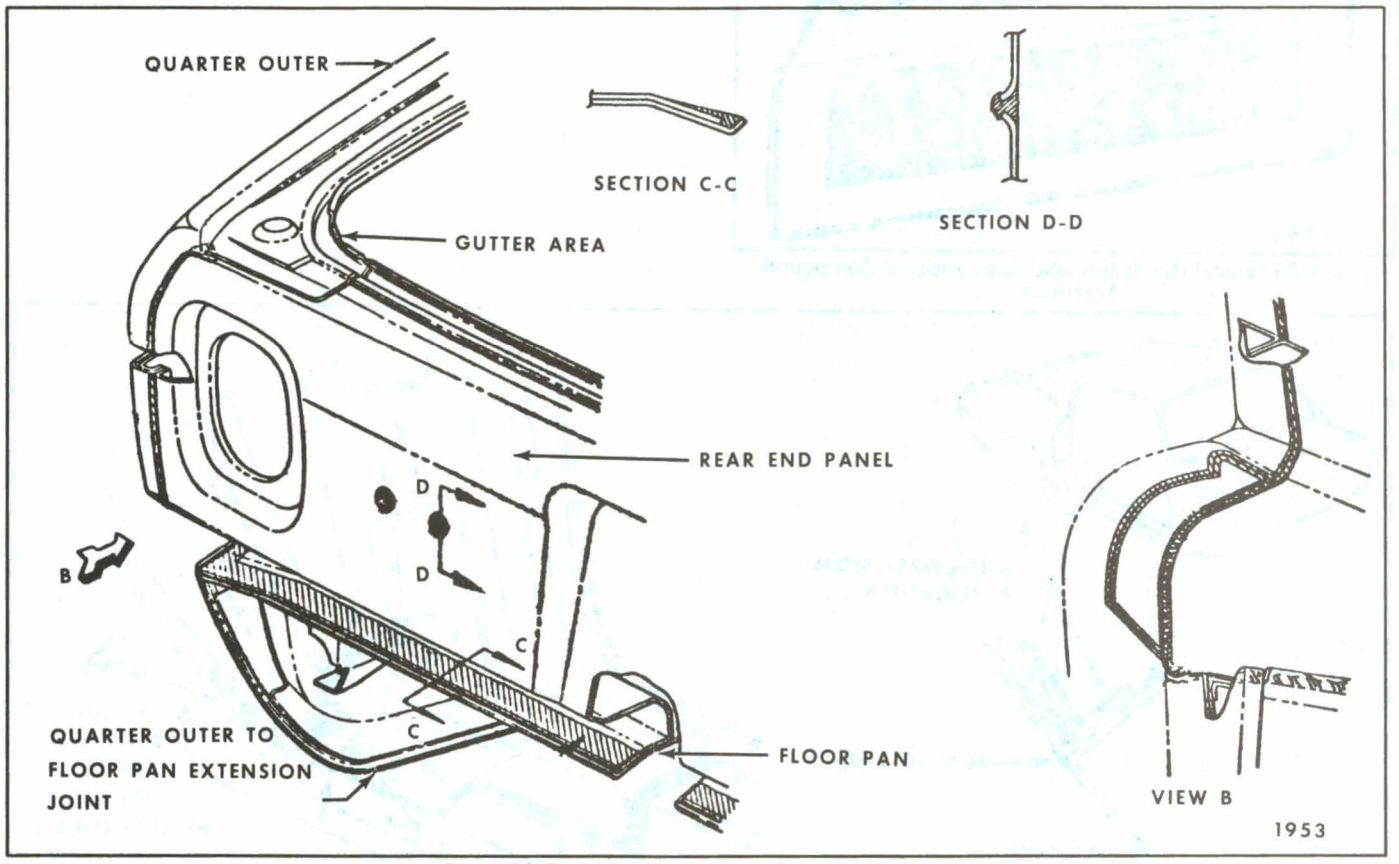


Fig. 1-29-Typical Joint Sealing, Rear End Area(s)

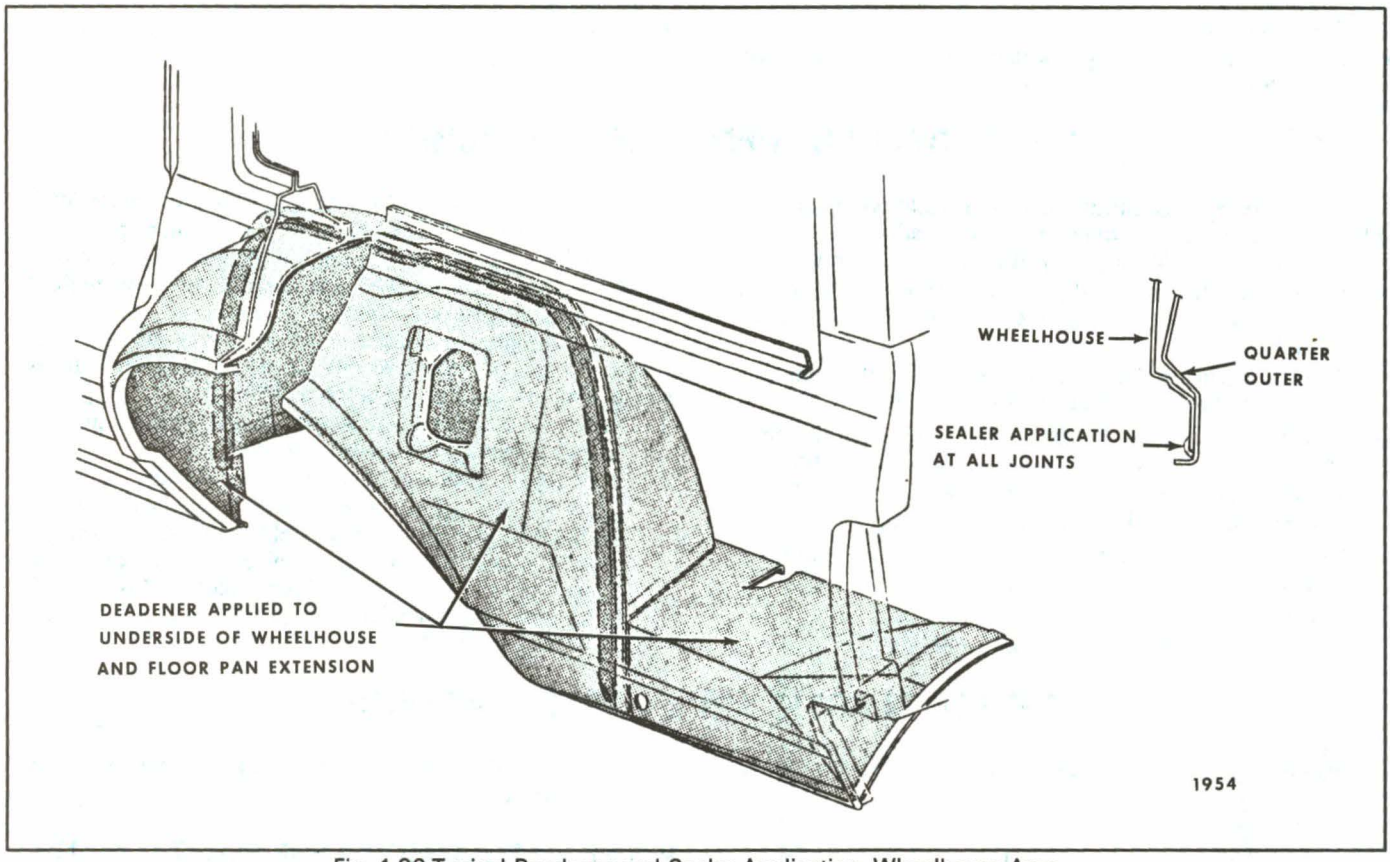


Fig. 1-30-Typical Deadener and Sealer Application, Wheelhouse Area

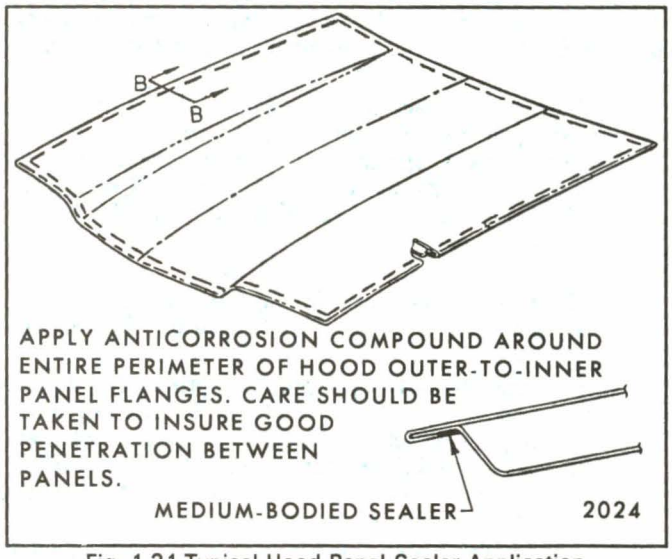


Fig. 1-31-Typical Hood Panel Sealer Application

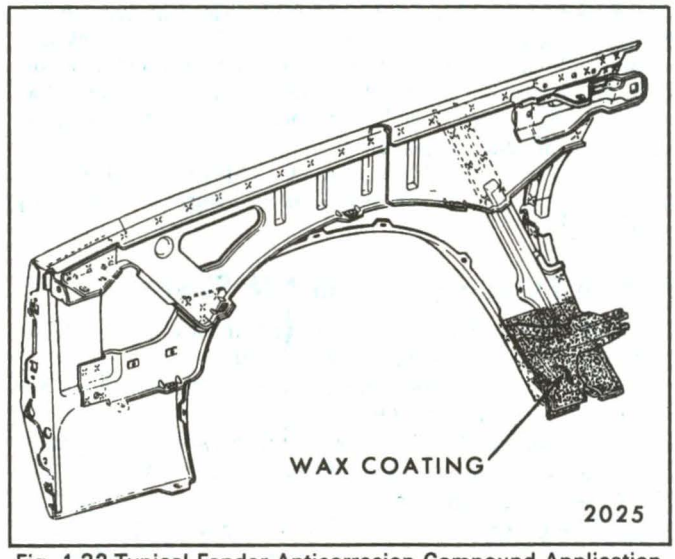


Fig. 1-32-Typical Fender Anticorrosion Compound Application

CHIP RESISTANT PLASTISOL MATERIAL

A chip resistant plastisol material is applied to specific lower areas of the body and periphery of fuel tank openings prior to color coat application on some vehicles. The presence of the applied material is readily detected through visual inspection. A very high degree of orange peel will be present in these areas.

In the event the production applied chip resistant plastisol material requires replacement, a chip resistant air dry vinyl plastisol that is solvent borne and sprayable is available for field use.

The following refinish materials can be used for refinish operations. Follow material manufacturer's label directions for application.

- Acme Gravel Guard #559 or equivalent - 1 quart container
- Rodgers Vinyl Gravel Guard #4559 or equivalent - 1 quart container
- Sherwin-Williams Vinyl Gravel Guard #G1W295 or equivalent - 1 quart container
- Tuff-Kote #1077 or equivalent - 1 quart container

Equipment necessary for repair in addition to the above materials:

- Sandpaper - #80 Grit
- Portable heat lamp or heat gun
- Extension cord

- Clean shop towel
- Conventional hand spray gun with pressure feed cup attached (DeVilbiss, J.G.A., Binks or equivalent)
- Putty knife

METAL REPLACEMENT PARTS FINISHING

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

1. Clean part with a wax and grease removing solvent such as Prep-sol, Pre-Kleano, Acryli-Clean, Sher-Will-Clean or equivalent.
2. Scuff-sand panel lightly with wet or dry no. 400 sandpaper and water. Avoid cut-throughs. Reclean part.
3. If factory primer coat was cut through, apply metal conditioner to exposed bare metal. Follow label directions.
4. Apply primer-surfacer, allow to dry thoroughly before sanding. Follow label directions for drying time.
5. Sand primer-surfacer using wet or dry no. 400 sandpaper and water.
6. Reclean part.
7. Apply color coats to parts to achieve hiding.
8. Follow label directions for drying time before compounding.
9. Compound part by hand or with power equipment.
10. Nonsealing polish may be applied after rub-out if desired. Waxes, however, should NOT be applied until the paint finish has aged at least two months.

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

1. Remove rust with suitable wire brush, abrasive or liquid rust removing agent. Follow label directions.
2. If necessary, wash with detergent, rinse and dry.
3. Apply a heavy coating of anticorrosion compound, part no. 1051685, 60 liters (16 gal.); 1051686, 210 liters (55 gal.); or 1052290, aerosol or equivalent, to all cleaned hidden surfaces before installing exterior body parts. Also, apply anticorrosion compound to all inner surfaces of exterior body parts being installed.

INTERIOR PLASTIC TRIM PARTS FINISHING

Paintable plastic interior trim components 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.

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 should 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.
4. If black smoke residue, which hangs temporarily in the air, is readily visible when wire (with retained plastic residue) is returned to the flame, the part is made of flexible (soft) ABS plastic material.

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.

NOTICE: Service part most 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 Polypropylene Primer, part no. 1051497, or equivalent.

1. Wash part 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 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.

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.

1. Wash part 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). Apply only enough color for proper hiding to avoid washout of "grain" effect.

3. Allow to dry following label directions and then install part.

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. No primer or primer-sealer is required.

1. Wash part 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. As soon as the surface has been wiped dry, apply interior vinyl color in wet coats. Allow flash time between coats. Follow label directions. Use proper vinyl color as shown by interior trim code combination. Apply only enough color for proper hiding to avoid washout of grain effect.
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. 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.

AVAILABILITY OF COLORS FOR PAINTING INTERIOR PLASTIC PARTS

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

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

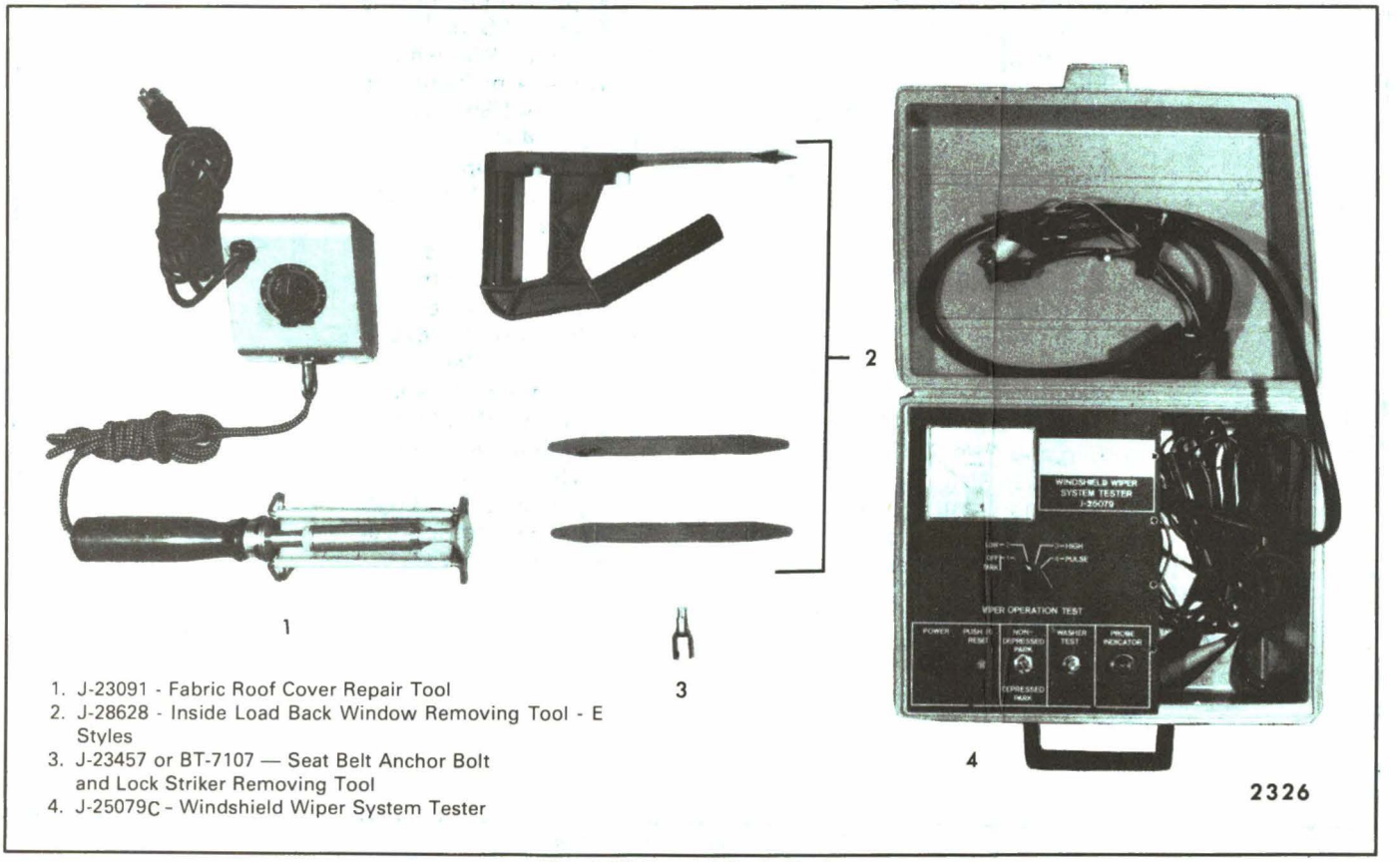
1. Steel parts (primer and/or sealer required on new service parts)
2. Hard ABS plastic (no primer necessary)
3. Hard polypropylene plastic (special primer required)

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

Vinyl interior colors are designed for soft trim parts such as instrument panel cover assemblies, 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.

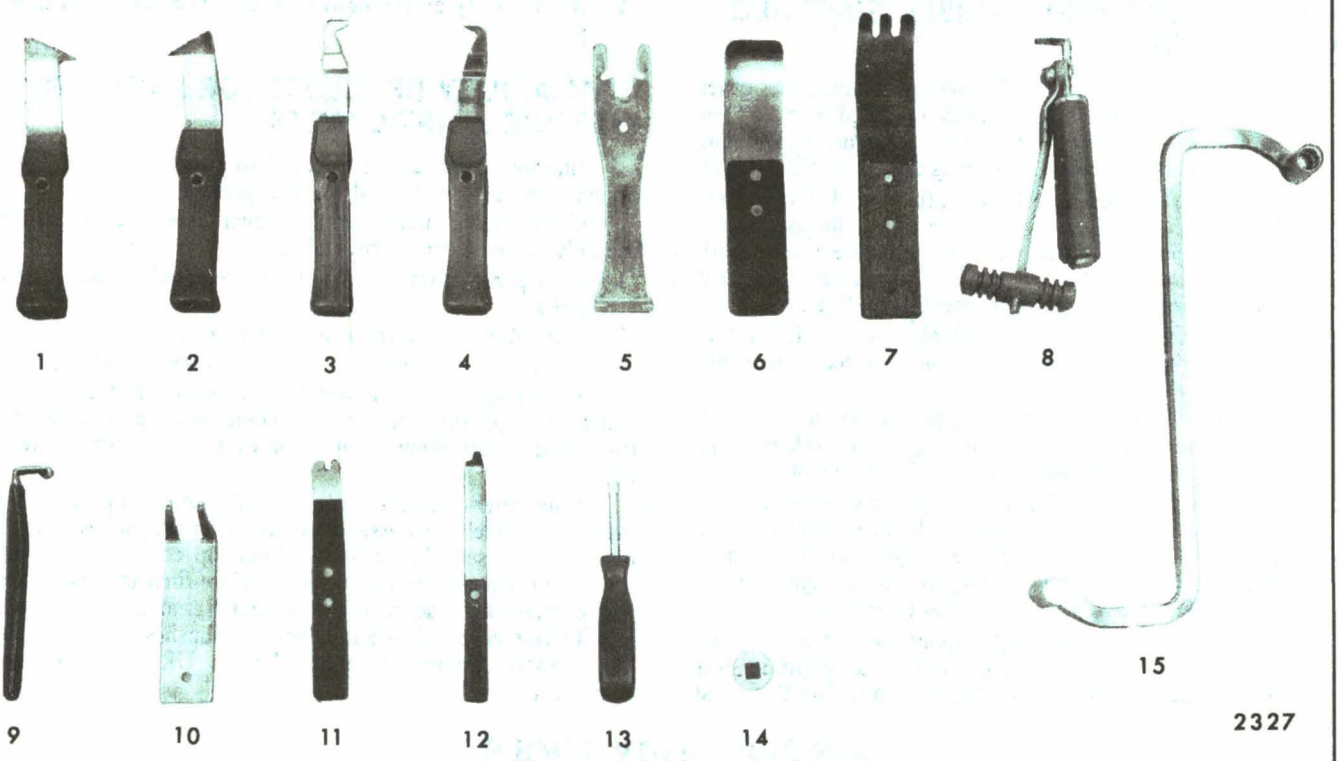
SPECIAL BODY TOOLS

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.



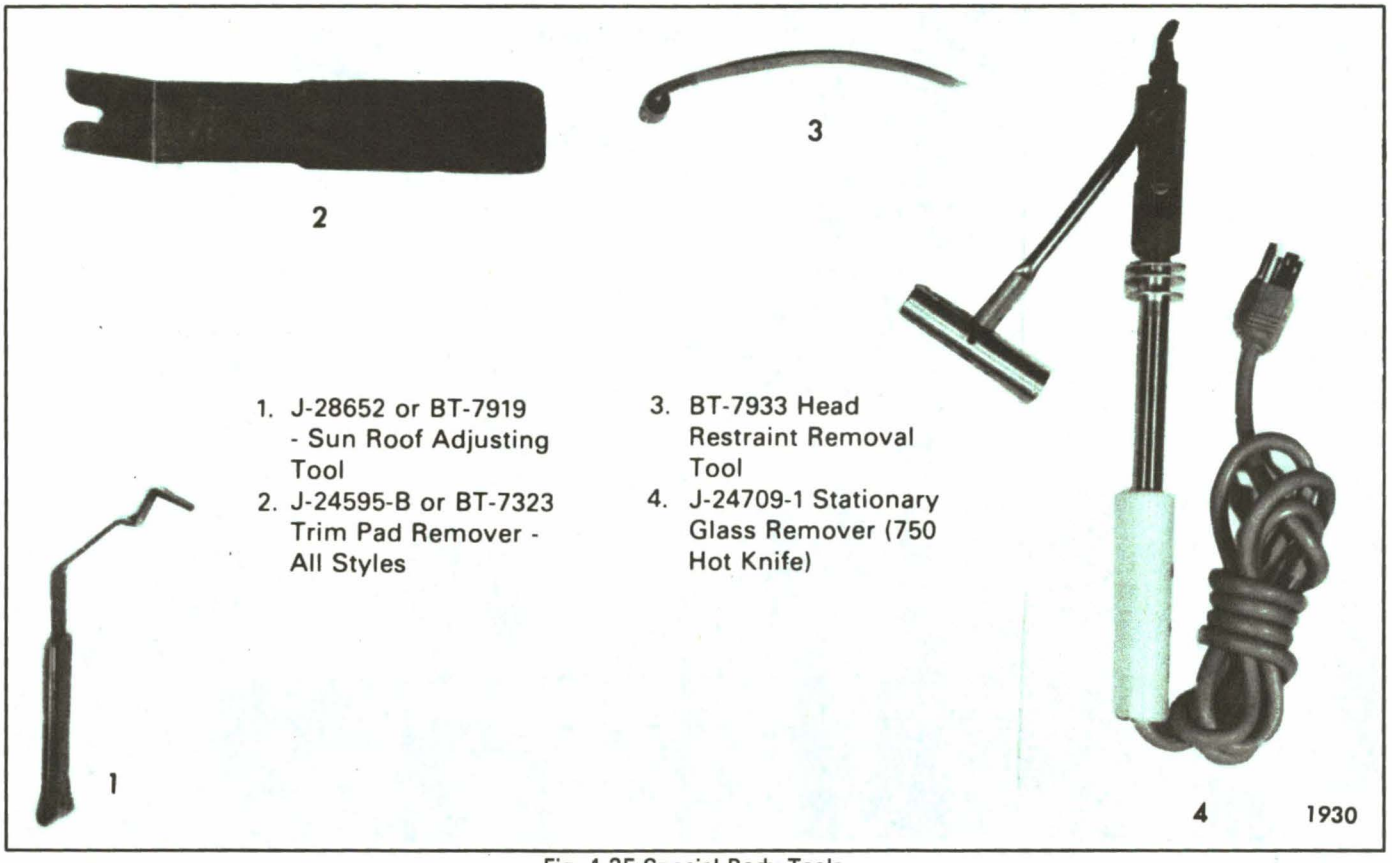
1. J-23091 - Fabric Roof Cover Repair Tool
2. J-28628 - Inside Load Back Window Removing Tool - E Styles
3. J-23457 or BT-7107 — Seat Belt Anchor Bolt and Lock Striker Removing Tool
4. J-25079C - Windshield Wiper System Tester

Fig. 1-33-Special Body Tools



1. J-21549- 10 - Reveal Molding Remover - B, C, D Styles (Left-Hand Operation)
2. J-21549- 11 - Reveal Molding Remover - B, C, D Styles (Right-Hand Operation)
3. J-21549-5 - Reveal Molding Remover (Left-Hand Operations) - G Styles
4. J-21549-6 - Reveal Molding Remover (Right-Hand Operations) - G 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 - G Styles
8. J-24402-A - 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 or J-28626 - Door Trim Pad Applique Remover
14. J-22055 - Window Nut Remover - All Styles
15. J-28500 - Door Hinge Wrench (Metric) - All Styles

Fig. 1-34-Special Body Tools



1. J-28652 or BT-7919 - Sun Roof Adjusting Tool
2. J-24595-B or BT-7323 Trim Pad Remover - All Styles
3. BT-7933 Head Restraint Removal Tool
4. J-24709-1 Stationary Glass Remover (750 Hot Knife)

Fig. 1-35-Special Body Tools

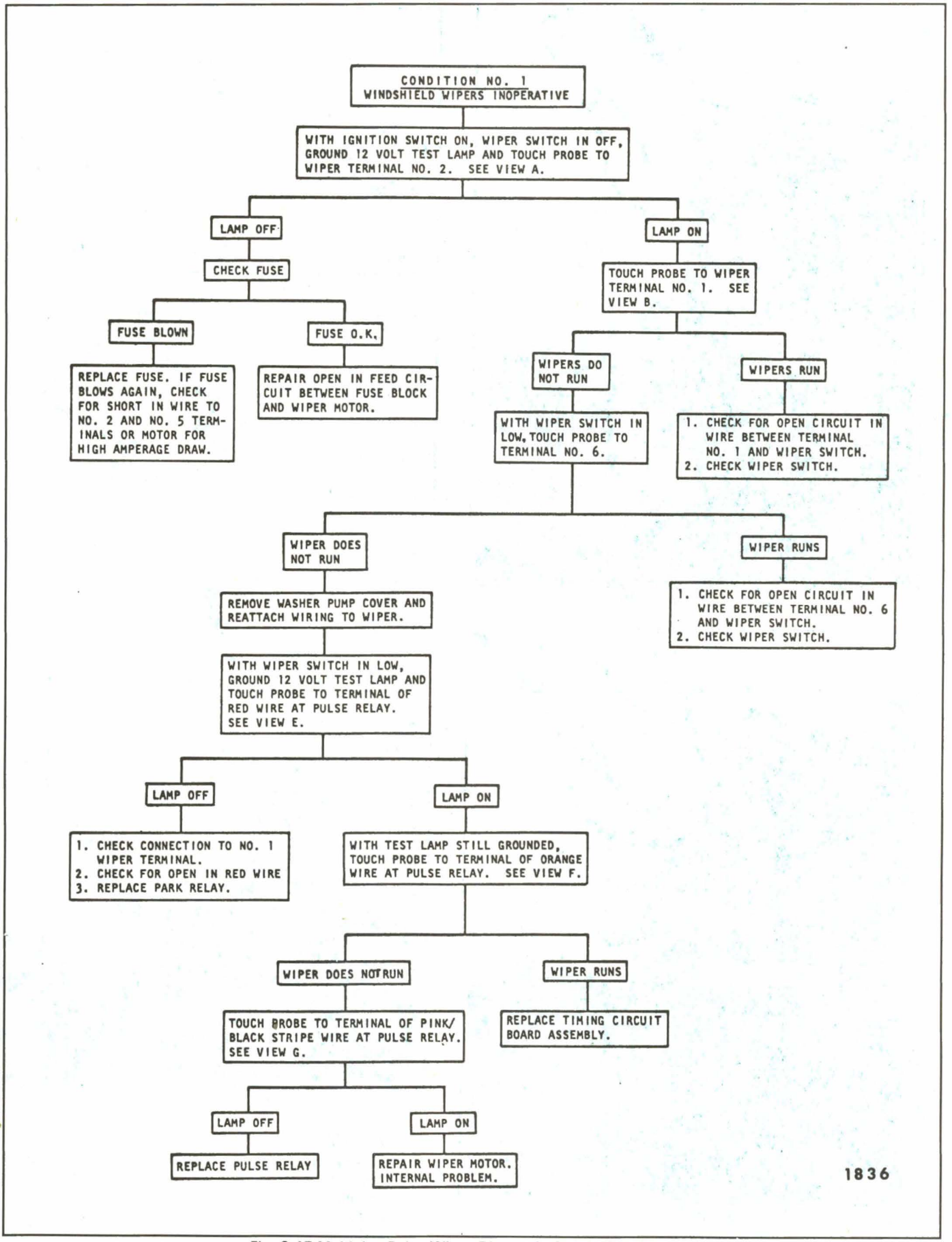


Fig. 2-45-Multiplex Pulse Wiper Diagnosis Chart - Condition 1

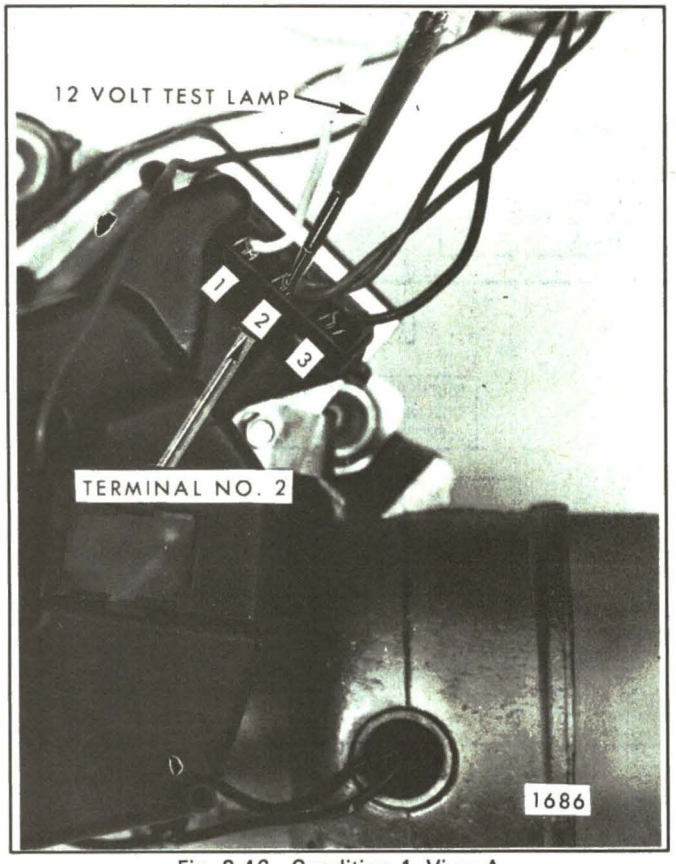


Fig. 2-46 - Condition 1, View A

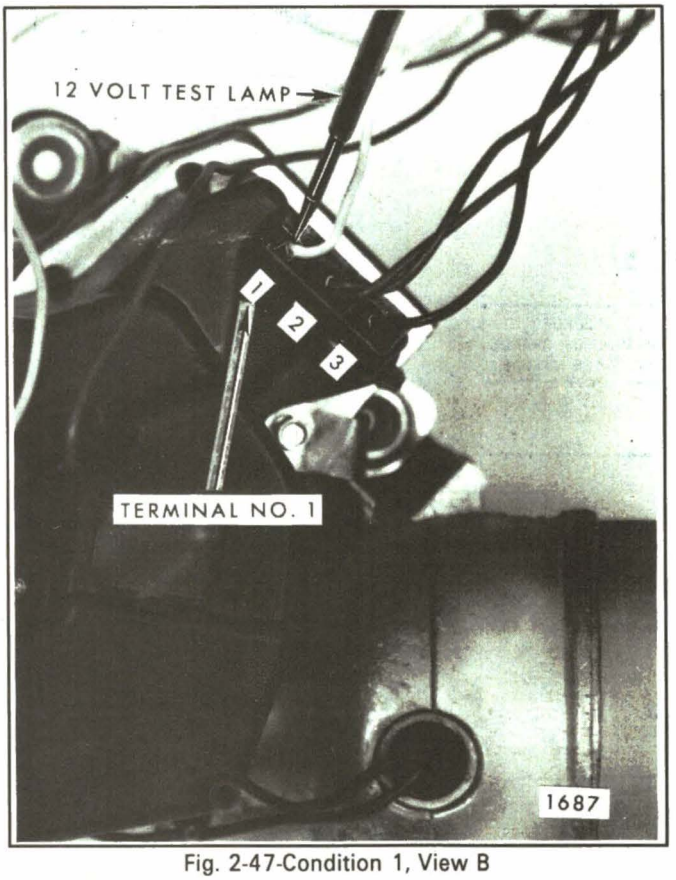


Fig. 2-47-Condition 1, View B

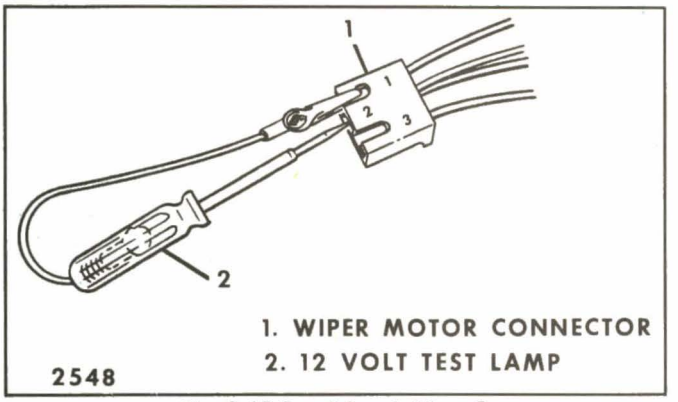


Fig. 2-48-Condition 1, View C

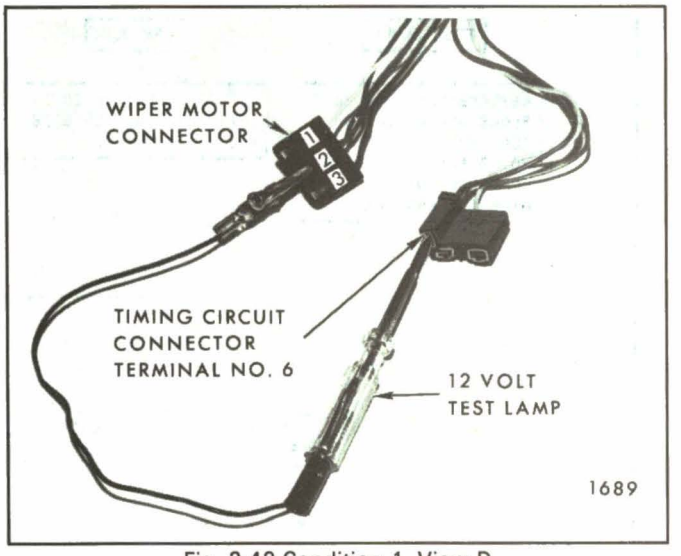


Fig. 2-49-Condition 1, View D

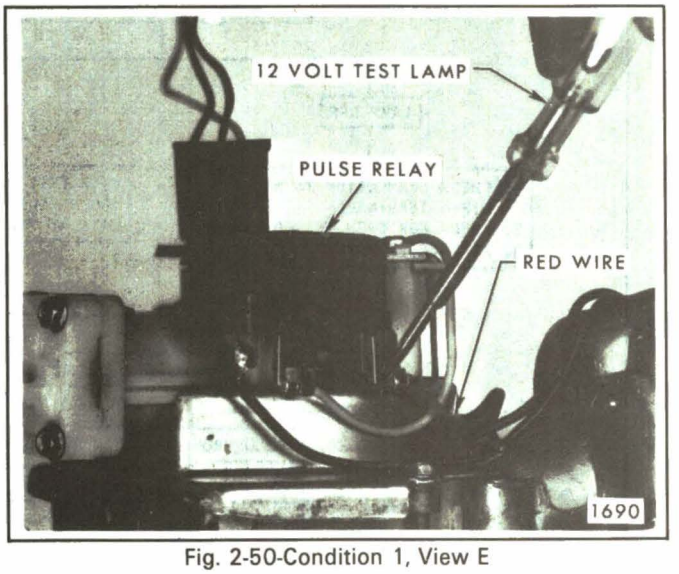


Fig. 2-50-Condition 1, View E

3. Lubricate end of armature shaft that fits in case bearing with Multifak EP-1 or equivalent type grease. 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 2-77.
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

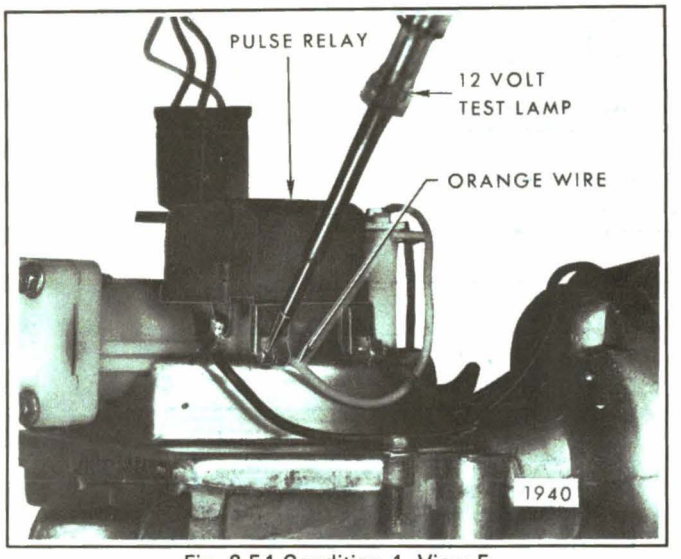


Fig. 2-51-Condition 1, View F

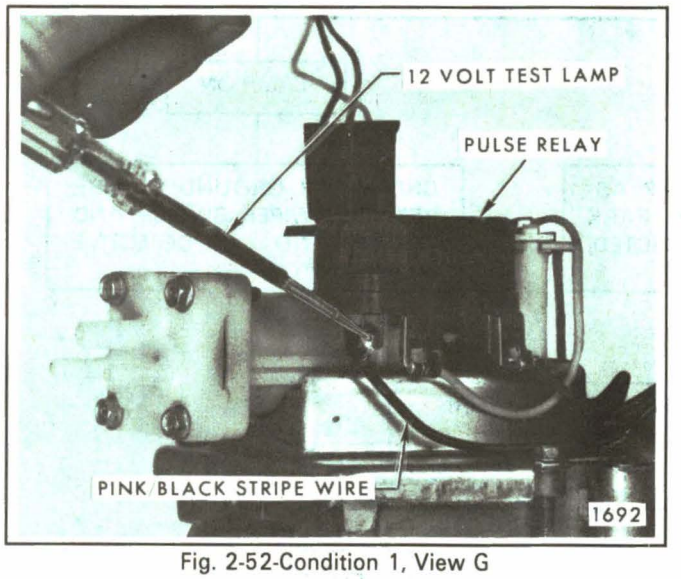


Fig. 2-52-Condition 1, View G

or distort the metal brush holders. 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. 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.

DIAGNOSIS — WIPER ON CAR

To check dash switch and harness, remove harness from the three-terminal board at motor. Use 12 volt test lamp to probe center terminal of switch harness. With test lamp grounded and ignition switch on, test lamp should light. To check two other terminals in the connector, attach alligator clip end of test lamp to a B+ source (hot wire) and probe the two outside harness terminals. Move dash switch to low-speed position. Test lamp should light when contact is made at either of the outside terminals. Move switch to the high position. Test lamp should light at one outside terminal only. With switch in OFF position, light should light at OPPOSITE outside terminal only.

If switch and harness are okay, check the relay switch by hot wiring the motor. Make sure that motor is well grounded and run a hot wire to the black with pink stripe wire. If motor runs under these conditions and not when dash switch is used, the trouble is in the relay switch. If motor does not run when hot wired, then trouble is in motor.

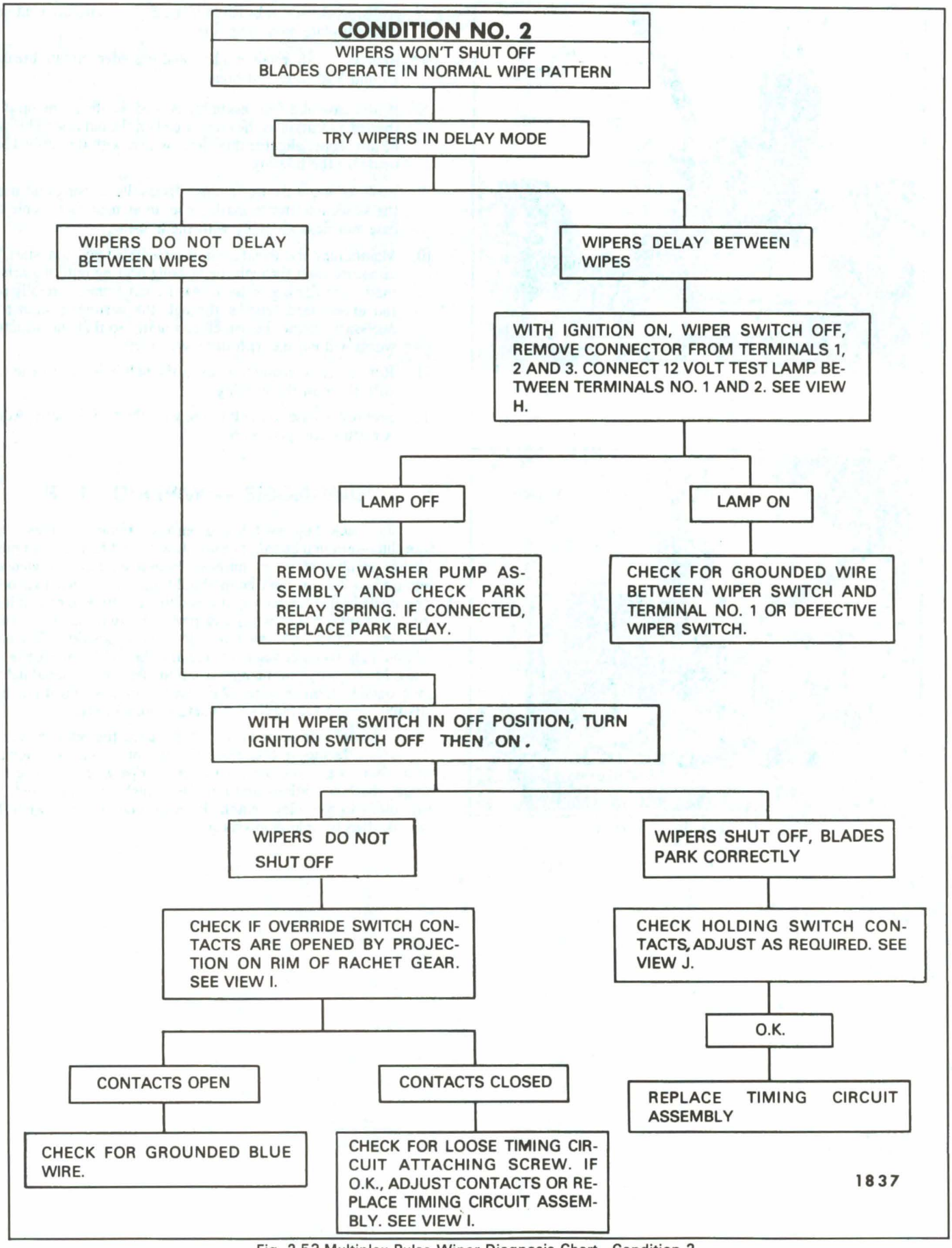


Fig. 2-53-Multiplex Pulse Wiper Diagnosis Chart - Condition 2

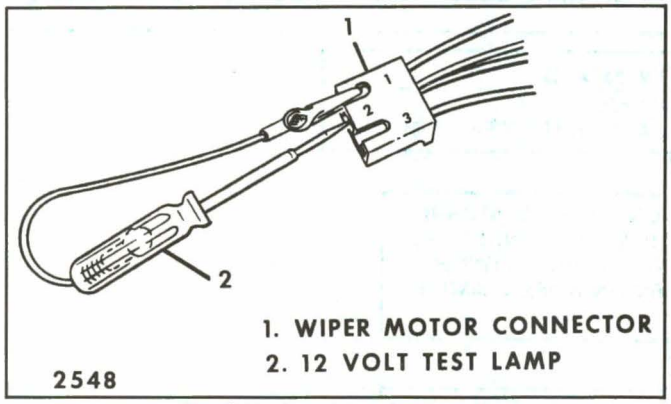


Fig. 2-54-Condition 2, View H

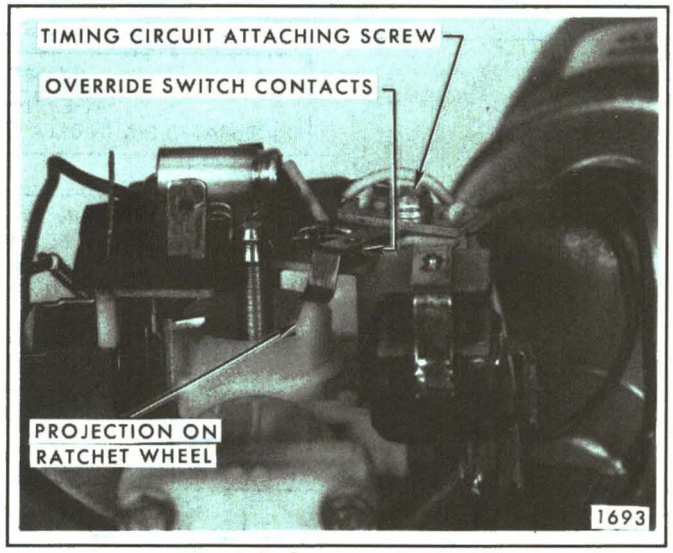


Fig. 2-55-Condition 2, View I

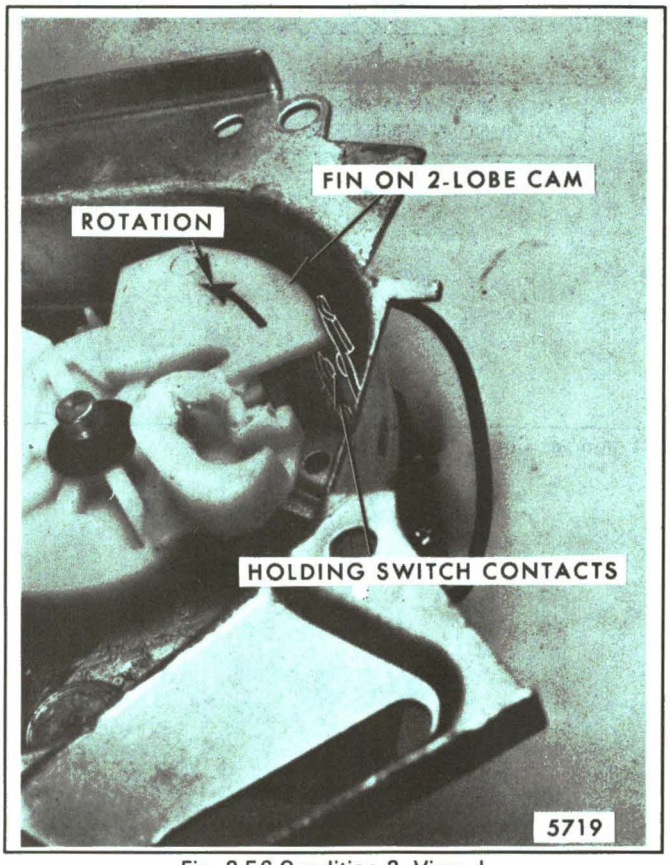


Fig. 2-56-Condition 2, View J

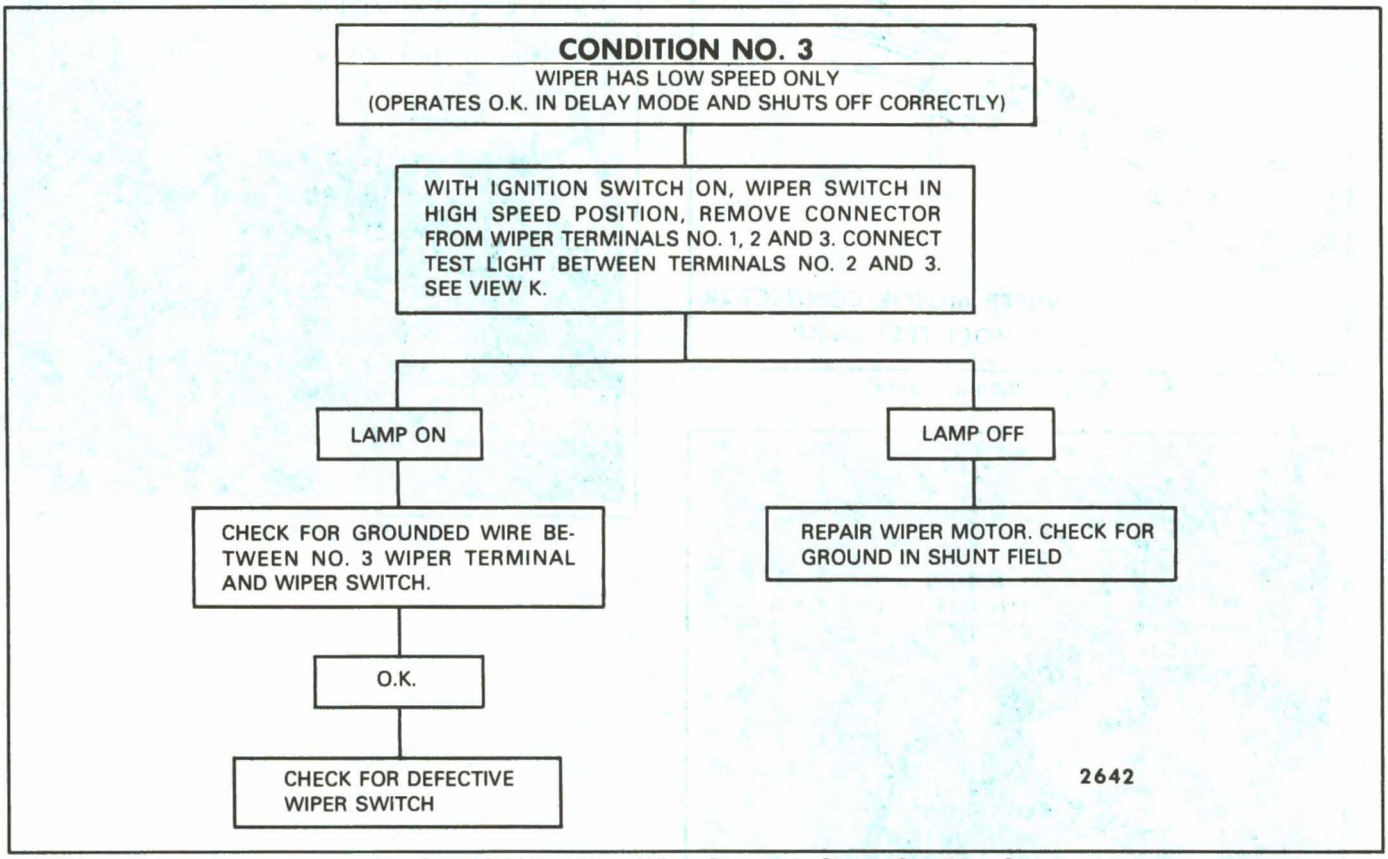


Fig. 2-57-Multiplex Pulse Wiper Diagnosis Chart - Condition 3

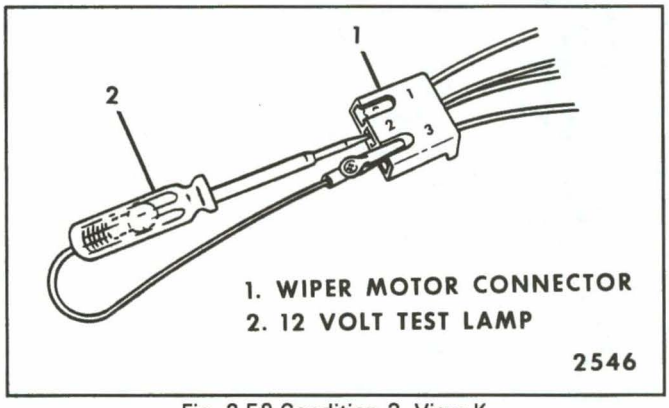


Fig. 2-58-Condition 3, View K

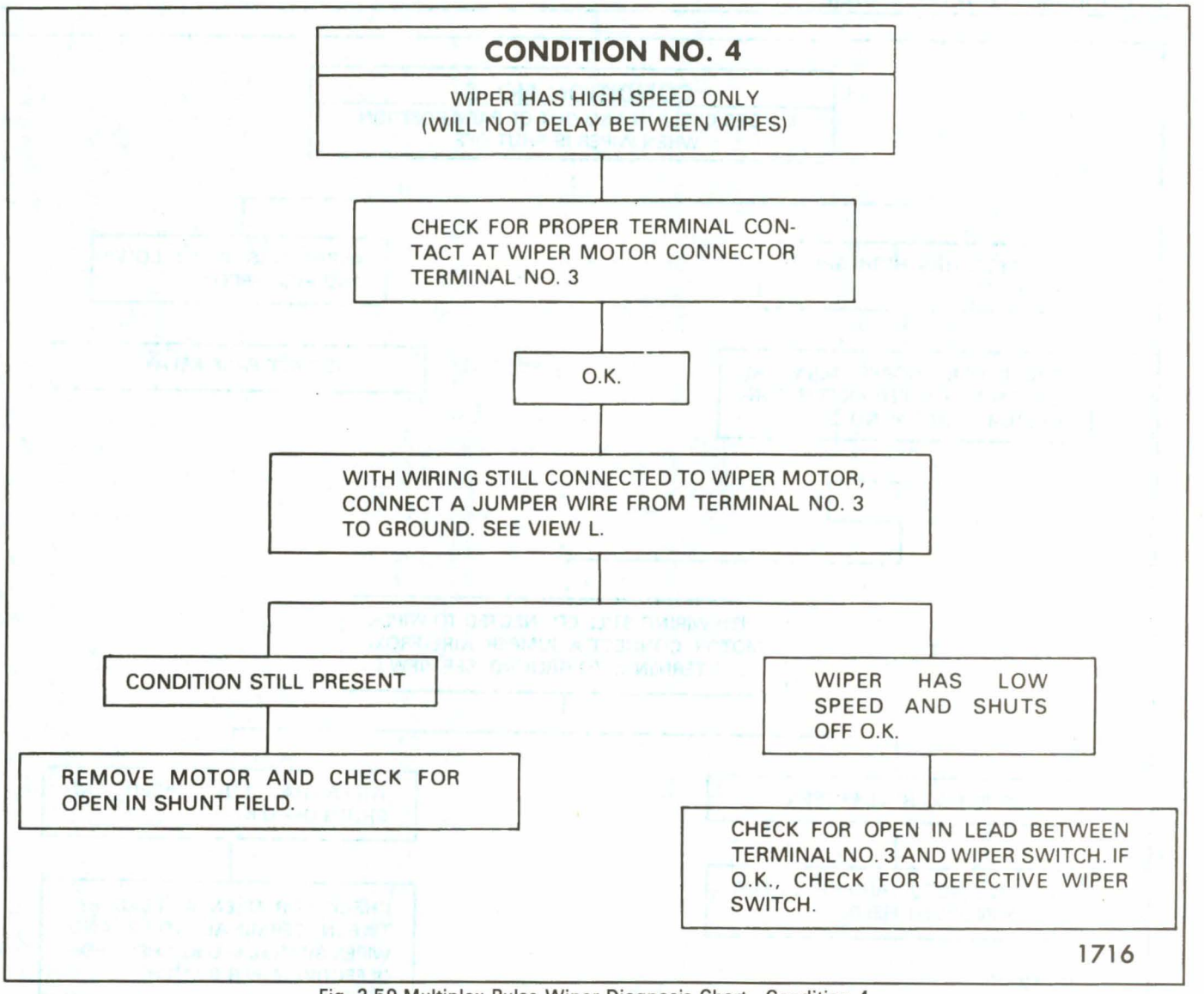


Fig. 2-59-Multiplex Pulse Wiper Diagnosis Chart - Condition 4

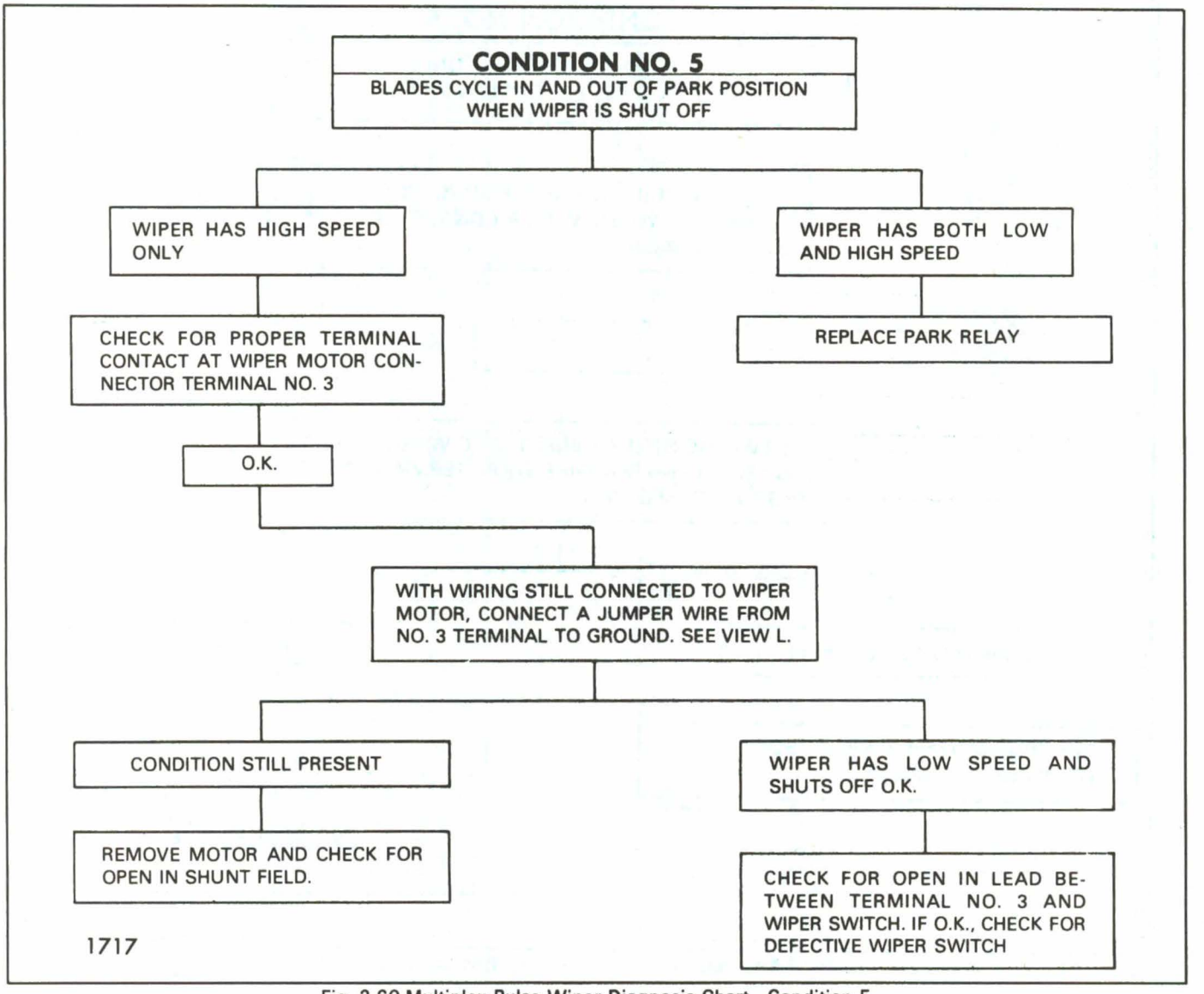


Fig. 2-60-Multiplex Pulse Wiper Diagnosis Chart - Condition 5

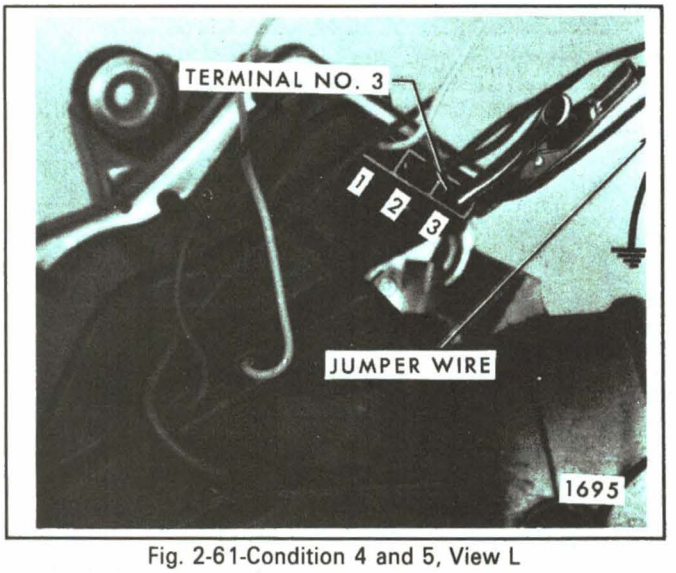


Fig. 2-61-Condition 4 and 5, View L

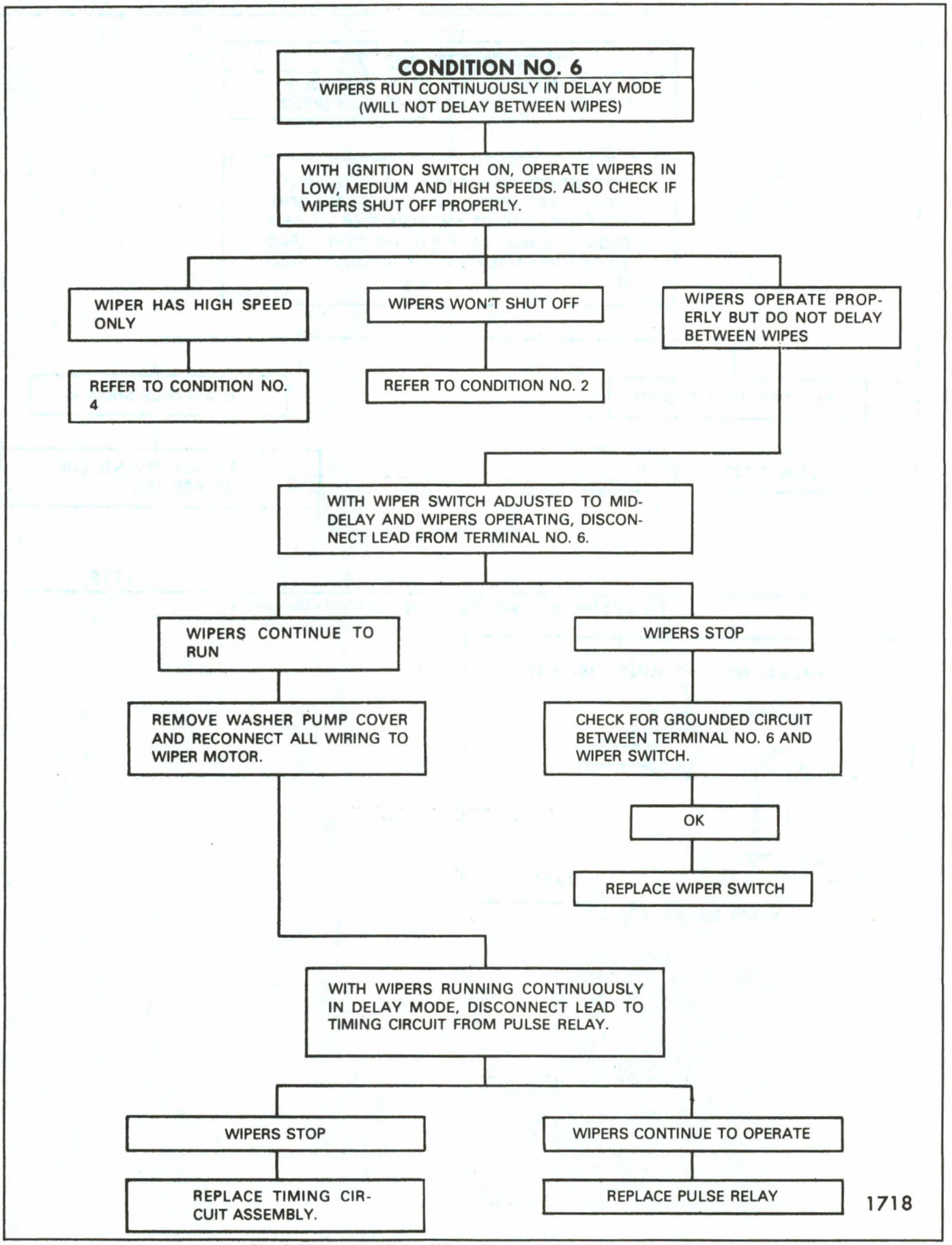


Fig. 2-62-Multiplex Pulse Wiper Diagnosis Chart - Condition 6

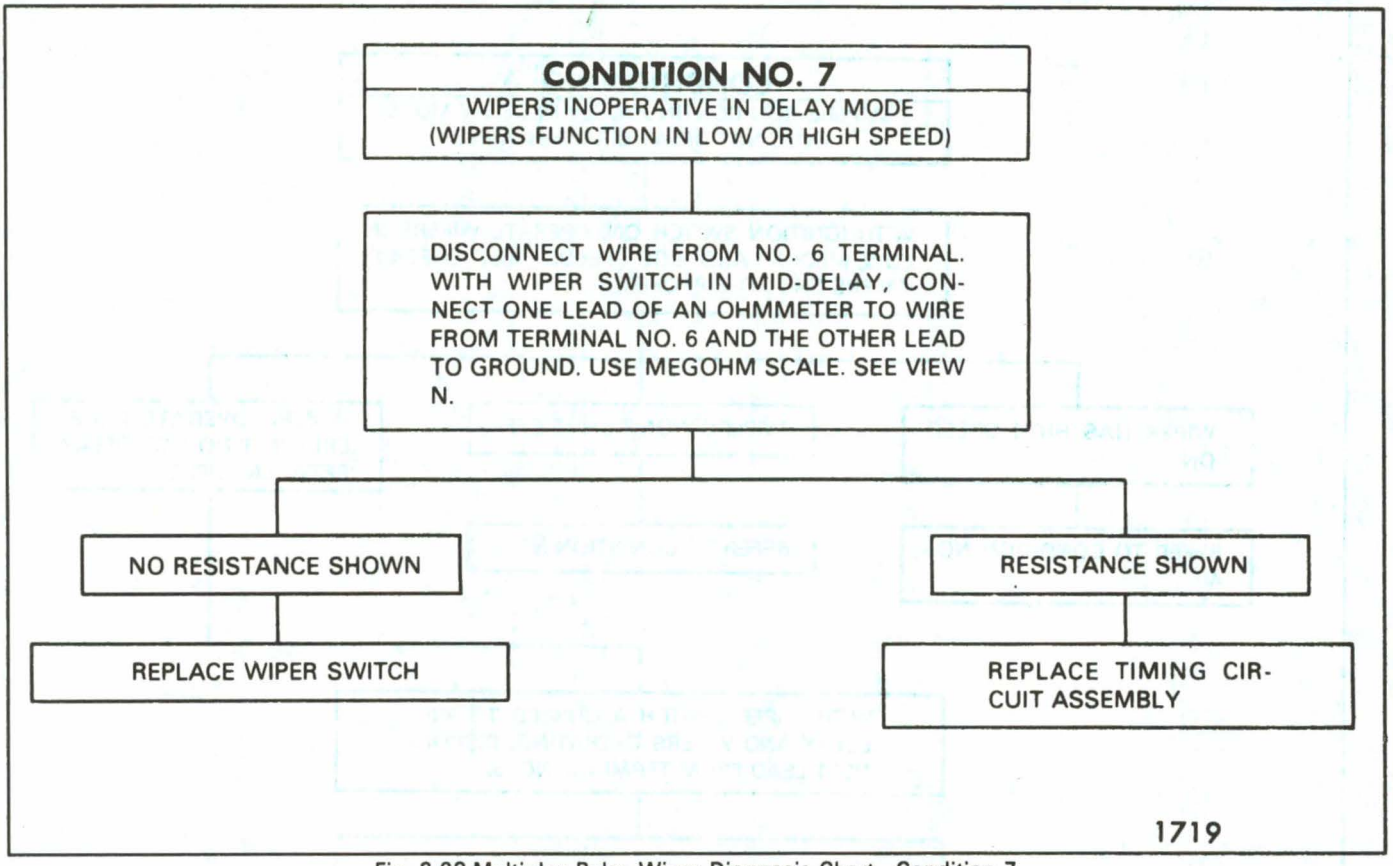


Fig. 2-63-Multiplex Pulse Wiper Diagnosis Chart - Condition 7

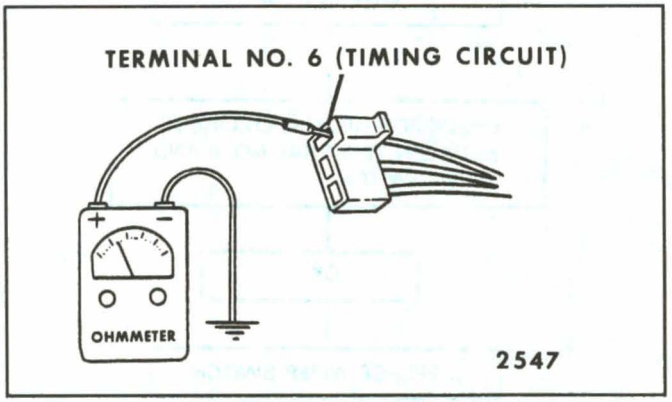


Fig. 2-64-Condition 7, View N

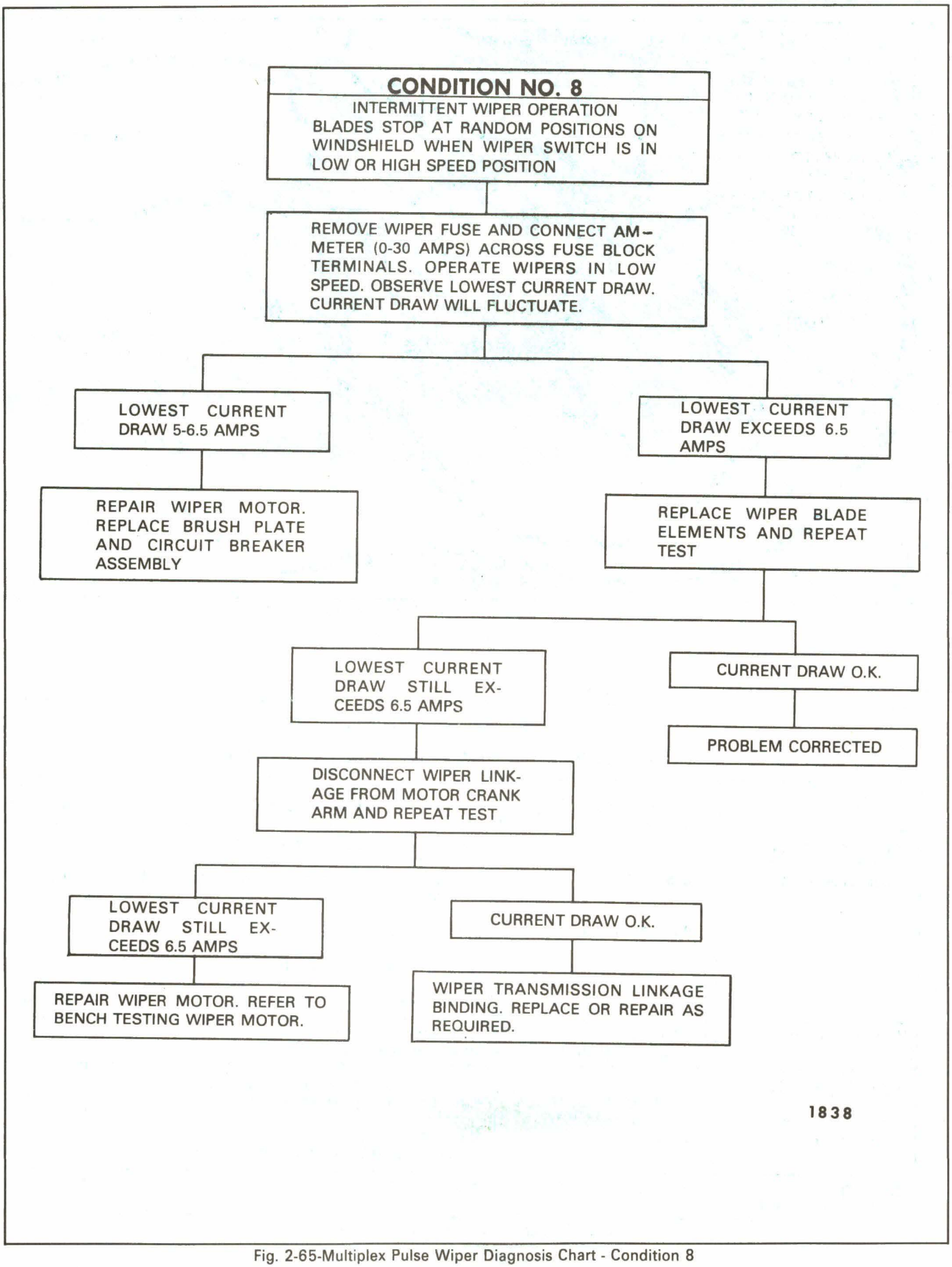


Fig. 2-65-Multiplex Pulse Wiper Diagnosis Chart - Condition 8

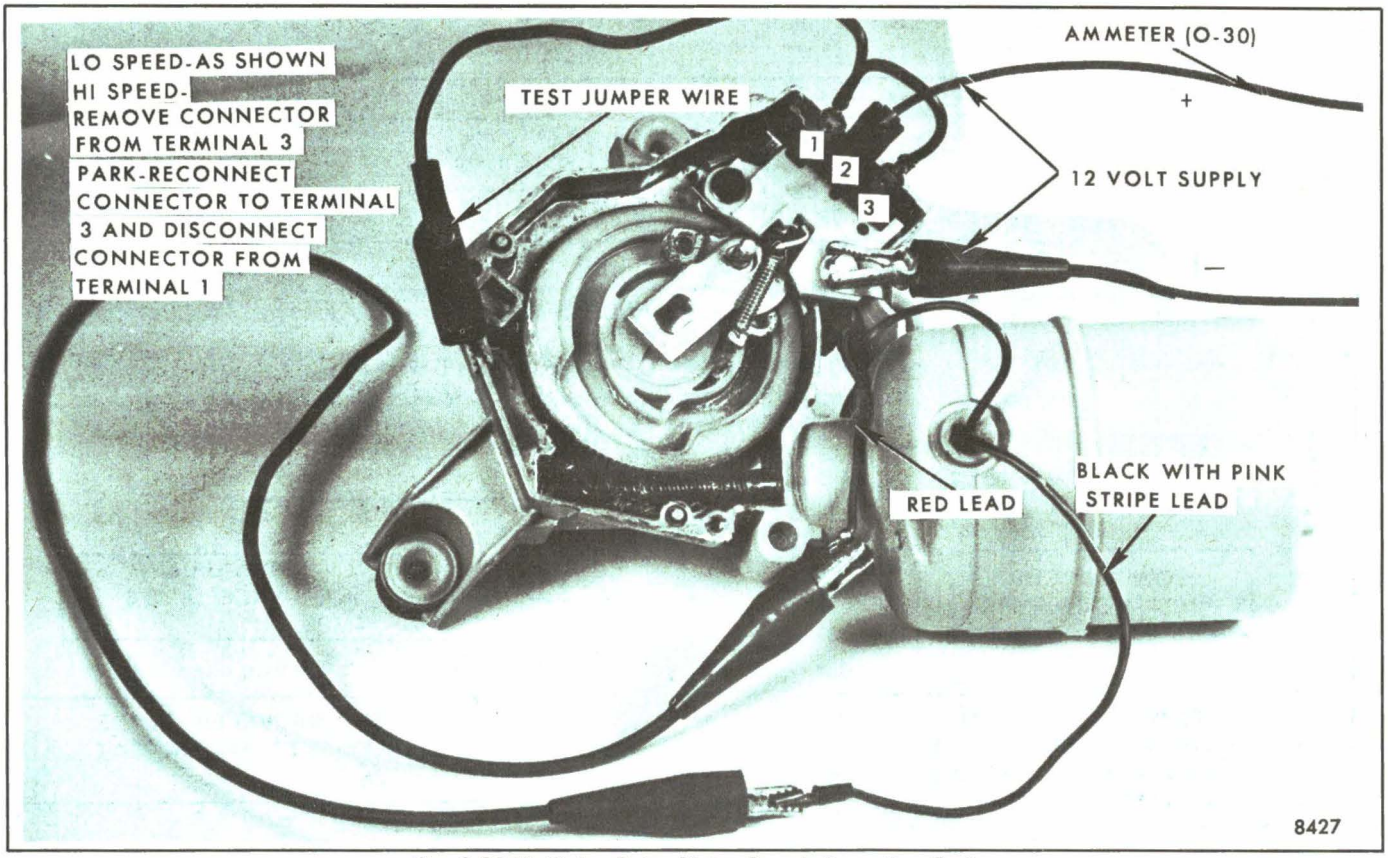


Fig. 2-66-Multiplex Pulse Motor Bench Operation Test

INTERPRETATION OF CURRENT DRAW READINGS LO SPEED OPERATION - NORMAL CURRENT @ 12V - 5/6 AMPS			
CONDITION	CURRENT DRAW (AMPS)	INTERPRETATION	REFER TO FIG. 2-68
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	2636

Fig. 2-67-Interpretation of Current Draw Readings

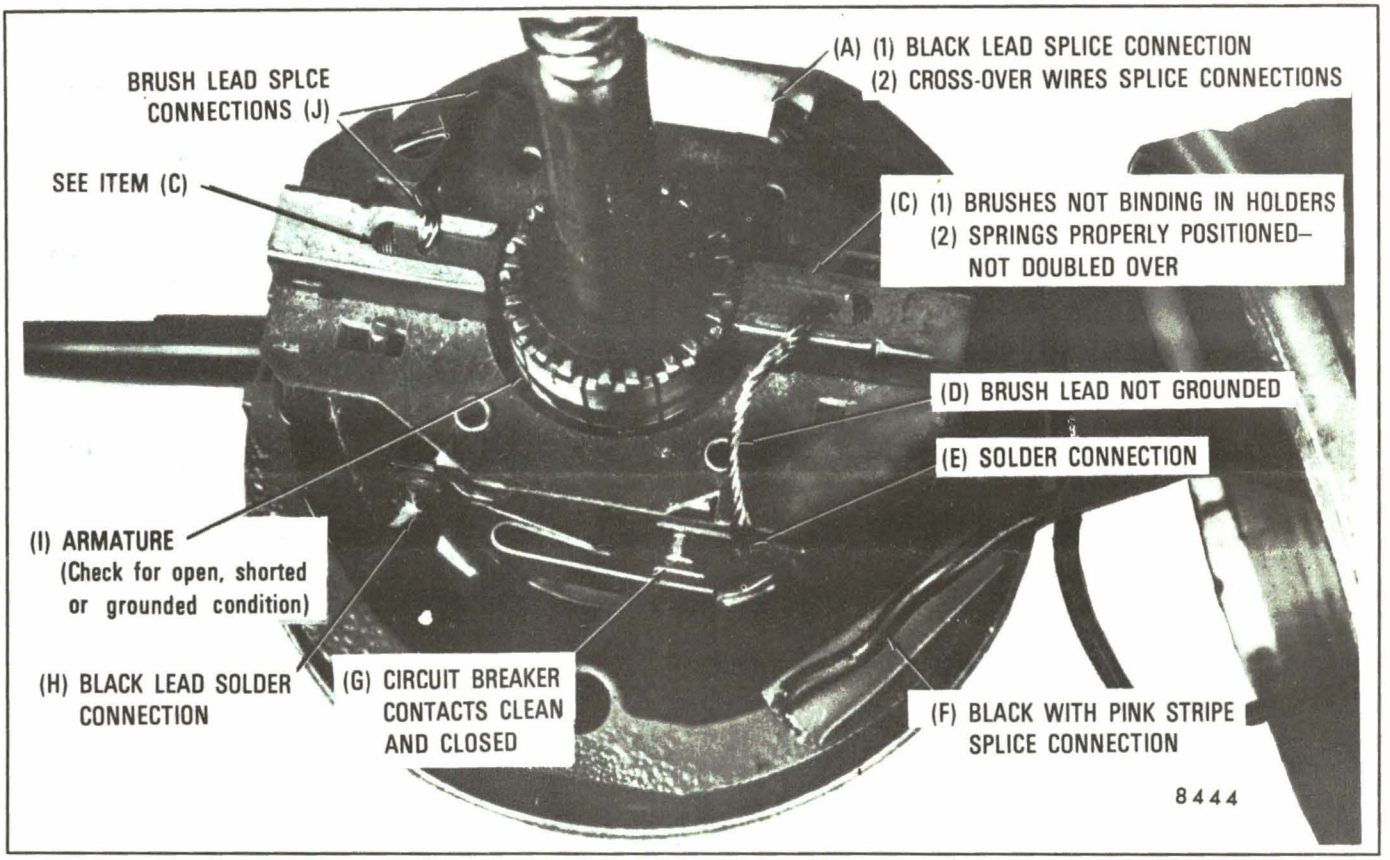


Fig. 2-68-Visual Inspection Multiplex Pulse Motor

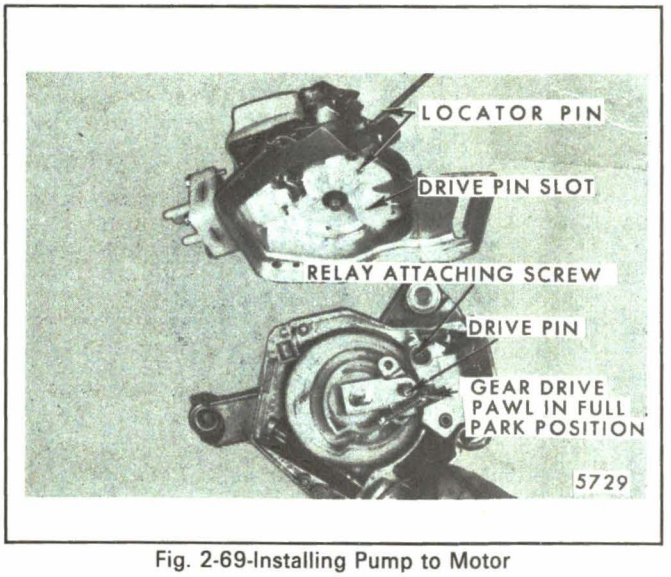


Fig. 2-69-Installing Pump to Motor

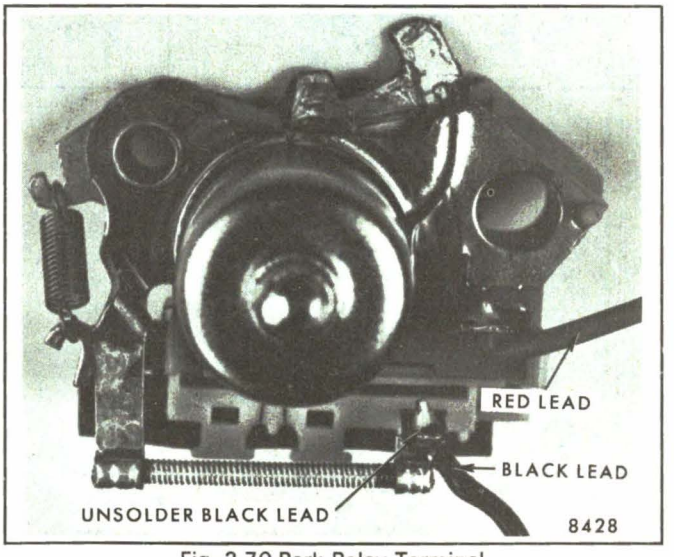


Fig. 2-70-Park Relay Terminal

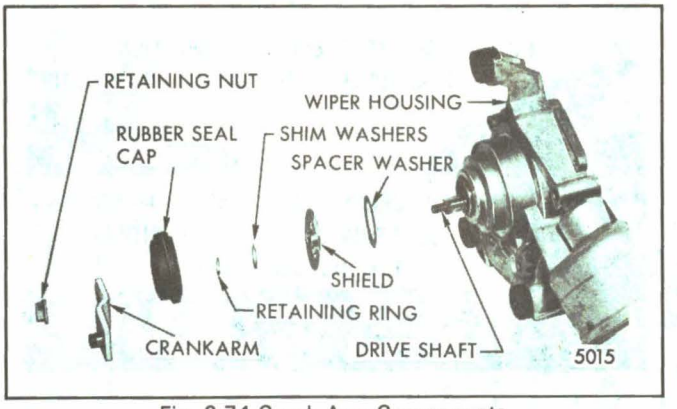


Fig. 2-71-Crank Arm Components

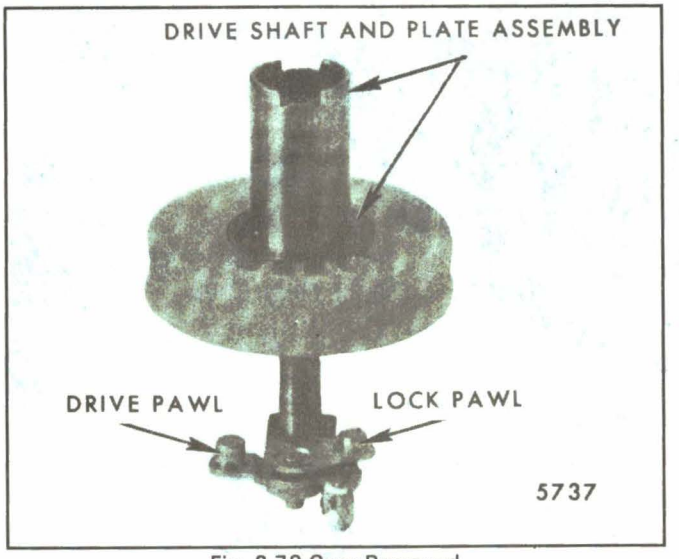


Fig. 2-73-Gear Removed

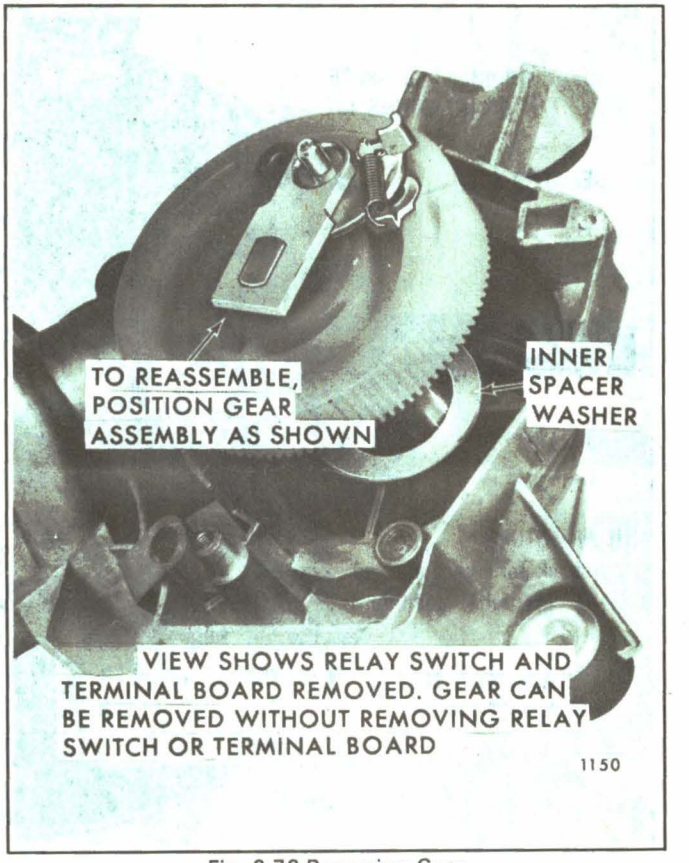


Fig. 2-72-Removing Gear

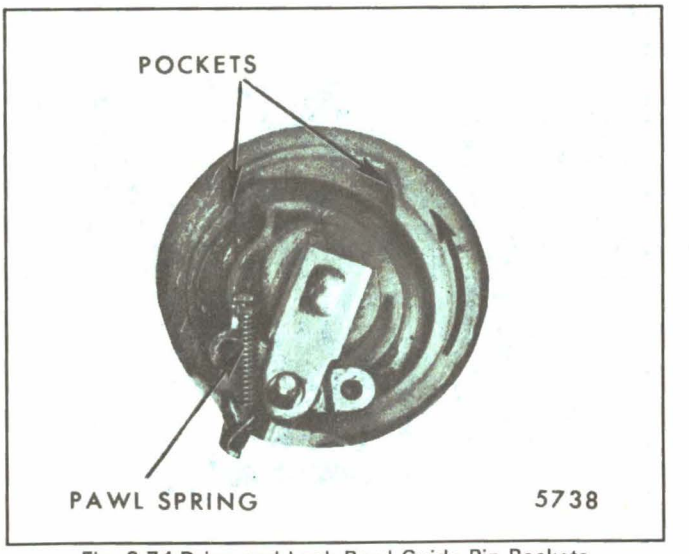


Fig. 2-74-Drive and Lock Pawl Guide Pin Pockets

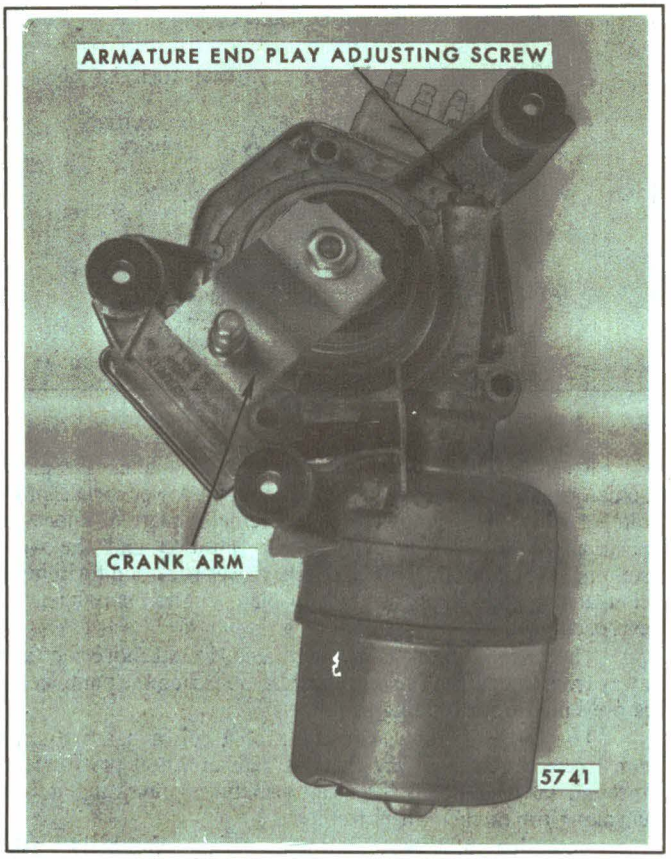


Fig. 2-75-Crank Arm in Park Position

Fig. 2-76-Motor Case Alignment Marks

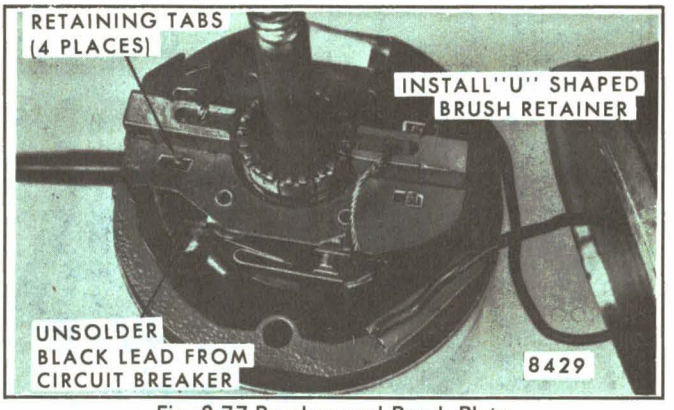


Fig. 2-77-Brushes and Brush Plate

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.	
CRANK ARM SPEED (RPM'S)		
Lo Speed	31 Min.	12 V
Hi Speed	55 Min.	12 V
TORQUE	N·m	In-lb
Washer Pump Mounting Screws	2	18
Motor Tie Bolts	4	30
Motor Crank Arm Attaching Nut	11-15	100-130
Motor Crank Arm to Drive Link	3-4	25-35
Motor to Body Attaching Bolts	4-5	30-45
Transmission to Body Bolts	5-8	48-72
Transmission Hex Head Nut	16-24	144-216
LUBRICATION		
Armature Shaft Bearings Gear Teeth Seal Cap (Inside)	Multifak EP-1 Or Equivalent	1734

Fig. 2-78-Specification Chart - Multiplex Pulse Wiper Motor

WASHER SYSTEMS

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.

ROUND MOTOR WASHER SYSTEM

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.

Past model design washer pump assemblies (prior to 1978) cannot be used with the new design motor.

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 2-89, 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 causes the cam-follower to move back and forth.

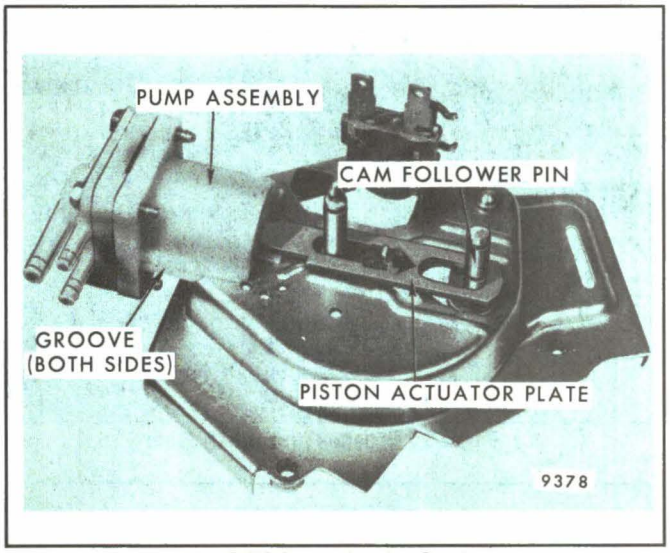


Fig. 2-79-Pump Intake Stroke

When the cam-follower moves in the direction indicated by the arrow in Figure 2-87, the cam-follower pin, which extends through the piston actuator plate, pulls the actuator plate away from the 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. 2-92).

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 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. 2-92). 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. 2-80).

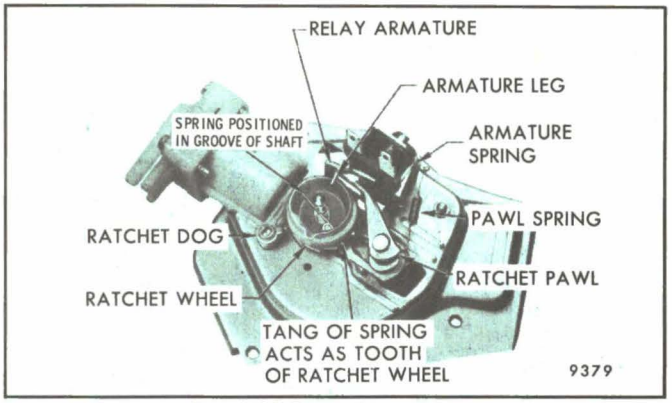


Fig. 2-80-Pump Mechanism

Refer to Figure 2-81 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. 2-81), permitting the piston spring to expand which 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 ended when the ratchet wheel has rotated a full 360 degrees. As the ratchet wheel approaches the completion of its 360 degree travel, two functions occur at the same time.

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. 2-80 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. 2-81).

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 repair	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

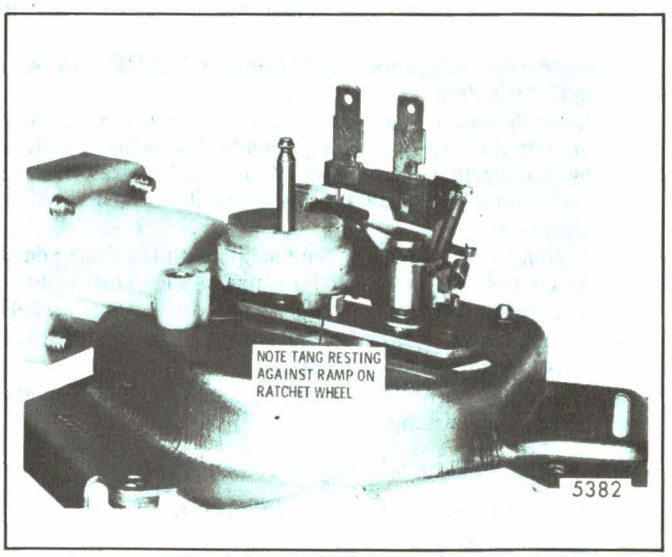


Fig. 2-81-Ratchet Wheel-Ramp

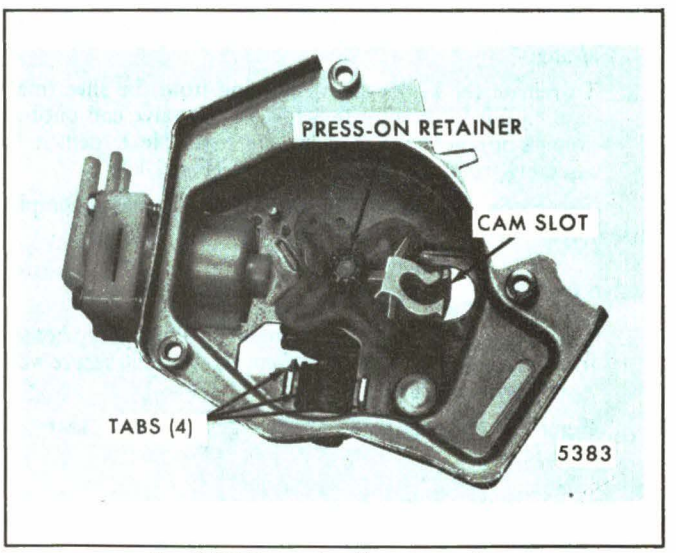


Fig. 2-82-Removing Four Lobe Cam

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

1. Remove attaching screw and lift ratchet dog off mounting plate.
2. Disengage pawl spring from pawl and slide pawl off cam-follower pin.
3. Pry ratchet spring out of slot in shaft, hold relay armature against relay coil and slide ratchet wheel off shaft.

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

4. Remove the push-on retainer and slide cam off shaft (Fig. 2-82).

Relay-Terminal Board Assembly

1. Remove four-lobe cam.
2. Remove ratchet pawl and pawl spring.

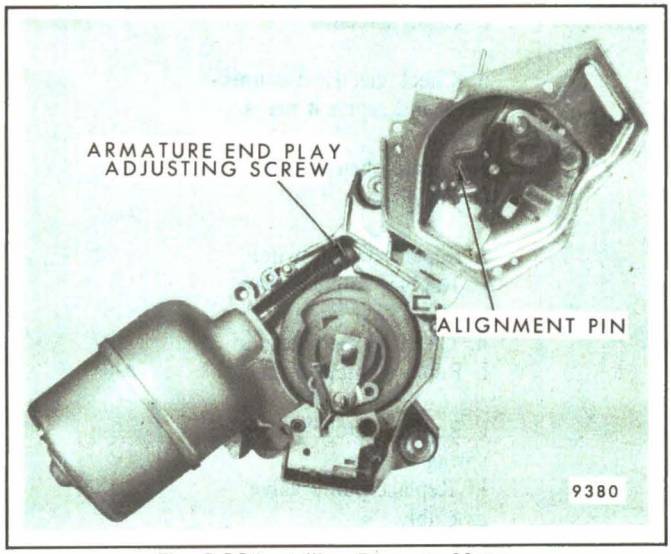


Fig. 2-83-Installing Pump to Motor

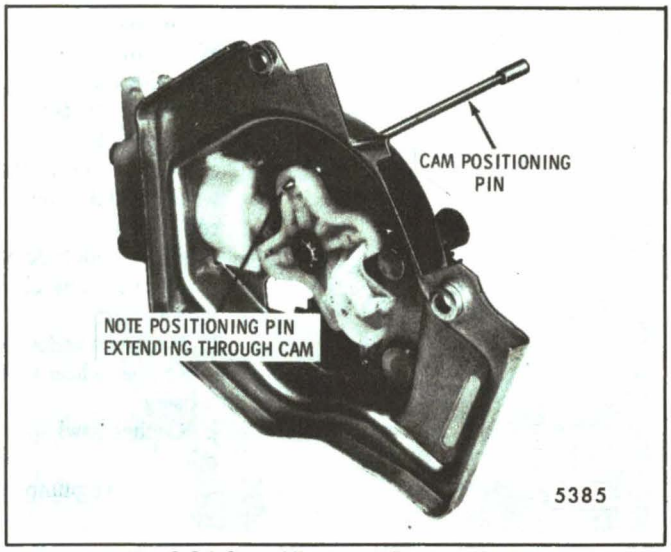


Fig. 2-84-Cam Alignment Pin Installation

3. Remove relay armature and spring.
4. Carefully chisel off the four bent-over tabs that secure the coil mounting bracket to the base (Fig. 2-82). 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.
5. To check the pump programming mechanism, manually rotate the four-lobe cam through complete cycle (360°) 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. 2-89).

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

The wiper motor gear must be in PARK position (Fig. 2-83) 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. 2-84).
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. 2-84). Secure pump to gear housing and remove locator pin, temporarily connect wiring connector.
4. Turn on wiper and washer pump to check pump operation. A loud knocking noise would indicate that the pump cam has not engaged the drive pin properly.
5. Install pump cover.

MULTIPLEX PULSE WASHER SYSTEM

The multiplex pulse windshield washer system is referred to as a programmed system and functions as described under Washer Pump Electrical Circuits and Operation.

Washer Pump

The washer pump used on the multiplex pulse wiper differs considerably from the pump used on a standard wiper. Referring to Figure 2-86, note the following components not found on a standard pump: (1) pulse relay, (2) override switch, (3) holding switch, (4) solid state integrated circuit, (5) a special drive cam (Fig. 2-87). These special components serve the following functions:

1. Pulse relay - acts as a switch to complete 12V DC 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 Motor Operation.
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 (Fig. 2-85).
4. Timing circuit - consists of transistors, capacitor, diodes and resistors mounted on an insulating board.
5. Drive cam - drives the pump mechanism and also actuates the holding switch.

Washer Pump Electrical Circuits and Operation

The washer system is divided into two main areas.

1. Electrical circuits
2. Mechanical operation

To start a wash cycle of operation requires three relay circuits. Referring to Figure 2-40, note that the park 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 park relay coil circuit to ground. This causes the relay switch contacts to close completing the 12V DC circuit to the wiper motor via the pulse

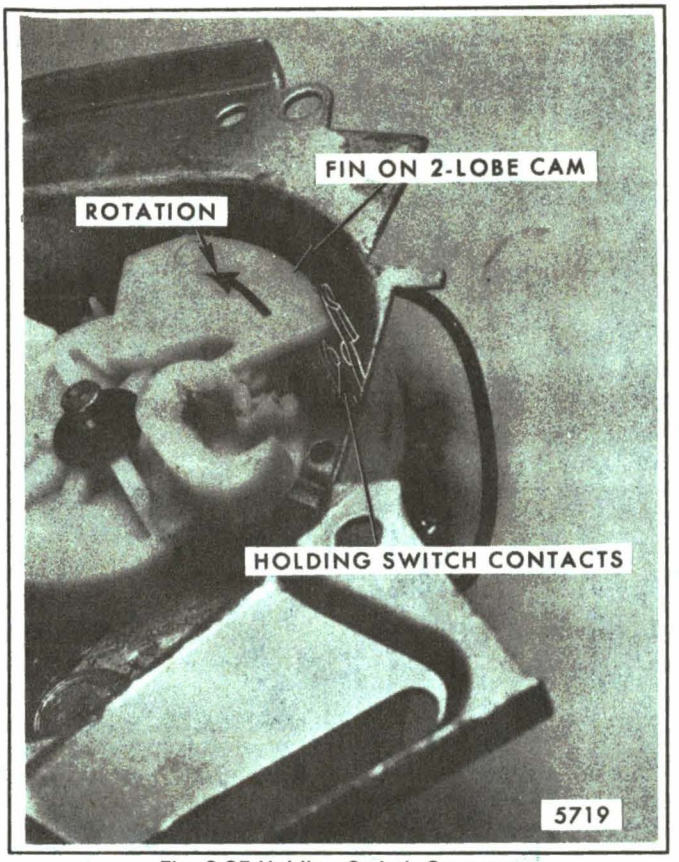


Fig. 2-85-Holding Switch Contacts

relay. This starts the wiper motor. (To prevent the wiper blades from returning to the park position when the wash button is released, an auxiliary park relay ground circuit is provided through a transistor in the timing circuit.)

The washer pump relay coil circuit is also completed to ground by the wash button at the same time. 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. 2-88). The closed override switch provides an alternate path to ground for the park relay when the auxiliary ground circuit through the timing circuit transistor shuts off.

The alternate park relay ground circuits described above are required to keep the wiper motor running after the wash button is released.

Completion of the Wash Cycle - Shutting the Wiper Off

When the ratchet gear has been rotated 360° (12 teeth), the projection on the rim of the ratchet opens the override switch contacts (Fig. 2-88), which opens the park relay coil circuit. Opening the park 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 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.

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

In order to override the delay mode during the wash cycle, a bypass circuit around the timing device is accomplished as follows:

Depressing the wash button completes the pulse relay coil and washer pump relay coil circuits to ground. This causes the wiper motor and pump to start at once 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 coil.

At completion of the wash cycle, the projection on the rim of the ratchet gear opens the override switch contacts which 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 multiplex 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 cylinder housing and controls the flow of washer solution (Fig. 2-89).

Figures 2-89 and 2-90 show the pump with most of the programming parts removed for illustrative purposes.

Referring to Figure 2-89 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. 2-87). When the wiper is running, the drive gear rotates the drive cam which 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. 2-89). 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 energizes the pump relay coil. With the relay coil 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 2-90 shows the pawl extending through window of relay armature.

The ratchet pawl, which is attached to the cam-follower pin, then begins to rotate the ratchet wheel. Rotating the ratchet gear one tooth moves the ratchet gear ramp away from the tang of the piston actuator plate (Fig. 2-89), permitting the piston spring to expand which forces the piston toward the valve assembly resulting in the first exhaust stroke (Fig. 2-92).

During the exhaust stroke, the piston spring moves the back edge of the piston actuator plate up tight 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

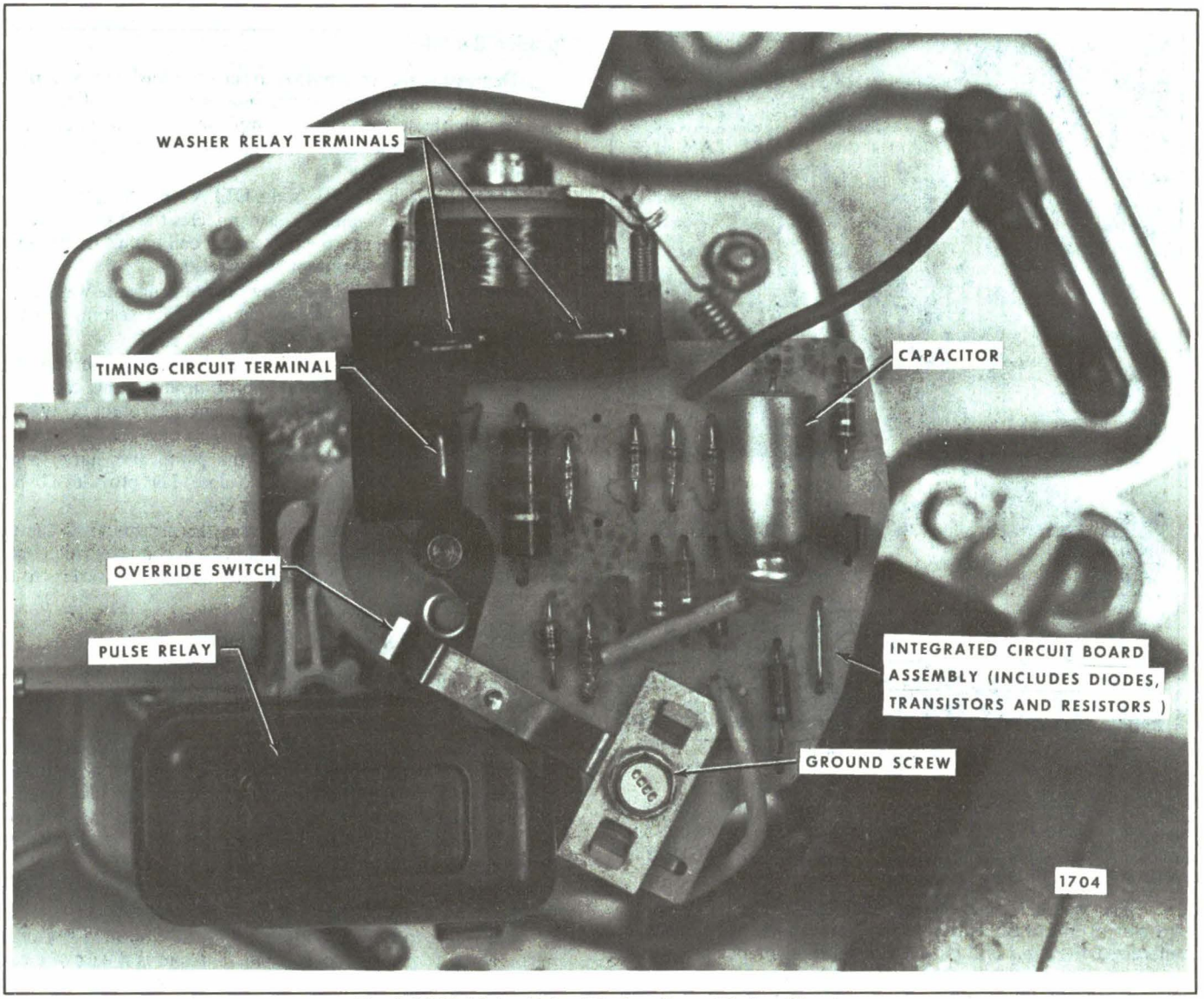


Fig. 2-86-Multiplex Pulse Washer Pump Timing Circuit

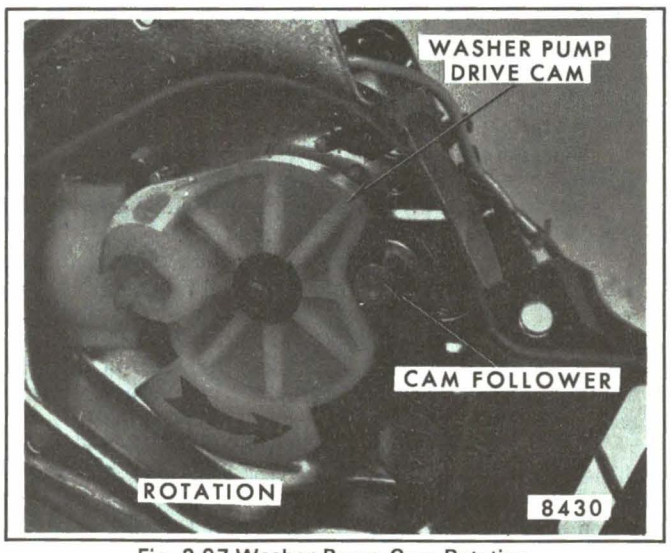


Fig. 2-87-Washer Pump Cam Rotation

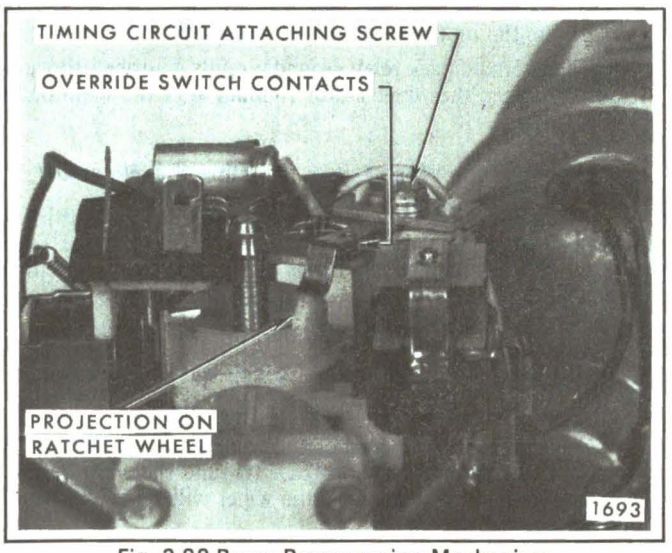


Fig. 2-88-Pump Programming Mechanism

direction that will compress the piston spring, causing washer solution to be drawn into the piston housing via the intake valve (intake stroke, Fig. 2-92).

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

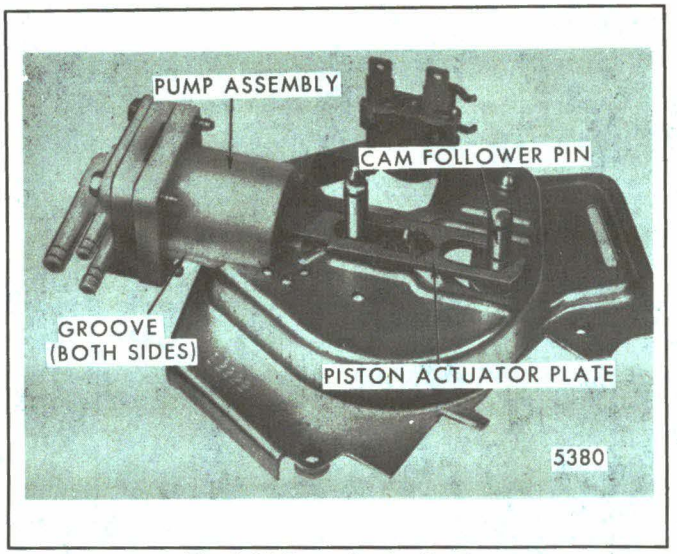


Fig. 2-89-Pump Intake Stroke

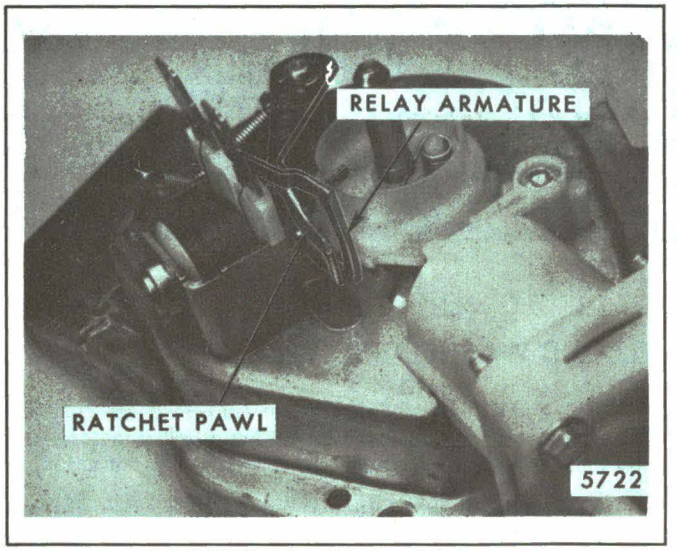


Fig. 2-90-Ratchet Pawl and Armature

The pumping operation is ended when the ratchet wheel has rotated a full 360°. As the ratchet wheel approaches the completion of its 360° travel, two functions occur at the same time.

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 2-91 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. 2-90).

DIAGNOSTIC PROCEDURES - MULTIPLEX 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.

Tools required to diagnose the wiper/washer system include:

1. Test lamp
2. Ammeter
3. Jumper wires and/or jumper wire assembly as shown in Figure 2-66.

Washer Pump Removal

1. Remove complete wiper-washer assembly from vehicle.
2. Pull plastic cover off mounting post.
3. Disconnect the green lead from terminal 1A, the yellow and red leads from pulse relay terminals and unsolder the black with pink stripe wire from the remaining relay terminal.
   If just the pump assembly is being removed from the motor and gearbox (wiper motor still on vehicle), cut the black with pink stripe lead 102 mm (4″) from the motor grommet. Depending on the type of repair required, it will be necessary to splice this lead to the replacement relay lead or to the original relay lead after the pump is reinstalled.
4. Remove the three screws that attach pump to gearbox.

Washer Pump Installation

The gearbox mechanism must be in park position (Fig. 2-108).

1. Install locator pin in pump mechanism as shown in Figure 2-108. 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. 2-108).
3. Remove locator pin.
4. Route and attach leads (solder black with pink stripe wire) as shown in Figures 2-106 and 2-107.
5. Position cover on washer pump mechanism and snap it over the mounting pin.
6. Reinstall wiper in vehicle and attach wiring and hoses.

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. 2-109).
   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. 2-110). New retainers are provided in cam service packages.
3. Timing Device, Holding Switch and Override Switch Assembly, Pulse Relay Assembly
   a. Unsolder black with pink stripe lead and remove attaching screw. 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 2-110, then secure the complete assembly to washer pump frame with the attaching screw. If screw strips, use a nut (6-32 thread) to secure.
   d. Reconnect red and yellow leads to proper pulse relay terminals (Figs. 2-106 and 2-107).
4. Ratchet Gear, Dog Spring, Ratchet Pawl, Relay Armature
   a. Follow step a under item 3.
   b. Remove dog spring assembly (Fig. 2-111).
   c. Remove ratchet pawl retaining ring, disconnect pawl spring and slide pawl off cam-follower shaft (Fig. 2-111).
   d. Disconnect relay armature spring and remove armature (Fig. 2-111).

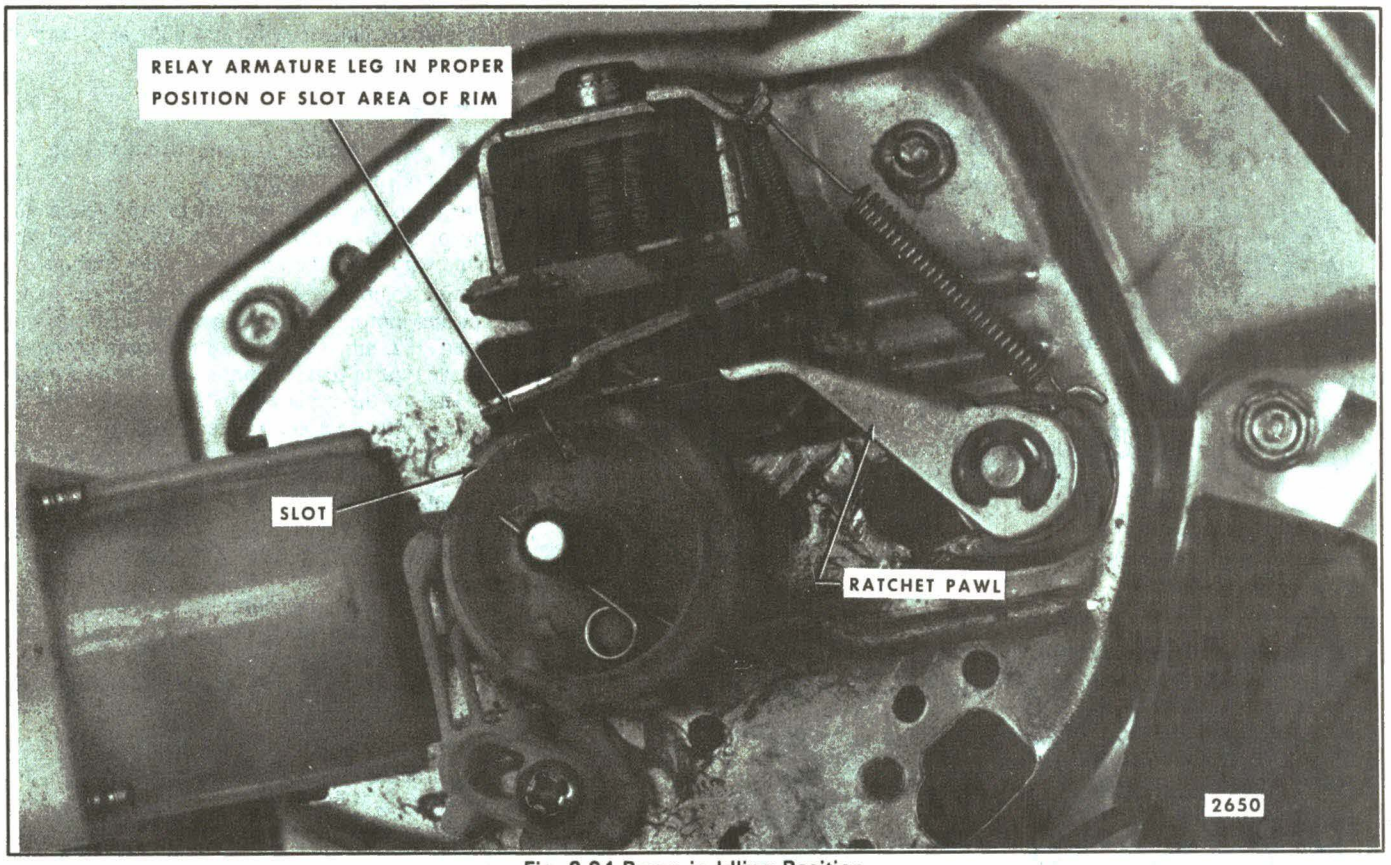


Fig. 2-91-Pump in Idling Position

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

   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. 2-110).
   To install a replacement relay assembly, hold it securely against the base mounting surface and bend locking tabs over. 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.

FLUIDIC WASHER SYSTEM

E, G and K styles will use a fluidic windshield washer system. The system consists of a fluid reservoir, pump, wiper motor, fluidic hoses and pipes, nozzle mounts, nozzles and wiper arms.

The fluidic washer system is controlled by a small plastic element designed into the washer nozzle. As water is forced through this insert, the design of the mechanism creates an oscillating power stream. This fluidic washer system produces larger, more widely dispersed droplets, resulting in a more efficient cleaning action than with conventional spray nozzles.

Two specific nozzles are required, one for coupe models and a second for sedan and wagon models due to the different windshield angles. Each nozzle mounting will either carry the code letter C for coupe models or S/W for sedan and wagon models.

A correctly operating system should deliver a spray pattern just below the lower edge of the windshield upper reveal molding. The bottom edge of the spray pattern should fall on a line about 254 mm (10″) below the upper edge of the windshield.

If the nozzles become plugged, they can be serviced only by replacement. If the spray pattern is too low or too high on the windshield, wedge-type adjustment shims can be used. Placement of a shim under the nozzle mounting bracket will raise the pattern 3°. Reverse installation of the same shim will lower the pattern 3°. Pump and wiper motor service remain unchanged.

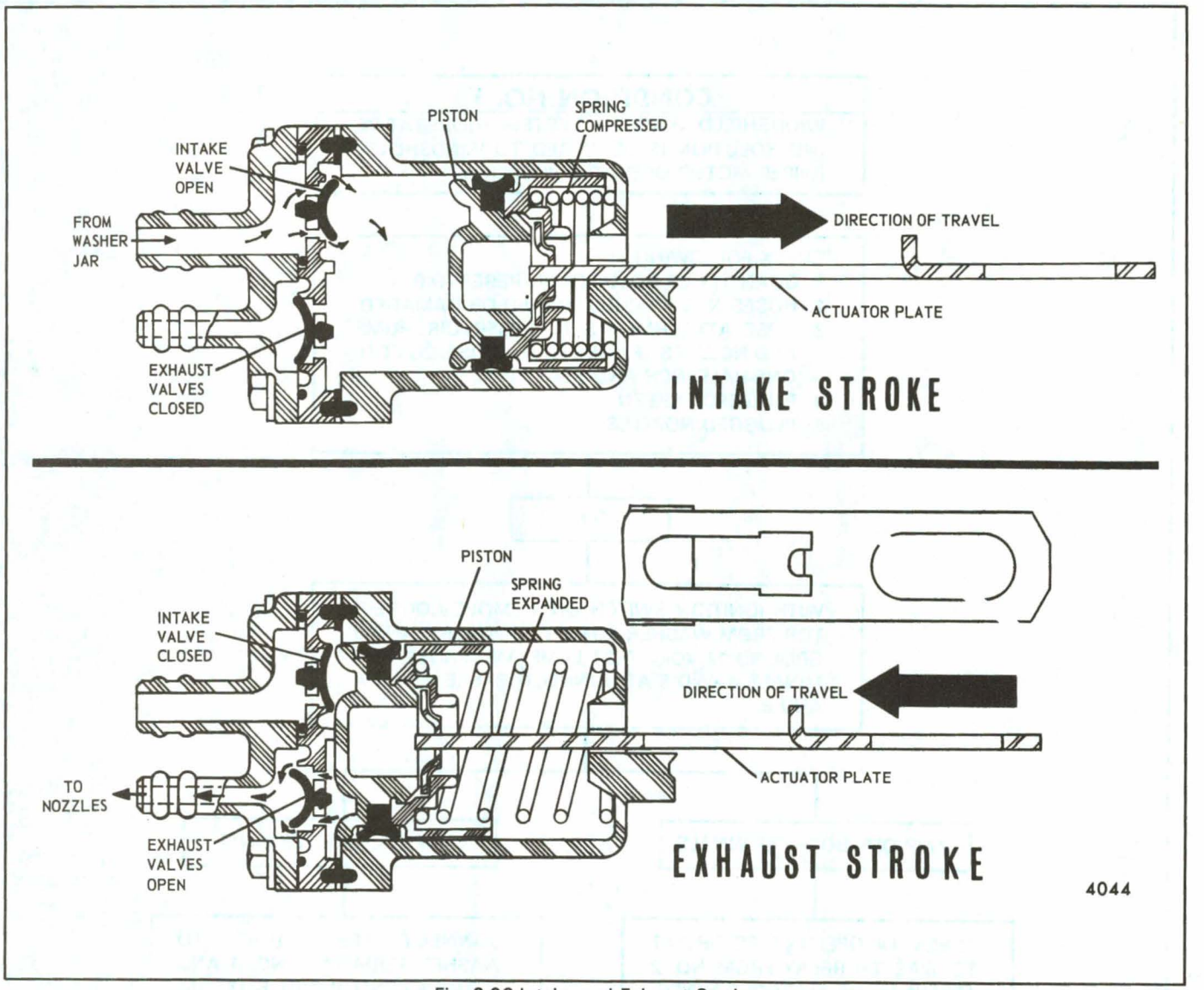


Fig. 2-92-Intake and Exhaust Stroke

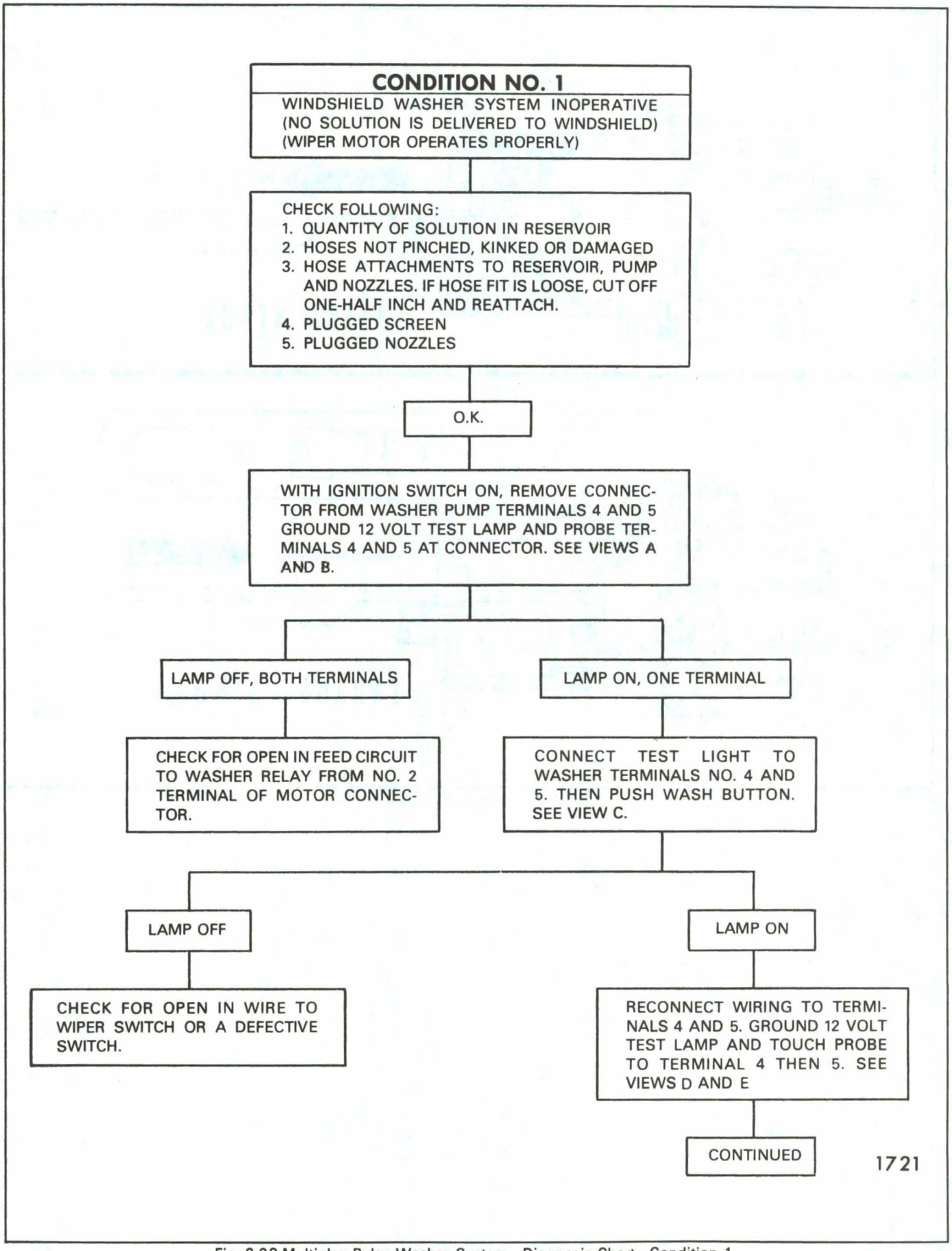


Fig. 2-93-Multiplex Pulse Washer System - Diagnosis Chart - Condition 1

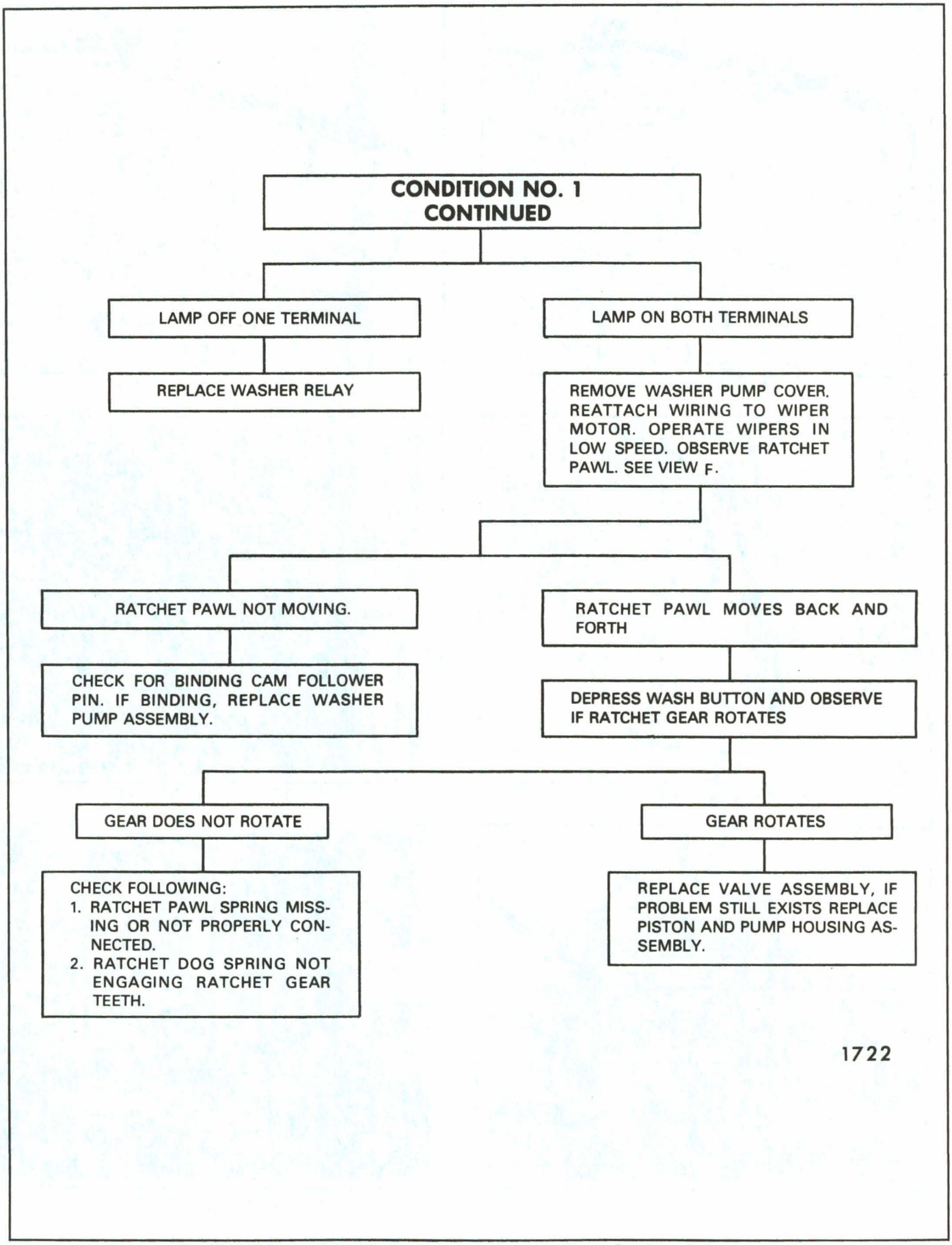


Fig. 2-94-Multiplex Pulse Washer System - Diagnosis Chart - Condition 1 Continued

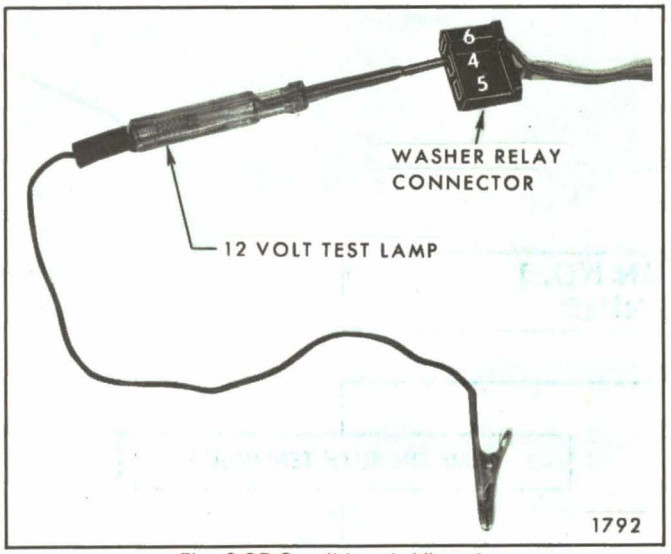


Fig. 2-95-Condition 1, View A

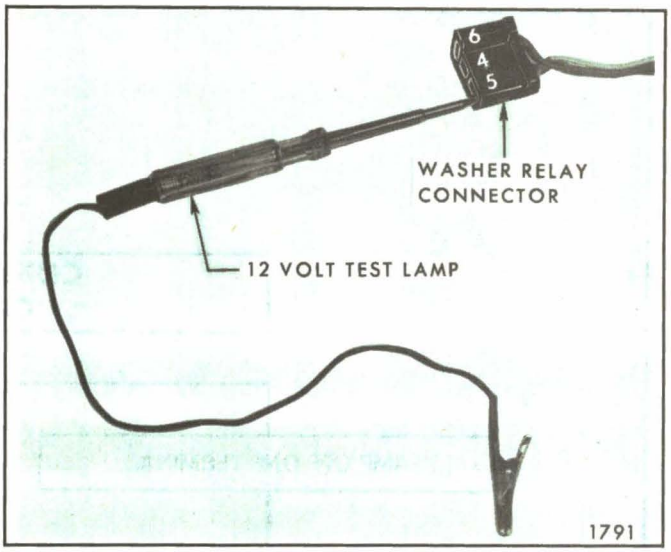


Fig. 2-96-Condition 1, View B

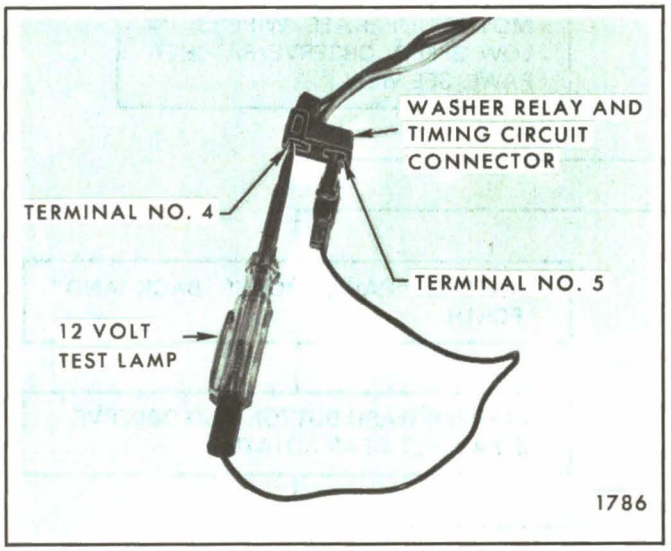


Fig. 2-97-Condition 1, View C

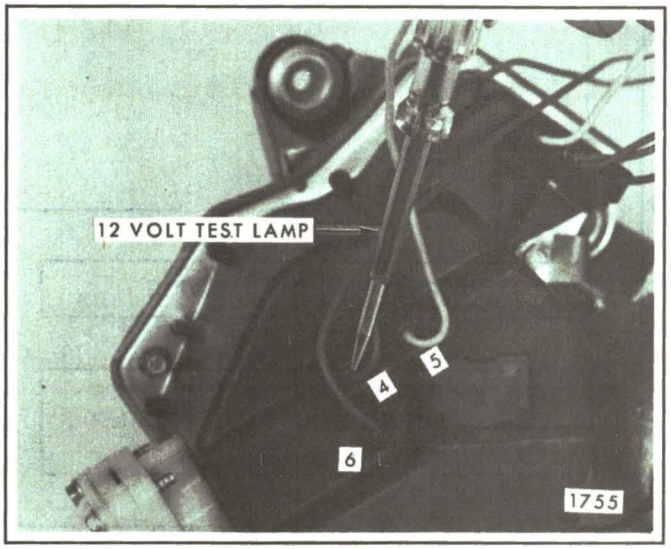


Fig. 2-98-Condition 1, View D

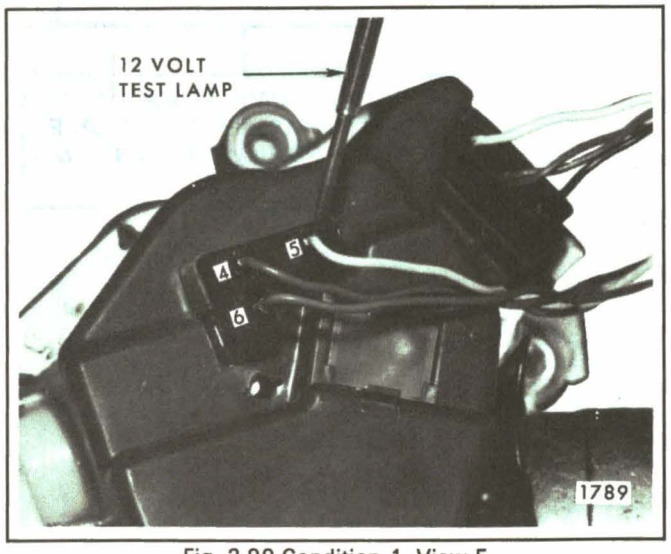


Fig. 2-99-Condition 1, View E

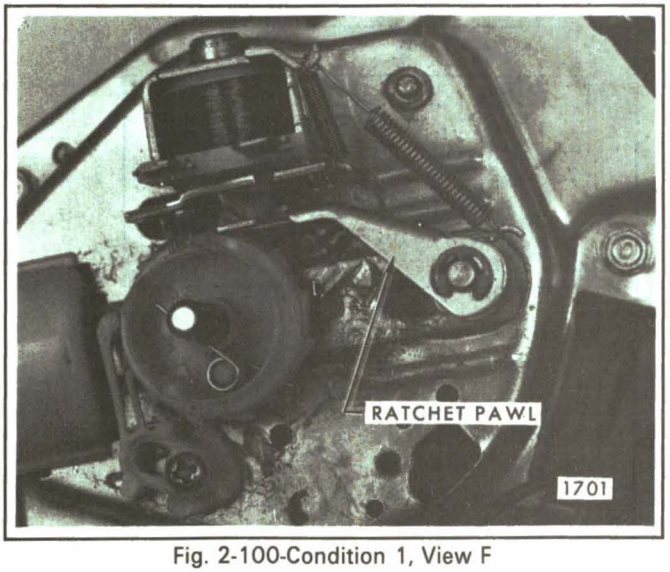


Fig. 2-100-Condition 1, View F

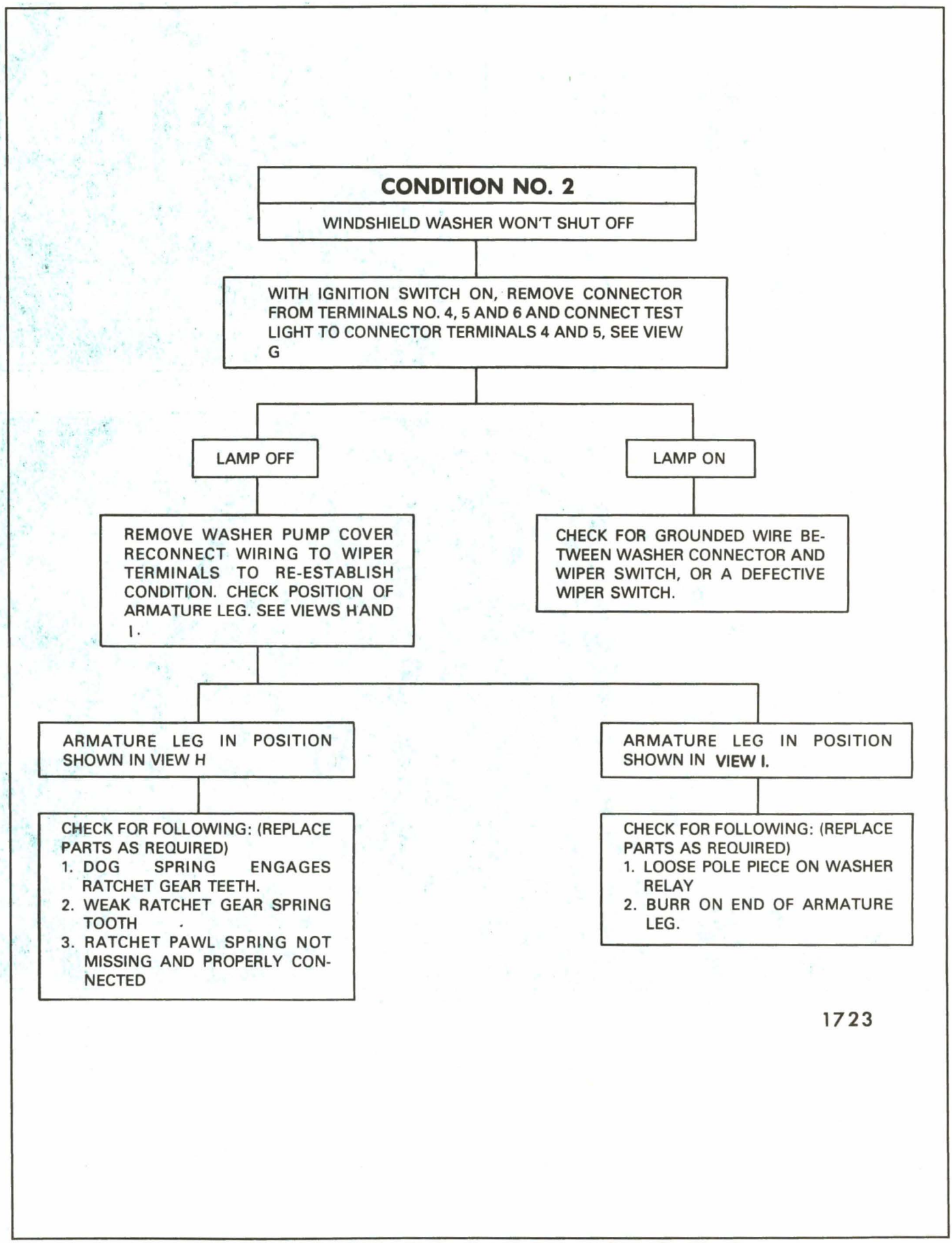


Fig. 2-101-Multiplex Pulse Washer System - Diagnosis Chart - Condition 2

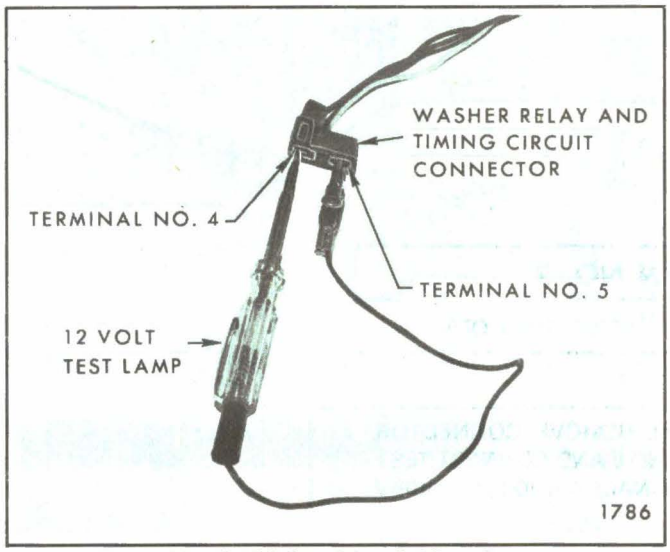


Fig. 2-102-Condition 2, View G

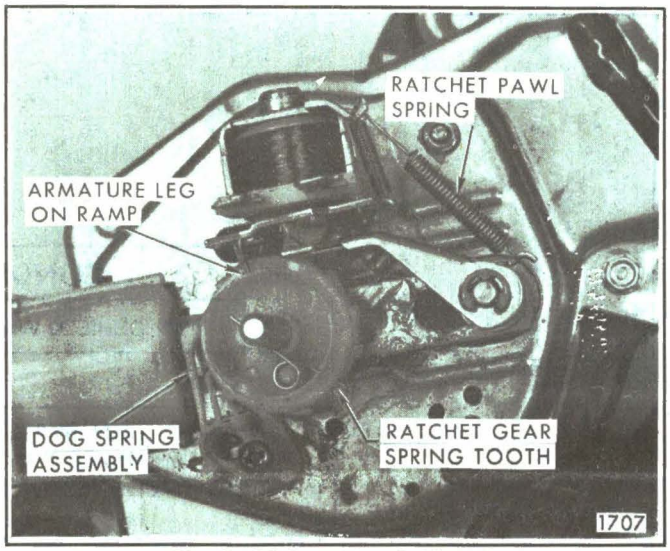


Fig. 2-103-Condition 2, View H

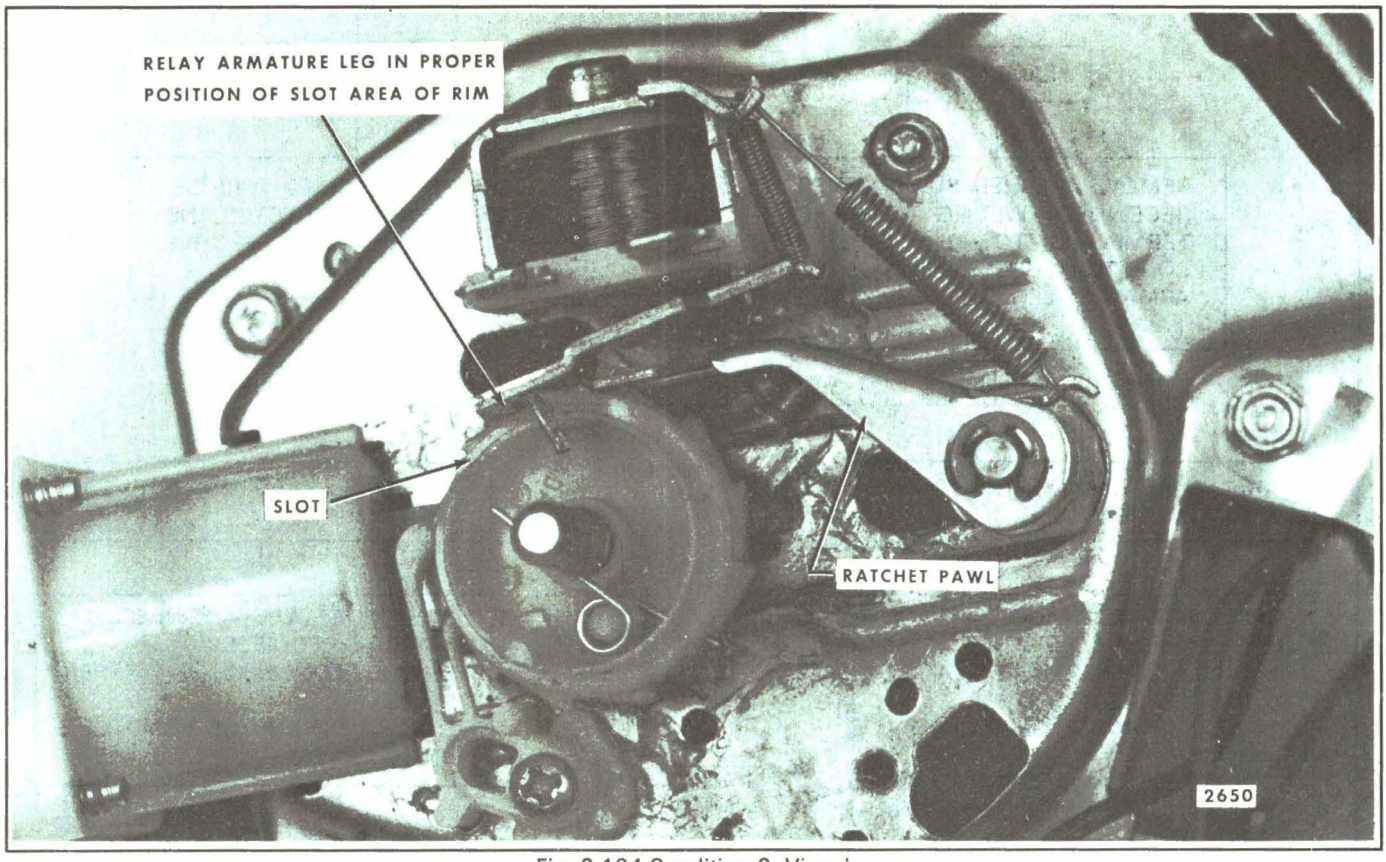


Fig. 2-104-Condition 2, View I

CONDITION NO. 3
WINDSHIELD WASHER MAKES TWO SQUIRTS AND WIPERS SHUT OFF
OVERRIDE SWITCH CONTACTS DIRTY OR NOT CLOSING CORRECTLY WHEN WASH CYCLE IS STARTED. CLEAN OR ADJUST CONTACTS AS REQUIRED.

CONDITION NO. 4
WIPERS STAY IN DELAY MODE DURING WASHER OPERATION WHEN WASHER IS STARTED FROM DELAY MODE.
OVERRIDE SWITCH CONTACTS DIRTY OR NOT CLOSING CORRECTLY WHEN WASH CYCLE IS STARTED. CLEAN OR ADJUST CONTACTS AS REQUIRED. 2646

Fig. 2-105-Multiplex Pulse Washer System - Diagnosis Chart - Condition 3 and 4

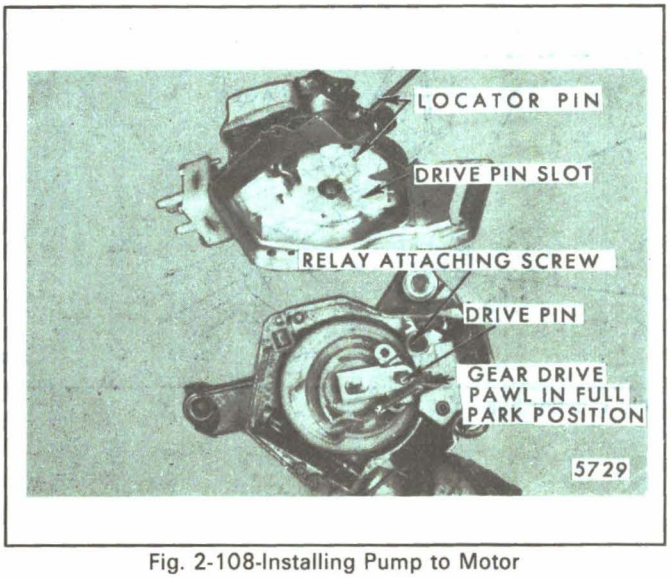


Fig. 2-108-Installing Pump to Motor

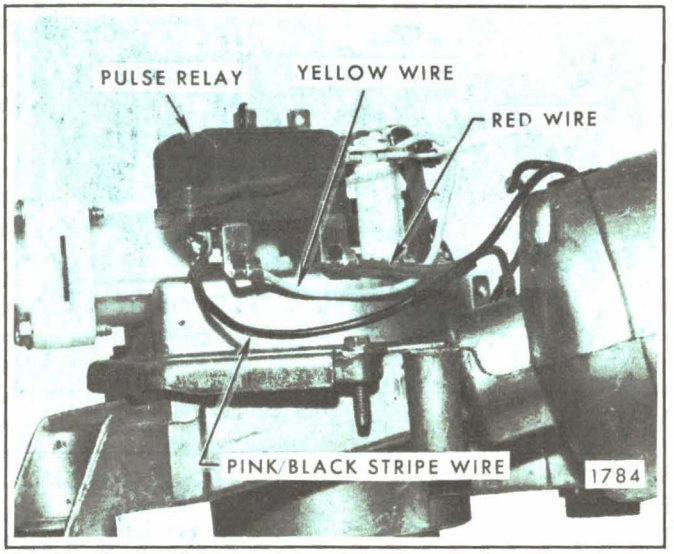


Fig. 2-106-Multiplex Pulse Relay Terminals and Leads

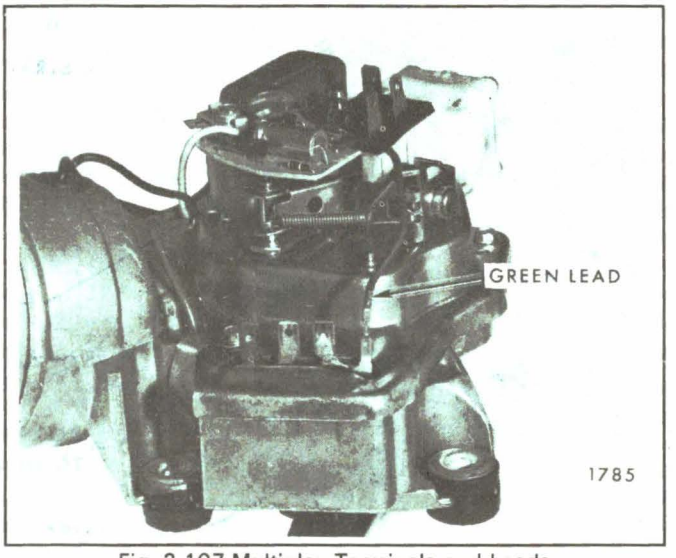


Fig. 2-107-Multiplex Terminals and Leads

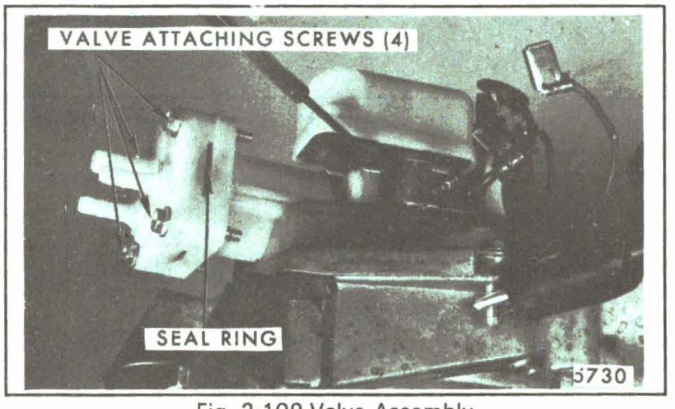


Fig. 2-109-Valve Assembly

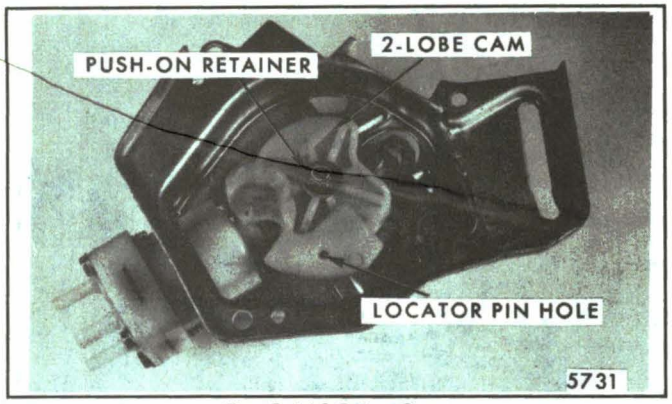


Fig. 2-110-Drive Cam

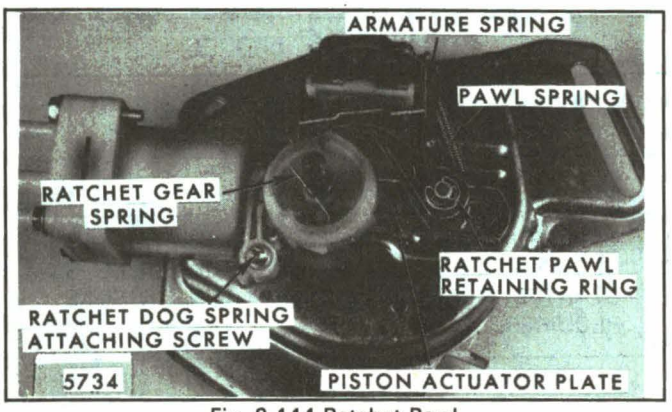


Fig. 2-111-Ratchet Pawl

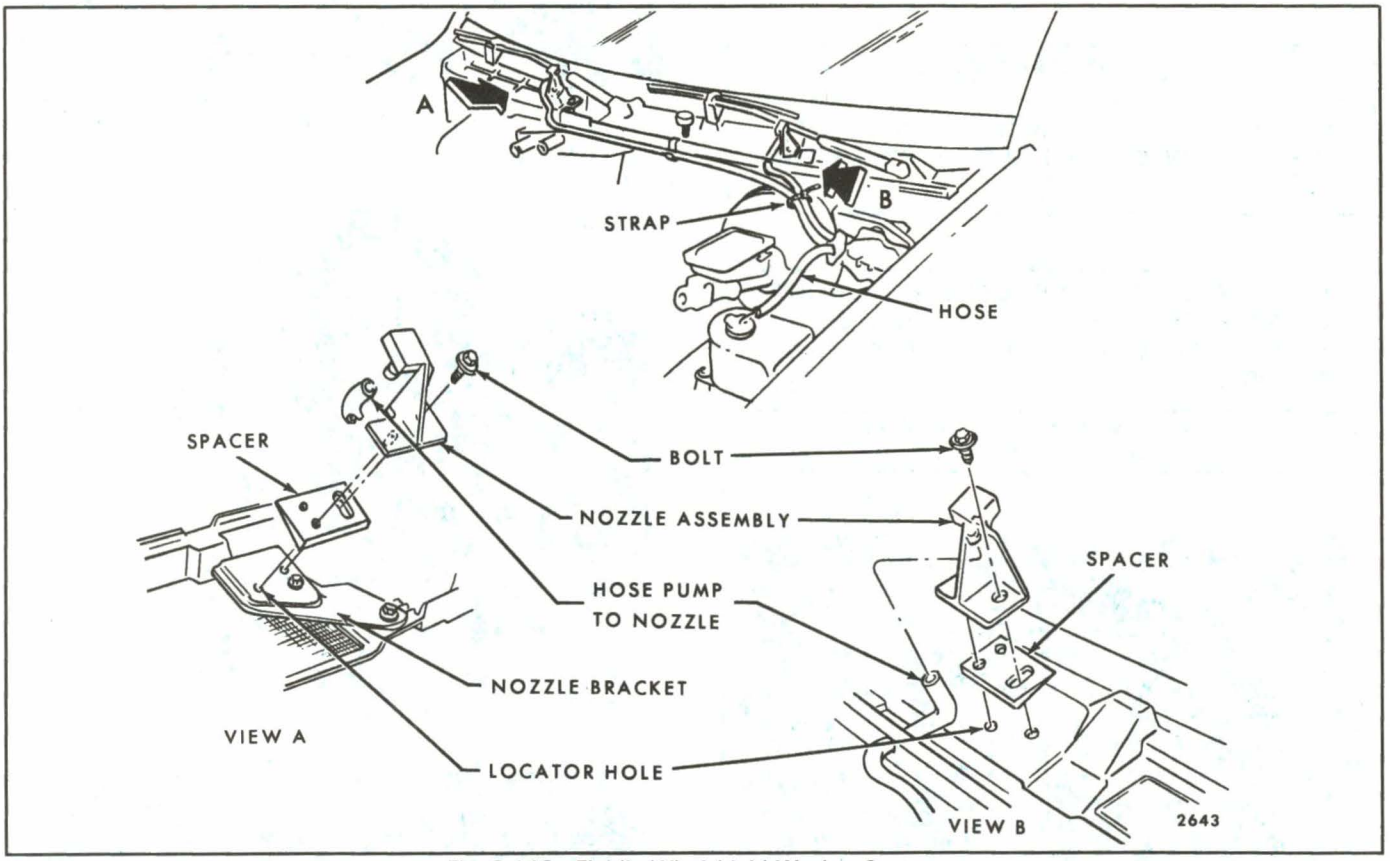


Fig. 2-112 - Fluidic Windshield Washer System

SECTION 12

INDEX

A

ABS and Polypropylene Plastic Test 1-20
Adhesive Body Side Molding 1-8
Adhesive Service Kit - Stationary Glass 11-4
Adjuster Locking Wire Adjustment 9-24
Aluminum Wiring (Front Body Wiring Harness) 10-4
Anticorrosion Treatment 1-15
Appliques - Door Trim Panel 5-15
Armature
  Multiplex Pulse Wiper 2-24
  Round Wiper Motor 2-12
Armrest
  Door 5-1
  Front Seat, Center 9-51
  Rear Quarter 6-1
  Rear Seat, Center 9-56
Assembling and Coding Lock Cylinder 1-6
Automatic Door Lock
  Buick and Oldsmobile 10-86
  Cadillac 10-84
Automatic Lap and Shoulder Belts 9-3
Auxiliary Seat - Limousine 9-56

B

Back Body Pillar Upper Trim Panel - 6-7
Back Window
  E and G Styles 11-10
  Lower/Upper Garnish Molding 8-13
  Trim Ring Assembly 11-10
Body
  Lock Pillar Applique 8-18
  Number Plate 1-2
  Series Number 1-2
  Ventilation 4-1
  Wiring Pictorial Views 10-123-171
  Wiring Repair Procedures 10-4
Bonded Rearview Mirror Support 11-12
Braided Lead Wire Repair - Defogger 10-119
Brush Plate and Circuit Breaker -
  Multiplex Pulse Wiper 2-24
  Round Wiper Motor 2-12
Bucket Seats
  B, E and G Styles 9-46
  Inertia Lock 9-48
  Reclining Control Hinges 9-48
  Seat Back Lock Striker and Stop 9-50

C

Cable - Hood Latch Release 4-5
Cam - Door Inner/Lower Sash Channel 5-29
Case and Field Assembly
  Multiplex Pulse Wiper 2-24
  Round Wiper Motor 2-12
Center Pillar Trim 5-5
Chip Resistant Plastisol Material 1-19
Coding Lock Cylinders 1-6
Colors for Interior Plastic Parts 1-21
Combination Insulator Pad/Water Deflector 5-22
Connecting Rods, Push Rods, Bell
  Cranks - Front and Rear Doors 5-24
Control Arm Knob - Manual Seat 9-25
Control Switch
  Power Door Lock 10-84
  Power Reclining Seat 10-55
  Power Tailgate Window
    B Styles 10-33
    G Styles 10-42
  Sun Roof 8-41
  Wipers 2-1
Copper Wiring 10-4
Cutting Keys 1-6

D

Defective Electrical Components 10-3
Deflector, Inner Panel - Water 5-22
Defogger - Electric Grid Repair 10-117
Diagnosis Chart
  Manual Reclining Back 9-23
  Manual Seat Adjusters 9-22
  Power Reclining Seat Back 9-24
  Power Six-Way Seat Adjuster 9-22
  Rear Compartment Lid Release 10-44
  Round Motor Washer System 2-40
  Sun Roof 8-39
  Three-Way Tailgate 7-47
  Two-Speed Round Motor 2-7
Diagnosis
  Multiplex Pulse Washer System 2-45
  Multiplex Pulse Wiper System 2-24
  Two-Speed Round Motor 2-4
  Waterleak 1-10
Dome and Sail Lamps 10-72
Dome Lamps 8-9
Door 5-1
  Adjustment 5-31
  Armrest 5-1
  Center Pillar Trim 5-5
  Front 5-31
  Hardware Lubrication 5-31
  Inner Panel Cam 5-29
  Inside Handles and Cover Plate 5-2
  Jamb Switches 10-1
  Lock 5-27
  Lock Cylinder 5-25
  Lock Striker 5-27
  Outside Handles 5-25
  Outside Mirror
    Face Replacement 5-39,5-41
    Power Operated 5-41
    Remote Controls and Escutcheon 5-2
    Standard 5-41
  Power Door Locks 10-84
  Rear 5-53
  Trim Assemblies 5-2
  Trim Panel Moldings and Appliques 5-5
  Window Assembly 5-42
  Window Regulator 5-50
Drain Hoses, Sun Roof 8-39,8-45
Drive Gear
  Multiplex Pulse Wiper 2-24
  Two-Speed Round 2-15

E

Electric Back Window Grid Defogger 10-117
Electric Locking Fuel Filler Door 7-12,10-107
Electric Motor - Six-Way Seat 9-29,9-37
Electrical Diagnosis
  Power Seat 10-48

Sun Roof 10-69
Window 10-15
Electroluminescent Sail Panel Lamps 10-72
Electronic Logic Module - Cadillac 10-85
Emblems, Name Plates and Moldings -
Rear Compartment 7-1
Emblems - Roof Panel 8-17
Exterior and Interior Lamps 10-72
Exterior Lamps - Rear End 7-13
Exterior Moldings
Doors 5-16
Rear Quarters 6-14
Roof 8-17

F

Fabric Roof Cover 8-19
Foam Pad Installation 8-25
Installation
With Foam Pad 8-25
Without Foam Pad 8-23
Removal
With Foam Pad 8-25
Without Foam Pad 8-19
Repair 8-29
Sun Roof Sliding Panel 8-45
Wrinkle Removal 8-27
Fiber Optic System
Rear End 7-11
Roof 8-13
Finishing Panel, Quarter Lower Trim 6-1
Floor Carpet 3-1
Floor Pan Insulators 3-1
Fluidic Washer System 2-46
Folding Rear Seat and Load Floor 9-66
Folding Second Seat Back
Filler Panel 9-66
Lock - B Styles 9-73
Lock - G Styles 9-67
Trim Panel
B Styles 9-72
G Styles 9-66
Folding Third Seat Back and Lock 9-75
Front and Rear Door 5-20
Inner Panel Cam 5-29
Inner Panel Water Deflector 5-22
Inside Locking Rod 5-24
Inside Remote Handle 5-25
Insulator Pad 5-22
Lock 5-27
Lower Sash Channel Cam 5-29
Outside Handles 5-25
Spring Clips 5-24
Weatherstrips 5-20,5-22
Window Belt Sealing Strips 5-21
Window Regulator Motor 5-29
Front Cowl Panel 4-2
Front Door 5-31
Hinges 5-32
Radio Speaker 5-32
Window Assembly
B, C Styles 5-42
E and G Coupe Styles 5-42
G Sedan Styles 5-48
K Style 5-49
Window Regulator
B, C Styles 5-50
E Styles 5-50
G Styles 5-51
K Styles 5-51
Front End 4-1
Front End Sealing 4-2
Front Glass Run Channel Retainer - 5-52
Front Panel, Rear Compartment 7-10
Front/Rear Vertical Gearnut, Seat Adjuster 9-34
Front Seat 9-20
Adjuster 9-26
Adjustment 9-24
Assembly 9-25
Back - Full Width Seats 9-42
Back Assist Straps 9-39
Back Head Restraint/Guide Tube 9-38
Back Inertia Lock 9-39
Back Power Reclining Actuator
B, C, E and K Styles 9-46
K Style, 40-40 Seat 9-45
Belt Warning System 9-18
Bucket Seats 9-21
Center Armrest 9-51
Full Width and Split 9-20
Manual Control Knob 9-25
Manual Reclining Back 9-43
Power Operated 10-48
Servicing 9-26
Six-way Power Seat
Motor, Transmission Type 9-29
3 Motor Direct Drive 9-37
Shoulder Belt Guide Loop 9-25
Two-way Power Seat 9-28
Torque 9-21

G

Gas Support Assembly - Rear Compartment 7-3
Gearbox Disassembly and Assembly
Multiplex Pulse Wiper 2-24
Two-Speed Round Motor 2-13
General Information 1-1
Glass Polishing 11-1
Glass Removal and Installation
Extended Method 11-6
Short Method 11-4
Glass Run Channel
Front Door 5-52
Rear Door 5-63
Glass Scratch Removal 11-1
Grid Line Repair, Defogger 10-118
Guide
Door Window 5-52
Tube - Three Way Tailgate 7-32

H

Handle
Door Inside 5-1, 5-25
Door Outside 5-25
Tailgate Outside
G-35 Style 7-31
Three-way 7-38
Hardware Attachment Thread Locking 5-31
Headlining
Formed Headlining 8-1
Sun Roof Sliding Metal Panel 8-44
Head Restraint 9-38
Heated Rearview Mirror 10-5
Hinge
Front Door 5-32
Rear Door 5-58
Tailgate
G-35 Style 7-29
G-80 Style 7-23
Three-Way Tailgate 7-43
Hood Latch Release 4-5
Horizontal Actuator - Seat Adjuster 9-33

Horizontal and Vertical Drive
Cables, Six-Way Seats 9-36
Horizontal Jackscrew/Gearnut, Two-Way Seat 9-28

I

Illuminated Lock Cylinder and Courtesy Lamps 10-72
Improper Electrical Ground 10-3
Inertia Lock
Bucket Seat Back 9-48
Front Seat Back 9-39
Inner Panel Access Hole Cover, Tailgate 7-32
Inner Panel Water Deflector 5-22
Inside Locking Rod 5-24
Inside Remote Handle 5-25
Instrument Panel Compartment Lock 1-7
Insulator Pad 5-22
Insulators - Floor Pan 3-1
Interior and Exterior Lamps 10-72
Interior Garnish Moldings 8-13
Interior Plastic Trim Parts Finishing 1-20

K

Key Cutting 1-6
Key Identification and Usage 1-6

L

Lamps
Dome 8-9
Exterior and Interior 10-72
Exterior - Rear End 7-13
Vanity Mirror and Lamp 8-11
Lap and Shoulder Belts 9-1
Lap and Single Loop Belts 9-2
Latch, G-80 Tailgate 7-25
Lid
Lock, Rear Compartment 7-4
Lock Striker, Rear Compartment 7-7
Rear Compartment 7-3
Lock
Cylinder Assembling and Coding 1-6
Cylinder - Door 5-25
Cylinder Emblem, Rear Compartment 7-4
Cylinder Replacement 1-6
Cylinder, Tailgate
G-35 Style 7-28
Three-way Tailgate 7-38
Front and Rear Door 5-27
Inertia
B,C,E and G Two-Door Styles 9-39
Bucket Seats 9-48
Relay - Cadillac P.M. Motor 10-86
Release Solenoid, G-35 Tailgate 7-28
Remote Control, G-80 Tailgate 7-24
Spare Tire Cover Panel 9-67
Striker
Door 5-27
Tailgate 7-29
Tailgate Glass, G-35 7-30
Lower or Upper Channel and Plastic
Shoes - Seat Adjusters 9-34
Lower Sash Channel Cam - Doors 5-29
Lubrication 1-10
Door Hardware 5-31
Sun Roof 8-49
Luggage Compartment
Carrier 8-18
Folding Third Seat Module 9-73
Lock Cylinder 9-73
Panel - B Style 9-73
Panel - G Style 9-66
Panel and Hinge - B Style 9-71

M

Manual Seat Adjuster Control Knob 9-25
Manual Seat Diagnosis Chart 9-22
Map Lamp Support 8-43
Memory Seat - Two-Position, Power 9-28,10-55
Metal Replacement Parts Finishing 1-20
Metric Parts and Specifications 1-3
Mirror
Inside - Rearview 11-12
Outside - Rearview
Heated 10-5
Manually Operated 5-39
Power Operated 5-41
Standard 5-41
Thermometer 5-39
Vanity Mirror and Lamp 8-11
Model Identification Chart 1-1
Moldings
Adhesive Body Side 1-8
Back Body Opening - B Wagons 8-18
Back Window Upper Garnish 8-13
Clip Replacement
Doors 5-16
Rear End 7-1
Rear Quarter 6-14
Stationary Glass 11-2
Door, Exterior 5-16
Door Trim Panel 5-5
Interior Garnish 8-13
Quarter Belt 8-18
Quarter Window Reveal 11-9
Rear Compartment 7-1
Rear Quarter 6-14
Reveal - Stationary Glass 11-2
Roof Drip Scalp 8-17
Side Roof Rail Garnish 8-13
Upper Roof, Landau 8-18
Windshield Upper Garnish 8-13
Motor
Door Window Regulator 5-29
Multiplex Pulse Wiper 2-19,2-24
Six-Way Seat 9-29,9-37
Tailgate Window Regulator 7-35
Two-Speed Round Motor 2-10,2-12
Two-Way Seat 9-28
Multiplex Pulse Washer System 2-42
Multiplex Pulse Wiper System 2-19

N

Name Plates, Moldings and Emblems -
Rear Compartment 7-1
Nonoperable Quarter Window 6-20

O

One-Piece Formed Headlining 8-1
Open Electrical Circuits 10-3
Opera Lamp 7-13
Outside Handles - Doors 5-25
Outside Mirrors
Power Operated 5-41
Remote Control/Escutcheon 5-2
Remote Control Mirror 5-39
Standard Mirror 5-41

P

Painting Plastic Parts 1-20
Plastic Identification Test 1-20
Plastic Shoes - Seat Adjusters

Six-Way Seat 9-34
Two-Way Seat 9-29
Plate - Body Number 1-2
Polypropylene and ABS Plastic Test 1-20
Power
Door Lock 5-28
Electrical Diagnosis 10-84
Rearview Mirror 5-41,10-5
Reclining Seat Back 10-55
Seat Adjuster Horizontal Actuator Adjustment 9-24
Seat Back Diagnosis Chart 9-22
Six-Way Seat Adjuster
Electrical Diagnosis 10-48
Mechanical Diagnosis 9-22
Sun Roof 10-69
Tailgate Window
B Styles 10-33
G Styles 10-42
Two-Way Seat Adjuster
Electrical 10-48
Mechanical 9-28
Vents - G Styles 10-27
Windows 10-15
Pressure Relief Valve 4-2
Pulse Relay - Multiplex Pulse Wiper 2-23
Push-Button Handle Disassembly 5-25

Q

Quarter Armrest 6-1
Quarter Belt Moldings 8-18
Quarter Glass Installation Chart 11-8
Quarter Trim 6-1
Quarter Windows 6-20
Quarter Window Reveal Moldings, G-35 11-9

R

Radio Speakers 10-119
Door Inner Panel 5-32
Rear Seat 9-59
Rear Compartment 7-1
Emblems, Moldings and Name Plates 7-1
Front Panel 7-10
Lid 7-3
Electric Closing Unit 7-7
Gas Support 7-3
Lock 7-4
Lock Cylinder 7-4
Lock Striker 7-7
Release System 10-44
Lock Cylinder Emblem 7-4
Weatherstrip 7-9
Rear Door 5-53
Hinges 5-58
Operating Vent 5-60
Stationary Vent 5-62
Window
B, C Styles 5-58
G Style 5-59
Glass Run Channel 5-63
K Style 5-59
Regulator Tape Replacement
B and C Styles 5-59
K Style 5-60
Rear Quarter 6-1
Armrest 6-1
Exterior Moldings 6-14
Lock Pillar Finishing Lace - 6-2
Trim
Finishing Panel 6-1
Quarter Lower 6-1
Quarter Upper/Sail 6-2
Wheelhouse/Body Lock Pillar Covers 6-4
Rear Seat Back
Assembly 9-54
Center Armrest 9-56
Rear Seat Cushion 9-54
Rear Seat to Back Window Panel Trim 9-64
Rear Seats 9-54
Rear Speakers - Seats 9-59
Rearview Mirror Support, Bonded 11-12
Reclining Back Control Hinges, Bucket Seats 9-48
Regulator
Front Door Window 5-50
Rear Door Window 5-63
Three-Way Tailgate 7-33
Regulator Tape Replacement
Front Doors
B, C Styles 5-50
K Styles 5-52
Rear Doors
B, C Styles 5-59
K Styles 5-60
Relay Switch and Terminal Board
Multiplex Pulse Wiper 2-24
Two Speed Round 2-13
Removing Minor Scratches and Abrasions, Glass 11-1
Removing Wrinkles, Fabric Roof Cover 8-27
Repair Procedure
Fabric Roof Cover 8-29
Fusing Cuts, Scuffs, Gouges 8-31
Using Plastic Graining Die 8-29
With Foam Pad 8-32
Grid Line - Back Window Defogger 10-117
Replacement Lock Cylinders 1-6
Reveal Moldings - Stationary Glass 11-2
Roof Cover Repair 8-29
Roof Drip Scalp Moldings 8-17
Roof Panel Emblems 8-17
Round Motor Washer System 2-39

S

Seat Adjuster Diagnosis Chart
Manual Seat 9-22
Power Six Way 9-22
Seat Back
Assist Straps 9-39
Inertia Lock
B,C,E and G Two-Door Styles 9-39
Bucket Seats 9-48
Lock Striker/Stop, Bucket Seats 9-50
Reclining Actuator Unit - Power
B,C, E and K Style 9-46
K Style, 40-40 Seat 9-45
Seat Sensor Switch - Cadillac 10-86
Seat Torque Specifications 9-21
Seats 9-1
Auxiliary - Limousine 9-56
Front 9-20
Rear 9-54
Second Seat Back Filler Panel 9-66
Second Seat Cushion
B Station Wagon 9-72
G Station Wagon 9-66
Servicing Lap and Shoulder Belts 9-1
Short Circuits - Electrical 10-4
Shoulder Belt Guide Loop 9-25
Shroud Side Finishing Panel 4-1
Side Marker Lamps and Tail Lamps 10-72
Side Marker Lamps - Rear End 7-13
Side Roof Rail
Garnish Moldings 8-13

Weatherstrip and Retainer 5-22
Single Acting Tailgate 7-23
Six-Way Power Seats
Electrical 10-48
Mechanical
Motor, Transmission Type 9-29
3 Motor Direct Drive 9-37
Mechanical Diagnosis 9-22
Solenoid, Tailgate Glass Lock Release 7-28
Spare Tire Cover, Station Wagon 6-5
Hold-Open Rod 9-66
Panel Lock 9-67
Sealing Strip 9-67
Special Body Tools 1-21
Spring Clips - Door Locking Rod 5-24
Stainless Steel Roof Panel 8-33
Complete Refinishing 8-35
Major Surface Scratch Repair 8-34
Minor Surface Scratch Repair 8-33
Stationary Glass 11-4
Stationary Quarter Window 11-8
Station Wagon
Folding Rear Seats, Floor Panels 9-66
Tailgate - G-35 7-26
Three-Way Tailgate 7-32
Wood Grain Transfer 1-9
Striker
Door Lock 5-27
Tailgate Lock - G-35 7-29
Three-Way Tailgate 7-44
Sun Roof 8-39
Actuator 8-41
Adjustments 8-40
Control Switch 8-41
Diagnosis Chart 8-39
Drain Hose 8-39
Headlining - Metal Panel 8-43
Headlining Retainer 8-41
Housing Assembly 8-43
Housing Drain Hose Replacement 8-45
Lubrication 8-49
Map Lamp Support 8-43
Power 10-69
Sliding Glass Finishing Cover 8-46
Sliding Glass Panel 8-45
Sliding Glass Panel Sunshade 8-41
Sliding Metal Panel 8-44
Sliding Panel Cable 8-45
Sliding Panel Cable Center Guide 8-47
Sliding Panel Cable Conduit 8-48
Weatherstrip 8-47
Sunshade and Vanity Mirror Lamp 8-11
Support Cable, G-80 Tailgate 7-23
Switch
Door Jamb 10-1
Wiper Control 2-1

T

Tailgate
G-35 7-26
Glass, Gas Support - G-35 7-31
Hinge - G-35 7-29
Hinge - G-80 7-23
Lock Cylinder - G-35 7-28
Single Acting - G-80 7-23
Three-Way Tailgate 7-32
Diagnosis and Service 7-47
Glass Blockout Switch 7-38
Inner Panel Access Hole 7-30
Left Lower Hinge Assembly 7-43
Left Upper Hinge Lock, Gate 7-43
Lock Cylinder 7-38
Lock Remote Control 7-38
Lock Synchronization Check 7-46
Motor Lock Actuator 7-38
Outside Handle 7-38
Right Lower Lock 7-41
Right Upper Lock 7-38
Striker 7-44
Torque Rod and Link 7-45
Weatherstrip 7-26,7-30
Window Assembly/Guide Tube 7-30
Window, Power 10-33
Window Regulator 7-33
Weatherstrip - G-35 7-27
Window, Power - G-35 10-42
Tail Lamps 7-13
Tail Lamps and Side Marker Lamps 10-72
Test for Electric Back Window Grid 10-117
Test for Plastic Identification 1-20
Third Seat Back Cushion 9-75
Third Seat Remote Control Handle 9-77
Three-Way Tailgate 7-32
Tools - Special Body 1-21
Torque Rods - Three-Way Tailgate 7-45
Transfer - Wood Grain 1-9
Transmission - Seats 9-36
Trim
Center Pillar 5-5
Door 5-2
Lower Quarter 6-1
Tailgate, G-35 7-26
Upper/Sail 6-2
Twin Lift-off Panel 8-50
Glass Panel 8-50
Latch 8-53
Weatherstrip 8-52,8-53
Two-Speed Round Wiper Motor 2-3
Arm 2-10
Blade 2-10
Diagnosis 2-4
Motor 2-10,2-12
Transmission 2-11
Two-Way
Power Seats 10-48
Seat Adjuster, Power 9-28

U

Upper Roof Moldings - Landau 8-18

V

Valve - Pressure Relief 4-2
Vanity Mirror and Lamp 8-11
Vehicle Identification Number 1-2
Vent Window
Operating 5-60,10-27
Power - G Styles 10-27
Stationary 5-62
Ventilation 4-1
Vinyl Plastic Test 1-20

W

Washer Pump - Multiplex Pulse Wiper 2-42
Washer System - Windshield 2-39
Fluidic 2-46
Multiplex Pulse 2-42
Round Motor 2-39
Water Deflector - Inner Panel 5-22
Waterleak Correction - Stationary Glass 11-7
Waterleak Diagnosis and Repair 1-10
Weatherstrip

Front and Rear Door 5-20
G-35 7-26
Quarter Window 6-21
Rear Compartment 7-9
Side Roof Rail and Retainer 5-22
Sun Roof Housing 8-47
Three-Way Tailgate 7-32
Twin Lift-Off Panel 8-52,8-53
Wheelhouse
Cover 6-4
Trim and Stowage Pocket 6-6
Trim 6-4
Window Assembly
Back Window, E and G Styles 11-10
Front Door
B, C Styles 5-42
E and G Coupe Style 5-42
G Sedan Style 5-48
K Style 5-49
Rear Door
B and C Style 5-58
G Style 5-59
K Style 5-59
Operating Vent 5-60
Rear Quarter 6-20
Stationary Vent Window 5-62
Tailgate
G-35 Style 7-26
Power - B Styles 10-33
Power - G Styles 10-44
Single Acting - G-80 7-23
Three-Way Tailgate 7-32
Window Belt Sealing Strips 5-21
Window Regulator
Front Door 5-50
Motor 5-29
Rear Door 5-63
Tailgate - Three-way 7-33
Window Removal - Stationary Glass 11-4
Window, Stationary Quarter 11-8
Windshield
Upper Garnish, Molding 8-13
Washer Systems 2-39
Fluidic 2-46
Multiplex Pulse 2-42
Round Motor 2-39
Wiper System 2-1
Arm 2-10
Blade 2-10
Control Switches 2-1
Motor
Adjustments - Two-Speed Round 2-18
Two-Speed Round 2-3
Multiplex Pulse Wiper System 2-19
Tester 2-1
Transmission 2-11
Wire Identification Chart 10-121
Wood Grain Transfers 1-9
Wrinkle Removal - Fabric Roof Cover 8-27

SECTION 3

UNDERBODY

CONTENTS

Floor Pan Insulators 3-1
Floor Carpets 3-1

FLOOR PAN INSULATORS

Floor pan insulators have been designed 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 an insulator needs to be replaced, the proper material specified for that location on the floor pan must be used. The types of materials are listed below. Items 1 and 2 are rolled stock; order by linear foot and cut to fit.

1. Insulator floor pan (cerra blanket thermal) - consists of 9.5 mm (3/8") thick aluminum silica (Type 1).
2. Insulator floor pan (amberlite) - consists of 9.5 mm (3/8") thick resinated fibers (Type 2).
3. Insulator floor pan (phenolic bonded fiber glass) cut to size, 305 mm x 457 mm (12" x 18"), Type 3.

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 in order to avoid gapping or overlapping.
2. If an insulator needs to be replaced, 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, lap belt warning light and buzzer or rear speakers must be routed over the floor pan insulators in the original location and clipped in place properly.
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).

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.

FLOOR CARPETS

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, remove the following:

1. Front seat assembly
2. Front seat belts
3. Rear seat cushion
4. Accelerator pedal and carpet retainer if so equipped, by performing the following:
   a. Using trim pad remover tool BT-7323 or equivalent tool (same width), insert into opening at side of floor mounting bracket, as shown in Figure 3-1.
   b. As tab is being pressed inward, lift retainer with hand to free locking tab from slot.
   c. Repeat steps a and b on opposite side of retainer.
   d. Remove retainer from vehicle.
5. Front and rear door sill plates
6. Litter container
7. Left and right panel finishing shroud
8. Left and right lower body lock pillar trim

To install, reverse removal operations.

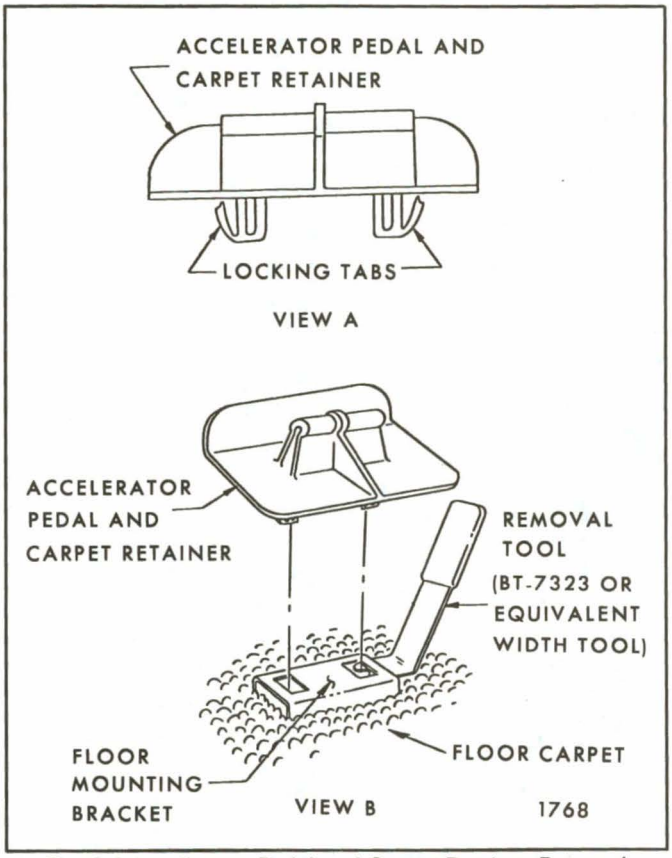


Fig. 3-1-Accelerator Pedal and Carpet Retainer Removal

SECTION 4

FRONT END

CONTENTS

Body Ventilation 4-1
Shroud Side Finishing Panel
B and C Styles 4-1
E and G Styles 4-1
K Style 4-2
Pressure Relief Valve 4-2
Front Cowl Panel 4-2
Front End Sealing 4-2
Hood Latch Release Cable 4-5

BODY VENTILATION

The body ventilation system on some vehicles without air conditioning is comprised of a low-level system or a combination of a low-level and a high-level system depending upon body style.

On B,C and G styles without air conditioning, ventilation is accomplished by a heater vent module which is mounted to the dash panel. The air then flows through the body and exits through relief valves located on the front door lock pillars or rear body lock pillars on sedan styles. Refer to the chassis service manual for use and repair details.

On B, C and G styles with air conditioning, air is supplied by a heater/air-conditioning module located in the plenum chamber. Air passes through the body and exits through the relief valves located on the body lock pillars.

On E styles, ventilating air is supplied to the heater/air conditioning module from the plenum chamber on the right side of the cowl.

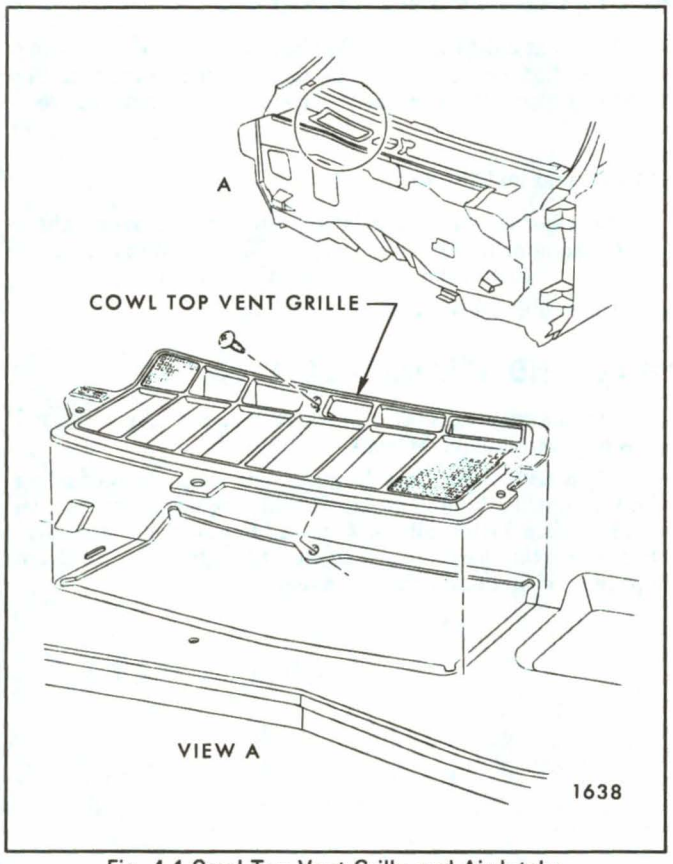


Fig. 4-1-Cowl Top Vent Grille and Air Intake

On K styles, body ventilation is controlled through the car's Automatic Climate Control system. Refer to Section 1 (Heating and Air Conditioning) of the chassis manual for operation.

Fresh air is taken into the front plenum chamber and introduced into the Automatic Climate Control system through a vacuum door in the right side shroud.

SHROUD SIDE FINISHING PANEL - B AND C STYLES

On B and C styles, the left and right shroud side panels are designed with an integral hinge pillar pinchweld lace. The left side panel contains the handle for the hood release cable. The cable must be removed as an assembly when removing the trim panel. The right side panel may have a removable litter container attached.

Removal and Installation, Right Side - B and C Styles

1. Remove sill plate retaining screws and sill plate.
2. Remove litter container if so equipped.
3. Remove shroud panel attaching screws and slide panel rearward.
4. To install, reverse removal procedure.

Removal and Installation, Left Side - B and C Styles

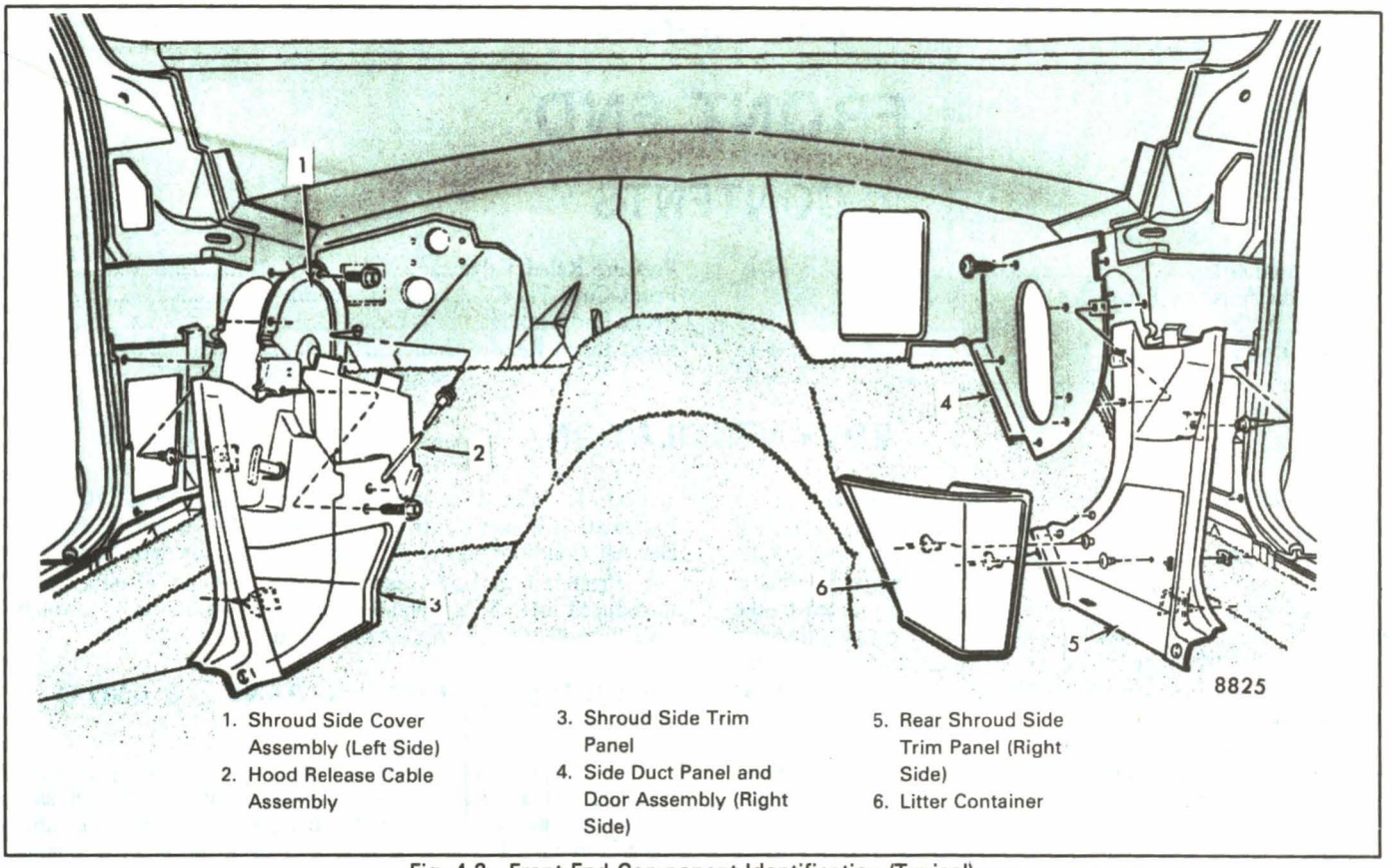
1. Raise hood and disengage hood release cable from hood latch. Block latch to prevent inadvertent hood locking until cable has been reinstalled onto latch.
2. Remove screw securing release cable grommet to dash panel and remove grommet from cable (Fig. 4-5).
3. Remove sill plate retaining screws and sill plate.
4. Depress parking brake and remove screws retaining trim panel to side shroud panel.
5. Remove shroud trim panel, including cable assembly, sliding control cable through opening in dash panel.
6. If trim panel is to be replaced, remove cable retaining clip and remove cable from panel.
7. To install, reverse removal procedure.

SHROUD SIDE FINISHING PANEL - E AND G STYLES

The left and right shroud side finishing panels are designed with an integral hinge pillar pinchweld finishing lace. The right side panel may have a removable litter container attached.

Removal and Installation, Right or Left Side

1. Remove sill plate retaining screws and sill plate.
2. Remove litter container if so equipped.
3. Remove screw retaining hinge pillar pinchweld upper finishing lace.



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

Fig. 4-2 - Front End Component Identification (Typical)

4. Grasp shroud finishing panel at forward edge toward dash panel and pull inboard to disengage plastic retaining clip, and slide panel rearward.
5. To install, reverse the removal procedure.

SHROUD SIDE FINISHING PANEL - K STYLE (FIG. 4-4)

Removal and Installation - Right or Left Side

1. Remove sill plate retaining screws and sill plate.
2. Remove litter container on right side.
3. Loosen hinge pillar pinchweld finishing lace.
4. Remove screw and carefully pull panel inboard until plastic retaining clip disengages from sheet metal and remove finishing panel.
5. To install, reverse removal procedure.

PRESSURE RELIEF VALVE

Pressure relief valves are attached to rear lock pillars (in door opening below belt) with screws. Figure 4-6 shows pressure relief valve installation.

FRONT COWL PANEL - E STYLES

The front cowl panel is an applied, screw-retained finishing panel installed between the rear edge of the hood and the windshield glass. The windshield wipers park beneath the front cowl panel.

Removal and Installation

1. Raise hood, remove attaching screws, remove panel. Three of the attaching screws are accessible only through access holes located in the leading edge of the panel.
2. To install, reverse removal procedure.

FRONT END SEALING - E STYLES

This information is being provided to help in diagnosing and correcting waterleak complaints in the field.

All potential waterleak locations are sealed in production with high quality durable sealers. Should it be necessary to reseal specific areas, a high quality sealer of medium-bodied consistency which will retain its flexible characteristics after curing and can be painted, if necessary, should be used.

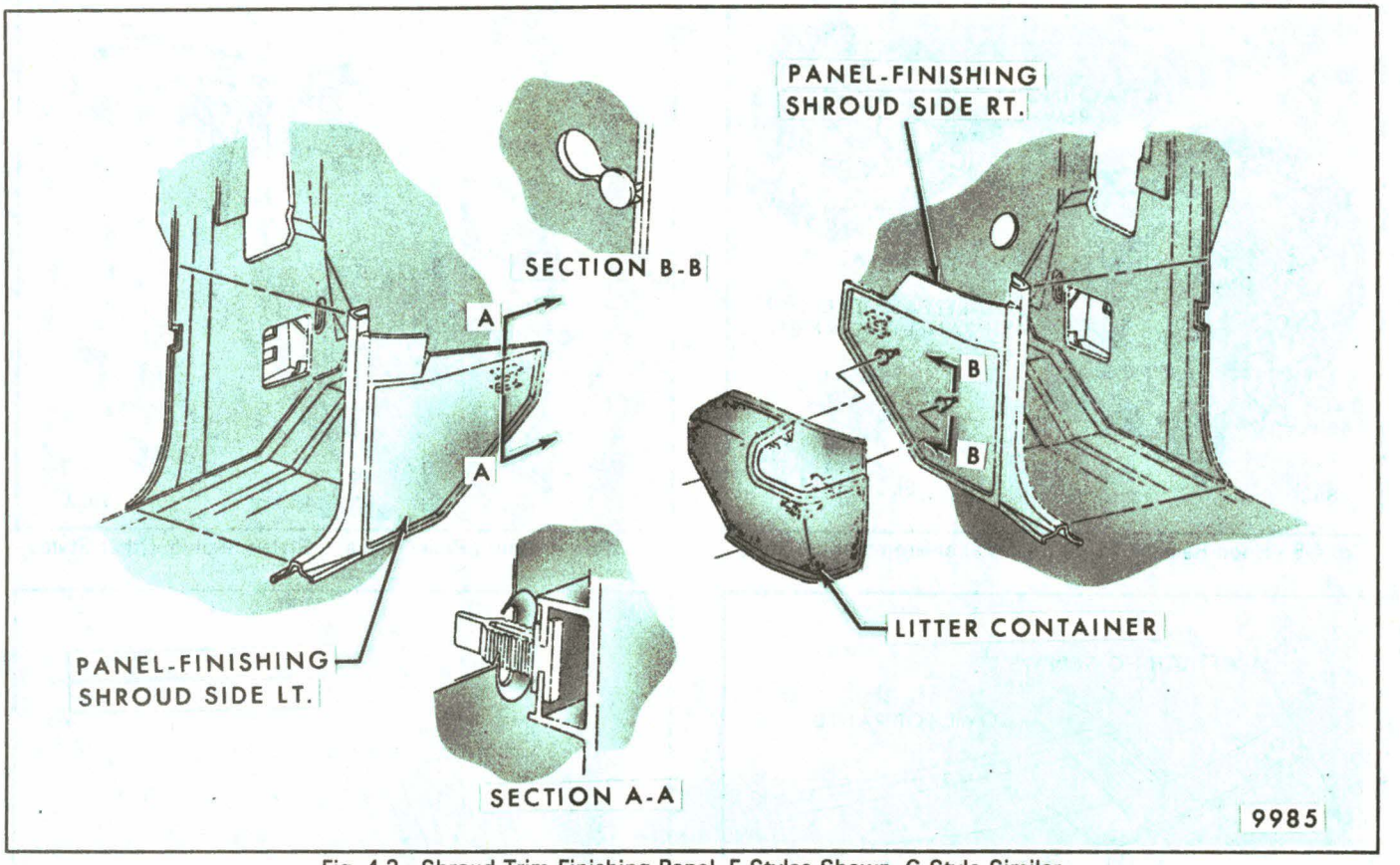


Fig. 4-3 - Shroud Trim Finishing Panel, E Styles Shown, G Style Similar

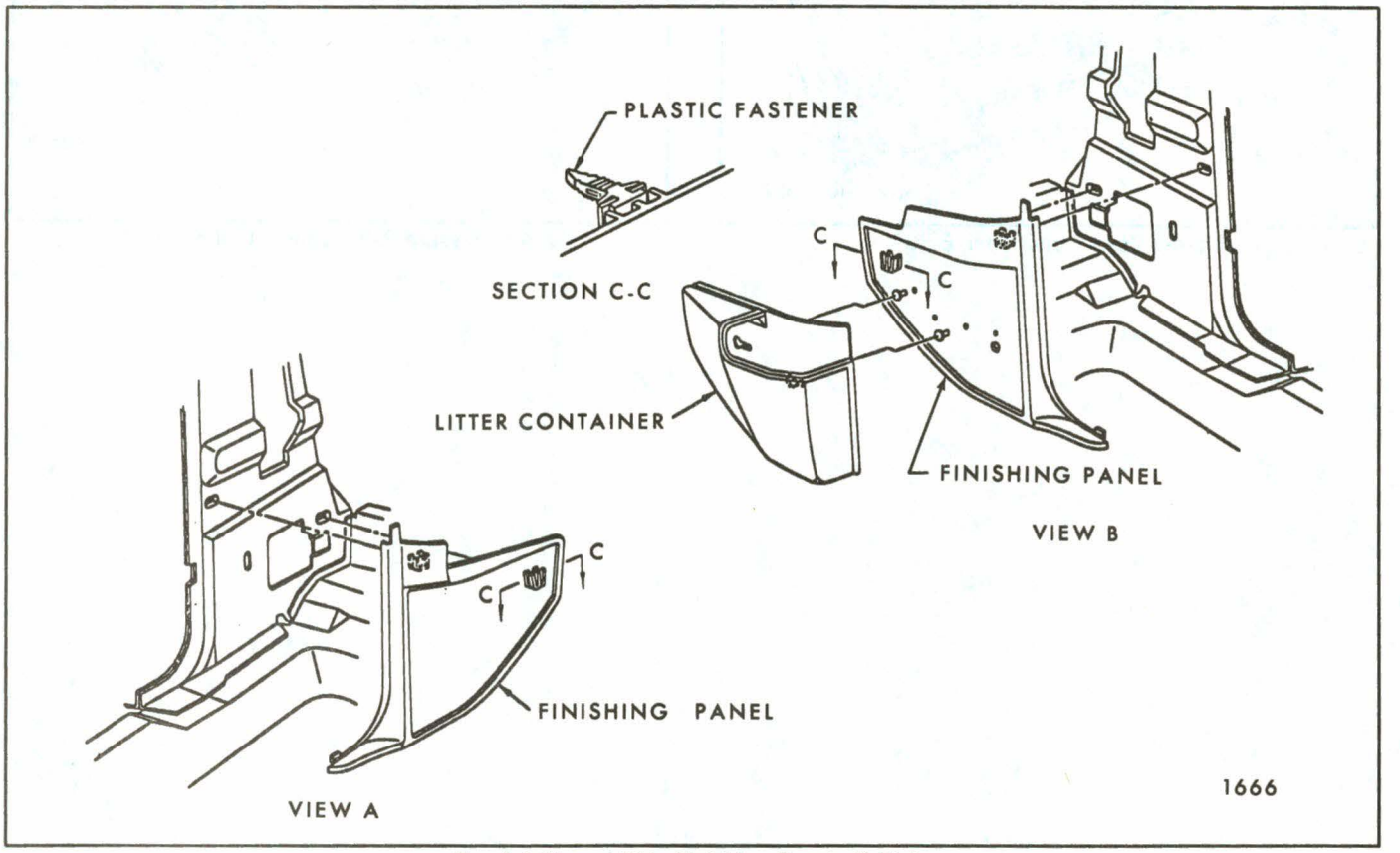


Fig. 4-4-Shroud Side Finishing Panel - K Style

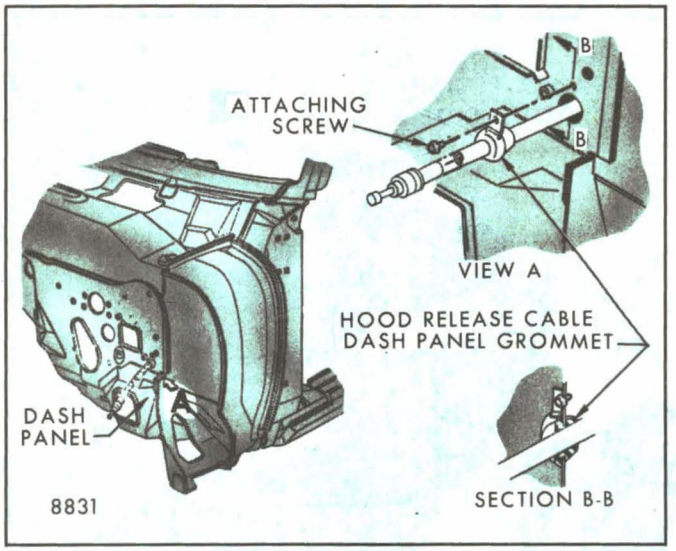


Fig. 4-5 - Hood Release Cable Dash Panel Grommet - K Style

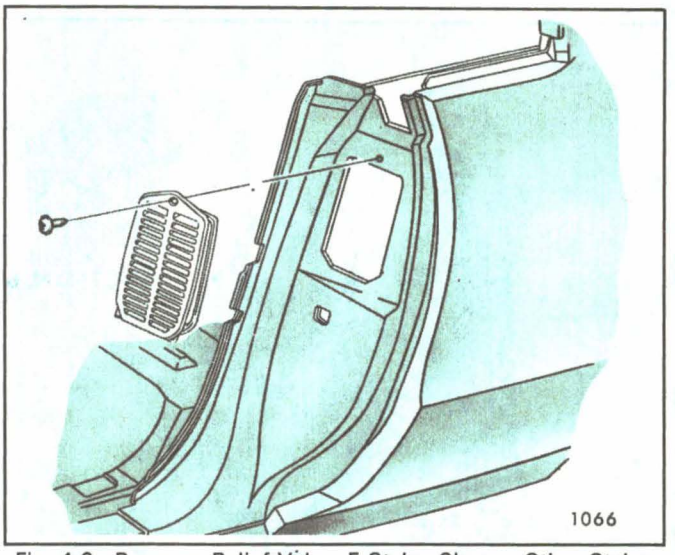


Fig. 4-6 - Pressure Relief Valve, E Styles Shown, Other Styles Similar

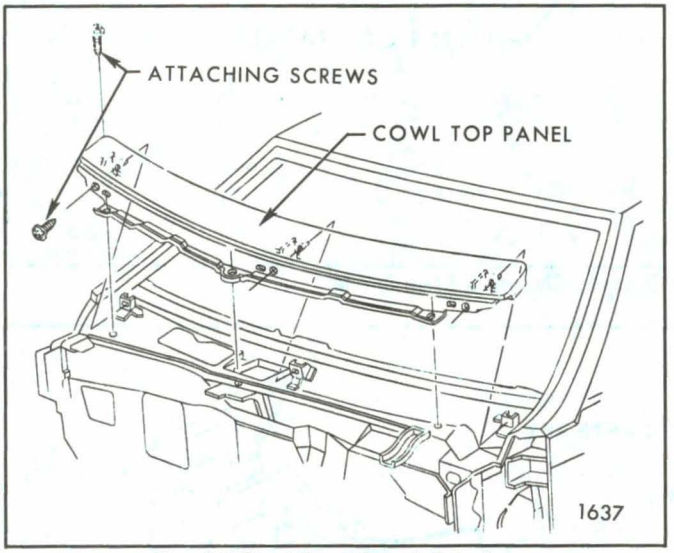


Fig. 4-7-Cowl Front Panel, E Styles

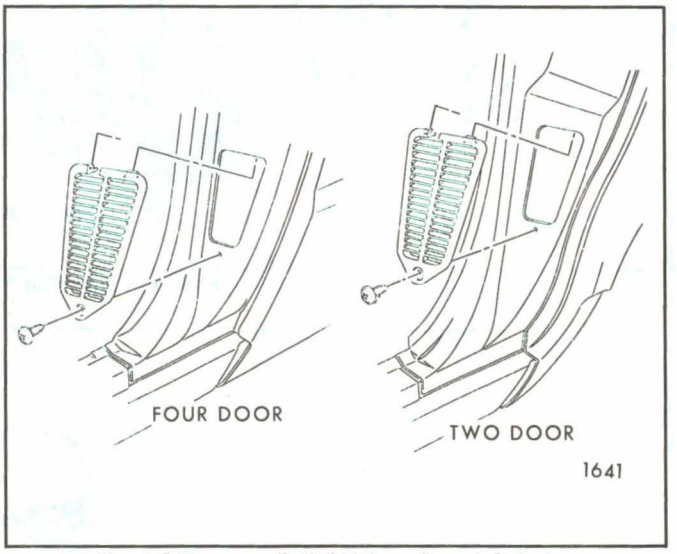


Fig. 4-8-Pressure Relief Valve - B and C Styles

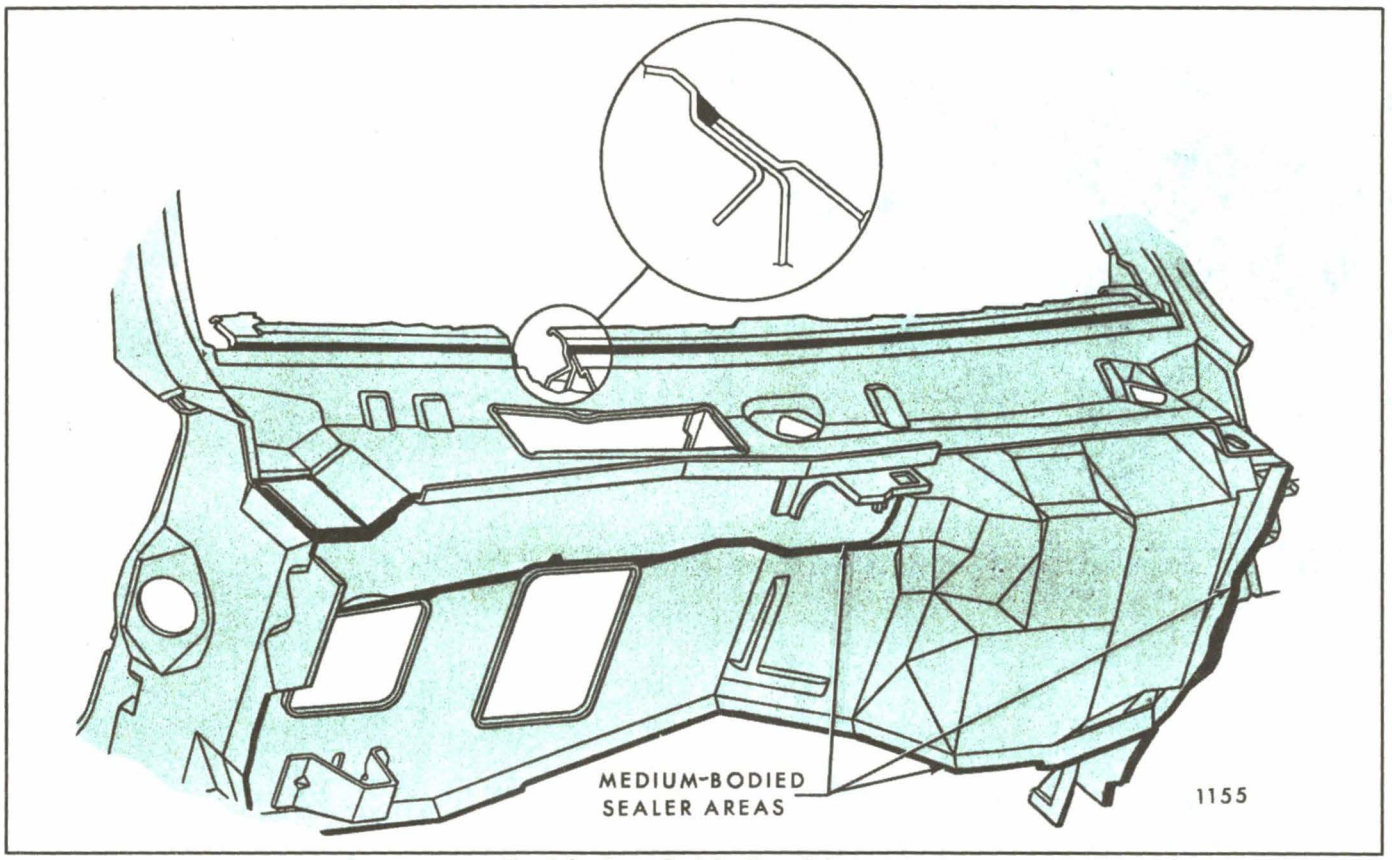


Fig. 4-9 - Front End Sealing, E Styles

HOOD LATCH RELEASE CABLE

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. 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 and remove grommet from cable (Fig. 4-5). The cable assembly is then bolted to the left shroud. On E and G styles, remove left shroud trim panel (see shroud side finishing panel). Remove cable to shroud panel attachments. Remove sealing grommet and cable from dash panel.
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. 4-10) 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 all attachments. Engage cable to hood latch assembly.

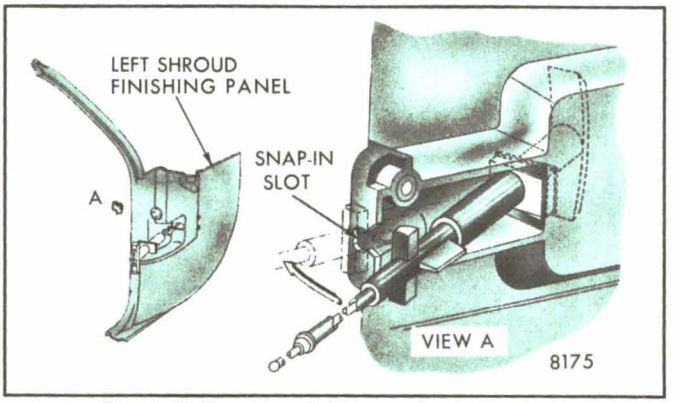


Fig. 4-10-Hood Latch Release Cable (Typical)

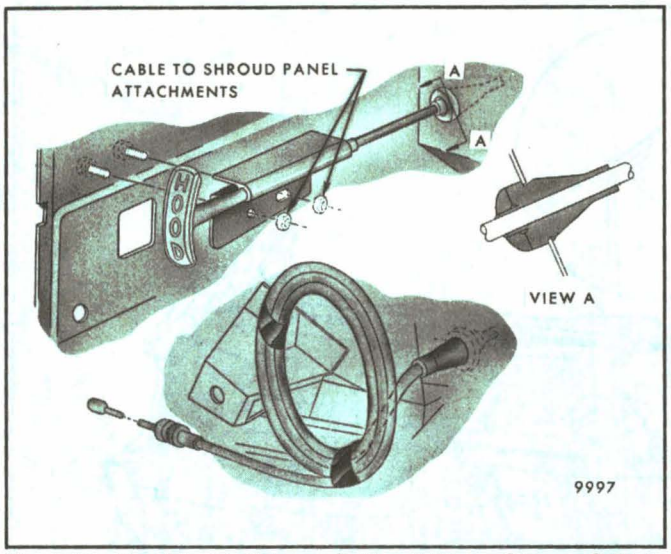


Fig. 4-11 - Hood Latch Release Cable - E Styles Shown, G Style Similar

SECTION 5

DOORS

CONTENTS

Door and Center Pillar Trim
- Inside Pull Handles 5-1
- Door Armrests 5-1
- Mirror Remote Control and Escutcheons 5-2
- Inside Handles and Cover Plates 5-2
- Door Trim Assemblies 5-2
- Trim Panel Moldings and Appliques 5-5
- Center Pillar Trim 5-5

Exterior Moldings 5-16

Front and Rear Doors
- Weatherstrips, Sealing Strips 5-20
- Insulator Pad/Water Deflector 5-22
- Clips, Locking and Connecting Rods 5-24
- Inside Handles 5-25
- Outside Handles 5-25
- Lock Cylinder 5-25
- Lock Striker 5-27
- Lock 5-27
- Power Lock System 5-28
- Inner Panel Cam 5-29
- Lower Sash Channel Cam 5-29
- Window Regulator Motor 5-29
- Hardware Lubrication 5-31
- Hardware Attachment Thread Locking 5-31

Front Doors
- Hinges 5-32
- Radio Speaker 5-32
- Outside Mirrors
  - Remote Control Mirror 5-39
  - Standard Mirror 5-41
  - Power-Operated Rearview Mirror 5-41
- Window - Adjust, Remove, Install
  - B,C Styles 5-42
  - E and G Coupe Styles 5-42
  - G Sedan Styles 5-48
  - K Style 5-49
- Window Regulator
  - B, C Styles 5-50
    - Regulator Tape Replacement 5-50
  - E Styles 5-50
  - G Coupe Styles 5-51
  - G Sedan Styles 5-51
  - K Styles 5-51
    - Regulator Tape Replacement 5-52
- Window Guides and Channels 5-52

Rear Doors
- Adjust, Remove and Install 5-53
- Hinges 5-58
- Window - Adjust, Remove, Install
  - B,C Styles 5-58
    - Regulator Tape Replacement 5-59
  - G Styles 5-59
  - K Style 5-59
    - Regulator Tape Replacement 5-60
- Operating Vent Window 5-60
  - Manual Latch Assembly 5-61
  - Electric Actuator Assembly 5-61
- Stationary Vent Window 5-62
- Window Regulator 5-63
- Window Run Channel and Retainer 5-63

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 5-10).

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 through 5-4).

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).

DOOR ARMRESTS - B AND G 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 5-10 and 5-13.

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.

C styles use a separate armrest preassembled to the door trim panel prior to trim panel attachment. For this reason the C style armrest is considered to be an integral component of the trim assembly (Fig. 5-13).

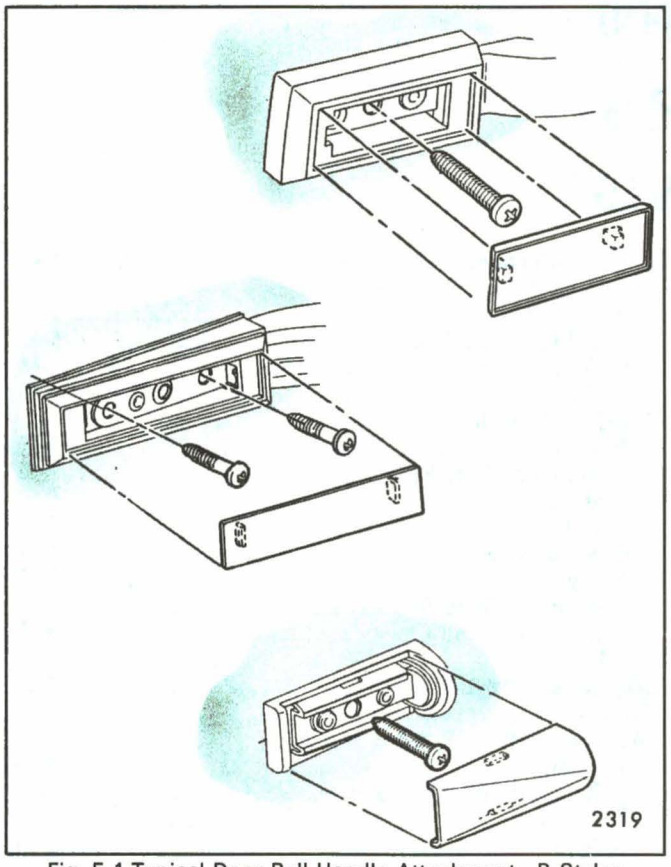


Fig. 5-1-Typical Door Pull Handle Attachment - B Styles

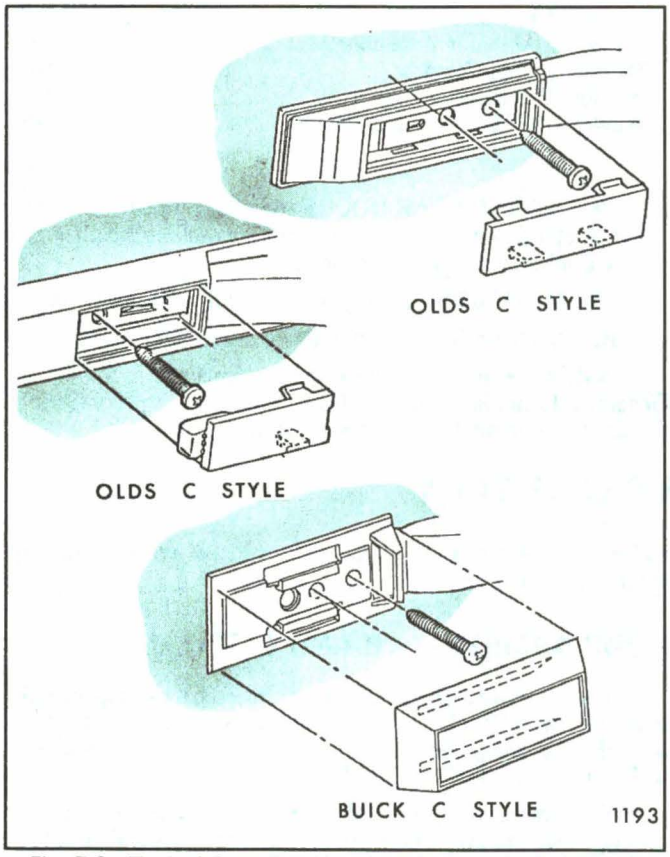


Fig. 5-2 - Typical Door Pull Handle Attachment - Buick and Oldsmobile C Styles

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 5-14 through 5-17.

DOOR INSIDE HANDLES AND COVER PLATES

Door inside handles are retained by either screws, blind rivets or spring clips (Figs. 5-18 and 5-19). 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 Figure 5-20.

Removal and Installation

1. Clips hidden by window regulator handles (Fig. 5-19) can be disengaged by depressing door trim assembly enough to permit inserting tool J-9886 or equivalent between handle and trim panel or plastic bearing plate (Fig. 5-23). 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, K and some E styles and a two-piece trim that is used on G styles.

On all styles with one-piece trim, the trim hangs over the door inner panel across the top and is secured by clips down the sides and across the bottom. (Figs. 5-11, 5-12 and 5-25 illustrate the various types of door trim panel fasteners).

On G and some E styles with the two-piece trim, the upper portion hangs over the door inner panel across the top and the lower edge fits into a formed groove in the lower trim panel. The lower portion is retained by screws across the top and by clips down the sides and across the bottom. Figure 5-30 shows typical two-piece trim panel retention methods.

DOOR UPPER TRIM

Some E styles use a two-piece door trim assembly.

Removal

1. Lower door window.
2. Remove door inside locking rod knob.
3. Remove door pull strap escutcheons and remove screws securing strap to door inner panel.
4. Remove door inside remote control handle escutcheon attaching screw.
5. Insert tool BT-7323 or equivalent between door inner panel and trim assembly and disengage retaining clips at side of upper trim panel.
6. Using tool shown in Figure 5-28, insert tip of tool behind trim pad rear retaining embossment as shown in Figure 5-29. Rotate tool inboard to disengage pad from rear retainer.
7. Repeat step 6 at front retaining embossment.

Installation

Before installing door trim assembly, check that all trim retainers are securely installed to the trim assembly and are not damaged. Replace damaged trim retainers as required.

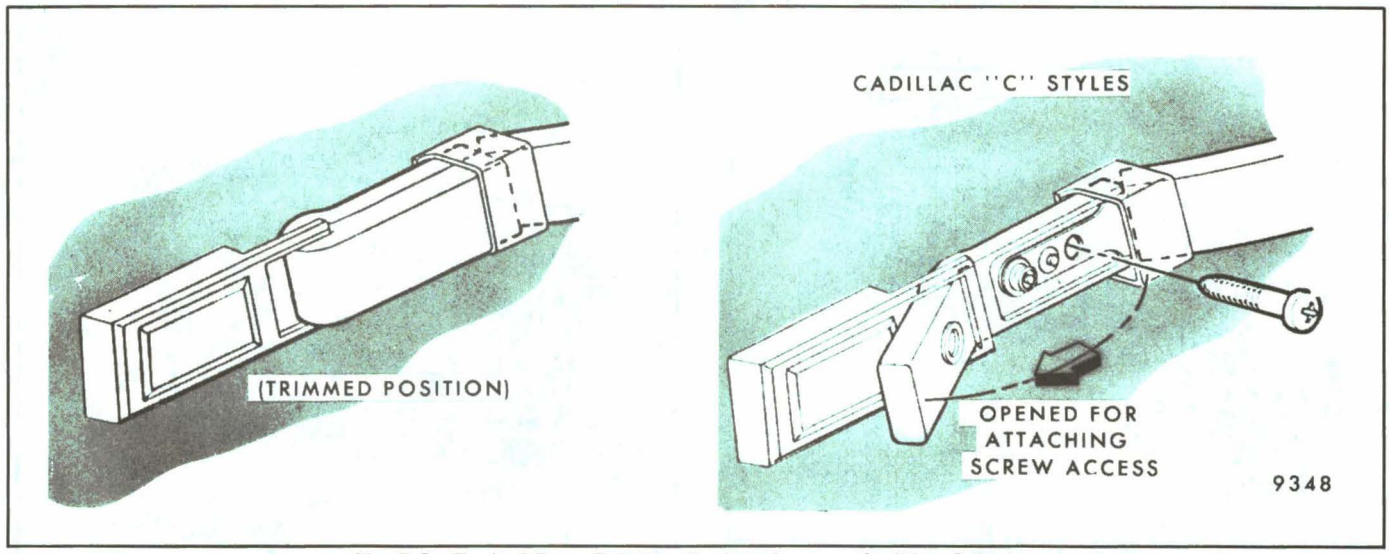


Fig. 5-3 - Typical Door Pull Handle Attachment - Cadillac C Styles

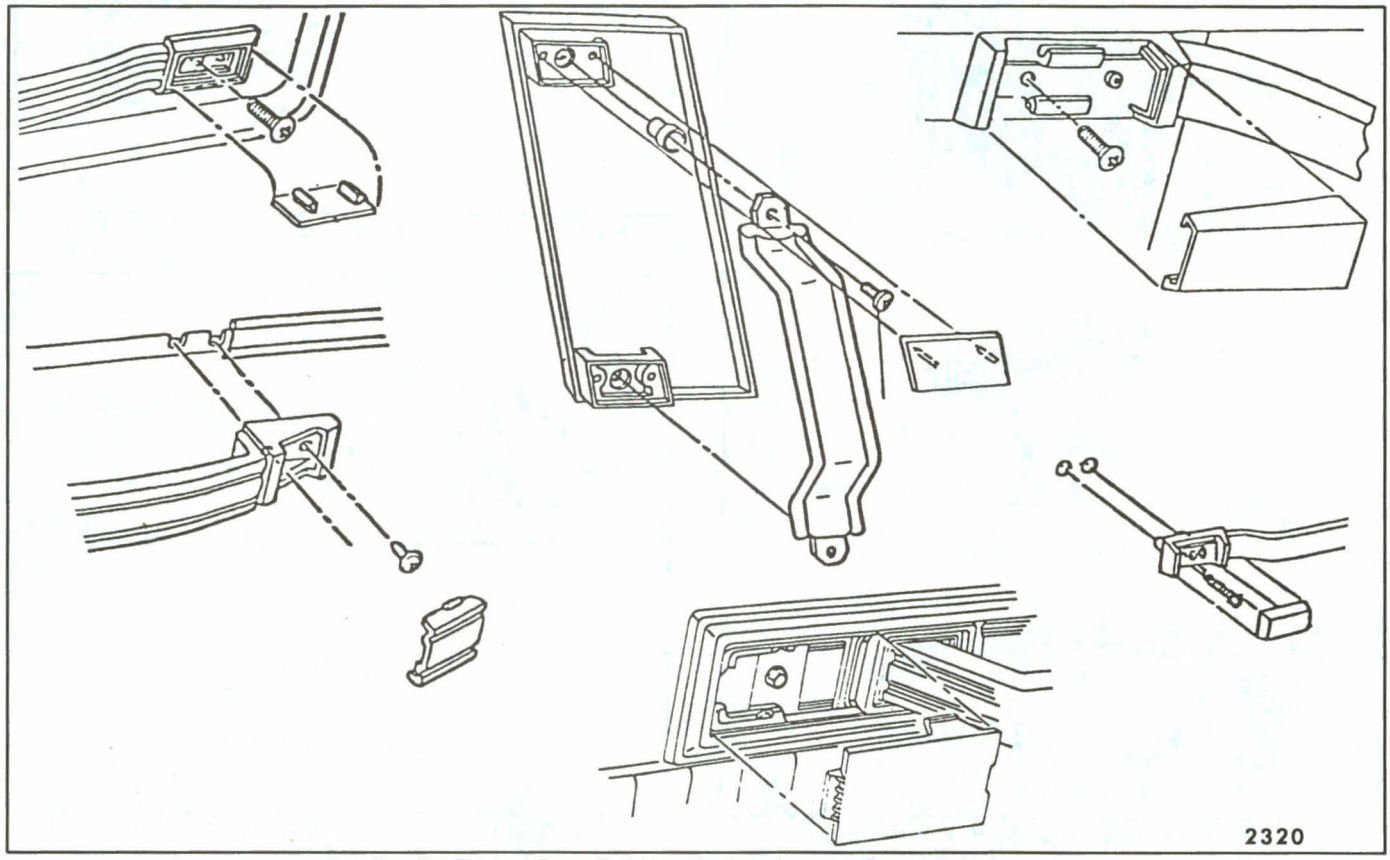


Fig. 5-4-Typical Door Pull Handle Attachment - G and K Styles

1. To install door trim assembly, pull door inside handle inboard; then position door trim to inner panel, inserting handle through hole in door trim panel.
2. Install trim pad over locking rod knob, then firmly engage upper trim pad embossments with front and rear retainers.
3. Position door trim to inner panel so trim retainers are aligned with attaching holes in inner panel and tap retainers into holes with palm of hand or a clean rubber mallet.
4. Install all previously removed hardware items.

DOOR TRIM ASSEMBLIES - B, C, G, K AND SOME E STYLES

Removal

1. Remove all door inside handles.
2. Remove door inside locking rod knob.
3. On styles equipped with door pull handles, remove screws inserted through handle into door inner panel.
4. On styles with remote control mirror assemblies, remove remote mirror escutcheon and disengage end of mirror control cable from escutcheon.

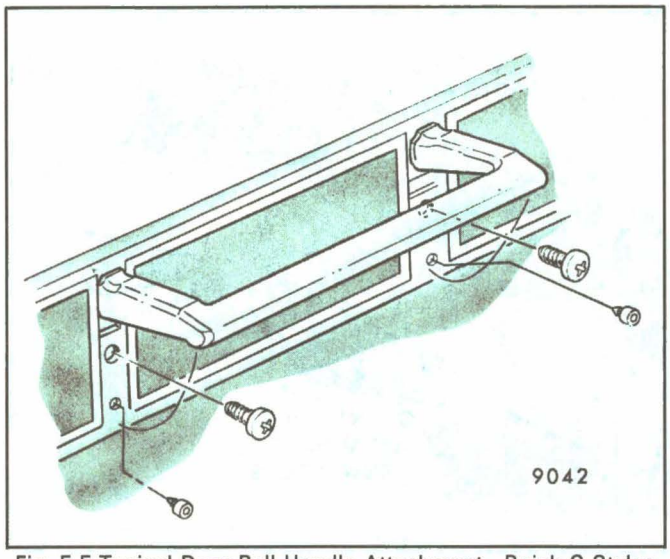


Fig. 5-5-Typical Door Pull Handle Attachment - Buick C Styles

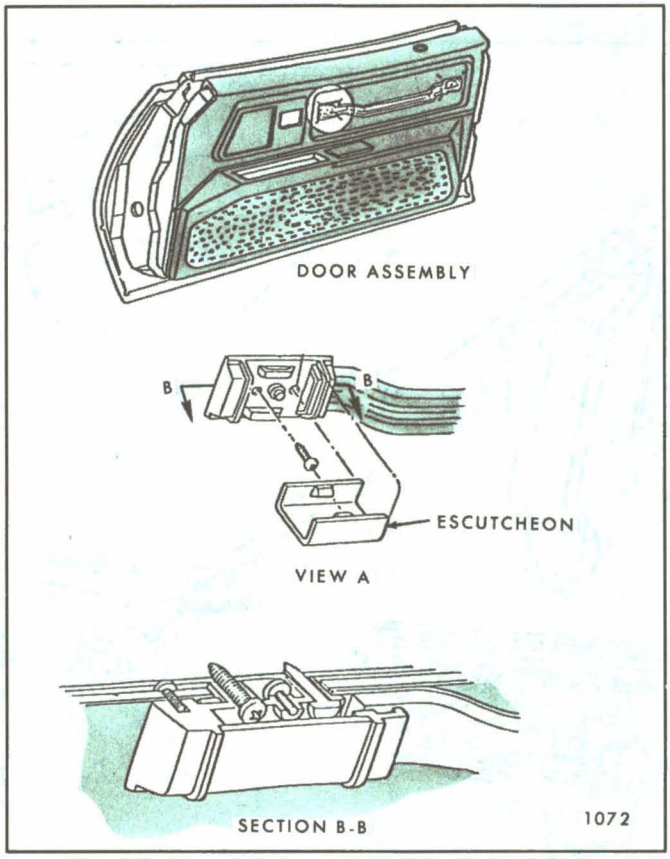


Fig. 5-6 - Door Pull Strap Assembly - Buick E Style

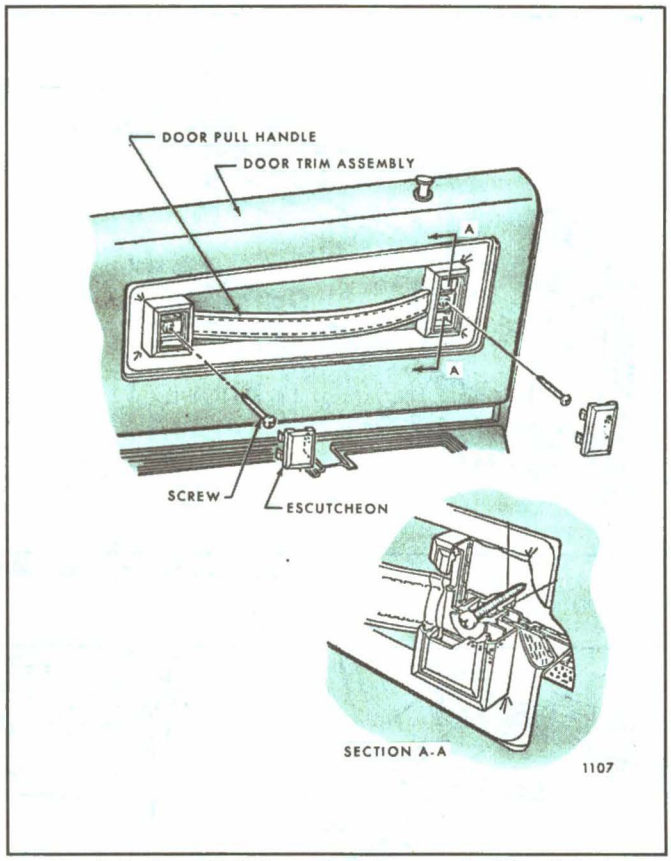


Fig. 5-7 - Door Pull Strap Attachment - Cadillac E Style

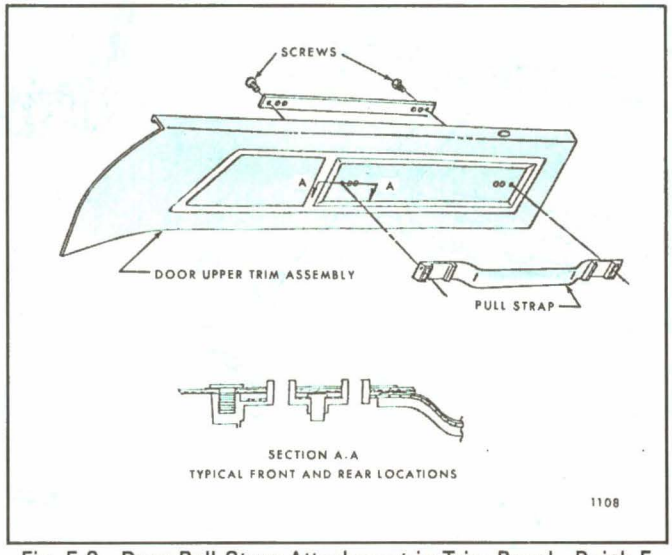


Fig. 5-8 - Door Pull Strap Attachment in Trim Panel - Buick E Style

5. 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. 5-15, 5-17, 5-21 and 5-24).

6. Remove remote control cover plates (Fig. 5-20) 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. On C and K styles, remove attaching screws behind armrest deflector or courtesy lamp and remote control cover plate (Figs. 5-20 and 5-31). On styles with armrest applied after door trim installation (Fig. 5-12), remove armrest to door inner panel attaching screws.

8. On styles, with two-piece trim assemblies, disengage retainer clips at front and rear of upper trim pad using tool BT-7323 or equivalent (Sec. A-A, Fig. 5-30). Remove upper trim from door by lifting upward and sliding slightly rearward to disengage from door inner panel at beltline (Sec. D-D, Fig. 5-30).

   On styles with electric switches located in door trim assembly, disconnect wire harness at switch assembly (Figs. 5-12 and 5-17).

   To remove lower trim, remove attaching screws along upper edge of lower trim assembly. 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.

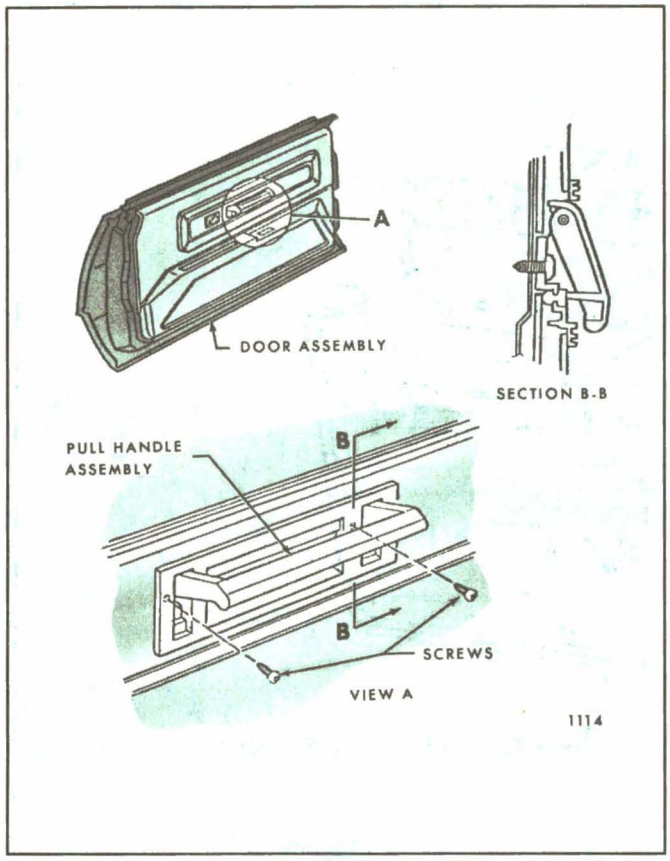


Fig. 5-9 - Door Pull Handle Attachment - Oldsmobile E Style

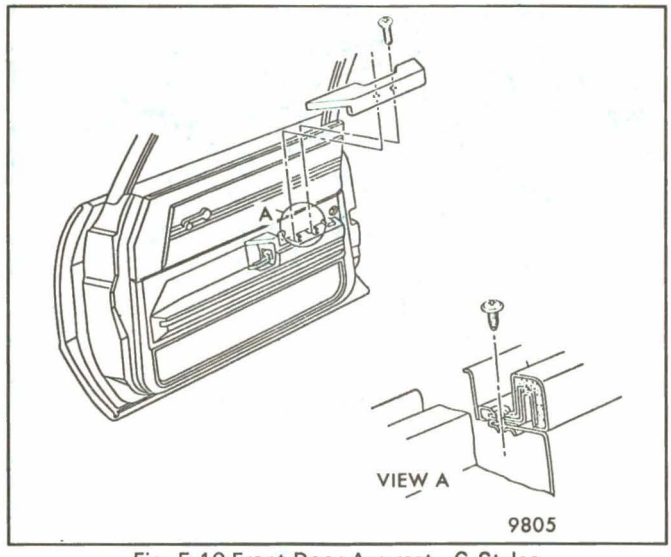


Fig. 5-10-Front Door Armrest - G Styles

On styles with courtesy lamps or reading lamps located in trim assembly, disconnect wire harness at lamp assembly (Figs. 5-20 and 5-31).

9. On styles with one-piece trim assemblies, remove all clips around perimeter of door trim pad using tool BT-7323 or equivalent (Figs. 5-12 and 5-25).

   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 6.3 mm (1/4") cutout into attachment hole in trim assembly; then rotate retainer until flange with 6.3 mm (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.

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. D-D, Fig. 5-30).

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. 5-32) or bend-over tabs.

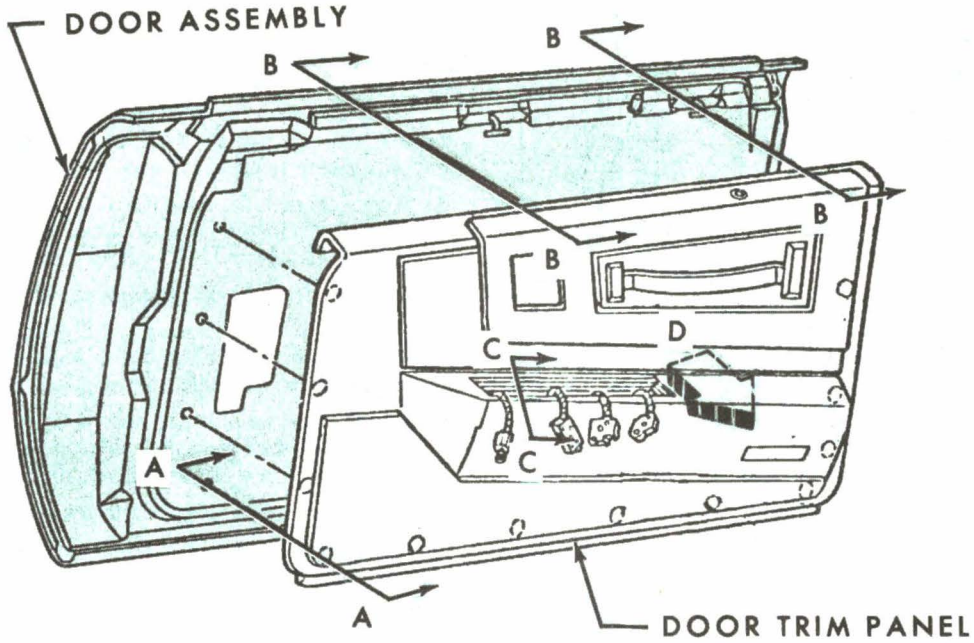
Removal and Installation

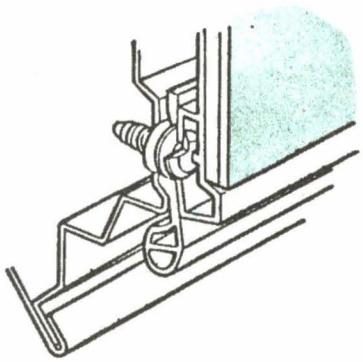
1. Remove door trim assembly.
2. For removal of type A fasteners, use tool J-23554 or equivalent.
3. To remove type B fasteners, carefully pry up on fastener until there is enough working space to insert wire cutter; then cut fastener and discard.
4. For removal of type C fasteners, use a crosshead type 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.

CENTER PILLAR TRIM - ALL EXCEPT K STYLE

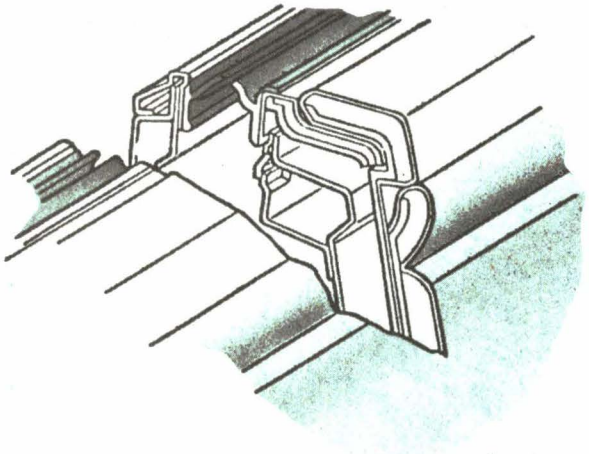
Removal and Installation - Upper and Lower Trim

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 (Fig. 5-34). On Cadillac C styles, after upper trim removal, carefully uncrimp and remove escutcheon covering webbing slot (view C, Fig. 5-35), remove belt webbing and remove upper trim.
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.



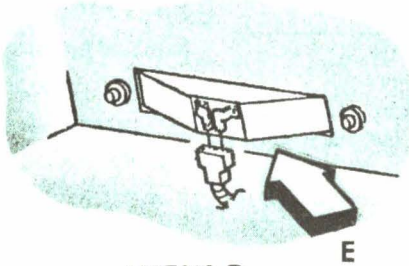


SECTION A-A

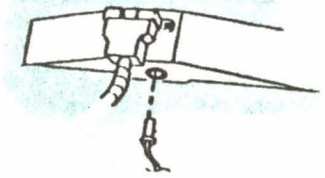


SECTION B-B

SECTION C-C



VIEW D



VIEW E

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Fig. 5-11 - One Piece Door Trim Panel Assembly

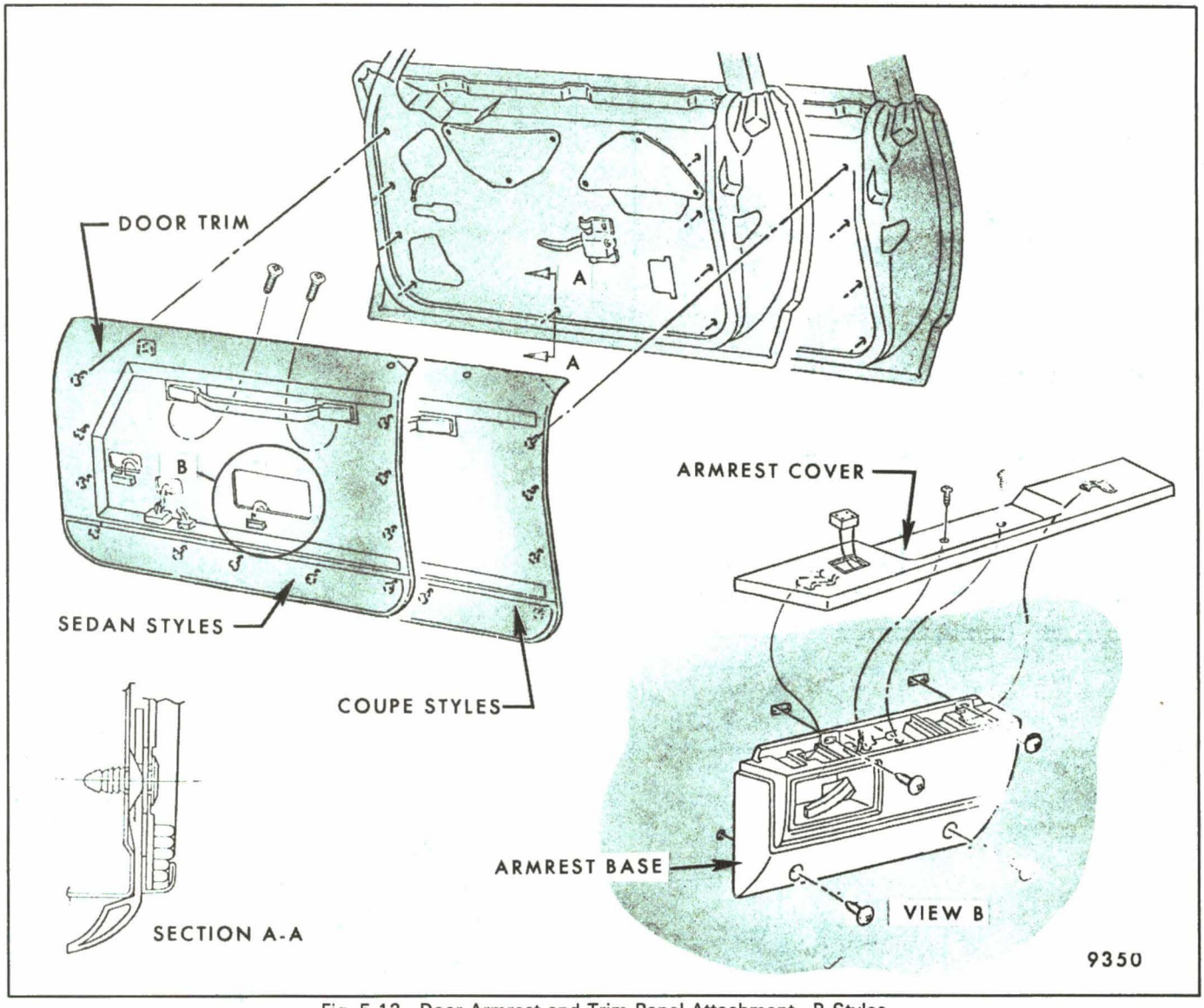


Fig. 5-12 - Door Armrest and Trim Panel Attachment - B Styles

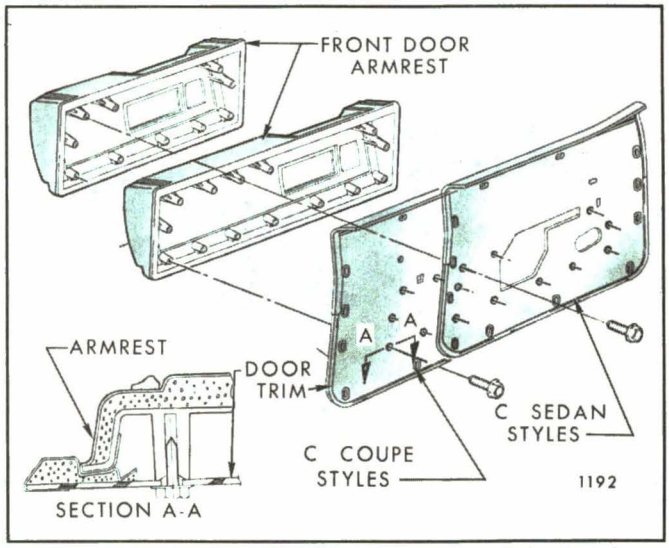


Fig. 5-13 - Preassembly of Door Armrest to Trim Panel Assembly - C Styles

CENTER PILLAR TRIM COVER - K STYLE

Removal and Installation

1. Using tool J-24595B, BT-7323 or equivalent, disengage upper trim cover retainer from center pillar and remove cover (view C, Fig. 5-36).
2. Disengage lower trim cover retainer from center pillar and remove cover (view A, Fig. 5-36).
3. To install, reverse removal procedure. Be sure center pillar telescoping tabs are installed into embossments on center pillar upper trim (Fig. 5-36).

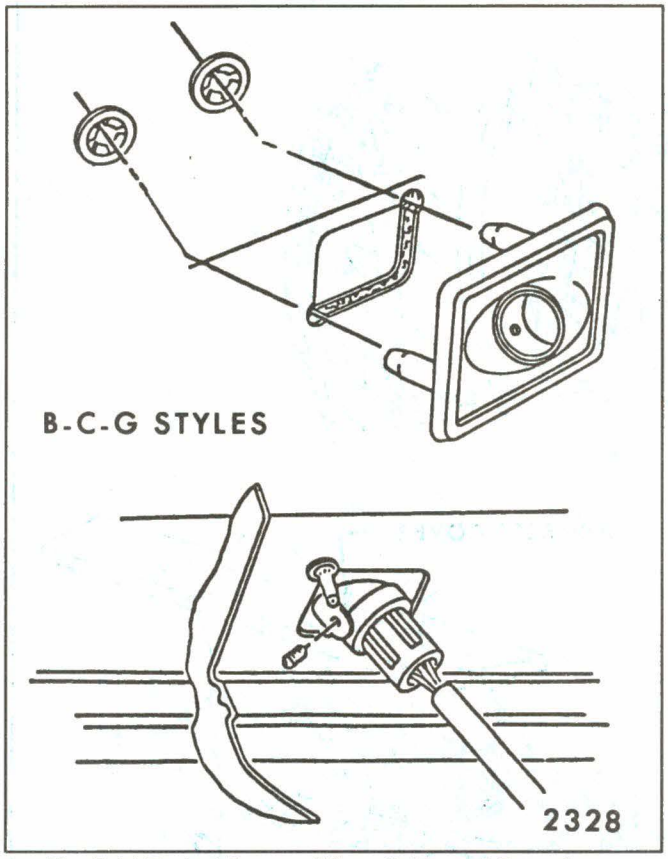


Fig. 5-14-Typical Remote Mirror Cable and Escutcheon Attachment

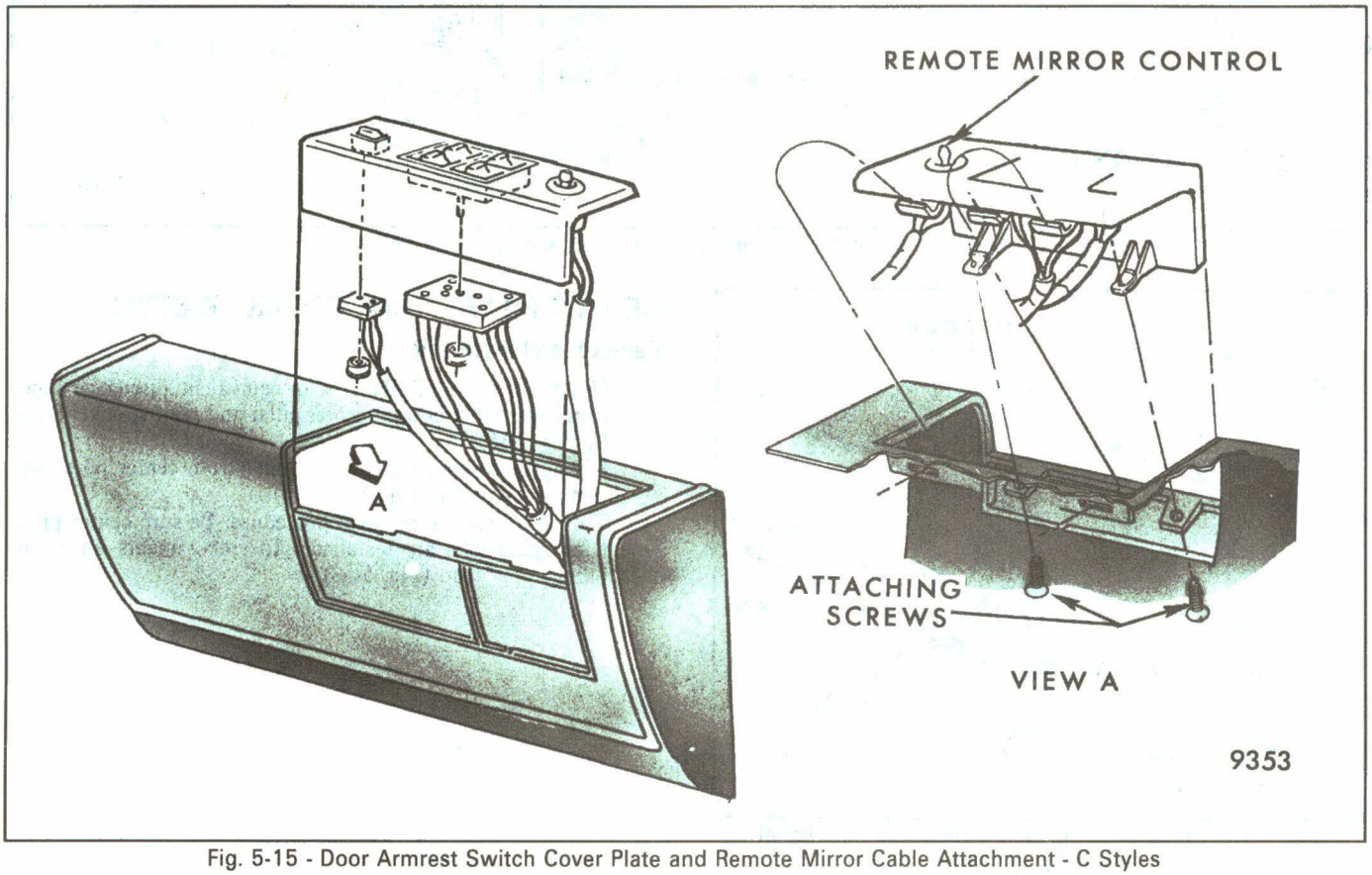


Fig. 5-15 - Door Armrest Switch Cover Plate and Remote Mirror Cable Attachment - C Styles

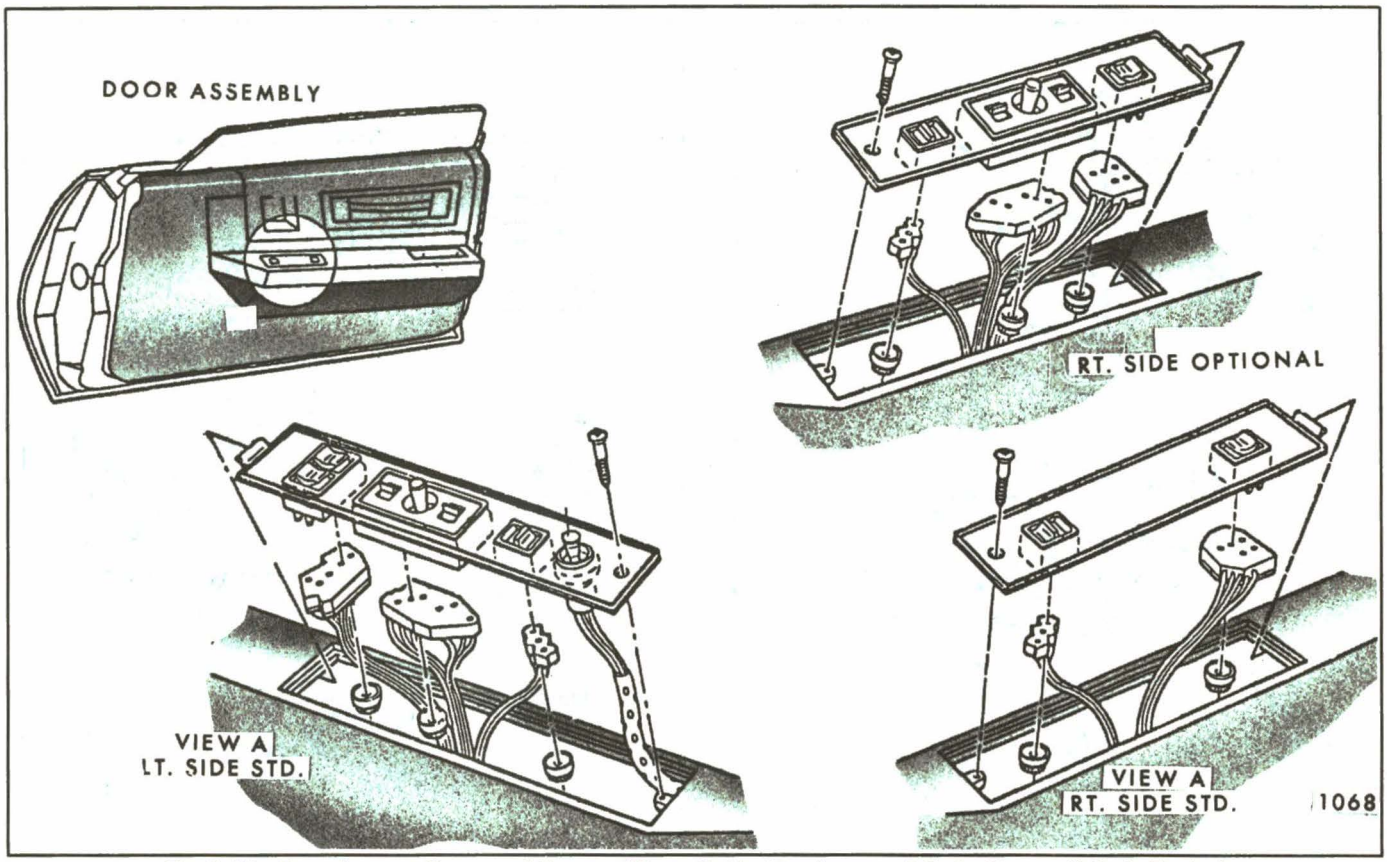


Fig. 5-16 - Door Armrest Cover and Remote Mirror Cable Attachment - E Style Shown, K Style Typical

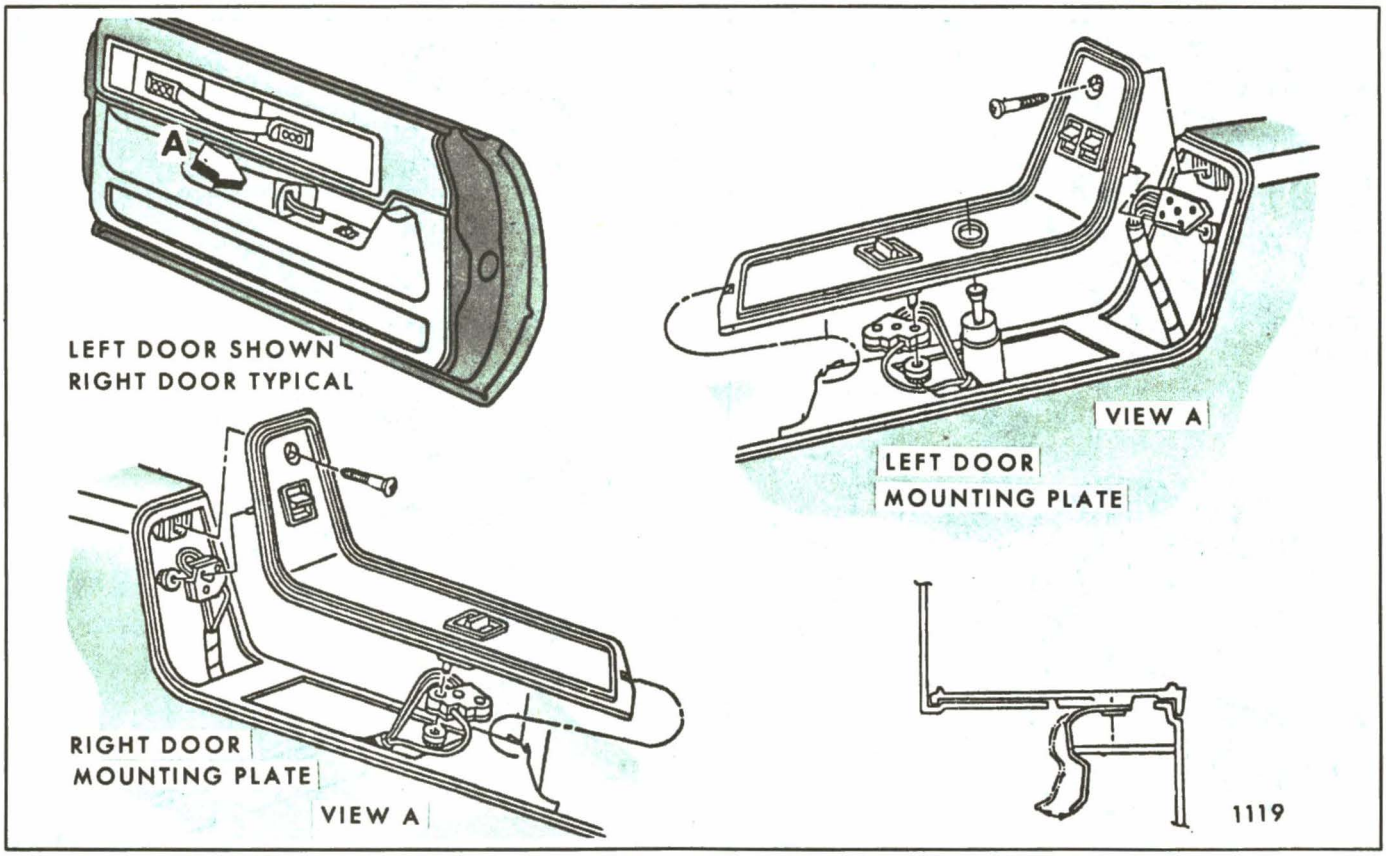


Fig. 5-17-Armrest Switch Cover Plate and Remote Mirror Cable Attachment - 2GJ37 Style Shown

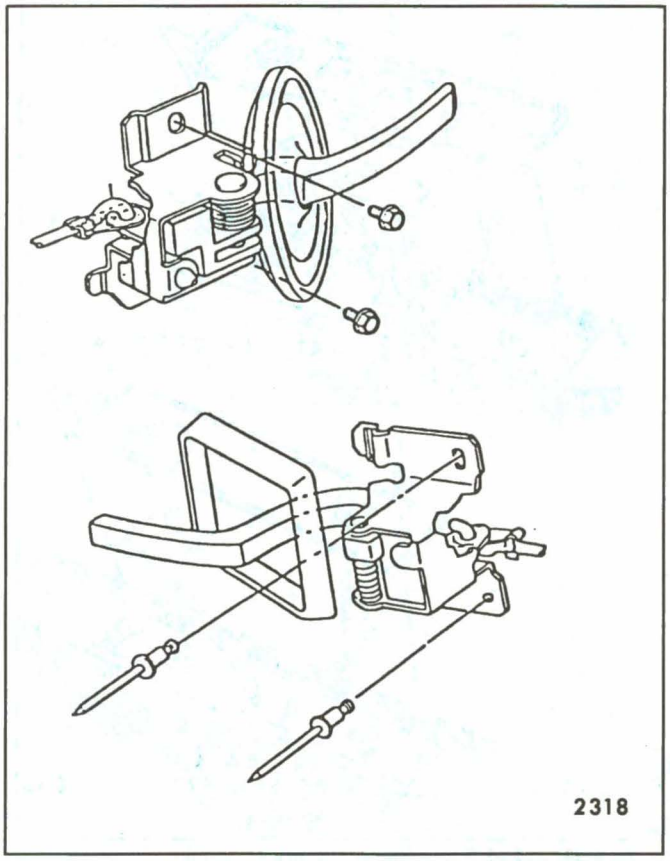


Fig. 5-18-Typical Door Lock Remote Control Handle Installations

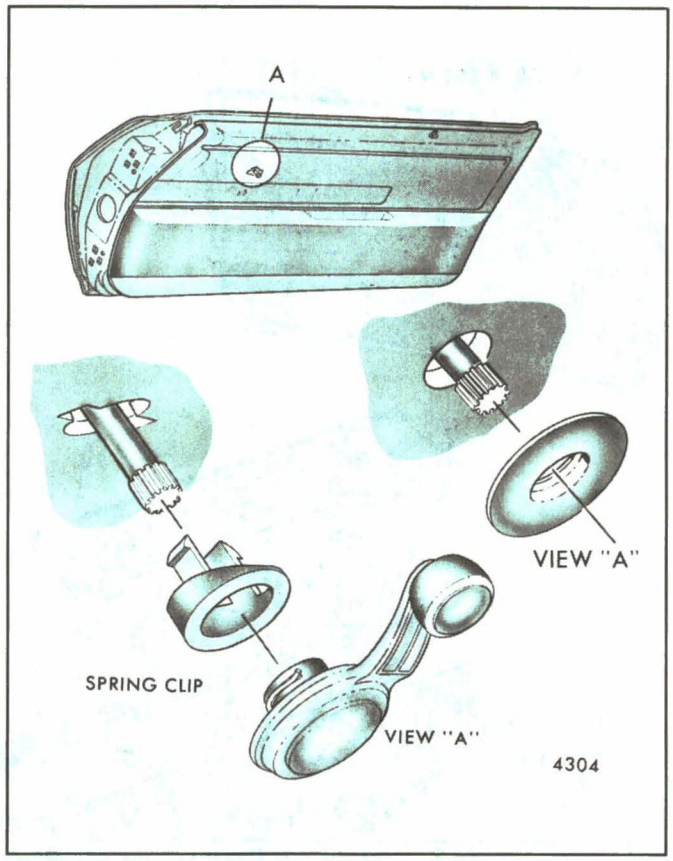


Fig. 5-19-Typical Window Regulator Handle Installation

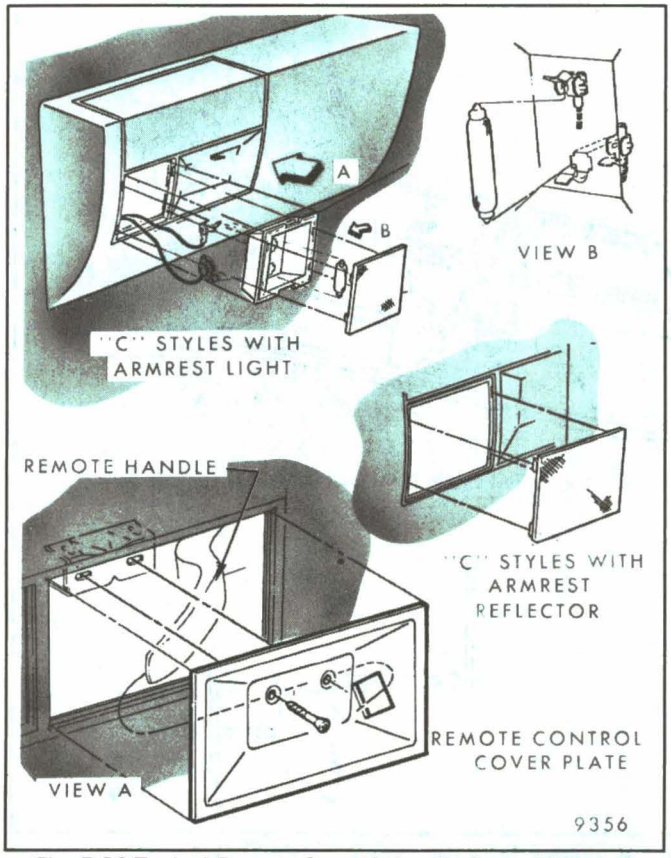


Fig. 5-20-Typical Remote Control Handle Cover Plate and Courtesy Lamp - C Styles

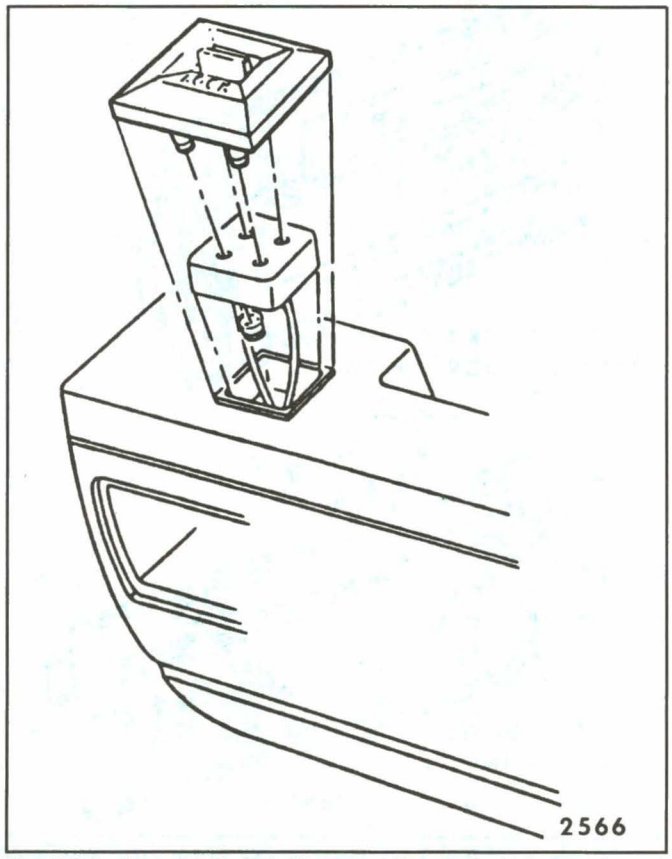


Fig. 5-21 - Armrest Switch Plate and Power Switch Attachment - B Styles

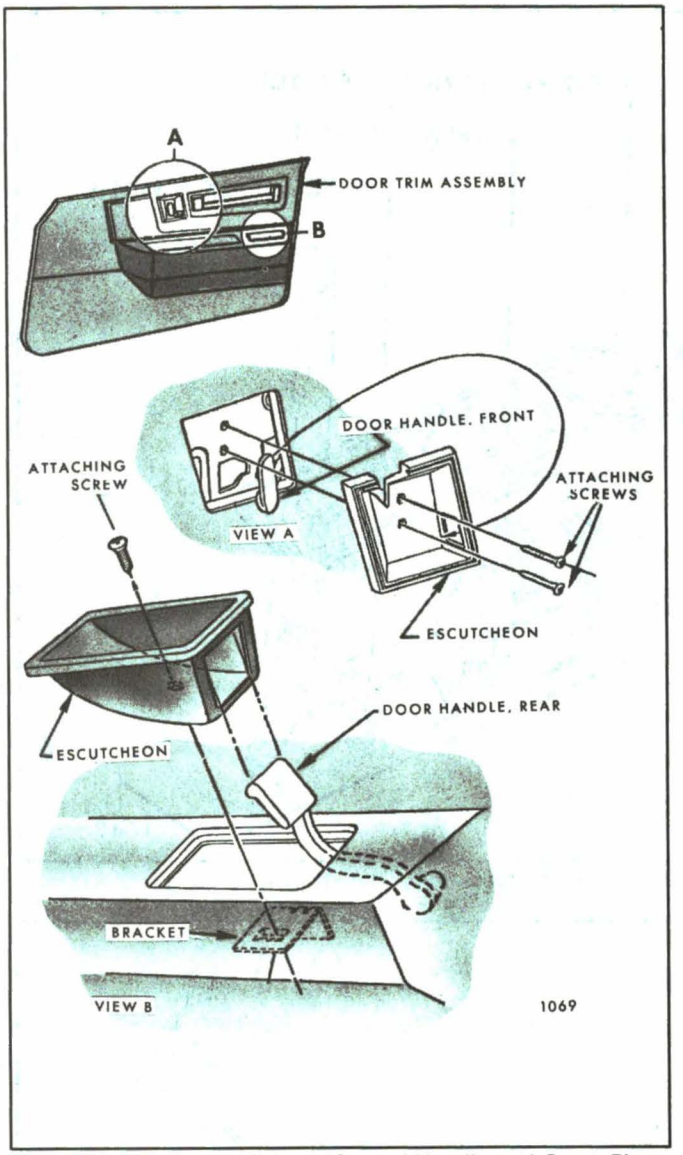


Fig. 5-22 - Door Lock Remote Control Handle and Cover Plate Installation - E Styles

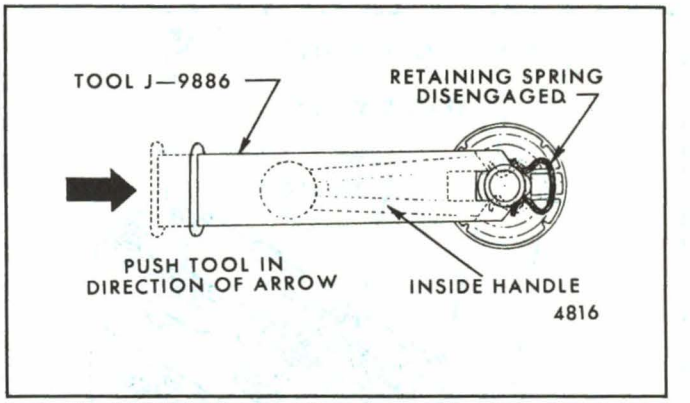


Fig. 5-23-Clip Retained Door Inside Handle Removal

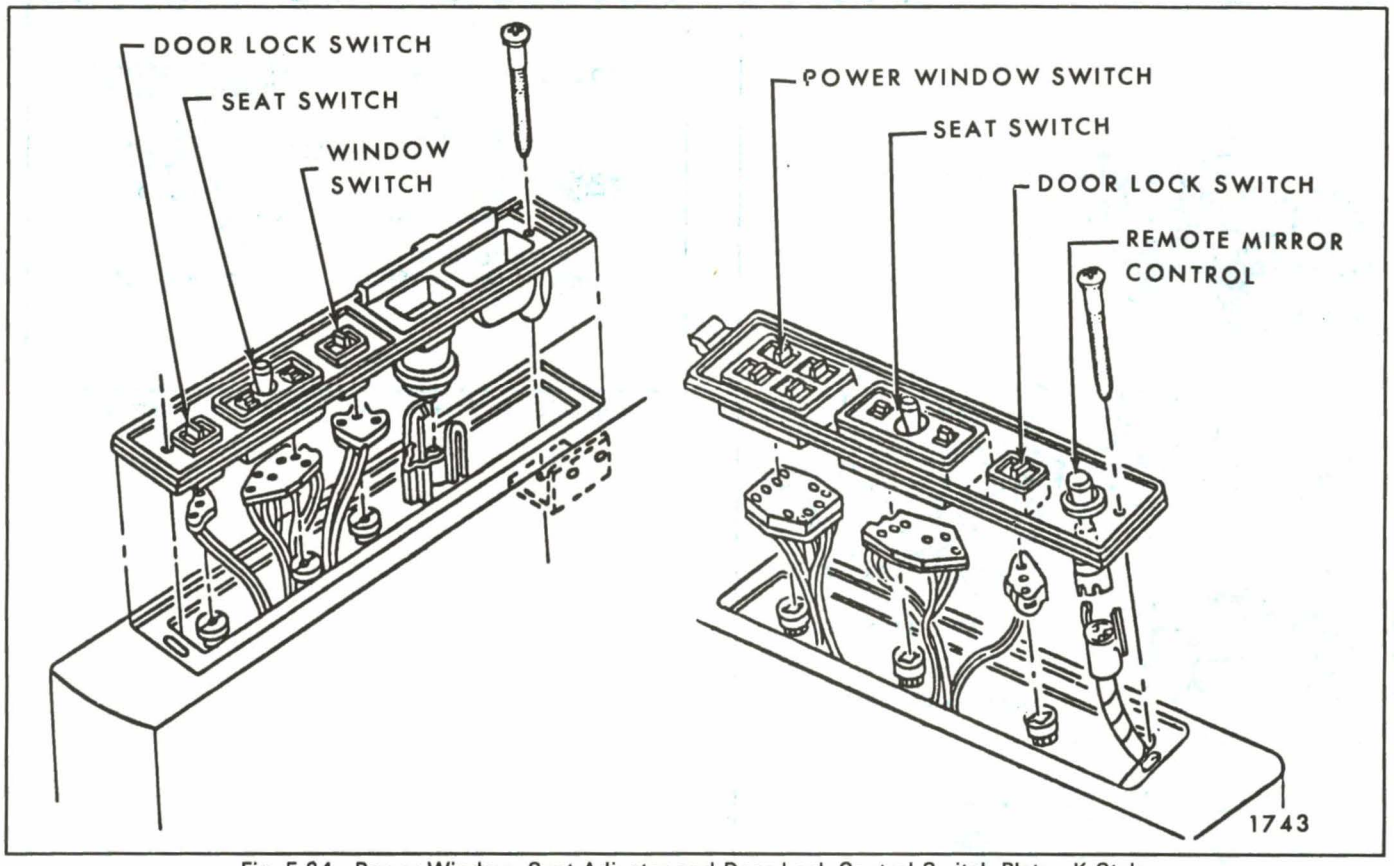


Fig. 5-24 - Power Window, Seat Adjuster and Door Lock Control Switch Plate - K Style

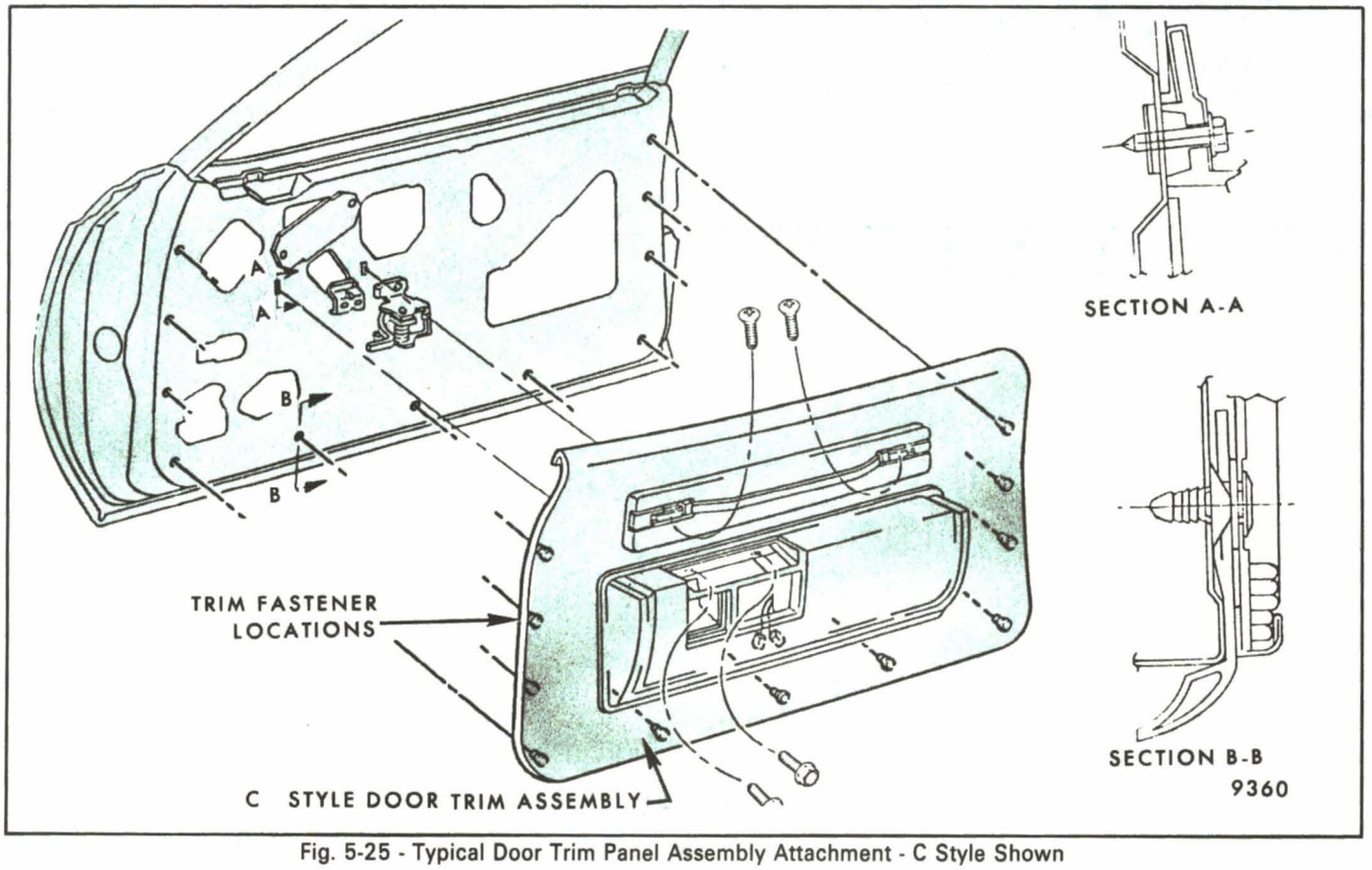


Fig. 5-25 - Typical Door Trim Panel Assembly Attachment - C Style Shown

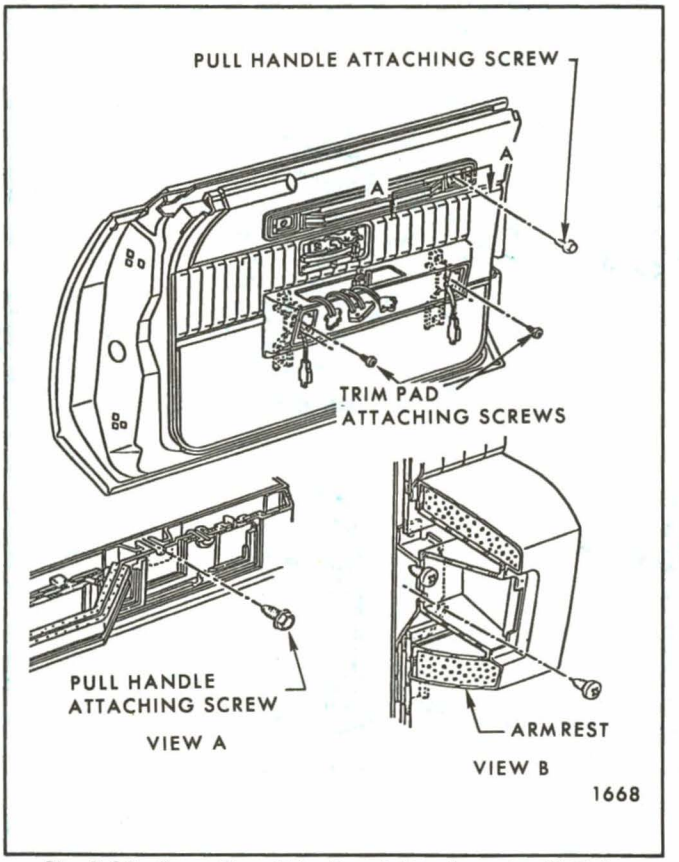


Fig. 5-26 - Front Door Trim Panel Attachments - K Style

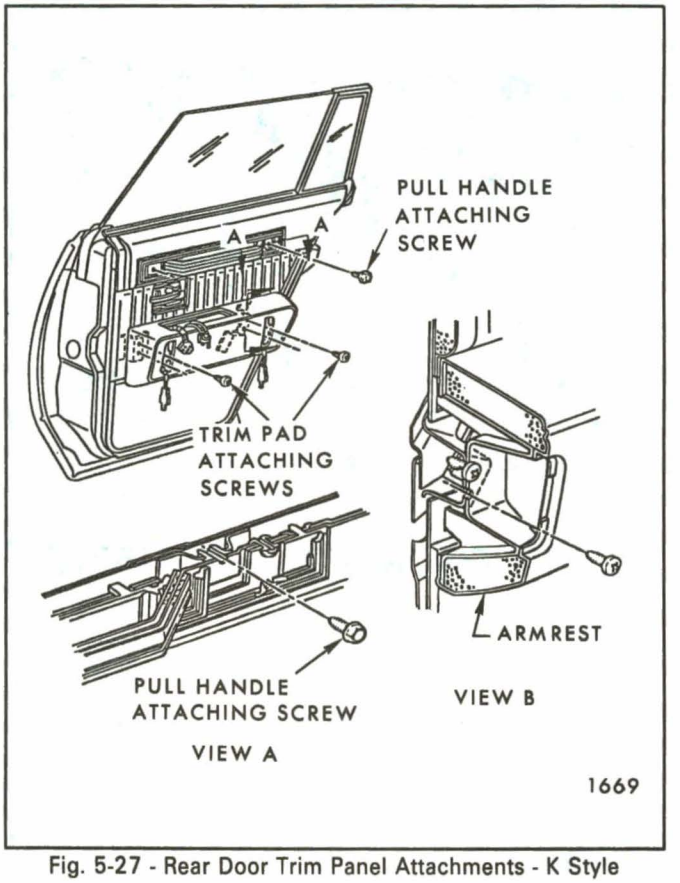


Fig. 5-27 - Rear Door Trim Panel Attachments - K Style

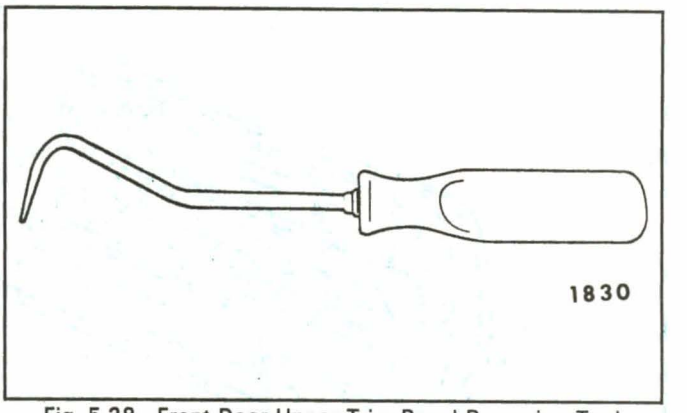


Fig. 5-28 - Front Door Upper Trim Panel Removing Tool

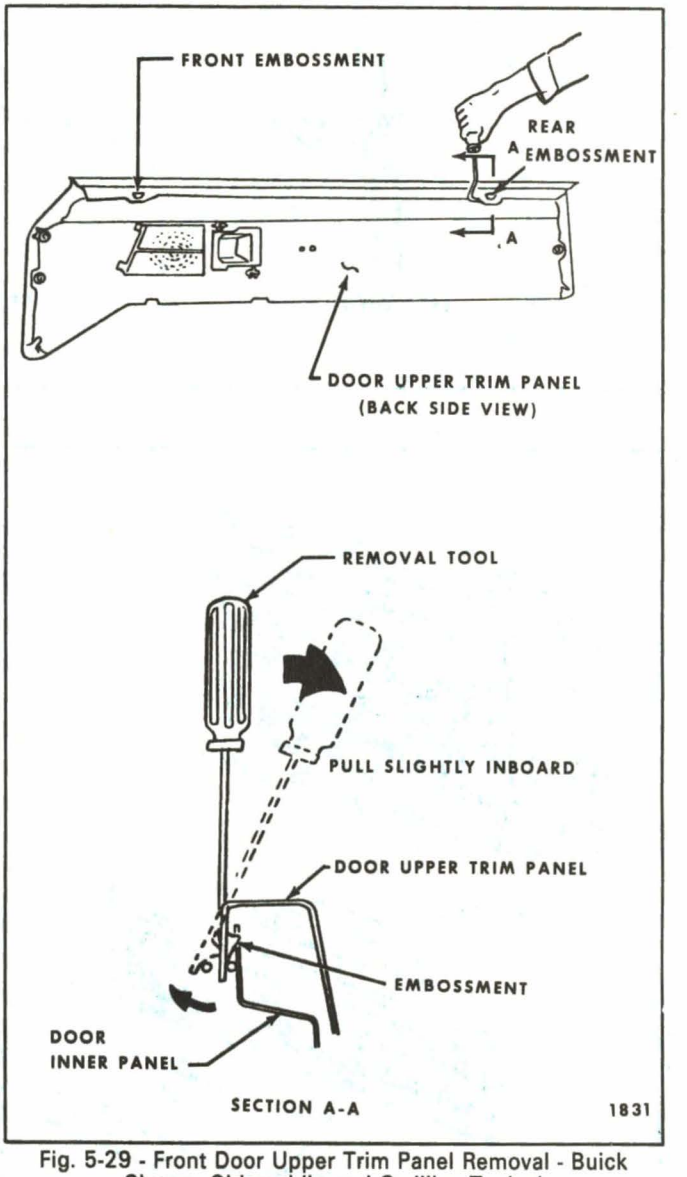


Fig. 5-29 - Front Door Upper Trim Panel Removal - Buick Shown, Oldsmobile and Cadillac Typical

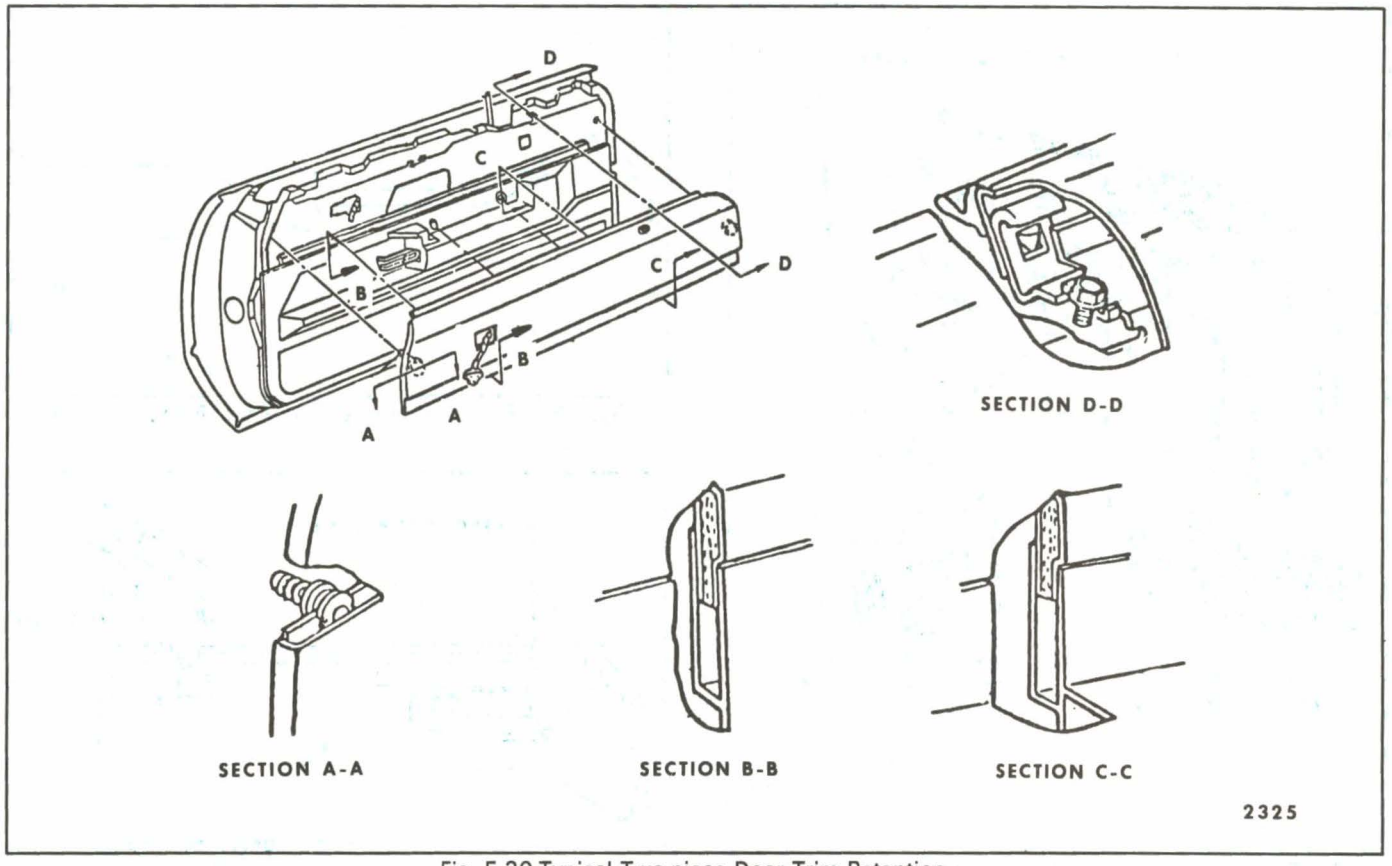


Fig. 5-30-Typical Two-piece Door Trim Retention

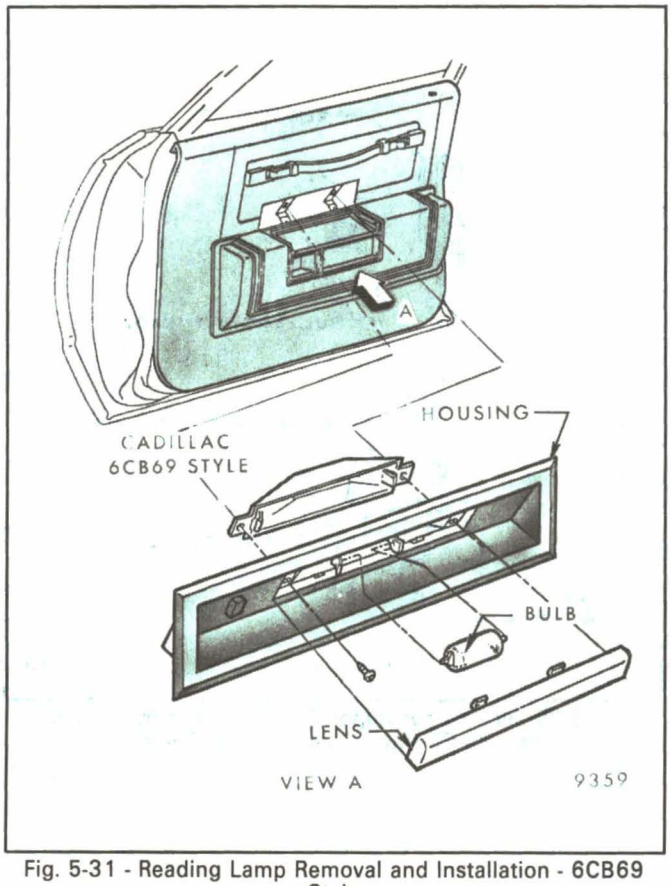


Fig. 5-31 - Reading Lamp Removal and Installation - 6CB69 Style

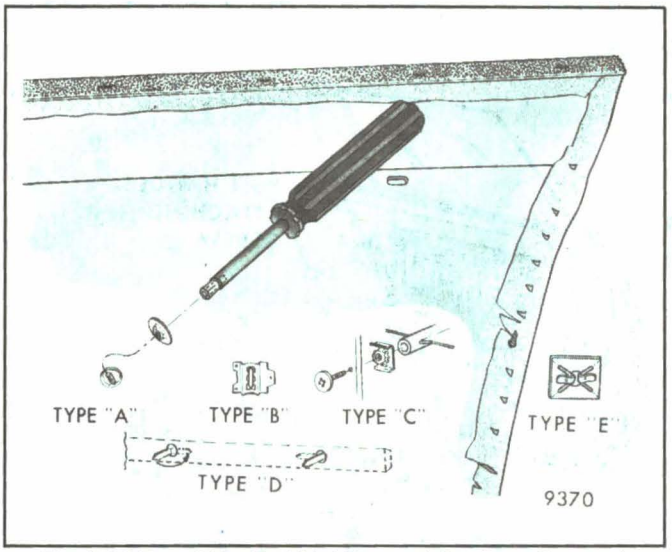


Fig. 5-32-Door Trim Pad Molding and Applique Removal

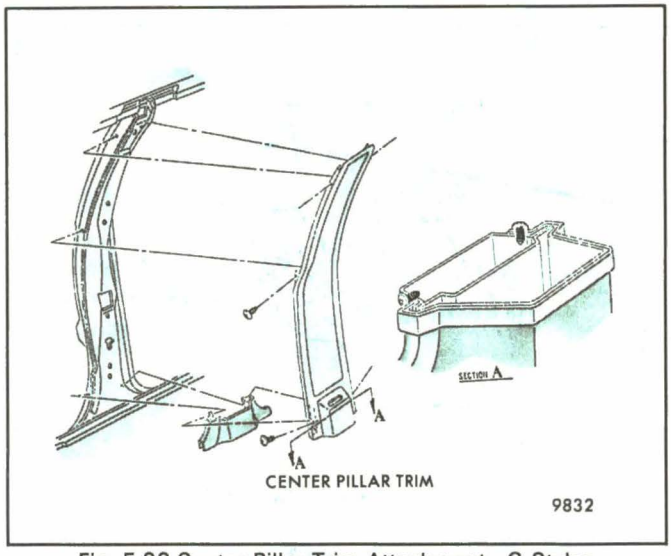


Fig. 5-33-Center Pillar Trim Attachment - G Styles

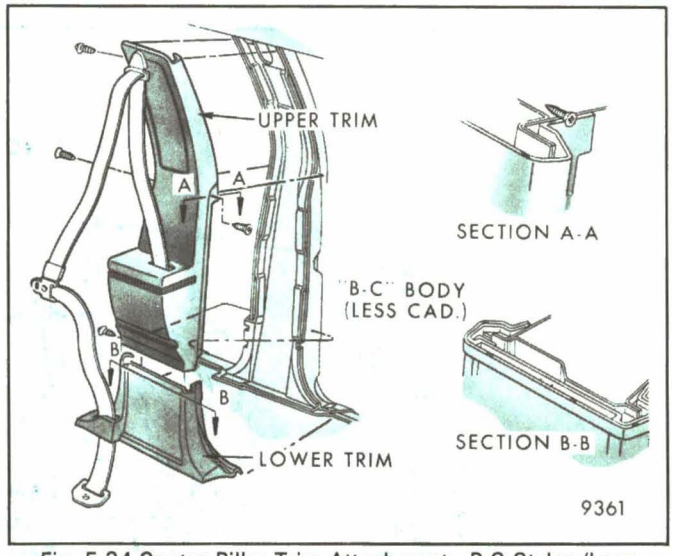


Fig. 5-34-Center Pillar Trim Attachment - B,C Styles (Less Cadillac)

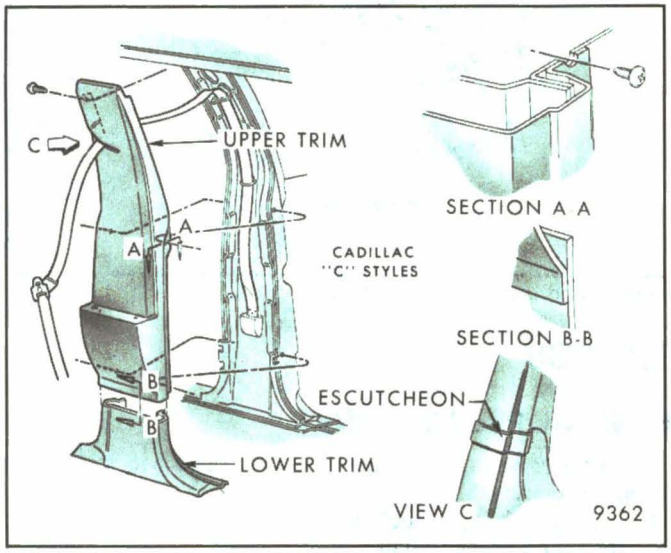


Fig. 5-35 - Center Pillar Trim Attachment - Cadillac C Styles

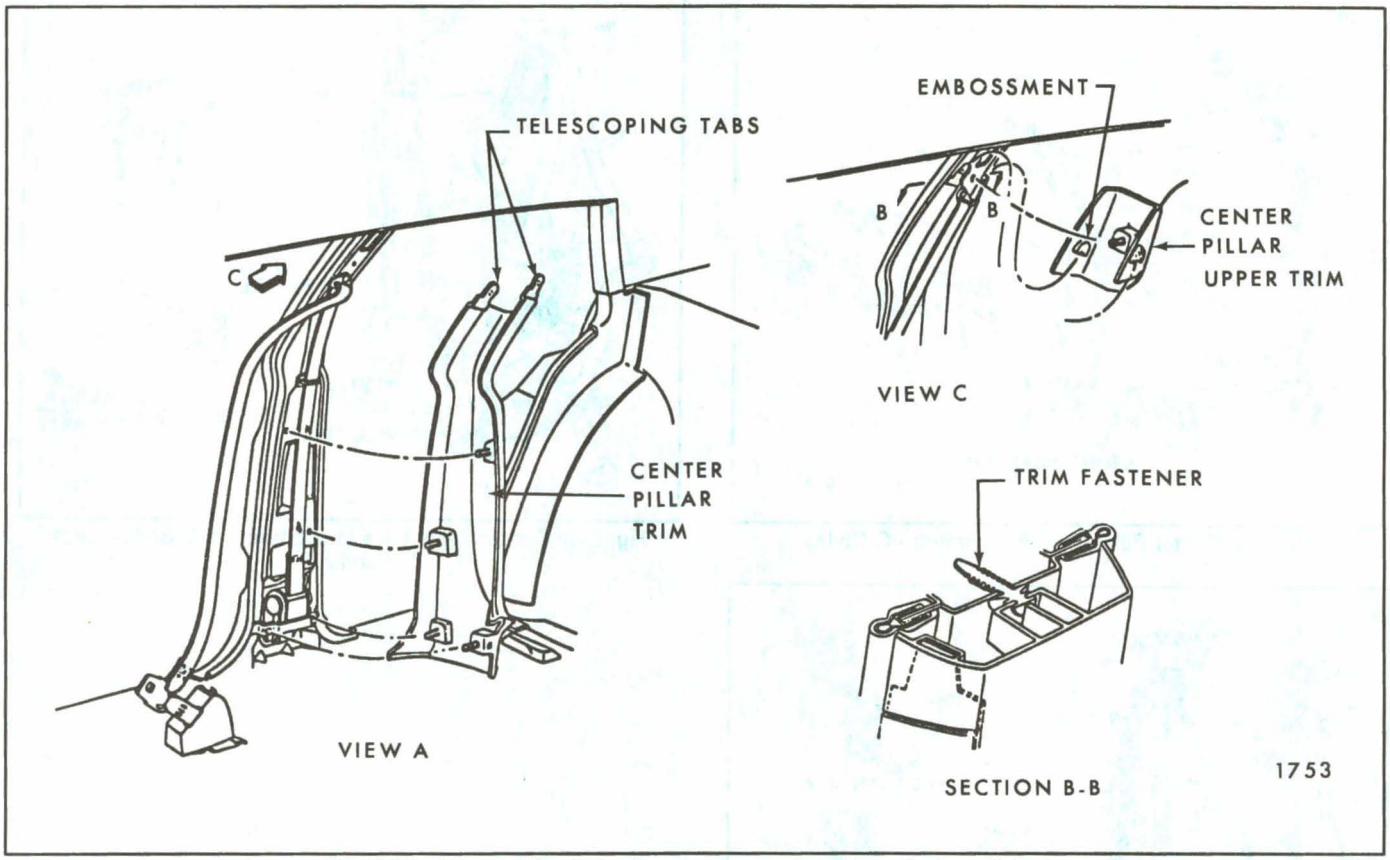


Fig. 5-36 - Center Pillar Trim Cover - Removal and Installation - K Style

EXTERIOR MOLDINGS

The door outside moldings are secured to the body by any one or a combination of attachments. Figure 5-39 illustrates the various door molding attachments for most styles. Figure 5-40 shows the installation of the front and rear door moldings on K style.

A. Weld stud retained plastic clip

B. Weld stud retained plastic or metal clip with screws and/or T-bolt clip and nut holding molding end(s) in hem flange

C. Adhesive bonded (either tape or urethane sealant)

D. Spring or clinch type (self-retained) - B and C styles

E. Attaching screw (with integral or separate belt molding)

Figure 5-37 shows all typical door outside moldings by number. Molding installation chart (Fig. 5-38) identifies molding description and specific attachment.

To use molding installation chart, use the following procedure.

1. Using typical outside molding drawing (Fig. 5-37), locate number of specific molding(s).
2. Locate molding number on chart (Fig. 5-38). Chart will then supply molding name, attachment(s) reference to Figure 5-39 and specific style (if difference in attachment exists).

GENERAL PRECAUTIONS

When removing or installing any door outside molding, care should be exercised.

1. Adjacent finishes should be protected with masking tape to prevent damage to finish.
2. Proper tools and care should be used 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 next 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, screw-type weld stud.

ADHESIVE BODY SIDE MOLDING

A complete procedure for attaching loose or removed adhesive attached moldings can be found in Section 1 of this manual.

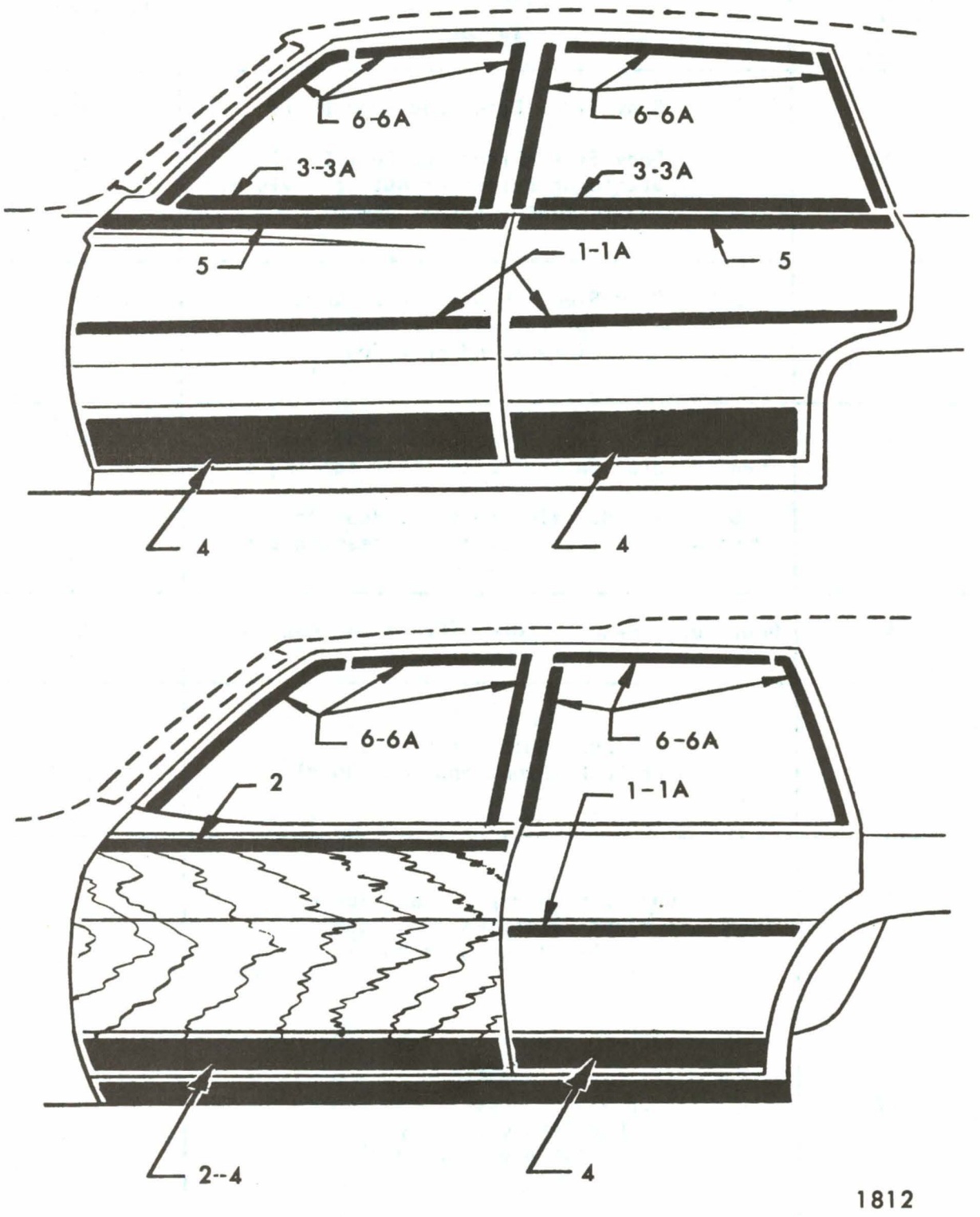


Fig. 5-37 - Typical Door Exterior Moldings

MOLDING REFERENCE NUMBER 5-37	MOLDING DESCRIPTION (USAGE)	ATTACHMENT REFERENCE 5-39
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
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 and C styles less 6CB69 (Front and Rear Door)	D
6A	Door Window Upper Frame Scalp Cadillac 6CB69 Style (Front and Rear Door)	D

2625

Fig. 5-38 - Door Molding Installation Chart

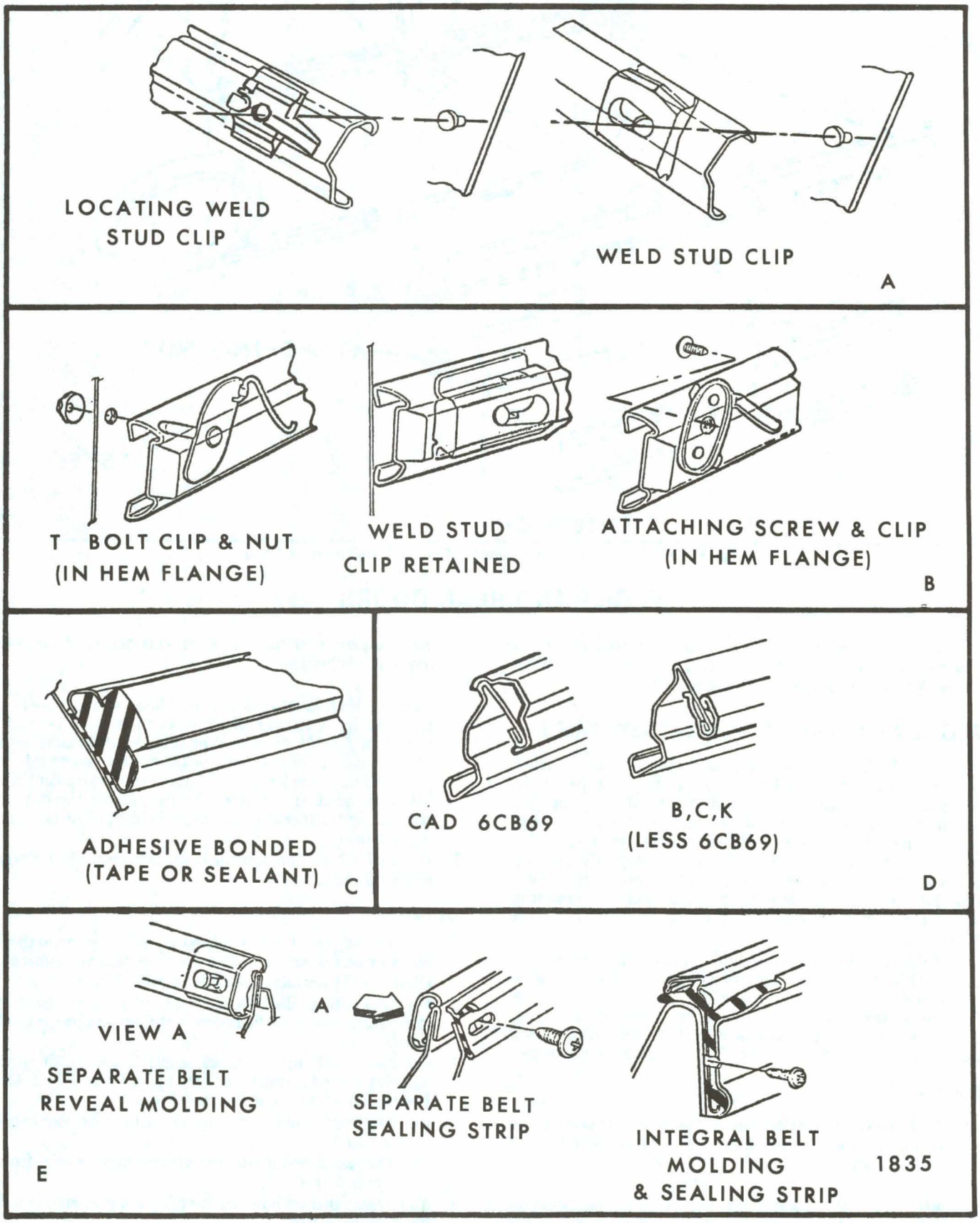


Fig. 5-39 - Door Molding Attachments

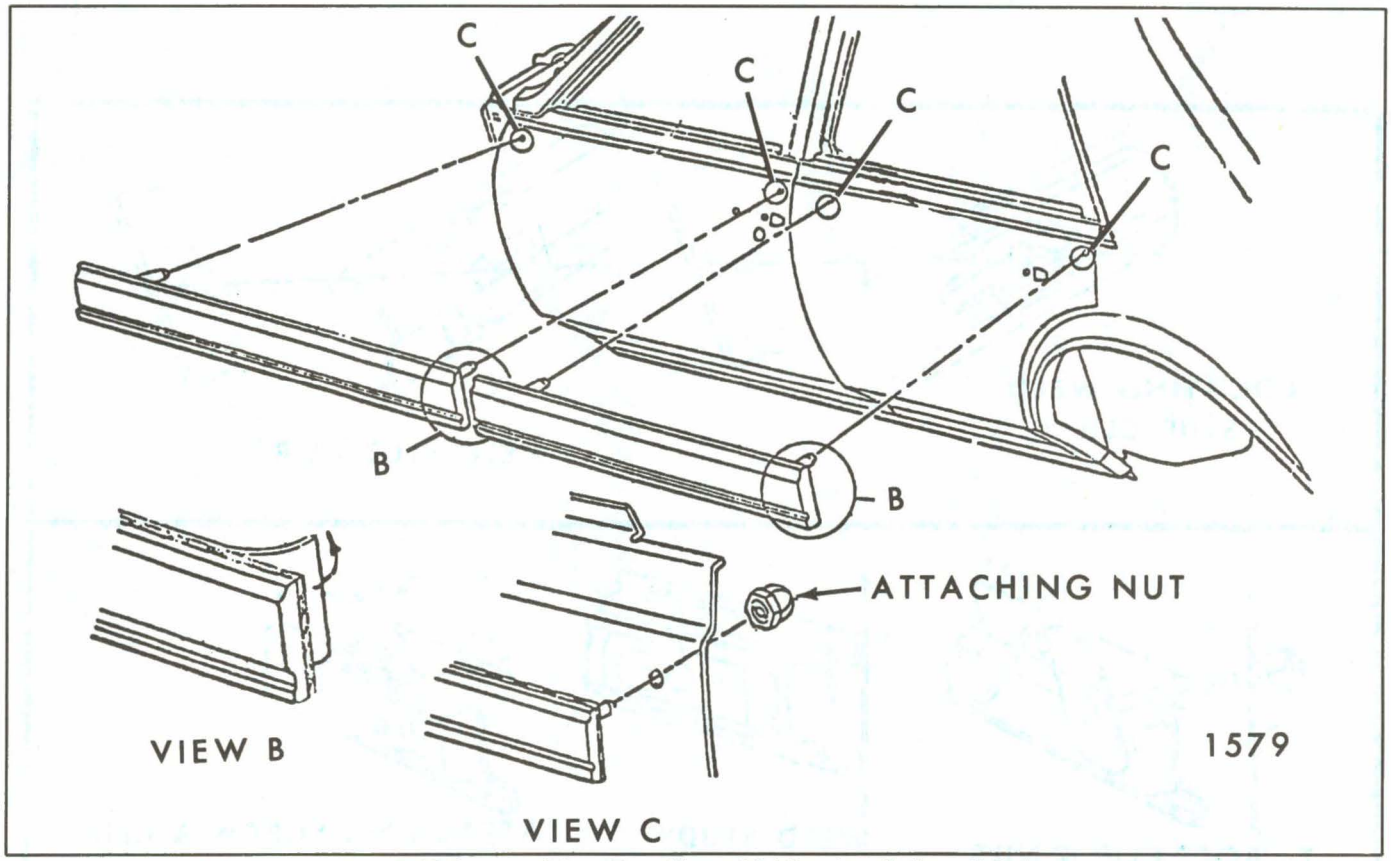


Fig. 5-40-Front and Rear Door Upper Molding Installation - K Style

FRONT AND REAR DOORS

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. 5-41). On closed styles, nylon fasteners are used below the beltline only. Weatherstrip adhesive retains the weatherstrip around the door upper frame (Fig. 5-42). 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. 5-41). 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 E and G coupe styles, remove door trim pad to gain access to weatherstrip fasteners hidden under trim assembly and remove fasteners.

   NOTICE: Due to weatherstrip bond, it is recommended an application of weatherstrip release agents such as 3M Improved Release Agent No. 08971, Kent Special Release Agent No. SR-A or equivalent be applied prior to step 2 to aid in breaking the adhesive bond. The following operation must be performed carefully to prevent damaging the side roof rail weatherstrip.

2. Use a flat-bladed tool to break cement bond between door and weatherstrip. A tool applicable to this usage can be made from tool J-21104 or equivalent (Fig. 5-44). Weatherstrip adhesive is used for a distance of 229 mm (9″) on door lock pillar and the entire length of the front door hinge pillar (Fig. 5-42). In addition, on closed styles, the weatherstrip is retained by weatherstrip adhesive completely around door upper frame.
3. 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 styles without door upper frames, position weatherstrip to door and install plastic fasteners at front and rear ends of weatherstrip.
4. On doors with upper frames, apply black weatherstrip adhesive around perimeter of door upper frame (Fig. 5-42). 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.
5. Tap nylon fasteners into door piercing using a hammer and blunt caulking tool.
6. After all fasteners have been installed on sedan styles, apply weatherstrip adhesive between door and weatherstrip outboard surface at the following locations:

a. 229 mm (9″) down door lock pillar starting at beltline and down entire hinge pillar facing.
b. On sedan rear doors, 229 mm (9″) down both door lock pillar and door hinge pillars starting at beltline.

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

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.

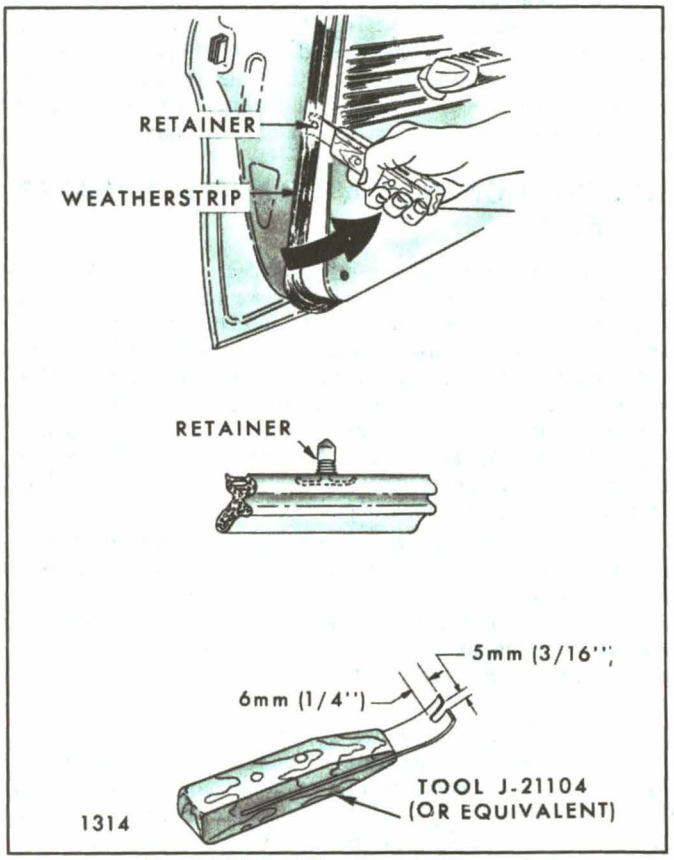


Fig. 5-41-Door Weatherstrip Removal

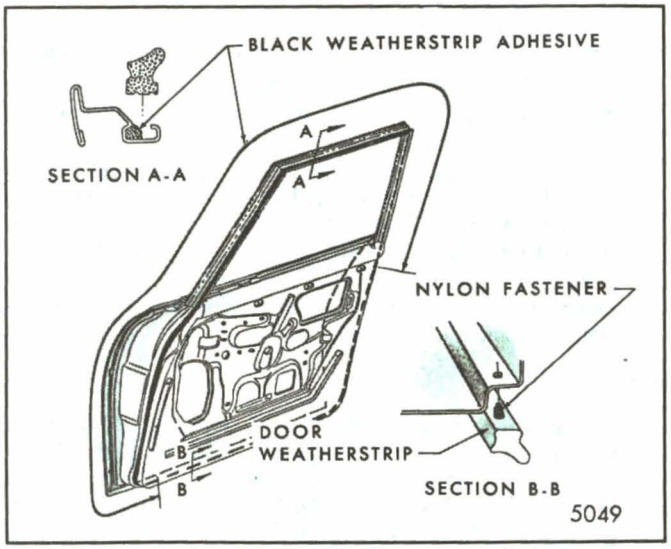


Fig. 5-42-Door Weatherstrip - Closed Styles

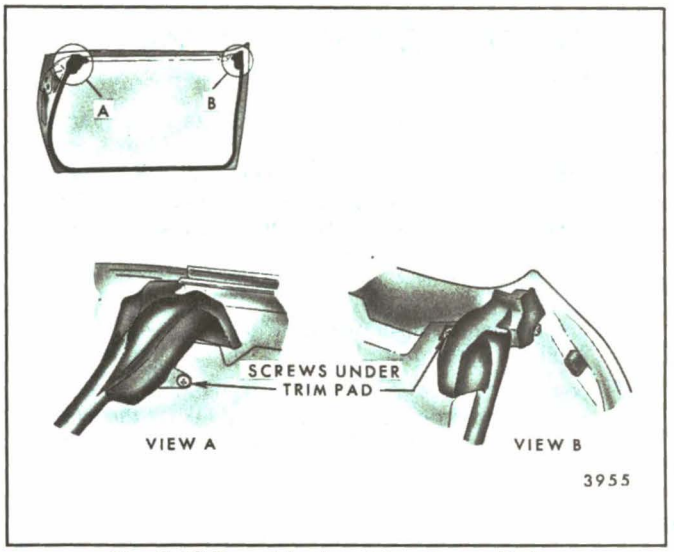


Fig. 5-43-Door Weatherstrip - Coupe Styles

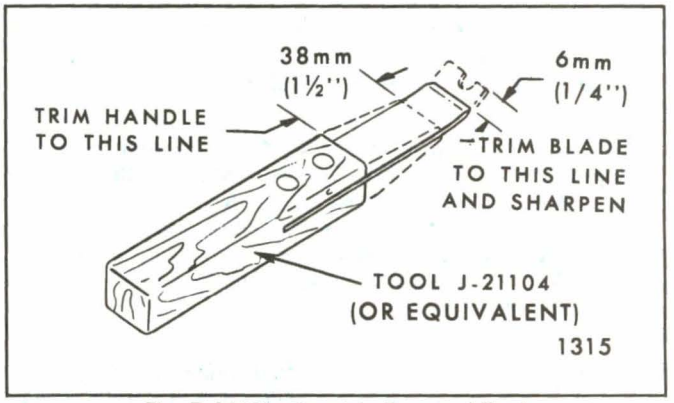


Fig. 5-44-Weatherstrip Removal Tool

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.

On styles which use 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.

Removal and Installation

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 down-travel supports to permit further lowering of window assembly. On G sedan rear doors, the stationary window (and vent window on G-35 and 69 styles) must be removed to gain access to the attaching screws. Then the strip assemblies can be removed by removing attaching screws. On styles with screw-retained strip assemblies, remove strip assembly by removing attaching screws.

SIDE ROOF RAIL WEATHERSTRIP AND RETAINER

The side roof rail weatherstrip is sealed to a weatherstrip retainer which is sealed to the body by a nitrile foam material 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 (Fig. 5-45).

Adjustment

For proper relationship of weatherstrip to door window, refer to Door Window Adjustments.

If inboard or outboard adjustment of the retainer is required, it can be accomplished by either elongating the holes in the retainer or repositioning the retainer and drilling new attaching holes in the rail or pillar assembly.

Removal

1. On E styles, remove quarter window as described in Section 6.
2. Remove plastic fasteners at front and rear of side roof rail weatherstrip (Fig. 5-45 is typical of all styles at front hinge pillar) with tool J-21104 or equivalent.

   NOTICE: Due to weatherstrip bond, it is recommended an application of weatherstrip release agent such as 3M Improved Release Agent No. 08971, Kent Special Release Agent No. SR-A or equivalent be applied prior to step 2 to aid in breaking adhesive bond. The following operation must be performed carefully to prevent damaging side roof rail weatherstrip.

3. 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 made from tool J-21104 or equivalent as shown in Figure 5-44.
4. 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 excess sealer from weatherstrip retainer.
2. Apply a continuous bead of a pumpable type body caulking compound 100 mm (4″) rearward and 100 mm (4″) down from front and rear upper corner of retainer that mates with side roof rail, and along full length of body lock pillar retainer. Apply bead outboard of attaching screw holes.
3. Position retainer to body and install attaching screws.
4. Apply a continuous bead of black weatherstrip adhesive (1, Fig. 5-45) to outboard flange and outboard surface of weatherstrip retainers (3, 4, Fig. 5-45). Then apply black weatherstrip adhesive to the front and rear end details of the side roof rail weatherstrip (view B and C of Fig. 5-45).
5. Position front end of weatherstrip to body and install plastic nail fasteners. Using a flat-bladed tool, engage weatherstrip with retainer, outboard lip first, then inboard lip (Section A, Fig. 5-45).

   Replacement plastic nail fasteners (6, Fig. 5-45) are available as a service part.
6. After weatherstrip has been installed along length of retainer, install plastic nail fastener at rear end of weatherstrip on styles so equipped.
7. On E styles, install quarter window and adjust as described in Section 6.

INSULATOR PAD

Insulator pads are installed between the door trim panel and inner panel water deflector. The purpose of the insulator pad is to absorb sound. The pad is attached to the door inner panel with plastic nail fasteners as shown in Figure 5-46.

INNER PANEL WATER DEFLECTOR

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 (Fig. 5-47). For service sealing, strip caulking is recommended if additional sealing material is required.

COMBINATION INSULATOR PAD AND WATER DEFLECTOR

A one-piece combination insulator pad and water deflector assembly is used on some styles. This assembly serves the same purpose as a two-piece or separate insulator pad and water deflector, that is to absorb sound and prevent water entry into the body. The combination insulator pad and water deflector assembly consists of a piece of plastic material bonded to a piece of foam. This assembly, like the two-piece installation, is secured and attached to the door inner panel by a string-loaded sealer, plastic nail fasteners and waterproof tape applied over tabs that fit into retaining holes in door inner panel.

When access to the inner panel is required to perform service operations, the deflector or combination insulator pad and water deflector assembly may be completely or partially detached from the inner panel. If the existing water deflector or combination assembly is damaged so that it will not properly seal the door, replacement is required. In such cases, roll stock is available as a service part.

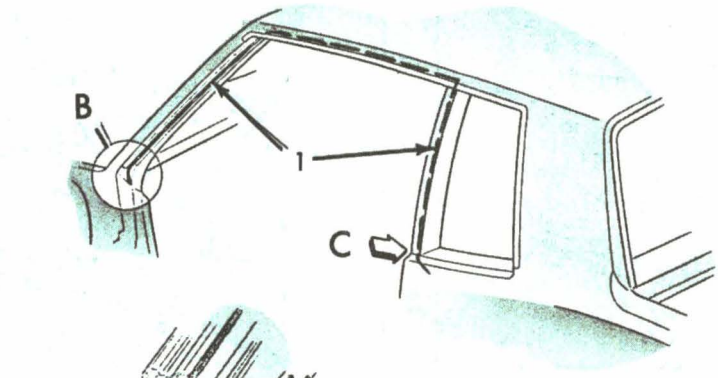
The following procedure covers complete removal and installation of the water deflector which is similar to removal and installation of the combination assembly. If only partial removal is required, perform only those steps which are necessary to expose the required area of the door inner panel.

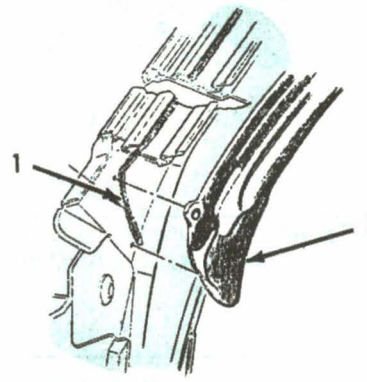
Removal (Figs. 5-47 and 5-48)

1. Remove the door trim assembly and door insulator pad if present. To remove plastic nails without damage to pads or nails, use tool J-21104 or equivalent.
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.

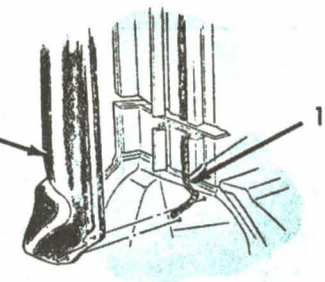
Installation

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. Firmly roll or press edges of deflector to obtain a good bond between deflector and door inner panel.

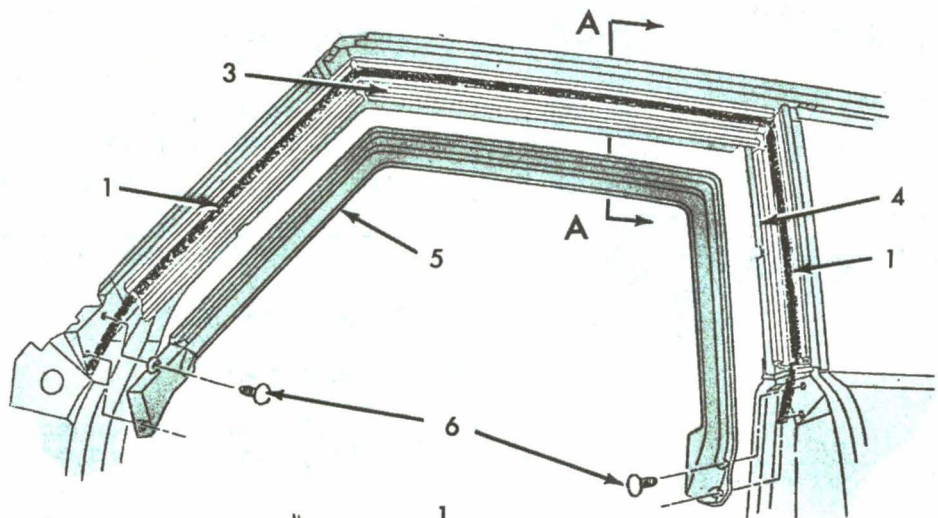


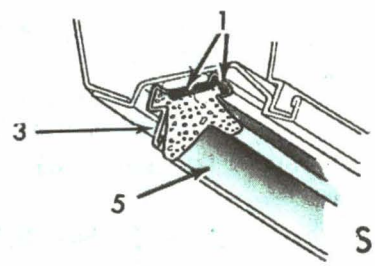


VIEW B



VIEW C





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SECTION A

1. Weatherstrip Adhesive
2. End Details of Weatherstrip
3. Side Roof Rail Weatherstrip Retainer
4. Body Lock Pillar Weatherstrip Retainer
5. Weatherstrip
6. Plastic Nail Fasteners

Fig. 5-45-Side Roof Rail Weatherstrip and Retainer - G-37 Style Shown, Other Styles Similar

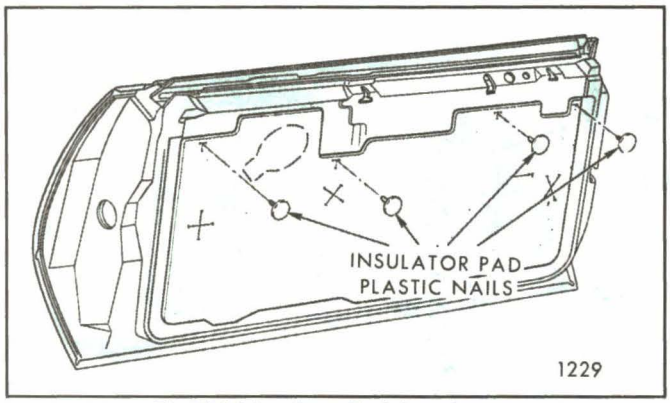


Fig. 5-46-Insulator Pad Attachment

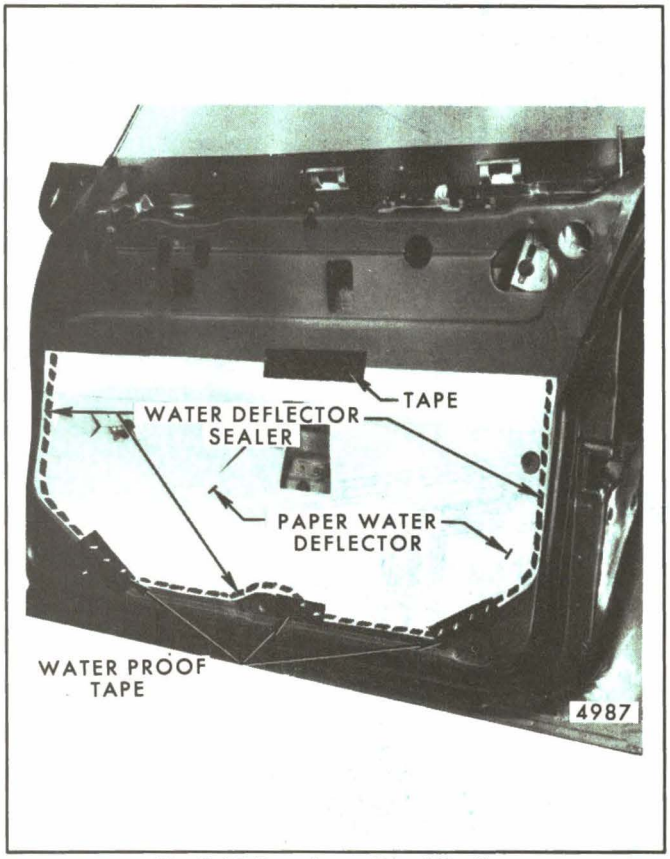


Fig. 5-47-Door Inner Panel Sealing

If old sealer does not provide 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.

Removal and Installation

To disengage a spring clip, use a scratch awl, pick or other thin-bladed tool, to slide clip out of engagement as shown in Figure 5-49 and disengage connecting rod. To install, press clip fully on lever, then press rod through hole in lever until fully engaged by clip.

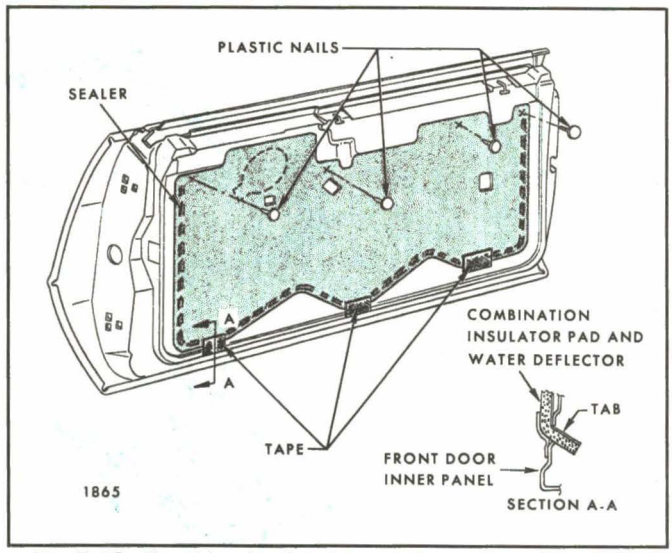


Fig. 5-48 - Combination Insulator Pad and Water Deflector Assembly

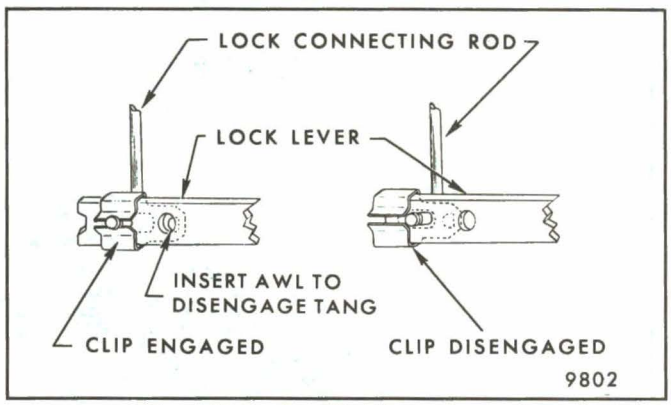


Fig. 5-49-Spring Clip Disengagement

INSIDE LOCKING ROD

Removal and Installation

1. Remove all door trim. Peel inner panel water deflector back enough to gain access to spring clip at door lock locking lever or bell crank.
2. Disengage spring clip securing locking rod to door lock locking lever.
3. Lift locking rod out through beltline of door. On E styles, remove rod through access hole in door inner panel.
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 4.7 mm (3/16″) drill bit. Attach bell crank with 3/16″ dia. x 5/16″ length steel rivet (USM part no. SD62BS or equivalent).

INSIDE REMOTE HANDLE

All inside remote handles are the pull-in type except the rear remote handle (right side only) on the Cadillac E style which is a pull-up (spindle) type (10, Fig. 5-50). 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 to full-up position, remove door trim panel (on G styles, remove upper and lower portion of door trim assembly) and detach insulator pad (if so equipped) and inner panel water deflector or combination assembly.
2. If handle is rivet attached, drive out rivet center pin with punch and drill out rivet with 4.7 mm (3/16″) diameter drill bit. If screw attached, remove screws.
3. Disengage lock connecting rod and remove remote handle.
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 rivets, 3/16″ dia. x 5/16″ length (USM part no. SD62BS or equivalent) to secure handle.

OUTSIDE HANDLES

There are two basic types of door outside handles, push-button and lift-bar (Figs. 5-51 and 5-52). The removal and installation procedure is similar for both types.

Removal and Installation

1. Raise door window to full-up position. Remove door trim assembly and detach upper rear corner of inner panel water deflector enough to gain access to outside handle attaching nuts.
   a. On styles with optional illuminated lock cylinder, disconnect wire harness prior to removal of the handle (Fig. 5-53).
   b. On all other styles, remove handle attaching nuts (or screws) through access hole and remove door handle and gaskets from outside of body.
2. To install, reverse removal procedure.

Disassembly and Assembly - Push-Button Type Handles

1. Remove door outside handle.
2. Depress retainer slightly and rotate 1/4 turn in either direction. Remove retainer, spring, push-button and shaft and sealing washer from handle (Fig. 5-54).
3. To assemble, reverse disassembly procedure.

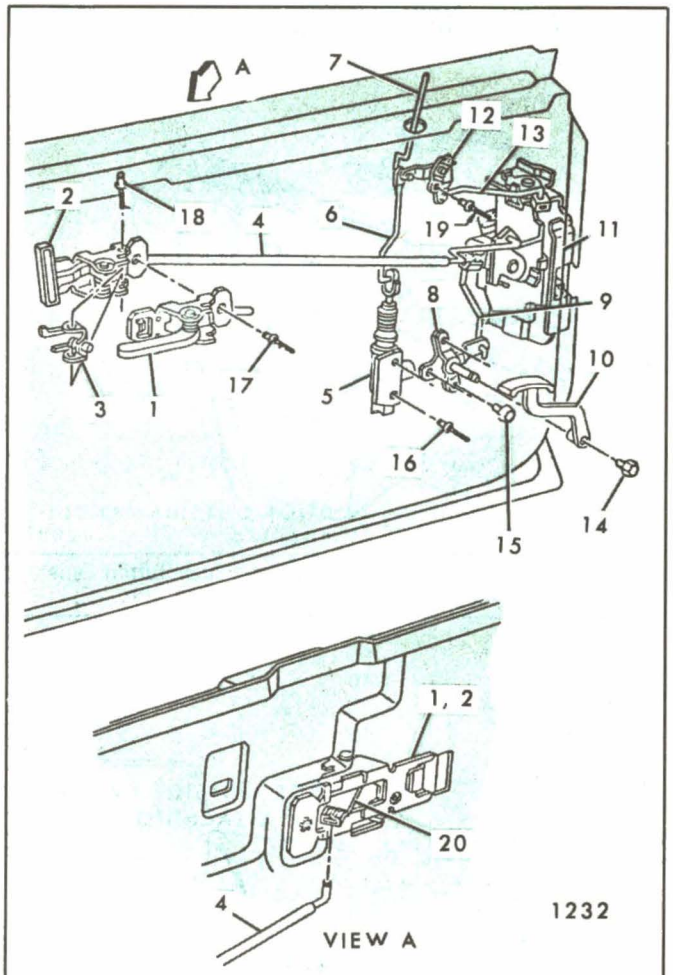
LOCK CYLINDER

Removal and Installation

1. Remove all door trim. Raise door window to full-up position and detach insulator pad and inner panel water deflector or combination assembly. On styles equipped with anti-theft system disconnect wire at door guard beam (Fig. 5-57). On E and G styles, disengage lock cylinder to lock connecting rod (3, Fig. 5-67) by disconnecting spring clip.
2. With a screwdriver or other comparable tool, slide lock cylinder retaining clip (on inboard side of door outer panel) forward till out of engagement. Remove lock cylinder from door (Fig. 5-55). On styles with illuminated lock cylinders, disconnect fiber optic at cylinder.
3. To install, reverse removal procedure.
4. Lubricate cylinder with 3M 4-way (Part No. 8902) WD-40 or equivalent spray lubricant.

Disassembly and Assembly

1. Remove lock cylinder from door.



1. Inside Handle (Buick and Oldsmobile)
2. Inside Handle (Cadillac)
3. Switch Assembly (Cadillac Option)
4. Inside Handle to Lock Connecting Rod
5. Power Actuator Assembly
6. Bell Crank to Power Actuator Connecting Rod
7. Inside Locking Rod
8. Control Assembly - Rear Inside Handle (Cadillac Right Door)
9. Control Assembly to Lock Connecting Rod (Cadillac Right Door)
10. Rear Inside Handle (Cadillac Right Door)
11. Lock Assembly
12. Bell Crank
13. Bell Crank to Lock Connecting Rod
14. Right Rear Handle Attaching Screw (Cadillac)
15. Control Assembly Attaching Screw (Cadillac)
16. Power Actuator Attaching Rivet
17. Inside Handle Attaching Rivet
18. Switch Assembly Attaching Rivet (Cadillac Option)
19. Bell Crank Attaching Rivet
20. Spring Clip

Fig. 5-50-Door Interior Locking Hardware

2. With a pointed tool, disengage pawl retaining clip and remove pawl (Fig. 5-56).

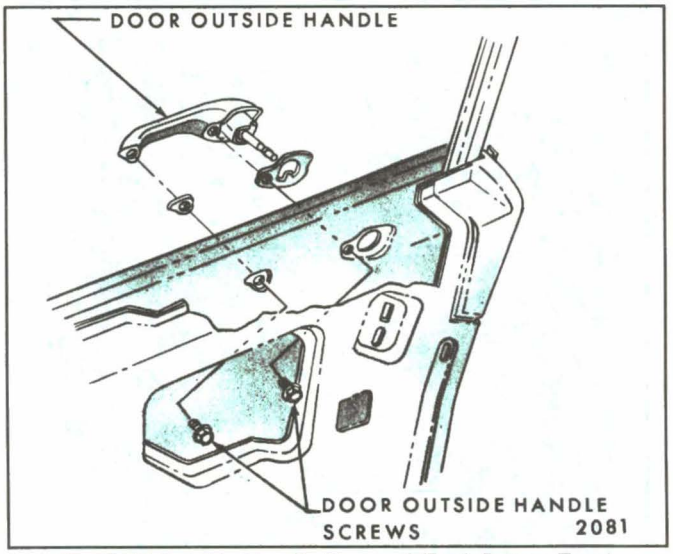


Fig. 5-51-Outside Handle Removal (Push-Button Type)

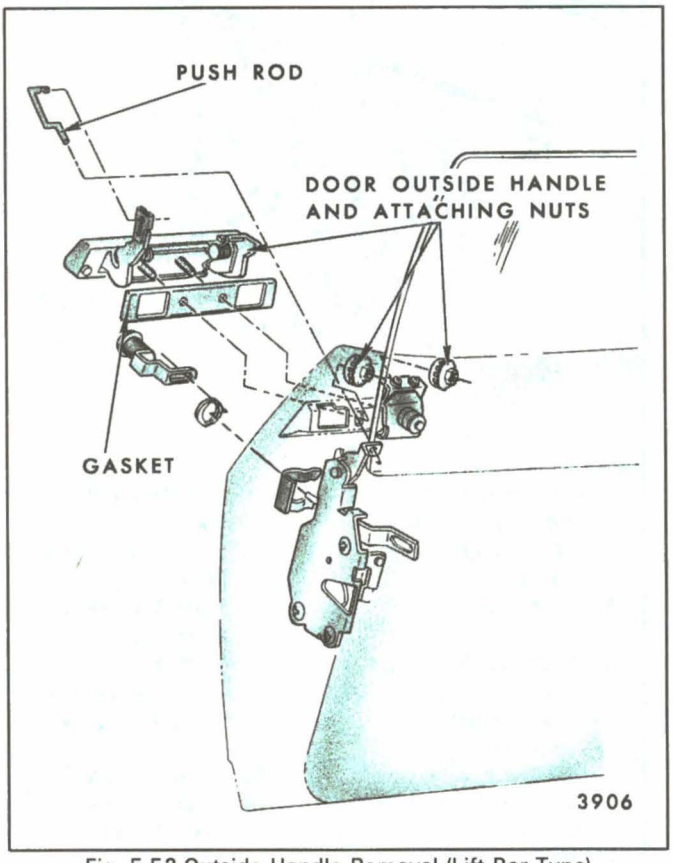


Fig. 5-52-Outside Handle Removal (Lift Bar Type)

3. With a flat-bladed tool, straighten out crimped-over edges of lock cylinder housing scalp and remove scalp and lock cylinder from housing. The lock cylinder housing scalp is usually damaged in removal procedure and, therefore, must be replaced. Replacement scalps are available as service parts. Refer to Section 1 of this manual for lock cylinder coding.
4. To assemble, reverse disassembly procedure.

DOOR LOCK SYSTEM PERFORMANCE

Some front door lock systems have been redesigned to prevent unlocking of the door using a flat tool. In the past, entry could be gained on all styles except E by inserting a flat tool into the door assembly and tripping the lock cylinder pawl and/or lock lever.

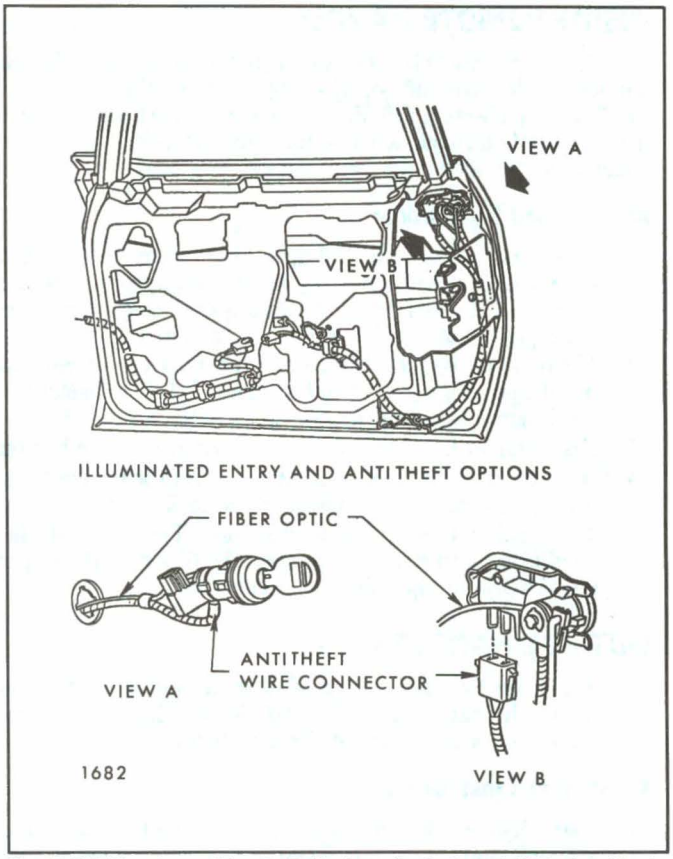


Fig. 5-53-Illuminated Lock Cylinder - B, C, E and K Styles (Push-Button Handle Shown)

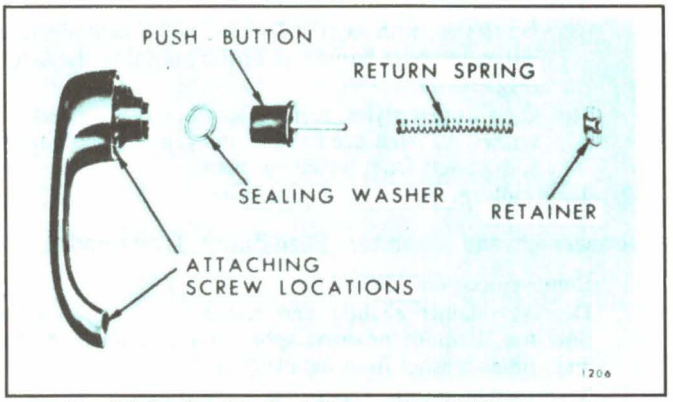


Fig. 5-54 - Outside Push-Button Handle Disassembly

The redesigned system requires close tolerances on connecting, lock and push rods in addition to specific rods for each different application.

In order to properly evaluate the lock system after a replacement part such as a rod, lock cylinder pawl or bell crank has been installed, the following operational checks should be made.

Evaluation

1. Insert key into cylinder. While holding the key in the neutral (pull-out) position, actuate the inside locking button to the fully locked position and back to the fully unlocked position. There must be no forced movement of the key out of neutral position during the entire cycle. (The key must be able to be removed when the inside locking button is held in both fully locked and unlocked positions.)
2. Turn key to fully locked position and return it to the neutral (pull-out) position. Actuate either the outside or inside handle to ensure that the door will not open.

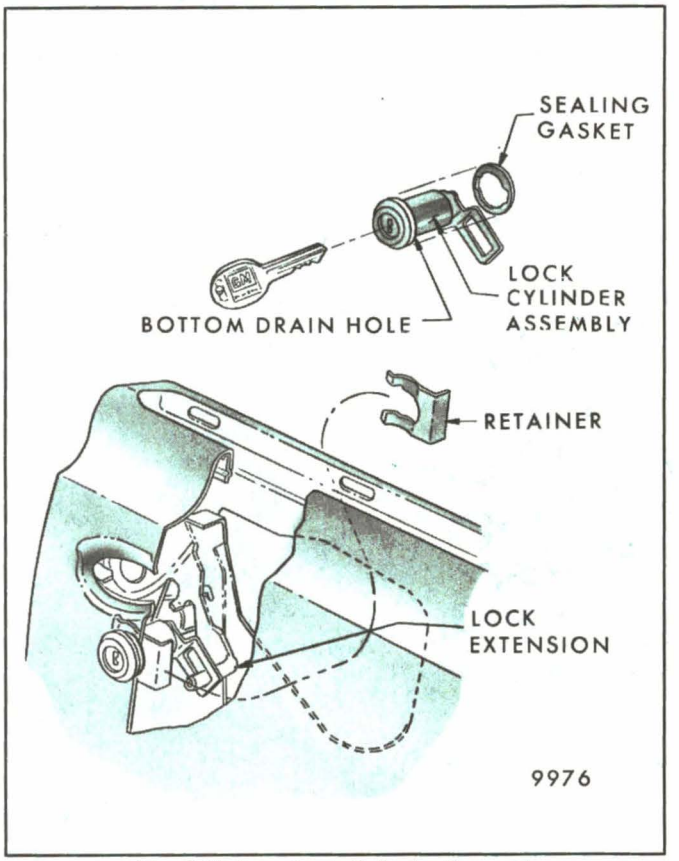


Fig. 5-55-Door Lock Cylinder Removal

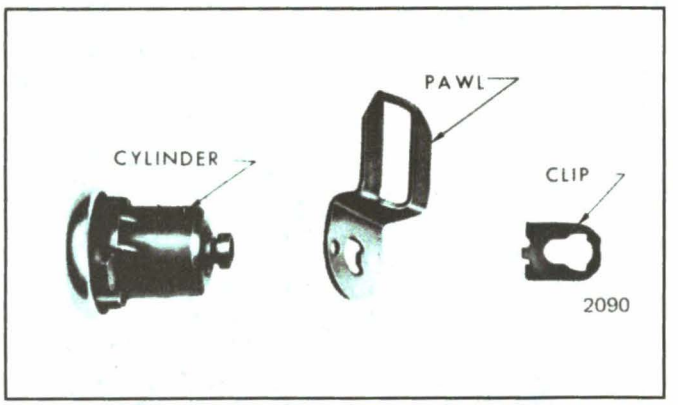


Fig. 5-56-Door Lock Cylinder Assembly

3. Turn key to the fully unlocked position and return it to the neutral (pull-out) position. Actuate either the outside or inside handle to ensure that the door will open.

DOOR LOCK STRIKER

NOTICE: 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.

The front and rear door lock striker consists of a single metal bolt and washer assembly that is threaded into a tapped, floating age plate located in the body lock pillar. With this design, the door secured in the closed position when the door lock fork bolt snaps er 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 bolt to 48 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 5-58.
   c. Close door only as far as necessary for striker bolt to form an impression in clay or caulking compound as shown in Figure 5-58. 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 5-58. The minimum allowable measurement for dimension X is 2.5 mm (3/32″). The maximum allowable measurement for dimension X is 4.5 mm (11/64″).
   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 equivalent
      - 4 mm (5/32″) spacer - part no. 20020725 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 (Fig. 5-59).
3. To install, reverse removal procedure. Make certain striker is positioned within mark. Tighten striker bolt to 48 to 60 N·m (35 to 45 ft-lb).
   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 inside locking knob. All doors can be locked from the outside by simply depressing the inside locking knob and closing the door. The front doors can also be locked by using the oval headed key.

Do not attempt repairs to correct lock discrepancies. Make corrections through replacement of lock assembly.

Removal and Installation

1. Remove all door trim and detach insulator pad and inner panel water deflector or combination assembly enough for access to lock. On G sedan front doors, remove inner panel cam for easier access. On G-35 rear doors, remove stationary window and ventilator assembly (13 and 17, Fig. 5-92). On K style rear doors, remove stationary vent window assembly. Procedures are described further in this section.
2. Disengage inside handle and power lock connecting rods as required. On front doors with electric locks, remove electric lock actuator as required. 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. On doors with locking button

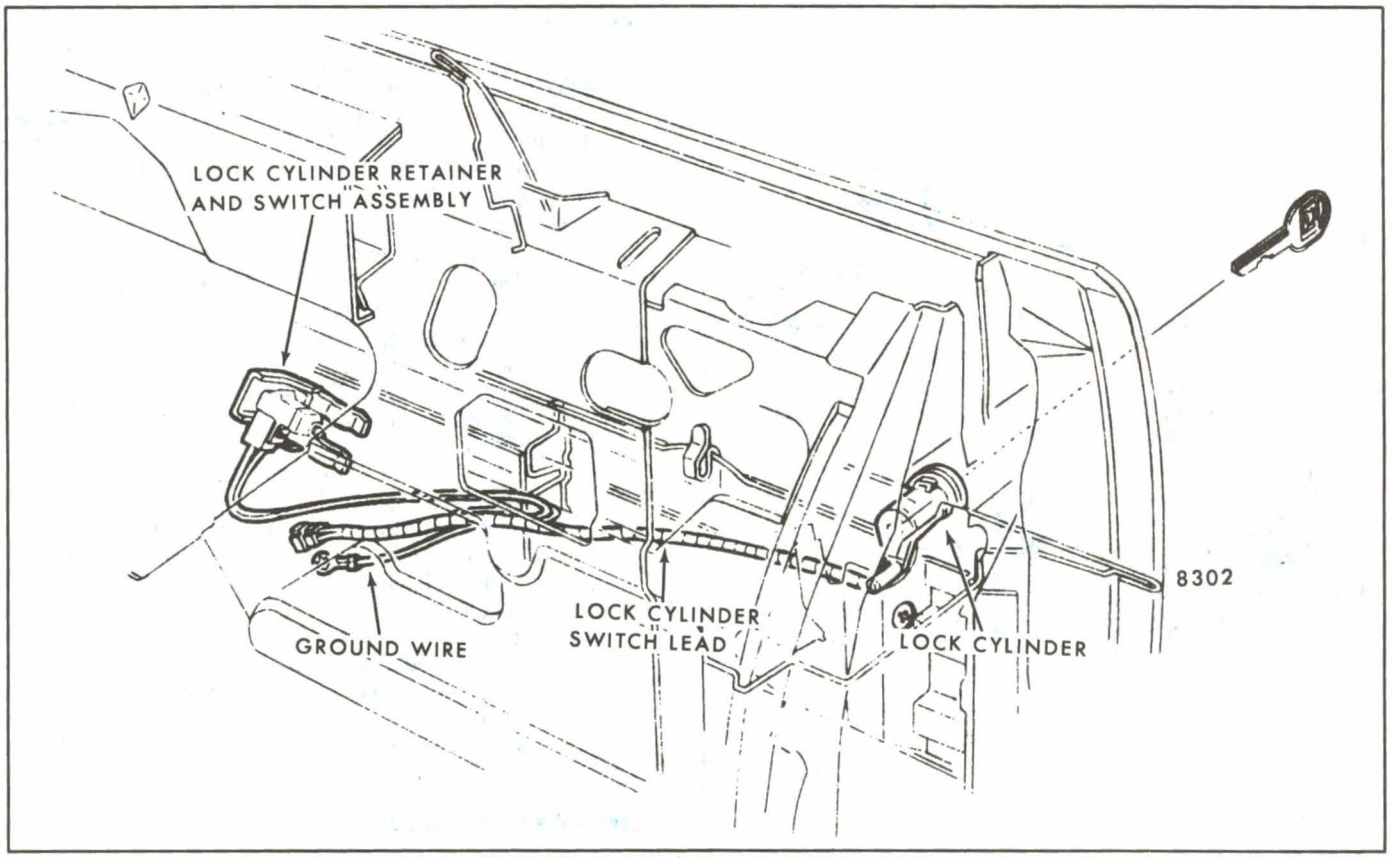


Fig. 5-57 - Anti-theft Door Lock Assembly

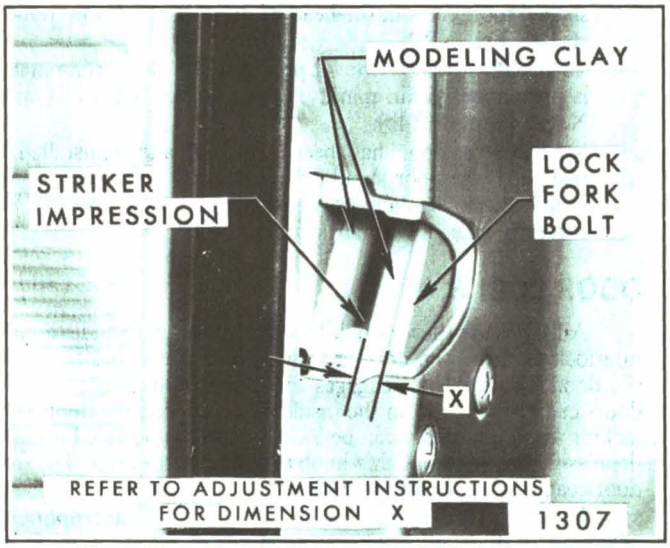


Fig. 5-58-Lock-to-Striker Fore and Aft Adjustment

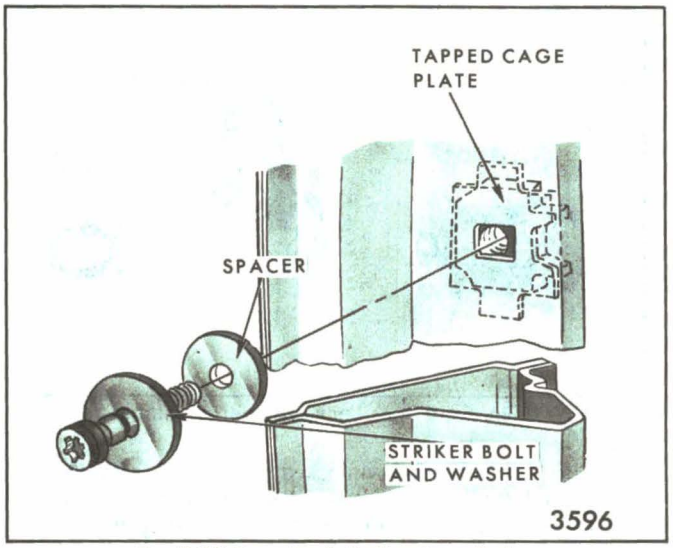


Fig. 5-59-Door Lock Striker Installation

directly above lock, locking rod is removed with lock. On G sedan front doors, disengage lock cylinder to lock connecting rod (3, Fig. 5-67) and outside handle to lock connecting rod (4, Fig. 5-67).

4. Remove lock attaching screws and remove lock through access hole. On B and C front doors, slide lock down to clear door frame extension.

5. To install, first install spring clips to lock assembly, then reverse removal procedure. Tighten 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 has a motor actuator in each door which actuates the lock through a linkage. The system is actuated by a control switch on each front door. All doors lock and unlock at the same time from any control switch or manually from each door in the conventional manner. Each actuator has an internal circuit breaker which may require one to three minutes to reset.

Removal and Installation

1. Raise door window, remove trim pad and detach insul pad or combination assembly (if so equipped) and inner p water deflector.

2. Punch out actuator attaching rivet center pins, then drill out rivets with 6.3 mm (1/4") drill bit. Disconnect rod and wire harness, then remove actuator through access hole (Fig. 5-60). On K style rear doors, remove window regulator lower adjusting screw and bracket. Move regulator outboard to allow the actuator to slide past. Disconnect wiring harness after actuator reaches the access hole in the inner panel.

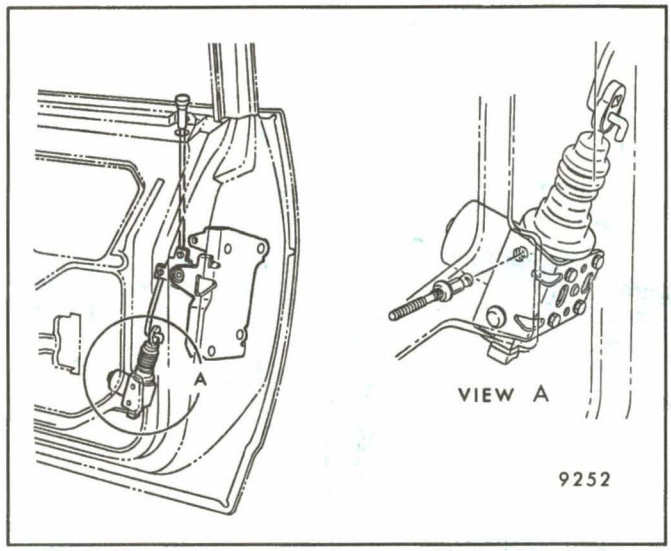


Fig. 5-60-Power Door Lock Actuator - Typical Installation

3. To install, connect actuator to lock linkage and wire harness. If hand rivet tool J-29022 or equivalent is available, install actuator to inner panel using 1/4"x0.500" aluminum peel type rivets. If hand rivet tool is not available, 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). Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque.

DOOR INNER PANEL CAM

Removal and Installation

1. Remove door trim and detach insulator pad or combination assembly (if so equipped) and inner panel water deflector enough to gain access to the inner panel cam.
2. With window in raised position, remove inner panel cam attaching screws and slide cam off regulator balance arm roller. 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).
3. To install, reverse removal procedure. Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque.

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. If glass or sash channel requires replacement and the sash is still firmly bonded to the glass with plastisol, both glass and sash channel must be replaced. However, if a plastisol-bonded lower sash channel cam has separated from the door glass, the sash channel may be rebonded to the glass. (Heat cannot cause a bond separation in plastisol as it does in urethane.) Prior to reinstallation, the sash channel and glass must be cleaned to remove plastisol residue. If urethane (black color) adhesive was used, the following removal procedure may be used to separate sash channel from glass.

Removal of Urethane or Structural Adhesive Bonded Glass

1. Remove door trim panel assembly, insulator pad or combination assembly (if so equipped), inner panel water deflector and door window.
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.
   CAUTION: During burn-out operation, avoid direct inhalation of the fumes being emitted as these fumes may be hazardous.
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.
4. Clean replacement glass. If original glass is to be used, scrape all traces of adhesive off with sharp bladed tool. If original channel is to be reused, clamp in vise and burn out remaining adhesive with welding torch. While still hot, wire brush adhesive 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 - Bonded

1. If replacement glass is being installed on G-35 or 69 styles, dimension "A" should be 167 mm (6-5/8") from the front of sash channel to lower front edge of glass as shown in Figure 5-61.
2. To bond channel to glass, a two-part adhesive such as 3M Channel Bonding Adhesive No. 08640, 3M Structural Adhesive No. 8101, Loctite Clear Epoxy, or equivalent is required. Follow package instructions. Place adhesive into channel at three locations indicated in Fig. 5-61.
3. Install spacer clips (part no. 1696671, 3060754 or equivalent) in channel about 12 mm (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.
5. After adhesive cure, flow a thin bead of silicone adhesive such as Dow Corning RTV 732 Silastic, 3M Super Silicone part no. 8661, General Electric RTV 108 Silicone Rubber or equivalent the full length of channel surface to prevent water entrapment in channel (Fig. 5-61).
6. Reinstall glass, water deflector and door trim assembly.

WINDOW REGULATOR MOTOR - B, C AND K STYLES

The optional power window system incorporates a 12V reversible direction motor with an internal circuit breaker and a self-locking gear drive. The motor can be operated by an independent control switch for each operating door window or from a master window control switch on the driver's door. The motor unit is attached to the window regulator with rivets.

Removal and Installation

1. Remove door trim pad and water deflector or combination assembly.
2. On B and C styles, place glass in the full-up position and tape glass to door frame. On K style, lower the glass until the regulator sash attaching bolts are in line with the inner panel access hole.
3. Remove attaching bolts. On K styles, remove glass from door. K front door has a front up stop riveted to the glass. Up stop must be guided through the inner panel offset at the front in order to remove glass.
4. Remove window regulator as described under window regulator removal procedure for the style involved.

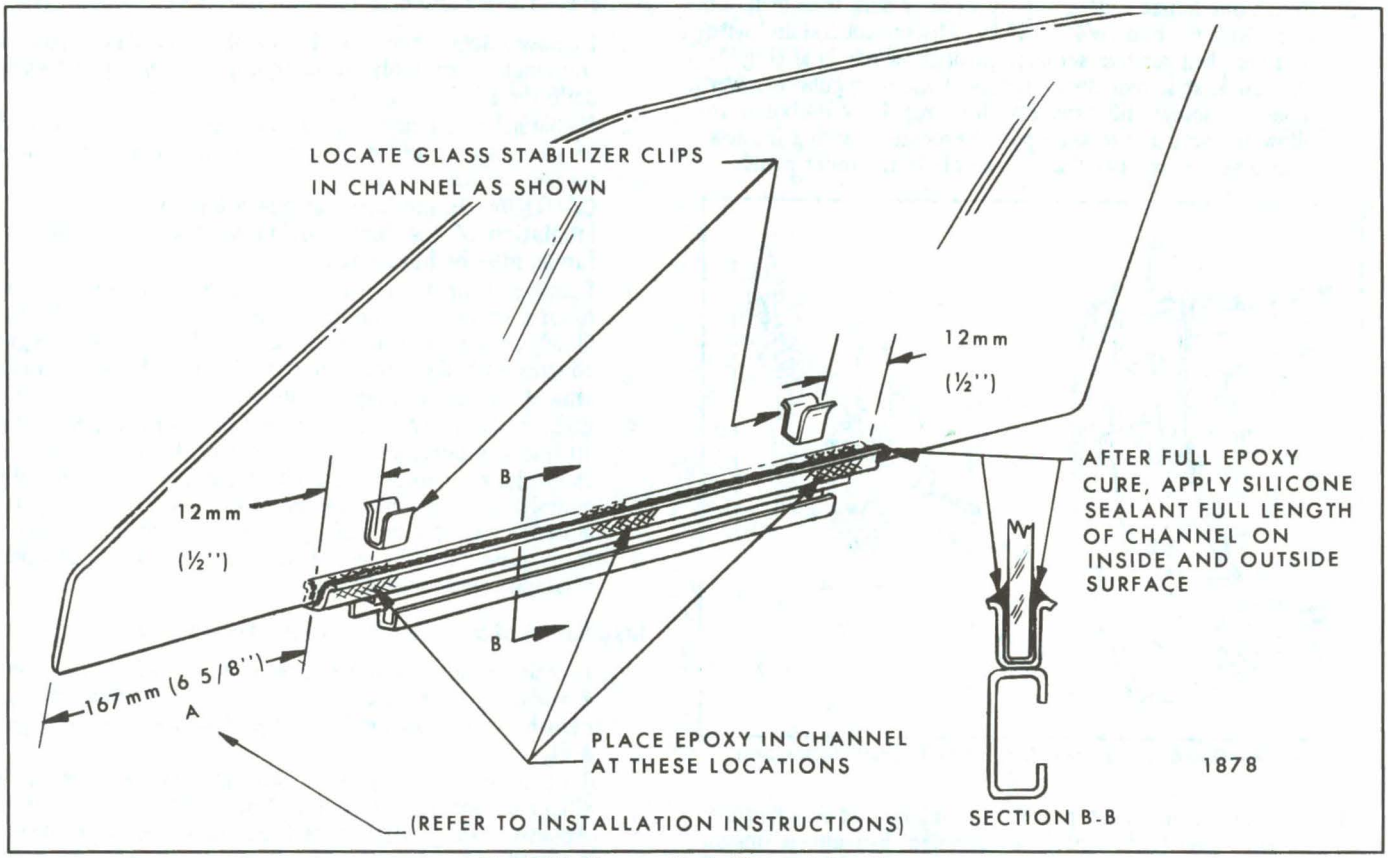


Fig. 5-61-Glass to Sash Channel Bonding

5. Using 5 mm (3/16") drill bit, drill out motor attaching rivets and remove motor.
6. To install, reverse removal procedure. Use 5 mm (3/16") rivets to install motor to regulator.

WINDOW REGULATOR MOTOR - E AND G STYLES

The optional power window system incorporates an electric motor and an independent control switch for each operating door window. The driver's door has a master window control switch permitting operation of all operating windows from driver's position.

The electric motor which powers the window regulator is a 12V, reversible-direction motor with an internal circuit breaker and a self-locking gear drive. The motor is secured to the regulator assembly with bolts or rivets.

On E and G 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. Motor removal and installation procedures for both conditions follow.

Removal and Installation - Glass Intact and Attached to Regulator

CAUTION: 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. Unrestrained spring can cause personal injury. If door glass has been broken or removed, refer to the next procedure in this section.

1. Remove door trim assembly, insulator pad or combination assembly (if so equipped) and inner panel water deflector and raise window. Disconnect harness at motor.

   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, personal injury and/or glass damage may result.
2. Tape window to frame with pieces of cloth-backed body tape to prevent glass from dropping when regulator motor is removed.
3. E and G style front doors have locating dimples in the inner panel to locate motor to regulator attaching bolts. Using a 19 mm (3/4") hole saw, drill three holes at locating dimples.
4. Remove motor attaching bolts, disconnect wire connector and remove motor through access hole. 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.
5. Prior to installation, lubricate motor drive gear and regulator sector teeth.
6. Attach motor to regulator making sure drive gear properly engages sector gear teeth before installing motor attaching bolts. Tighten attaching bolts to 10 to 14 N·m (90 to 125 in-lb) torque.
7. Use waterproof tape to seal any holes outside water deflector sealing area and install trim.

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.
   CAUTION: 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 backplate (Fig. 5-62) and install a screw and nut to lock sector gear in position. DO NOT drill hole closer than 13 mm (1/2") to edge of sector gear or backplate.

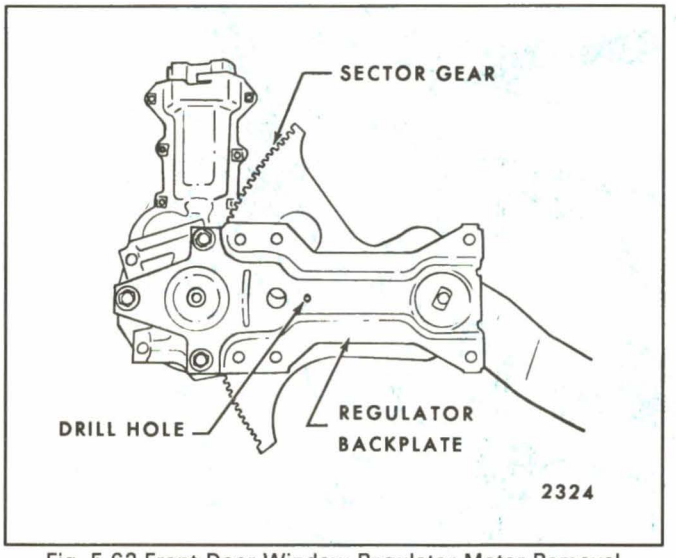


Fig. 5-62-Front Door Window Regulator Motor Removal

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. The lubricant, part no. 1052349, Lubriplate Spray Lube A, part no. 1052196, Lubriplate Auto-Lube A or equivalent, must be cold weather approved to a minimum of -29°C (-20°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 to 10 to 14 N·m (90 to 125 in-lb) torque.
7. Remove screw locking sector gear in a fixed position.
8. If hand rivet tool J-29022 or equivalent is available, install regulator to inner panel using 1/4"x0.500" aluminum peel type rivets. If rivet tool is not available, 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. Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque.

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 part no. 1052349, Lubriplate Spray-Lube "A", part no. 1052196, Lubriplate Auto-Lube "A" or equivalent. Door hinge pins and rollers should be lubricated at normal service intervals with 30 weight engine oil. Do not lubricate hinge roller to hold-open link contacting surfaces as this may prevent the roller from rolling properly.

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 may 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 part no. 1052279, Loctite 75 (or equivalent) which is a two-part material applied to the hardware attachment as a liquid. Upon installation and tightening, 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

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 5-63 through 5-70 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.

FRONT DOORS

Adjustment

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.

When making door adjustments, refer to door lock striker engagement specifications in the Front and Rear Door portion of this section.

After adjusting front doors on 6CD69 styles equipped with automatic seat belts, check the alignment of the door upper frame striker and center pillar clevis assembly (Fig. 5-71). The striker should be centered up and down and fore and aft in the mouth of the clevis and be free of binds and interference. The clevis is adjustable fore and aft and the striker is adjustable up and down.

1. Adjust door up and down and/or fore and aft at body hinge pillar attachments. If REARWARD adjustment of either front door is made, replace the jamb switch as described in Section 10.
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-28500 (11 mm socket) or equivalent (Fig. 5-73). After hinge adjustment, tighten attaching bolts to 20 to 29 N·m (15 to 21 ft-lb) torque.

Removal and Installation

When removing the door only, it is recommended that the door be removed from the hinges because of easier access to the door side hinge bolts.

1. Prior to loosening any hinge bolts, mark position of hinge on door to ease adjustment when reinstalling door on hinge.

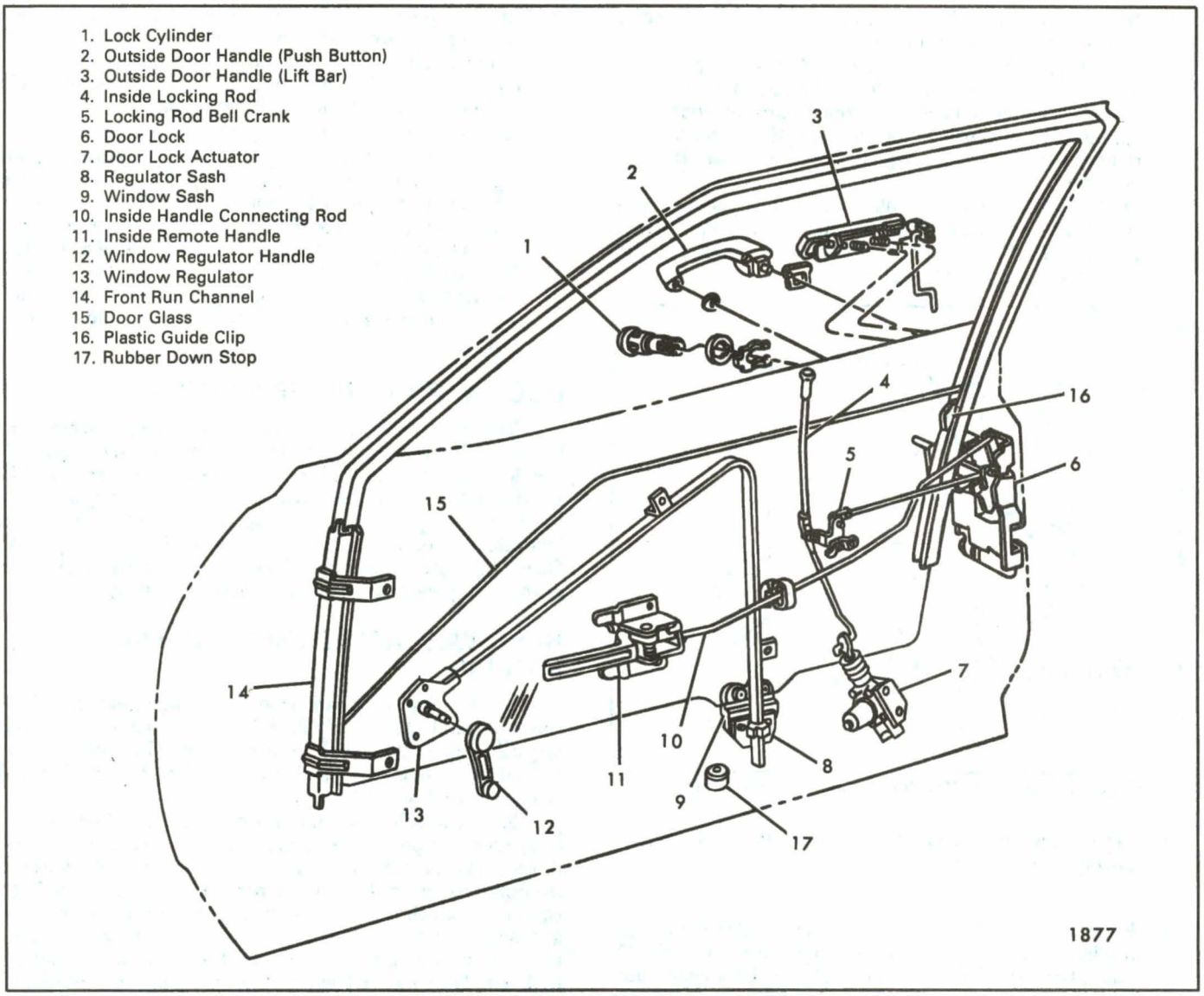


Fig. 5-63-Front Door Hardware - B, C Styles (Coupe Door Shown, Sedan Door Similar)

2. On doors equipped with power operated components, remove trim panel and detach inner panel water deflector enough 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. 5-72).
4. To install, reverse removal procedure. Adjust door as outlined in previous adjustment procedure. Tighten hinge attaching bolts to 20 to 29 N·m (15 to 21 ft-lb) torque.

HINGE

Removal and Installation

1. If door has no power-operated components installed, remove door; then remove hinge after marking position on pillar. Proceed to step 3.
2. On doors with power operated components, it is not necessary to disconnect the wiring harness. Support door in the full-open position and mark position of hinge on each surface. Remove hinge to door and body hinge pillar attaching bolts (Fig. 5-72).
3. Loosen body hinge pillar bolts on remaining hinge as required. Remove affected hinge from body. Removal of upper and lower hinges from body hinge pillar can be accomplished with the door removed and without loosening front fender.

NOTICE: 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.

4. To install, reverse removal procedure. Align door. Tighten hinge attaching bolts to 20 to 29 N·m (15 to 21 ft-lb) torque.

DOOR RADIO SPEAKER

Some styles have a radio speaker mounted on the door inner panel. The speaker is protected from the outside elements by a plastic housing and is screw attached to the inner panel (Fig. 5-74).

Removal and Installation

1. Remove door trim panel and detach insulator pad and inner panel water deflector or combination assembly.
2. Remove speaker attaching screws and remove speaker and housing assembly (Fig. 5-74).
3. Separate speaker from plastic housing and disconnect wire harness connector (Fig. 5-74). Some styles may require drilling out rivets to remove housing.
4. To install, reverse removal procedure.

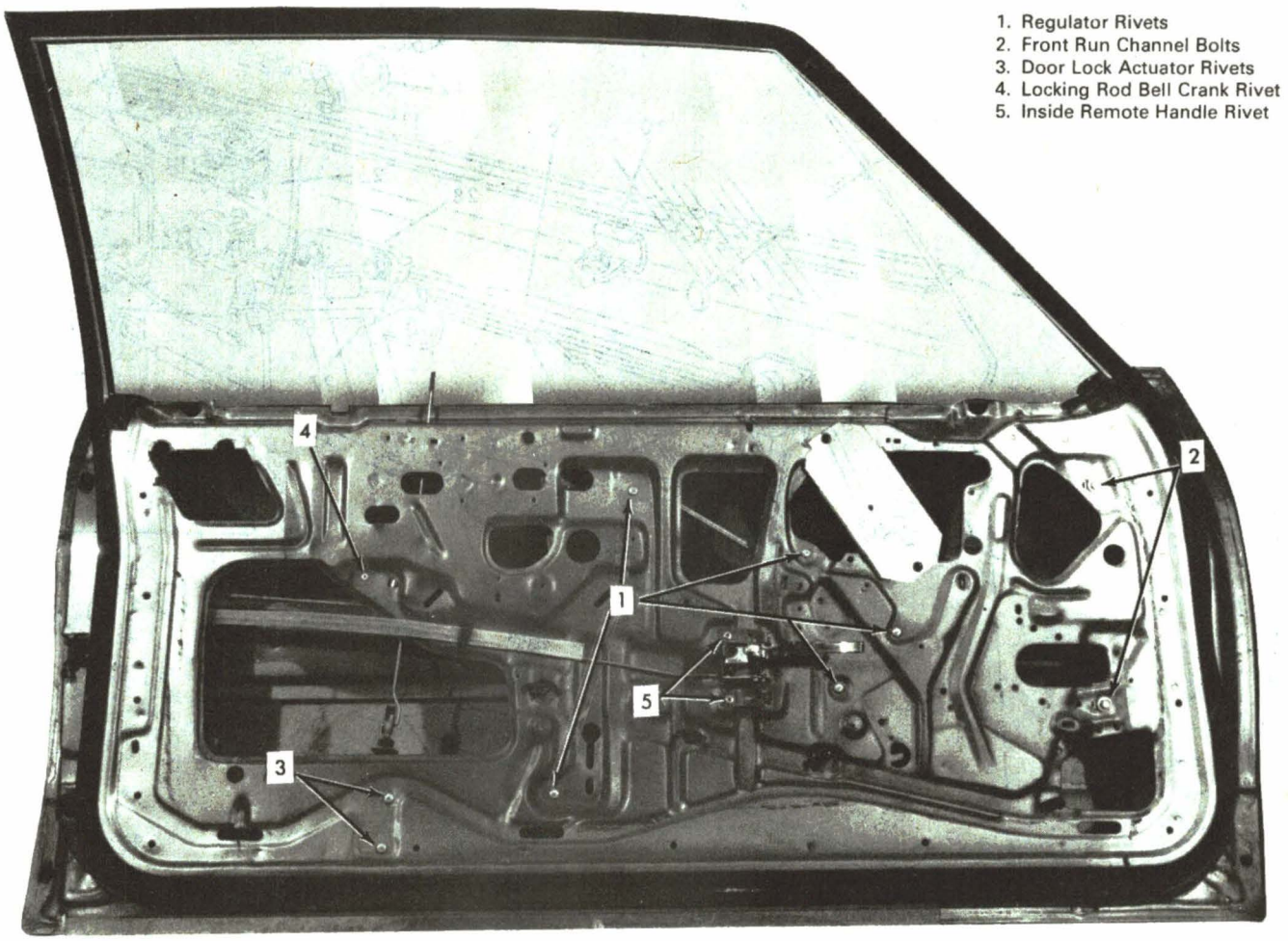
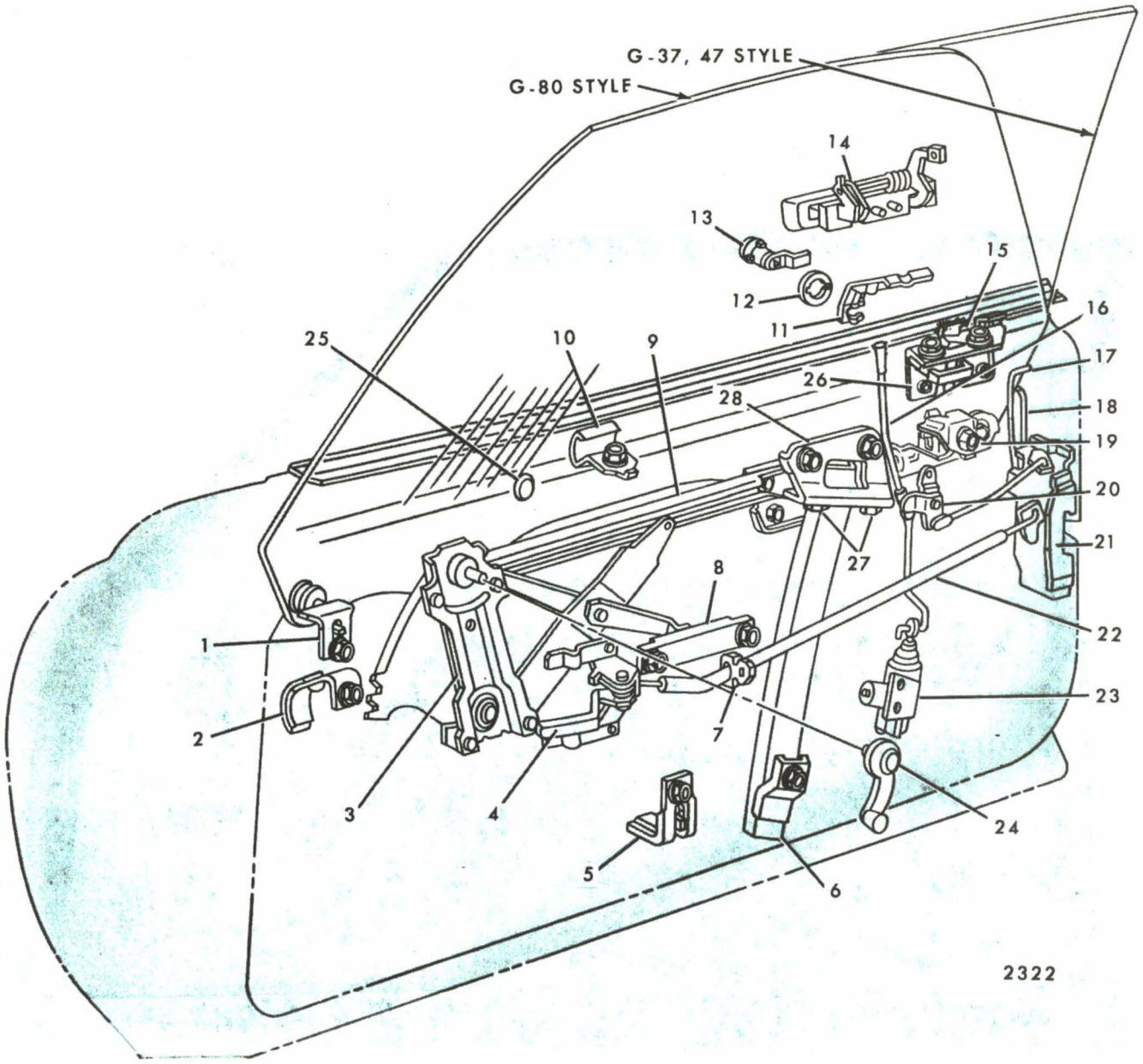
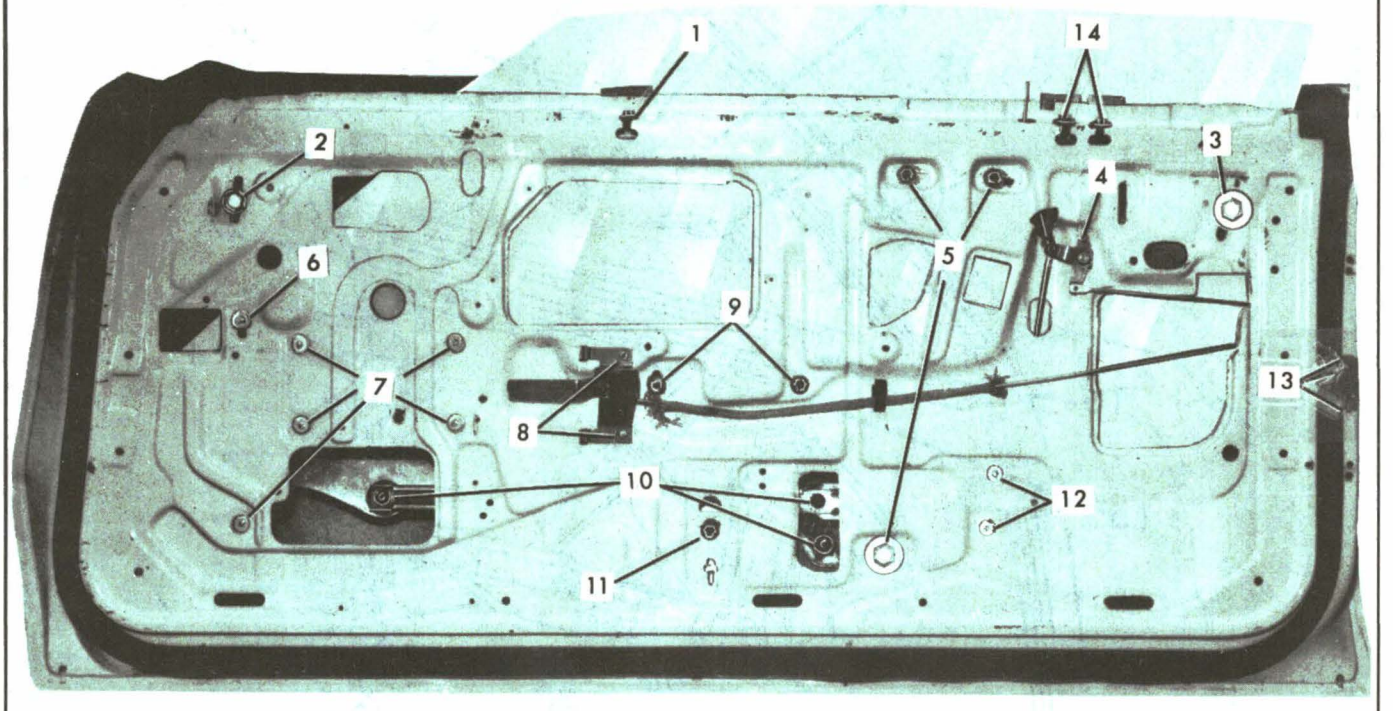


Fig. 5-64-Front Door Hardware Attachments - B, C Styles (Coupe Door Shown, Sedan Door Similar)



1. Front Up-Travel Stop (on Inner Panel)
2. Glass Stabilizer (on Inner Panel)
3. Manual Window Regulator
4. Inside Remote Handle
5. Down-Travel Stop
6. Vertical Guide Cam Assembly
7. Silencer
8. Inner Panel Cam
9. Lower Sash Channel Cam
10. Front Belt Stabilizer and Trim Retainer
11. Lock Cylinder Retainer
12. Lock Cylinder Gasket
13. Lock Cylinder Assembly
14. Outside Handle Assembly
15. Rear Belt Stabilizer Pin Assembly (on Inner Panel)
16. Inside Locking Rod
17. Outside Handle to Lock Connecting Rod
18. Lock Cylinder to Lock Connecting Rod
19. Rear Up-Travel Stop (on Inner Panel)
20. Bell Crank
21. Door Lock
22. Inside Handle to Lock Connecting Rod
23. Power Door Lock Actuator
24. Manual Window Regulator Handle
25. Plastic Stabilizer Button (on Glass)
26. Plastic Stabilizer Guide (Riveted to Glass)
27. Vertical Guide Upper Support (Lower) Screws
28. Vertical Guide Upper Support

Fig. 5-65-Door Hardware - G Coupe Styles



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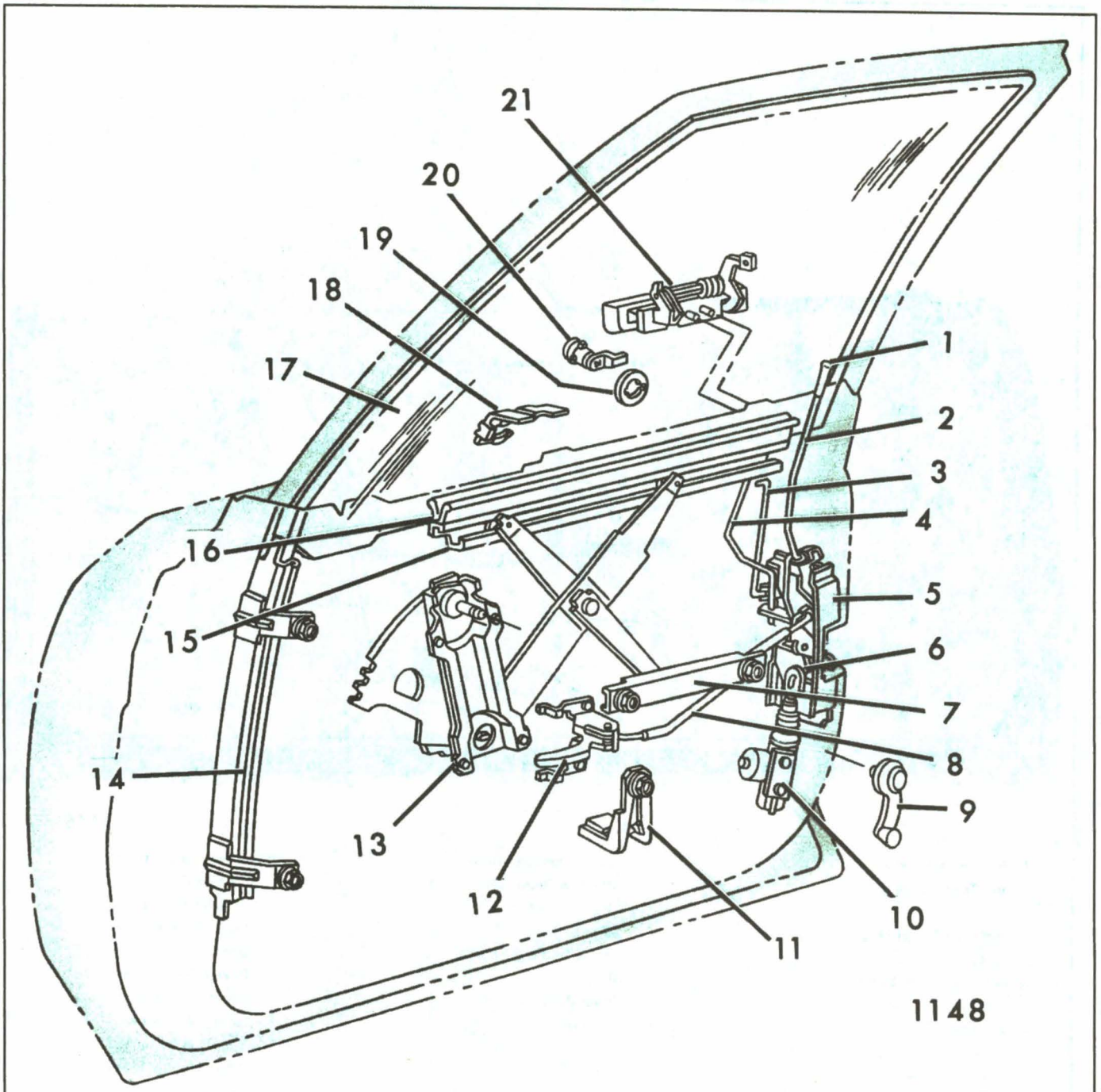
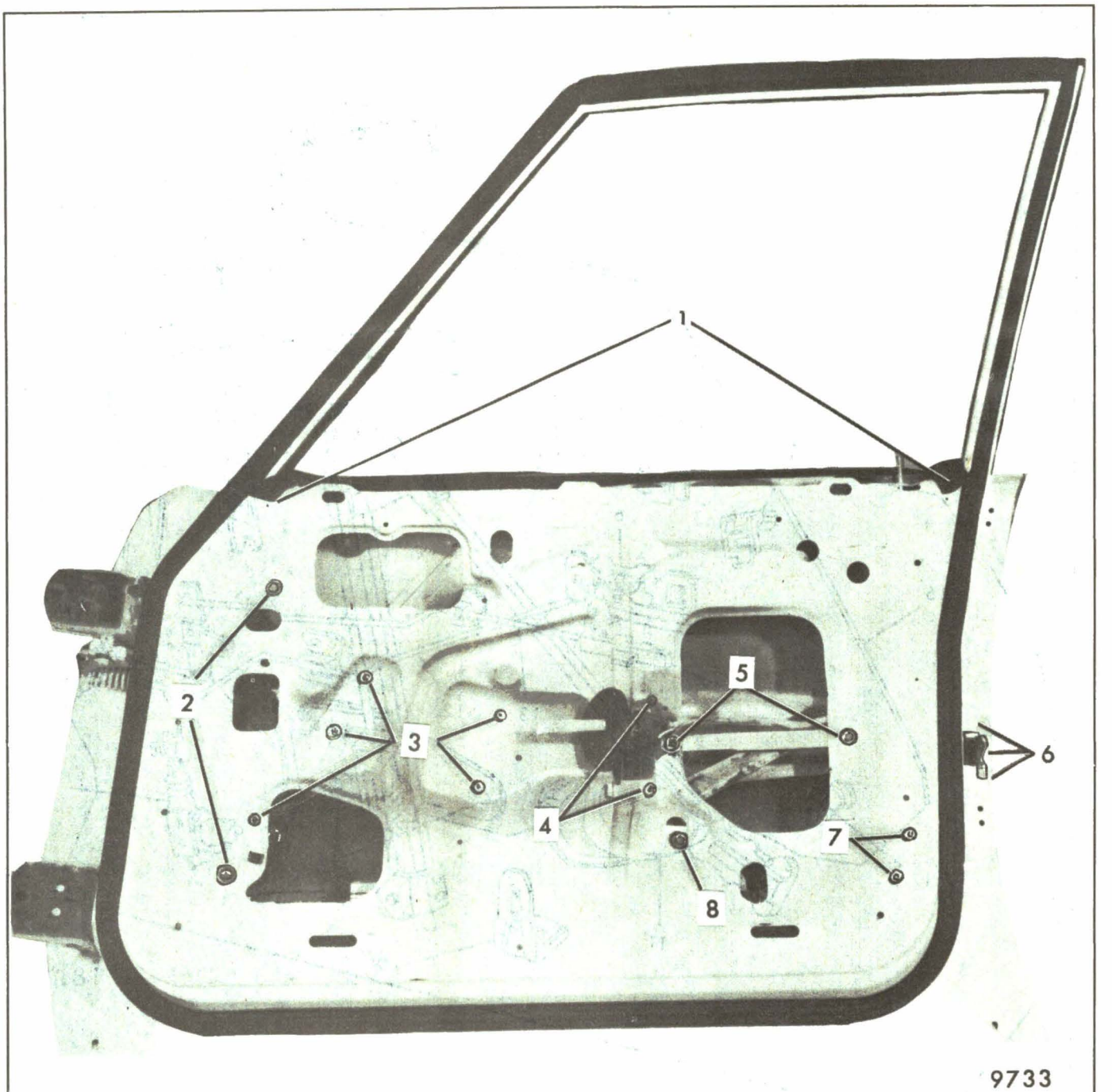
1. Front Belt Stabilizer and Trim Retainer Screw
2. Front Up-Travel Stop Screw
3. Rear Up-Travel Stop Screw
4. Bell Crank Rivet
5. Vertical Guide Upper and Lower Screws
6. Glass Stabilizer Rivet
7. Window Regulator Rivets (Electric Window)
8. Inside Remote Handle Rivets
9. Inner Panel Cam Screws
10. Lower Sash Channel Cam to Glass Attaching Nuts
11. Down-Travel Stop Screw
12. Power Door Lock Actuator Rivets
13. Door Lock Screws
14. Rear Belt Stabilizer Pin Assembly Screws

Fig. 5-66-Door Hardware Attachments - G Coupe Styles



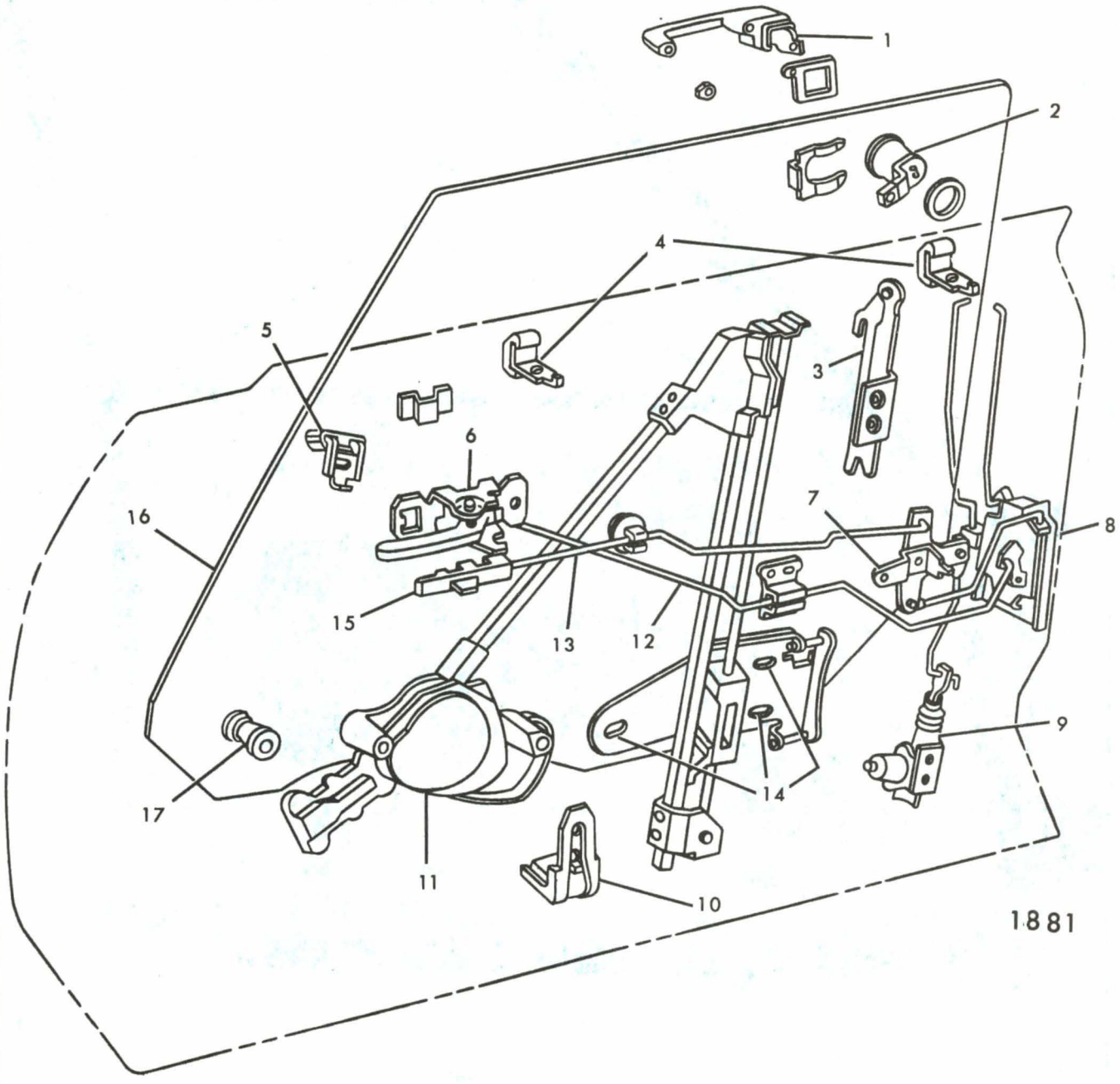
1. Inside Locking Rod Knob
2. Inside Locking Rod
3. Lock Cylinder to Lock Connecting Rod
4. Outside Handle to Lock Connecting Rod
5. Door Lock
6. Inside Locking Rod to Electric Actuator Connecting Rod
7. Inner Panel Cam
8. Inside Remote Handle to Lock Connecting Rod
9. Manual Window Regulator Handle
10. Power Door Lock Actuator
11. Down-Travel Stop
12. Inside Remote Handle
13. Manual Window Regulator
14. Glass Run Channel Retainer
15. Lower Sash Channel Cam
16. Lower Sash Channel
17. Window Glass
18. Lock Cylinder Retainer
19. Lock Cylinder Gasket
20. Lock Cylinder Assembly
21. Outside Handle Assembly

Fig. 5-67-Front Door Hardware - G Sedan Styles



1. Filler to Panel Plastic Nails
2. Front Glass Run Channel Retainer Upper and Lower Screws
3. Window Regulator Rivets (Electric Window)
4. Inside Remote Handle Rivets
5. Inner Panel Cam Screws
6. Door Lock Screws
7. Power Door Lock Actuator Rivets
8. Down-Travel Stop Screw

Fig. 5-68-Front Door Hardware Attachments - G Sedan Styles



1. Outside Handle
2. Door Lock Cylinder
3. Guide Assembly
4. Glass Stabilizers
5. Front Up Stop (On Inner Panel)
6. Inside Remote Handle
7. Locking Rod Bell Crank
8. Door Lock
9. Door Lock Actuator
10. Down Stop
11. Power Window Regulator
12. Inside Handle Connecting Rod
13. Inside Locking Rod
14. Regulator Sash To Glass Attaching Points
15. Inside Locking Lever
16. Door Glass
17. Front Up Stop (On Glass)

Fig. 5-69-Front Door Hardware - K Style

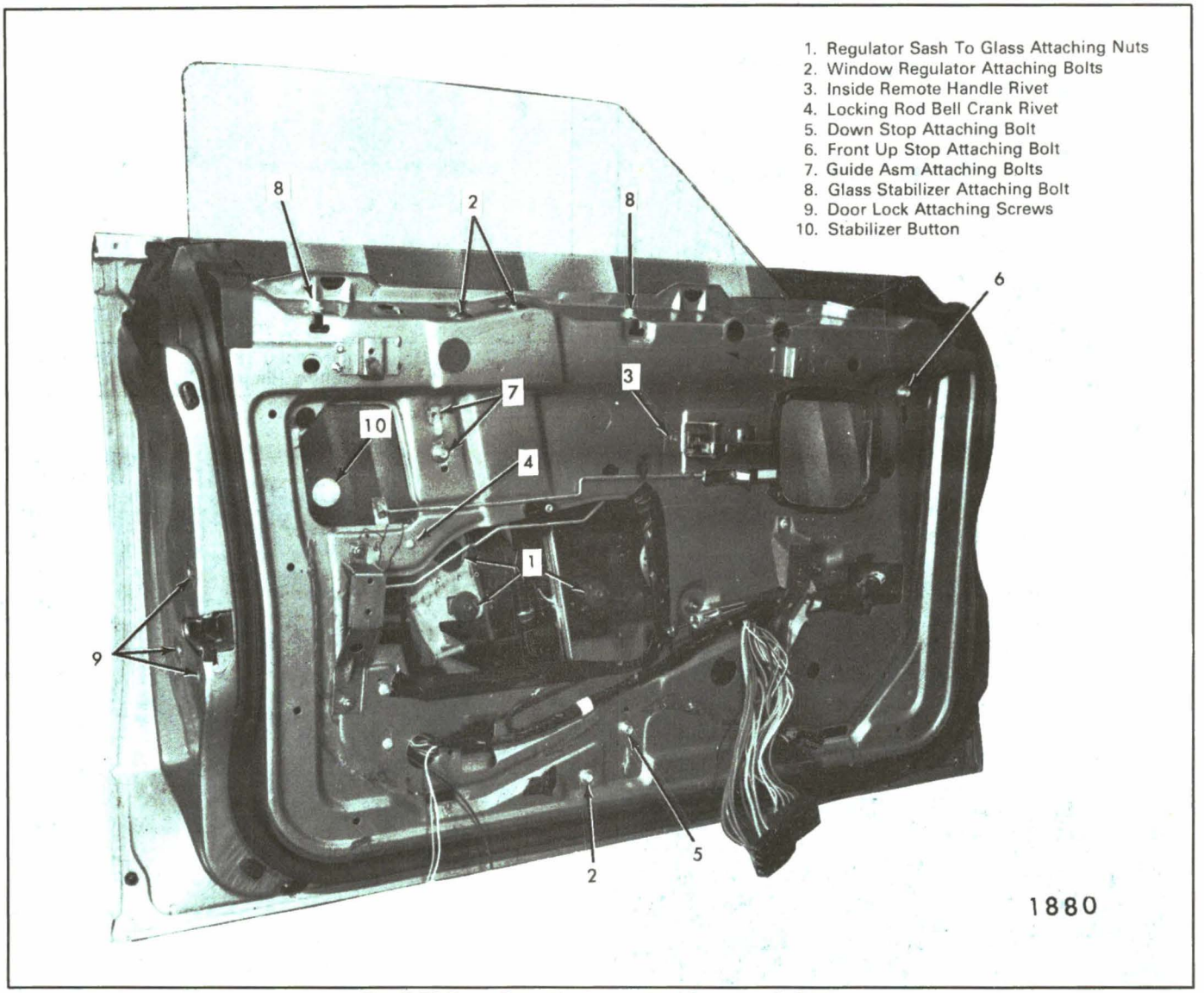


Fig. 5-70-Front Door Hardware Attachments - K Style

MANUALLY OPERATED OUTSIDE REMOTE CONTROL MIRROR

The optional remote control mirror can be adjusted from the interior of the car by moving the remote control lever in the direction desired. The mirror and cable are removed from the car as an assembly. Right side flat and convex mirrors must be replaced with same type mirror when serviced.

Remote Mirror Face Replacement

CAUTION: To prevent personal injury, gloves should be worn when removing broken glass.

NOTICE: When breaking mirror, cover painted surface of door to avoid damage.

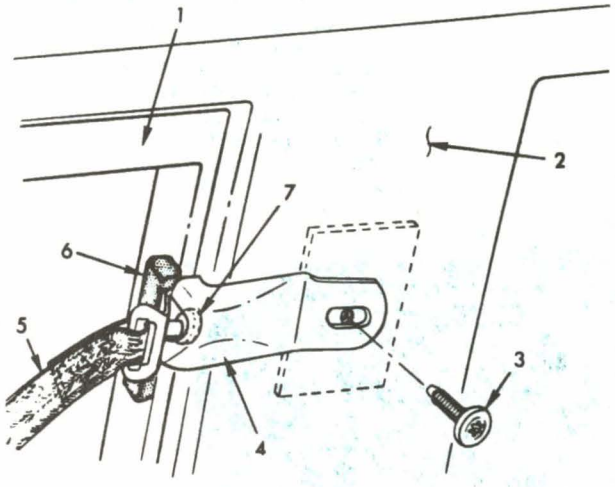
1. To remove a scratched, broken, stained, etc., mirror face from the mirror frame, tape, then break the mirror glass and remove the broken glass and fiber pad from the mirror frame. Inside of mirror must be clean.
2. To install replacement mirror faces, remove paper backing from mirror face and center mirror in mirror frame. Then press firmly to ensure adhesion of the mirror face to the mirror frame.

Remote Control Mirror Thermometer Replacement - B, C, E and K Styles

1. Working through sensor hole in front of mirror base, drive thermometer sensor out of mirror base (rearward) with center punch.
2. Clean attaching surface of mirror thermometer in mirror base of any adhesive or residue from previous thermometer.
3. Mix two components of Loctite Fast Cure Epoxy 45, Loctite "Neat" Epoxy No. 10905 or equivalent in epoxy mixing cup and apply adhesive to mirror base at three attaching notches.
4. Install thermometer into 3 locating notches in mirror base; tape thermometer to base until adhesive cures (about 30 minutes), then remove tape.

Removal and Installation - Left Side

1. Remove door trim panel and detach remote control lever. Peel back insulator and water deflector or combination assembly to gain access to mirror cable.
2. Detach cable from any retaining tabs in door (Fig. 5-75).
3. Remove attaching nuts (Fig. 5-75) and remove mirror and cable assembly from door.
4. To install, reverse removal procedure.



1. Door Upper Header
2. Center Pillar
3. Bolt, Type 2
4. Clevis (Sedan)
5. Shoulder Belt
6. Retainer and Cover Assembly
7. Striker Pin

Fig. 5-71-Clevis to Striker Engagement and Retention

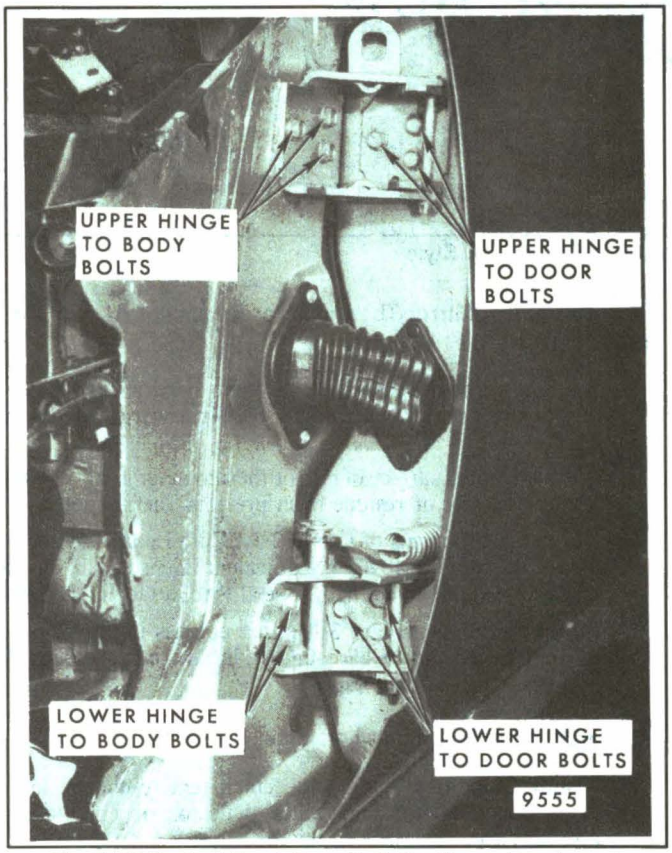


Fig. 5-72-Typical Front Door Bolt-On Hinge Attachment

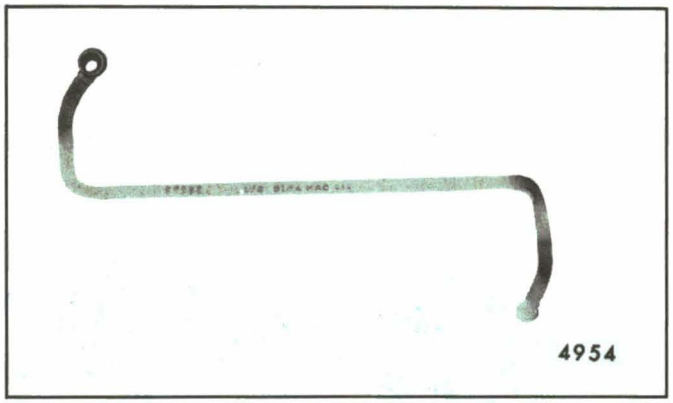


Fig. 5-73-Front Door Hinge Tool J-28500 (metric)- Styles with Bolt-on Hinges

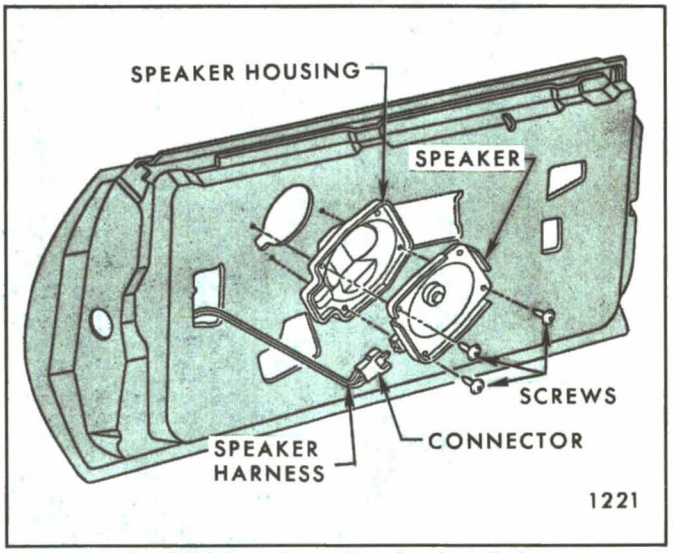


Fig. 5-74-Door Radio Speaker Installation

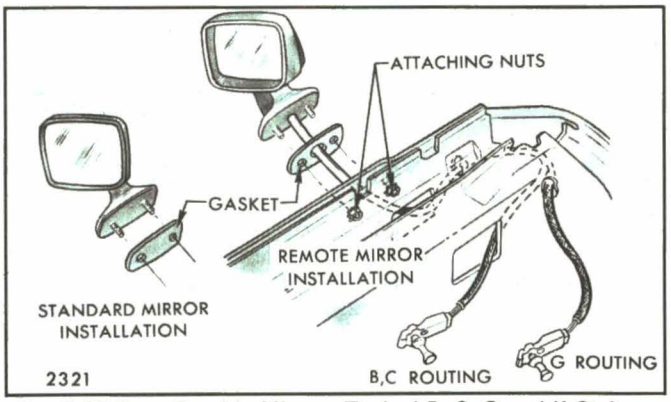


Fig. 5-75-Door Outside Mirror - Typical B, C, G and K Styles - Left Side

Removal and Installation - Right Side

1. Remove door trim panel and peel back insulator and water deflector or combination assembly enough 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).
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. 5-76) and remove mirror and cable assembly from door.

5. To install, reverse removal procedure. Make sure mirror operates satisfactorily from remote control before reinstalling trim.

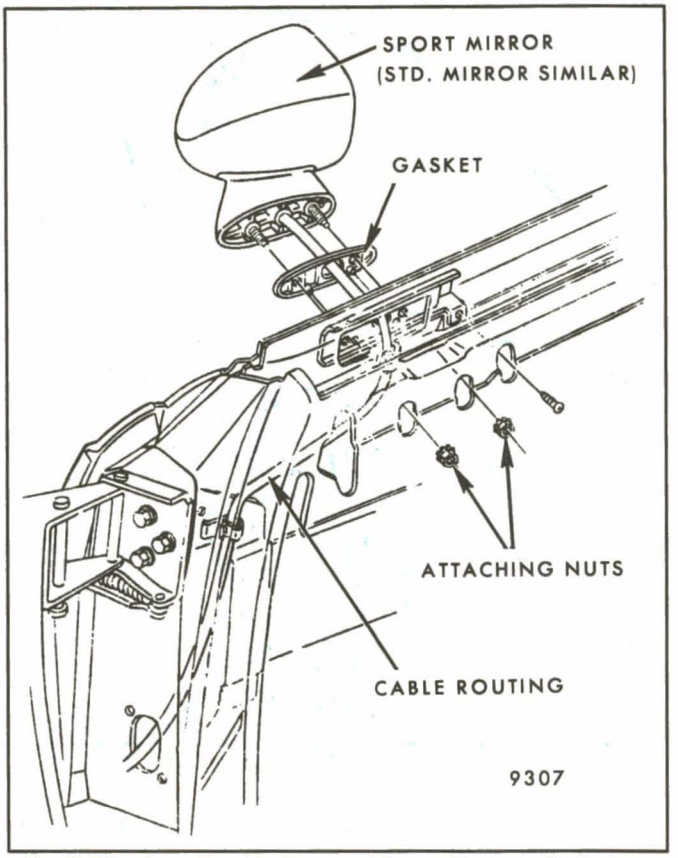


Fig. 5-76 - Door Outside Remote Mirror - Typical, All Styles - Right Side

OUTSIDE STANDARD MIRROR

Removal and Installation - B, C and G Styles

1. Remove door trim assembly as described in Door Trim portion of this section.
2. Remove mirror base to door outer panel stud nuts (Fig. 5-75) and remove mirror from door.
3. To install, reverse removal procedure.

POWER-OPERATED OUTSIDE REARVIEW MIRRORS

The power-operated outside rearview mirrors are available as an option on some styles. They can be adjusted from the interior of the car by moving the proper electrical switch in the desired direction. The left side switch is in the door trim panel; the right side switch is in the instrument panel. Also, on some styles, right and left mirror adjustments can be made from a single switch located in the door trim panel. Both right and left-hand mirrors are serviceable. Parts are available for replacement of total assembly, mirror face only or a mirror kit which includes mirror face, mirror frame, drive unit and attaching screws. Mirror control switches are serviced separately. The wire harness routing for the left side power mirror is shown in Figure 5-77. The routing for the right side mirror is similar.

Complete electrical diagnostic procedures for power mirrors can be found in Section 10.

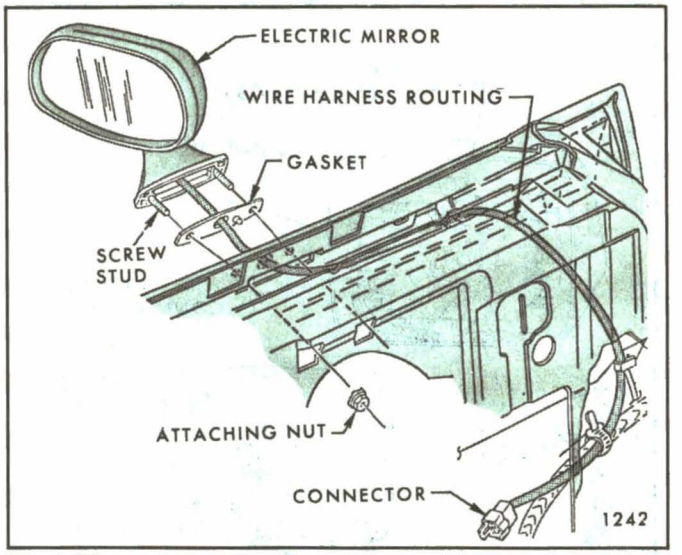


Fig. 5-77-Power Operated Outside Rearview Mirror Installation; Left Side Shown, Right Side Typical

Power Mirror - Removal and Installation - Right and Left Sides

1. Remove door trim panel and disconnect wire harness at connector (Fig. 5-77). Peel back combination insulator pad and water deflector enough to gain access to wire harness.
2. Detach harness from any retaining tabs in door.
3. Remove attaching nuts and remove mirror and harness assembly from door.
4. To install, reverse removal procedure.

Power Mirror Face Replacement - Except Heated Type

CAUTION: To prevent personal injury, gloves should be worn when removing broken glass.

NOTICE: When breaking mirror, cover painted surface of door to avoid damage.

1. To remove a scratched, broken, stained, etc., mirror face from the frame, tape, then break the mirror glass and remove the broken glass and fiber pad from the mirror frame.
2. Wipe inside of mirror frame clean.
3. To install replacement mirror face, remove paper backing from service mirror face and center mirror in mirror frame. Press firmly to ensure adhesion of the mirror face to the mirror frame.

Power Mirror Drive Unit Replacement

CAUTION: To prevent personal injury, gloves should be worn when removing broken glass.

NOTICE: When breaking mirror, cover painted surface of door to avoid damage.

1. Remove mirror face by taping the glass and breaking. Remove broken glass.
2. Remove mirror frame attaching screw (Fig. 5-78). Remove frame from housing.
3. Remove drive unit attaching screws. Lift drive unit out of housing and disconnect wiring harness. Drive unit contains no serviceable parts; unit must be replaced.
4. Connect wiring harness to new drive unit and install drive unit to housing with screws.
5. Position new frame to drive unit and install attaching screw.
6. Remove paper backing from service mirror face and center mirror in mirror frame. Press firmly to ensure adhesion of the mirror face to the mirror frame.

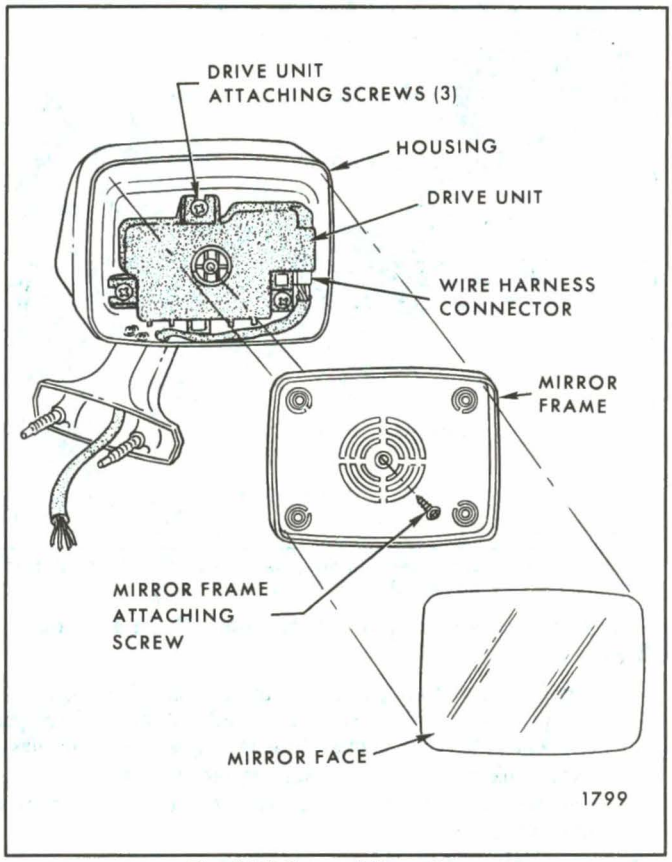


Fig. 5-78-Power Mirror Parts

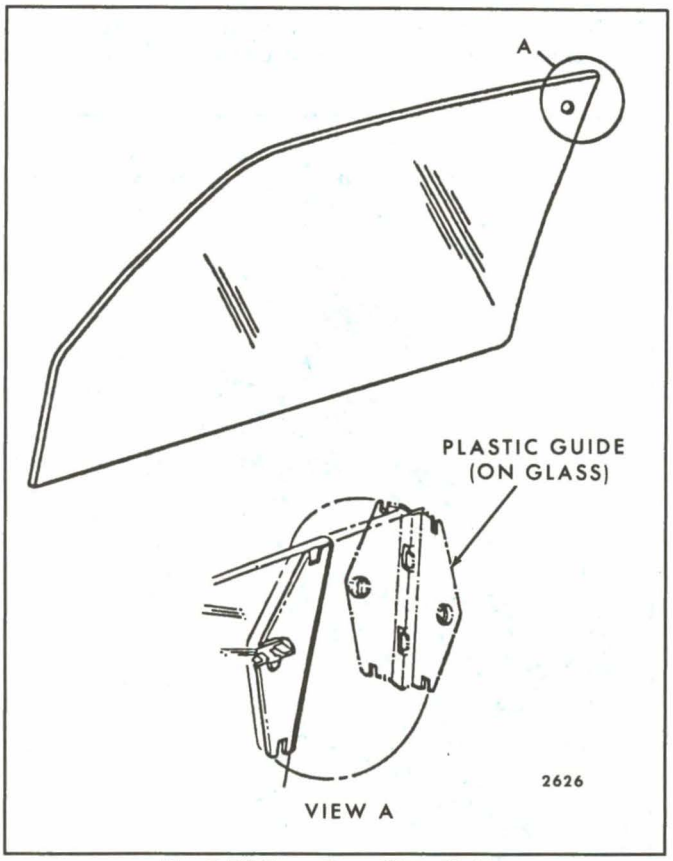


Fig. 5-79-Front Door Glass Guide

FRONT DOOR WINDOW ASSEMBLY - B, C STYLES

The door window assembly consists of a frameless piece of solid tempered safety plate glass with an attached guide (Fig. 5-79). The glass is bolted to a lower sash channel which is bolted to the window regulator sash (items 8 and 9, Fig. 5-63). With this design, the door glass and lower sash channel are removed from the door as a unit and replacement glass is installed to the lower sash as a bench operation. When the glass is replaced, also replace glass bushings and washers.

Adjustments

Window not parallel (cocked) to door frame along upper edge - loosen regulator sash to lower sash channel bolts and adjust glass as needed. Tighten bolts to 7 N·m (60 in-lb) torque.

Glass adjustment is restricted by engagement of glass guide (at rear upper corner) into run channel. Down travel stop is an integral part of the tape drive regulator and is not adjustable.

Removal and Installation

1. Remove door trim pad and combination sound absorber and water deflector.
2. Raise window to full-up position and tape glass to door frame using cloth-backed body tape.
3. Remove bolts holding lower sash channel to regulator sash (items 8 and 9, Fig. 5-63).
4. On coupe doors, remove rubber down stop at bottom of door by pulling carefully (Fig. 5-80).
5. Attach regulator handle and run regulator to full down position. Remove regulator sash by rotating 90 degrees and pulling outboard.
6. While supporting glass, remove tape and lower glass to full down position. Disengage front edge of glass from front glass run channel retainer. Slide glass forward and tilt slightly to remove guide from retainer in run channel (rear leg of door frame).
7. Using care, raise glass while tilting forward and remove glass from door.
8. To install, reverse removal procedure. Use liquid soap solution on rubber down stop before installing to bottom of door.

   Install guide retainer as follows:
   a. Install glass and lower about halfway.
   b. With one hand on bottom edge, rotate glass rearward to snap guide into retainer.

   Before installing trim parts, check window operation for proper alignment.

FRONT DOOR WINDOW ASSEMBLY - E AND G COUPE STYLES

The front door window assembly consists of a solid tempered safety plate glass with bolt-on and riveted components. On G styles, the lower sash channel cam, which is bolted to the glass, is removed during the window removal process. The stabilizer guide is riveted. On E styles, the door glass is attached to the lower sash channel cam with rivets. The front and rear up stops are also rivet attached. Figures 5-81 and 5-85 identify the window components and their assembly sequence. Specified installation torque for bolt-on parts is 8 N·m (72 in-lb). When replacing G coupe glass, new glass bushings and washers are required (7 and 8, Fig. 5-81). For service, rivet installation requires available hand rivet tool no. J-29022 or equivalent and the following rivet hardware parts.

- Rivet Bushing - p/n 20178799 or equivalent (12, Fig. 5-81)
- Rivet Retainer - p/n 20096585 or equivalent (13, Fig. 5-81)
- Rivet - p/n 20184399 or equivalent (15, Fig. 5-81)

The rivet bushing is held firmly to the glass by the rivet retainer. After glass removal, the bushing can be separated from the retainer using a flat-bladed tool covered with cloth body tape.

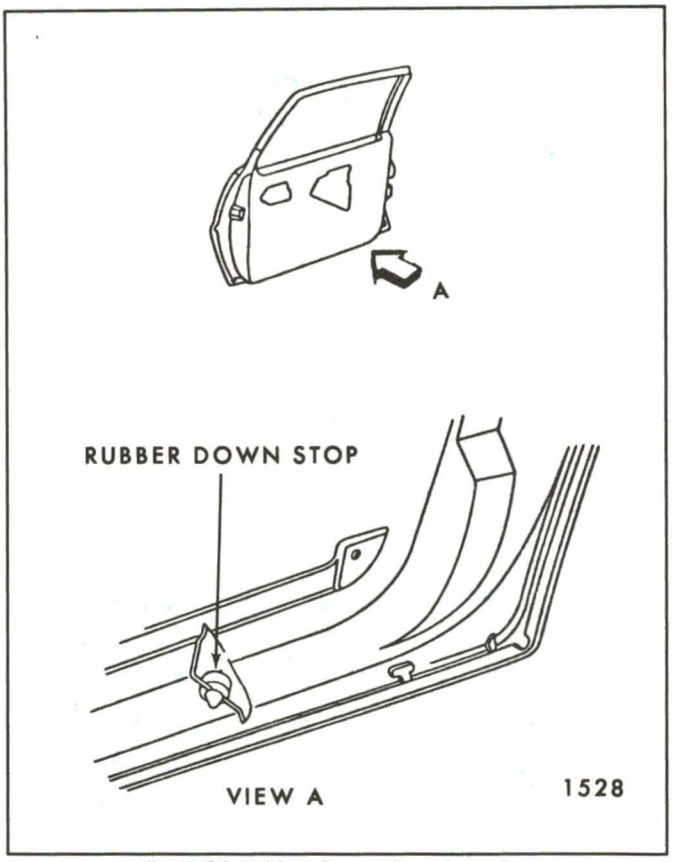


Fig. 5-80-Rubber Down Stop Location

NOTICE: Rivet bushings and rivet retainers must not be used when installing stabilizer guide with bolt-on hardware as this will cause glass breakage when tightening spanner nut and bolt.

If hand rivet tool no. J-29022 or equivalent is not available, the parts must be bolted to the glass. Figures 5-82 and 5-86 identify the window components and their assembly sequence for a bolt-on installation. This type installation requires tool no. J-22055 or equivalent and the following bolt-on hardware parts.

- Spanner Bolt - p/n 20083325 or equivalent (6, Fig. 5-82)
- Bushing - p/n 1705300 or equivalent (7, Fig. 5-82)
- Washer - p/n 7734899 or equivalent (8, Fig. 5-82)
- Spanner Nut - p/n 20083326 or equivalent (9, Fig. 5-82)
- Nut - p/n 11503745 or equivalent (13, Fig. 5-82)

Specified installation torque for all glass attachments is 8 N·m (72 in-lb) torque.

Adjustments - E Styles

In the following steps, the numbers is parentheses refer to the attachments in Figure 5-83 unless noted otherwise.

Door trim must be removed and combination insulator pad and water deflector detached before making adjustments. Mark attachments before loosening. After making adjustments, tighten all loosened attachments to 10 to 14 N·m (90 to 125 in-lb) torque.

1. **Window Rotated** - Loosen up-stop screws (6 and 20), front and rear vertical guide screws (9, 10, 11, 12) and inner panel cam screws (14). Adjust window so that upper edge of glass is parallel with side roof rail weatherstrip. Adjust up-stops (2, 14, Fig. 5-84) and tighten screws. Tighten inner panel cam screws and front and rear vertical guide screws.
2. **Window Upper Edge Inboard or Outboard** - Loosen rear up-stop in-out screw (5), rear vertical guide upper support screw (8) and front and rear glass stabilizer (at belt) screws (16 and 2). Adjust rear vertical guide (22, Fig. 5-84) and rear up-stop support (30, Fig. 5-84) in or out as required and tighten attaching screws. Adjust glass stabilizers (6 and 13, Fig. 5-84) and tighten screws. Make sure glass remains inboard of blow-out clip when cycled.
3. **Window Too Far Forward or Rearward** - Loosen front and rear vertical guide screws (9, 10, 11, 12), adjust window as required and tighten screws.
4. **Window Too High or Low in Up Position** - Loosen front and rear up-stop screws (6 and 20). Adjust up-stops (2 and 14, Fig. 5-84) as required and tighten screws.
5. **Window Too High or Low in Down Position** - Loosen down-stop screw (15), adjust down-stop (24, Fig. 5-84) as required and tighten screw. Top edge of glass should be level with inner belt sealing strip when window is in full-down position.
6. **Window Binds** - Ease of window operation and stability depend to a great extent on front and rear glass stabilizers at belt (16 and 2). Contact should be enough to stabilize glass but not restrict window operation. Front and rear vertical guide cam assemblies (22 and 23, Fig. 5-84) must be in proper alignment for ease of guide roller operation. If cam channels and rollers lack lubrication, lubricate with part no. 1052196, Lubriplate Auto-Lube "A" or equivalent.

Removal - E Styles

In the following procedures the numbers in parentheses refer to the window hardware attachments in Figure 5-83 unless otherwise noted. Mark locations of attachments prior to loosening or removing hardware parts. When reinstalling hardware parts, tighten all door inner panel attachments to 10 to 14 N·m (90 to 125 in-lb) torque. If not using rivets, tighten all glass attachments to 8 N·m (72 in-lb) torque.

Removal - Rivet Procedure - Installer must have available rivet tool J-29022 or equivalent.

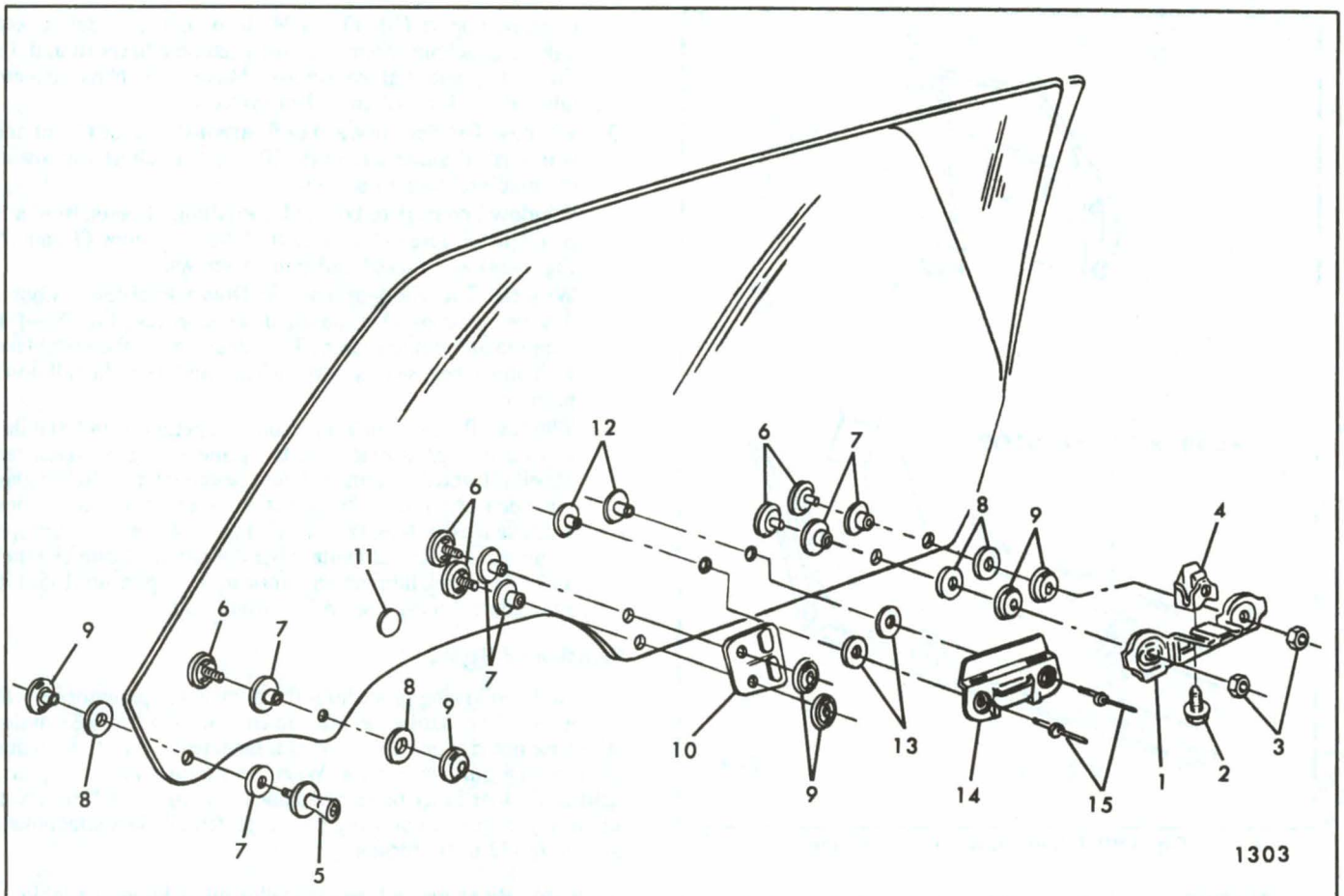
1. Remove door trim and combination insulator pad and water deflector. Mark attaching screws.

   NOTICE: Cover window regulator with shop cloth to prevent rivet shavings from entering mechanism during drilling operation. Shavings in the mechanism may cause binding and/or excessive wear.

2. Position glass so front and rear up-stop rivets (21 and 7) and lower sash channel cam rivets (13) are visible through access holes. Drive out centers of rivets (pins) using punch and hammer. Drill out four rivets using 6.3 mm (1/4") drill bit. Remove front and rear up-stops.
3. Remove glass from door.

Installation - Rivet Procedure - Installer must have available rivet tool J-29022 or equivalent.

1. Remove drilled out rivets and shavings from door.
2. Check rivet bushings and retainers for damage. If necessary, remove using flat-bladed tool covered with body cloth tape and replace. Install by snapping rivet retainer into bushing.
3. Install glass by first aligning glass roller (9, Fig. 5-85) to front vertical guide (23, Fig. 5-84), then slide glass into U plates of lower sash channel cam (28, Fig. 5-84). Glass is now supported by window regulator. Position glass so lower sash cam holes are visible through inner panel access holes (Fig. 5-83). Align rear hole of lower sash with hole in glass.
4. Install 1/4" peel type rivet (part no. 9437938 or equivalent) to rear hole of lower sash using available rivet tool J-29022 or equivalent. Install rivet to front slot of lower sash (5, Fig. 5-85).
5. Install front and rear up stops (3 and 7, Fig. 5-85) to glass using 1/4" rivets (4, Fig. 5-85).



1. Rear Up-Stop Support
2. Rear Up-Stop Screw
3. Rear Up-Stop Support to Glass Nuts
4. Rear Up-Stop
5. Front Up-Stop
6. Spanner Bolt
7. Bushing
8. Washer
9. Spanner Nut
10. Spacer
11. Stabilizer Button
12. Rivet Bushing
13. Rivet Retainer
14. Stabilizer Guide
15. Rivet

Fig. 5-81-Door Window Assembly - G Coupe Styles - Stabilizer Guide Riveted to Glass

6. Check window for proper alignment with side roof rail weatherstrip and quarter window weatherstrip. Adjust as necessary.
7. Install inner panel water deflector, insulator pad and door trim assembly.

Removal - Bolt-On Procedure, Glass Being Replaced

1. Remove door trim, insulator pad and inner panel water deflector. Mark attaching screws.

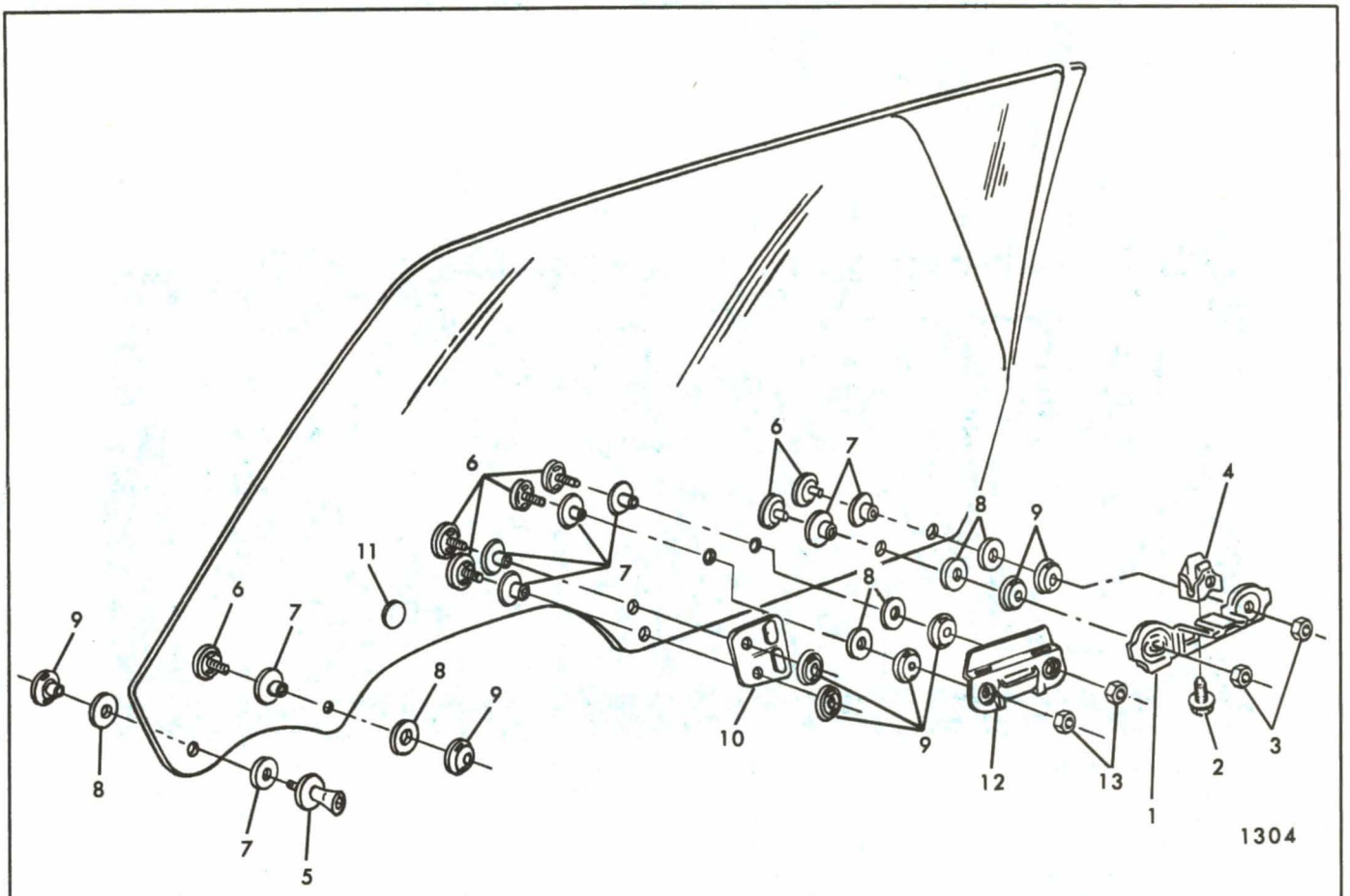
   NOTICE: Cover window regulator with shop cloth to prevent rivet shavings from entering mechanism during drilling operation. Shavings in the mechanism may cause binding and/or excessive wear.

2. Position glass so front and rear up-stop rivets (21 and 7) and lower sash channel cam rivets (13) are visible through access holes as shown in Figure 5-83. Drive out centers of rivets (pins) using punch and hammer. Drill out four rivets using 6.3 mm (1/4") drill bit. Remove front and rear up stops.
3. Remove glass from door.

Installation - Bolt-On Procedure, Glass Being Replaced

NOTICE: Do not use rivet bushings and retainers with bolt-on hardware as door glass breakage will result.

1. Remove drilled-out rivets and shavings from door.
2. Remove the following parts from door.
   a. Front vertical guide (23, Fig. 5-84)
   b. Rear vertical guide (22, Fig. 5-84)
   c. Inner panel cam (25, Fig. 5-84)
3. Install lower sash channel cam to glass using bolt-on hardware parts (Fig. 5-86).
4. Install glass by tilting forward to clear rollers through belt access hole. Hold glass.
5. Holding glass and adjusting window regulator arms as necessary, install front regulator roller through notch at center of lower sash channel cam. Install rear regulator roller through rear end of lower sash. Glass is now supported by window regulator.
6. Install the following parts to door.
   a. Inner panel cam
   b. Rear vertical guide
   c. Front vertical guide



1. Rear Up-Stop Support
2. Rear Up-Stop Screw
3. Rear Up-Stop Support to Glass Nuts
4. Rear Up-Stop
5. Front Up-Stop
6. Spanner Bolt
7. Bushing
8. Washer
9. Spanner Nut
10. Spacer
11. Stabilizer Button
12. Stabilizer Guide
13. Nuts - Stabilizer Guide to Glass

Fig. 5-82-Door Window Assembly - G Coupe Styles - Stabilizer Guide Bolted to Glass

7. Install front and rear up stops to glass using bolt-on hardware parts (Fig. 5-86).
8. Check window for proper alignment with side roof rail weatherstrip and quarter window weatherstrip. Adjust as necessary.
9. Install inner panel water deflector, insulator pad and door trim assembly.

Removal - Bolt-On Procedure, Glass not being Replaced

1. Remove door trim, insulator pad and inner panel water deflector. Mark attaching screws.

   NOTICE: Cover window regulator with shop cloth to prevent rivet shavings from entering mechanism during drilling operation. Shavings in the mechanism may cause binding and/or excessive wear.

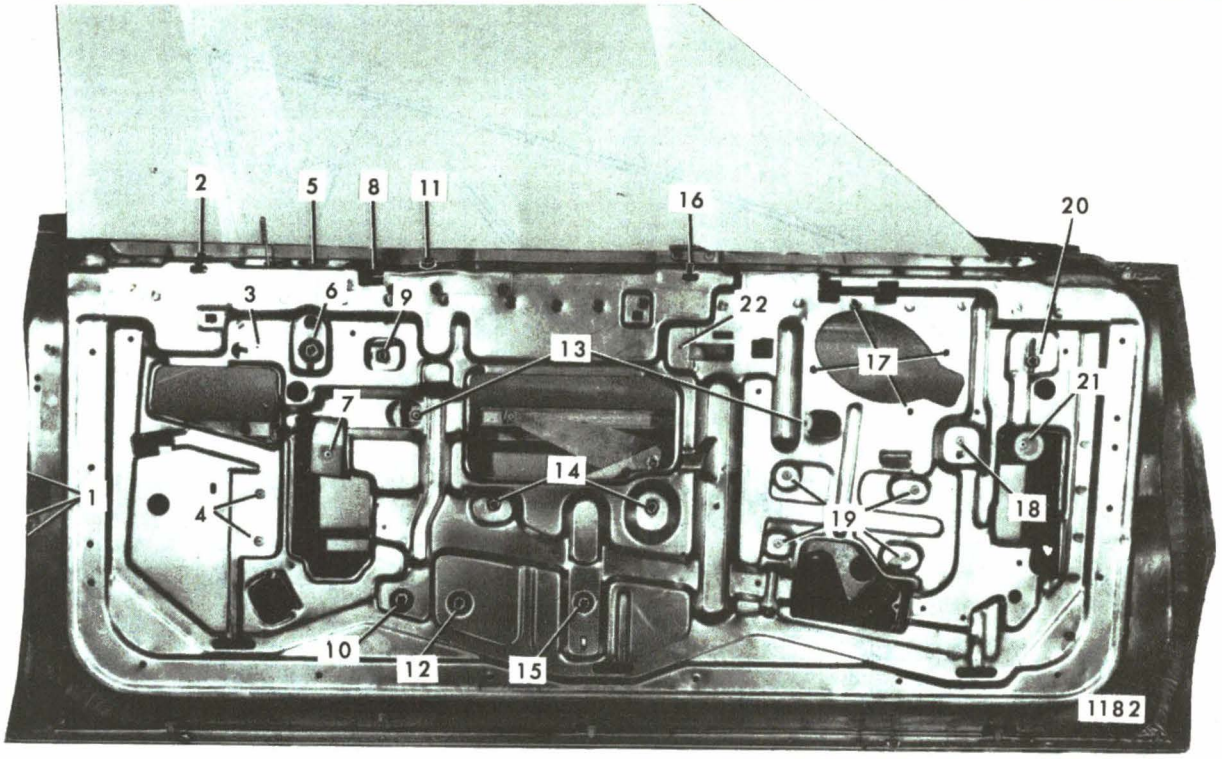
2. Position glass so front and rear up-stop rivets (21 and 7) on glass are visible through access holes. Drive out centers of rivets (pins) using punch and hammer. Drill out rivets using 6.3 mm (1/4") drill bit and remove front and rear up stops (1 and 21, Fig. 5-84).
3. Remove the following parts from door.
   a. Front vertical guide (23, Fig. 5-84)
   b. Rear vertical guide (22, Fig. 5-84)
   c. Inner panel cam (25, Fig. 5-84)
4. Holding glass and adjusting regulator arms as necessary, remove rear regulator roller from rear end of lower sash channel cam. Remove front regulator roller through notch at center of lower sash.
5. Raise glass and tilt forward to clear rollers through belt access hole. Remove glass from door.

   Remove rivet retainers and bushings (1 and 2, Fig. 5-85) from glass up-stop locations using flat-bladed tool covered with cloth body tape.

Installation - Bolt-On Procedure, Glass not being Replaced

NOTICE: Do not use rivet bushings and retainers with bolt-on hardware as door glass breakage will result.

1. Remove drilled out rivets and shavings from door.
2. Install glass to door by tilting forward to clear rollers through belt access hole.
3. Holding glass and adjusting window regulator arms as necessary, install front regulator roller through notch at center of lower sash channel cam. Install rear regulator roller



1. Screws - Door Lock Assembly (On Door Lock Pillar)
2. Screw - Rear Glass Stabilizer (At Belt)
3. Rivet - Bell Crank Assembly
4. Rivets - Power Lock Actuator
5. Screw - Rear Up Stop In-Out Adjustment
6. Screw - Rear Up Stop Up-Down Adjustment
7. Rivet - Rear Up Stop (On Glass)
8. Screw - Rear Vertical Guide Upper Support
9. Screw - Rear Vertical Guide Upper
10. Screw - Rear Vertical Guide Lower
11. Screw - Front Vertical Guide Upper
12. Screw - Front Vertical Guide Lower
13. Rivets - Lower Sash Channel Cam to Glass
14. Screws - Inner Panel Cam
15. Screw - Down Stop
16. Screw - Front Glass Stabilizer/Trim Retainer (At Belt)
17. Screw Locations - Speaker Attaching (Buick)
18. Rivet - Glass Stabilizer - Front (On Inner Panel)
19. Rivets - Window Regulator
20. Screw - Front Up Stop (On Inner Panel)
21. Rivet - Front Up Stop (On Glass)
22. Rivet Location - Inside Remote Handle

Fig. 5-83-Door and Window Hardware Attachments - E Styles

through rear end of lower sash. Glass is now supported by window regulator.

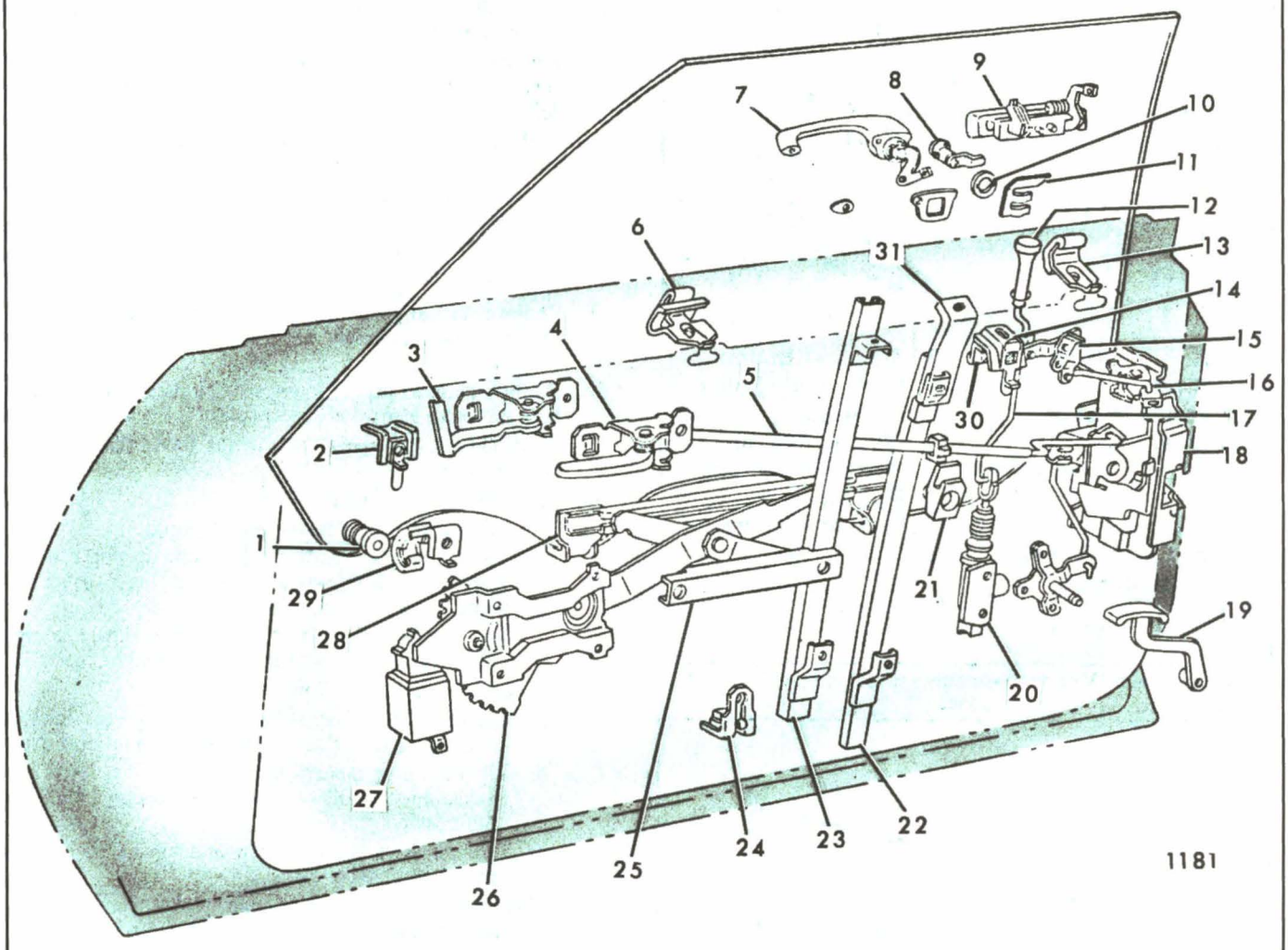
4. Install the following parts to door.
   a. Inner panel cam (25, Fig. 5-84)
   b. Rear vertical guide (22, Fig. 5-84)
   c. Front vertical guide (23, Fig. 5-84)
5. Install front and rear up stops (1 and 21, Fig. 5-84) to glass using bolt-on hardware parts (Fig. 5-86). Tighten glass attachments to 8 N·m (72 in-lb) torque.
6. Check window for proper alignment with side roof rail weatherstrip and quarter window weatherstrip. Adjust glass as necessary.
7. Install inner panel water deflector, insulator pad and door trim assembly.

Adjustments - G Coupe

In the following steps, the numbers in parentheses refer to items in Figure 5-87 unless otherwise noted. Door armrest cover, upper and lower trim panels must be removed and insulator pad (if so equipped) and water deflector detached before making adjustments. After making adjustments, tighten all loosened attachments to 10 to 14 N·m (90 to 125 in-lb) torque.

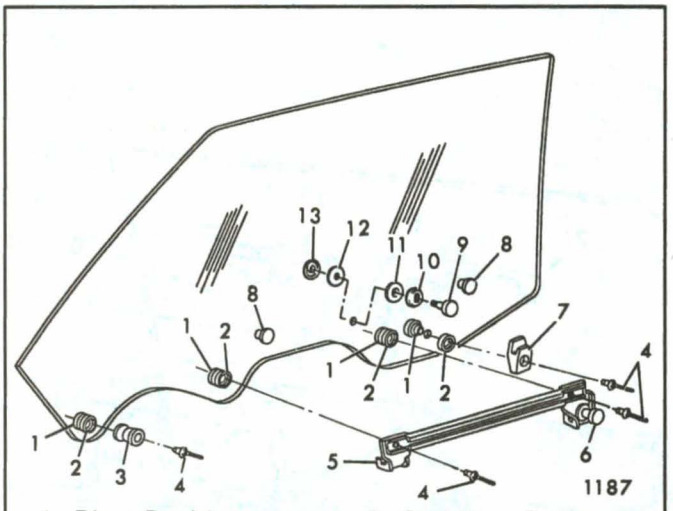
1. **Window Rotated** - Loosen up-stops (2 and 3) adjust inner panel cam (8) as required and tighten attaching screws. Adjust up-stops as required and tighten attaching screws.
2. **Window Upper Edge Inboard or Outboard** - Loosen the following attachments.
   a. Vertical guide upper support (lower) screws (27, Fig. 5-65, accessible through inner panel access holes).
   b. Pin assembly screws (12).
   c. Rear up-stop screw (10).
   d. Front belt stabilizer screw (1).

   Adjust vertical guide upper support (28, Fig. 5-65) and pin assembly (15, Fig. 5-65) in or out as required and tighten attaching screws. Adjust and tighten other loosened components. Make sure glass remains inboard of blow-out clip when cycled.
3. **Window Too Far Forward or Rearward** - Loosen vertical guide upper and lower screws (4) and adjust as required.
4. **Window Too High or Low in Up Position** - Adjust front and rear up-travel stops (2 and 3) as required.
5. **Window Too High or Low in Down Position** - Adjust down-travel stop (11) as required.
6. **Window Binds** - Ease of window operation and stability depend to a great extent on the front belt stabilizer (10, Fig. 5-65) and rear belt stabilizer pin assembly (15, Fig. 5-65). Contact should be enough to stabilize glass but not restrict window operation.



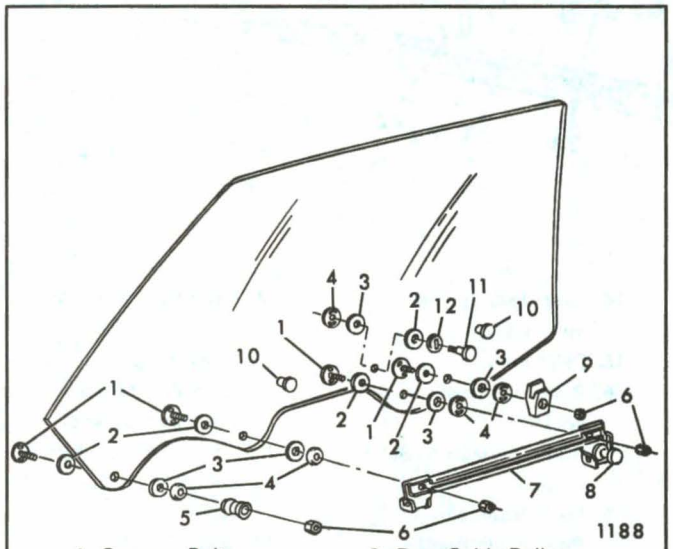
1. Front Up Stop (On Glass)
2. Front Up Stop (On Inner Panel)
3. Inside Remote Handle (Cadillac)
4. Inside Remote Handle (Buick and Oldsmobile)
5. Rod - Inside Handle to Lock
6. Front Trim Retainer/Glass Stabilizer (At Belt)
7. Outside Handle - Push-Button Type (Buick and Cadillac)
8. Lock Cylinder Assembly
9. Outside Handle - Lift-Bar Type (Oldsmobile)
10. Gasket - Lock Cylinder
11. Retainer - Lock Cylinder
12. Knob - Door Inside Locking
13. Glass Stabilizer - Rear (At Belt)
14. Rear Up Stop (On Inner Panel)
15. Bell Crank
16. Rod - Bell Crank to Lock
17. Rod - Actuator to Bell Crank
18. Lock Assembly
19. Rear Inside Handle (Cadillac Right Side)
20. Power Lock Actuator
21. Rear Up Stop (On Glass)
22. Rear Vertical Guide Cam Assembly
23. Front Vertical Guide Cam Assembly
24. Down Stop
25. Inner Panel Cam
26. Window Regulator
27. Power Window Motor
28. Lower Sash Channel Cam
29. Glass Stabilizer - Front (On Inner Panel)
30. Rear Up Stop Support
31. Rear Vertical Guide Upper Support

Fig. 5-84-Door and Window Hardware - E Styles



1. Rivet Bushing
2. Rivet Retainer
3. Front Up Stop
4. Rivet
5. Lower Sash Channel Cam
6. Rear Guide Roller - on Sash Channel
7. Rear Up Stop
8. Stabilizer Button
9. Front Guide Roller - on Glass
10. Washer (Metal) - Front Guide Roller
11. Bushing
12. Washer (Plastic)
13. Spanner Nut

Fig. 5-85-Door Window Assembly - Rivet-On Installation - E Styles



1. Spanner Bolt
2. Bushing
3. Washer (Plastic)
4. Spanner Nut
5. Front Up Stop
6. Attaching Nut
7. Lower Sash Channel Cam
8. Rear Guide Roller - On Lower Sash
9. Rear Up Stop
10. Stabilizer Button
11. Front Guide Roller - On Glass
12. Washer (Metal) - Front Guide Roller

Fig. 5-86 - Door Window Assembly - Bolt-On Installation - E Styles

Removal and Installation - G Coupe

In the following procedure, the numbers in parentheses refer to component attachments in Figure 5-87. Mark locations of attachments prior to loosening or removing hardware components. When reinstalling hardware components, tighten all attachments to 10 to 14 N·m (90 to 125 in-lb) torque.

1. Remove door armrest cover, upper and lower door trim panels, insulator pad (if so equipped) and inner panel water deflector.
2. With glass in half-raised position, mark location of attaching screws and remove the following components.
   a. Front belt stabilizer and trim retainer (1)
   b. Rear belt stabilizer pin assembly (12)
   c. Front up-travel stop - on inner panel (2)
   d. Rear up-stop assembly - on glass (9)
3. Remove vertical guide upper and lower attaching screws (4) disengage guide assembly from roller and lay guide in bottom of door.
4. Position glass to expose lower sash channel cam attaching nuts through inner panel access holes (7), then remove nuts.
5. While holding glass securely, separate glass from lower sash channel cam.
6. Carefully remove glass as follows.
   a. Raise glass slowly and slide rearward.
   b. Tilt top of glass inboard until front up-stop roller on glass clears front loading hole at inner panel belt reinforcement.
   c. Rotate glass 45° rearward, then raise slowly to clear glass attaching screws through belt loading holes.
7. To install, proceed as follows.
   a. Load rear vertical edge of glass at 45° angle to clear glass attaching screws, then rotate to horizontal position.
   b. Tilt top of glass inboard, slide rearward, then lower glass to clear up-stop roller through front loading hole at belt reinforcement.
   c. Lower glass and align screw attachments in holes on lower sash channel cam.
8. Adjust window for proper alignment and operation. Make sure glass remains inboard of blow-out clip when cycled.
9. Tighten all hardware attachments to 10 to 14 N·m (90 to 125 in-lb) torque. Reinstall all previously removed trim components.

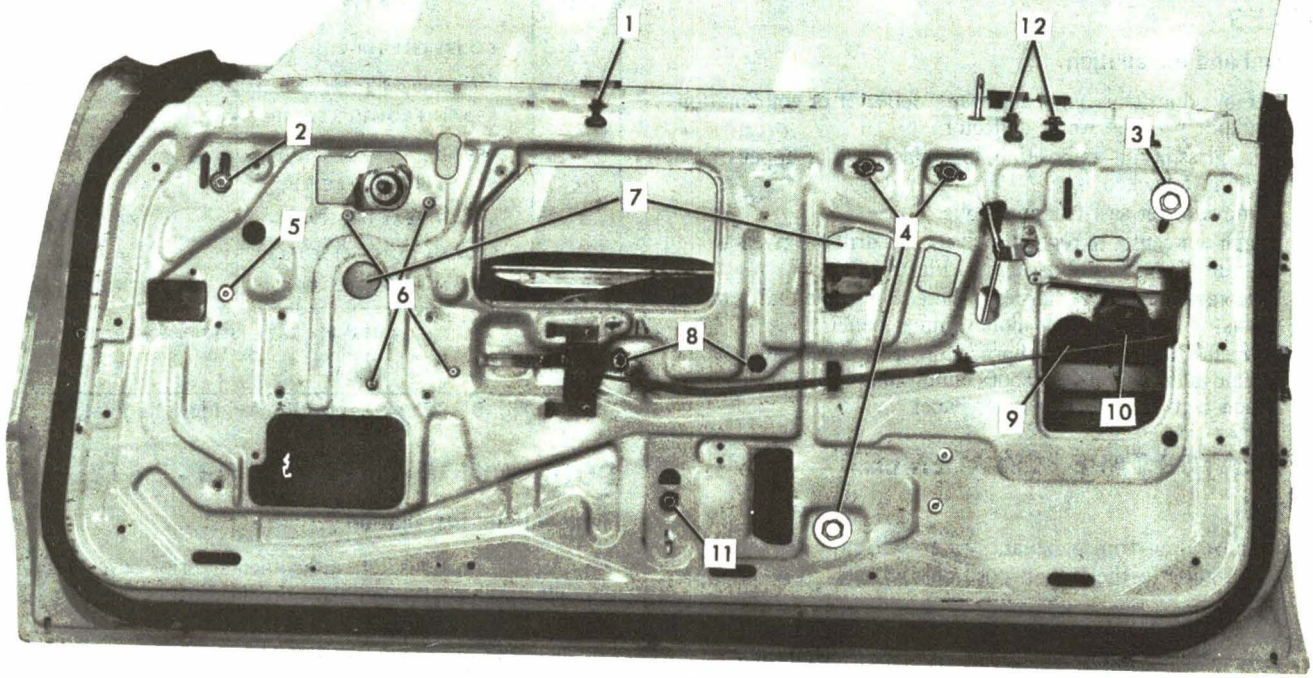
FRONT DOOR WINDOW ASSEMBLY - G SEDAN STYLES

The front door window assembly consists of a solid tempered safety plate glass window bonded to a lower sash channel. The channel is welded to 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

Door armrest cover, upper and lower trim panels must be removed and insulator pad (if so equipped) and water deflector detached before making adjustments.

1. **Window Rotated** - Loosen inner panel cam attaching screws (5, Fig. 5-68) adjust glass as required, then tighten screws to 10 to 14 N·m (90 to 125 in-lb) torque. Reinstall previously removed trim components.
2. **Window Too High or Low in Down Position** - Loosen down-travel stop attaching screw (8, Fig. 5-68) adjust glass as required, then position down-stop and tighten screw to 10 to 14 N·m (90 to 125 in-lb) torque. Reinstall previously removed trim components.



1. Front Belt Stabilizer and Trim Retainer Screw
2. Front Up-Travel Stop Screw (on Inner Panel)
3. Rear Up-Travel Stop Screw (on Inner Panel)
4. Vertical Guide Upper and Lower Screws
5. Glass Stabilizer Rivet
6. Window Regulator Rivets (Manual Window)
7. Access Holes - Lower Sash Channel Cam to Glass Attaching Nuts
8. Inner Panel Cam Screws
9. Rear Up-Stop Support to Glass Attaching Nut
10. Rear Up-Stop Attaching Screw
11. Down-Travel Stop Screw
12. Rear Belt Stabilizer Pin Assembly Screws

Fig. 5-87-Front Door Window Hardware Attachments - G Coupe Styles

Removal and Installation

Mark locations of attachments prior to loosening or removing hardware components.

1. Remove door armrest cover, upper and lower trim panels, insulator pad (if so equipped) and water deflector.
2. Remove inner panel cam attaching screws (5, Fig. 5-68), then remove inner panel cam.
3. With glass lowered 3/4 of the way down, tip nose of glass down and slide glass forward to disengage rear roller; raise nose up at 45° angle and slide glass rearward to disengage front roller.
4. Remove glass by lifting outboard of upper frame. Adjust regulator position as required during glass removal.
5. To install, reverse removal procedure. Tighten attachments to 10 to 14 N·m (90 to 125 in-lb) torque. Reinstall previously removed trim components.

FRONT DOOR WINDOW ASSEMBLY - K STYLE

The door window assembly consists of a solid tempered plate glass. Glass is attached to the regulator with bolt-on components.

Adjustments

1. **Window rotated** - minor adjustment may be achieved by lowering and repositioning the front and rear up stops (items 3 and 5, Fig. 5-69). If additional adjustment is required, loosen glass to sash attaching bolts and adjust as required (item 1, Fig. 5-70). Tighten bolts to 10 to 12 N·m (90 to 107 in-lb) torque.
2. **Window too high or too low in down position** - loosen window down stop and raise or lower window to desired height (item 10, Fig. 5-69). Then position down stop against lower edge of glass and tighten attaching screw 10 to 14 N·m (90 to 125 in-lb) torque.
3. **Glass tip-in adjustment** - in and out adjustment is controlled by moving the window regulator upper attachments inboard or outboard (item 2, Fig. 5-70). This adjustment may necessitate an adjustment of the rear up stop. Loosening the bolt on the side of the up stop will allow multidirectional movement. Tighten all bolts to 10 to 14 N·m (90 to 125 in-lb) torque upon completion of adjustments.

Removal and Installation

1. Remove door trim panel, inner panel water deflector and door insulator.
2. Lower door glass until sash attaching nuts are accessible through inner panel access hole.
3. Loosen attaching bolts on door stabilizer brackets (item 8, Fig. 5-70).
4. Remove sash attaching nuts (item 1, Fig. 5-70).

5. Remove glass from door, guiding front up stop on glass through inner panel depression.
6. To install, reverse removal procedure. Adjust window as required. Tighten nuts and bolts to 10 to 12 N·m (90 to 107 in-lb) torque.

FRONT DOOR WINDOW REGULATOR - B,C STYLES

Removal and Installation

1. Remove door trim panel and water deflector or combination insulator pad and water deflector.
2. With glass in full-up position, tape glass to door upper frame with cloth-backed tape.
3. Remove lower sash channel bolts.
4. Punch out center of regulator rivets and drill out rivets using 6.3 mm (1/4") drill bit (item 1, Fig. 5-64).
5. Disconnect electrical harness where applicable and remove regulator through access hole in inner panel.
6. To install, reverse removal procedure using rivet tool J-29022 or equivalent and 1/4"x0.500" aluminum peel type rivets to attach regulator to door inner panel.

REGULATOR TAPE REPLACEMENT

Removal

1. Remove door trim panel and water deflector.
2. Raise glass to the full-up position and tape to door upper frame.
   CAUTION: Coupe manual regulators have an assist arm which is under tension from a counterbalance spring. To avoid personal injury, release tension on assist arm by following step 3.
3. Coupe manual regulators only:
   a. Grasp roller on assist arm, pull down to release tension on tape and remove tape loop from roller.
   b. Carefully swing assist arm upward against channel.
4. Remove sash bolts.
5. Using regulator handle or motor, position sash next to access hole.
6. Insert thin, flat-bladed screwdriver into slot at top of guide. While pressing down on screwdriver, push up on guide to separate guide and block. Remove block from tape and let guide and sash drop to bottom of door.
7. Remove tape from tabs using flat-bladed screwdriver.
8. Use crank handle or regulator motor to remove tape from regulator.

Installation

1. Cut service tape to length needed (see chart, Fig. 5-88).
2. Insert tape into regulator to engage drive gear. Use handle or motor to run tape into regulator.
3. Attach free end of tape to regulator tabs. Last hole in tape must fit over last tab on regulator housing. This is required for proper glass travel.
4. Raise guide and sash above end of tape. Install block to tape with T section at the bottom. Lower guide and snap over block. A definite click will be heard when parts lock together.
5. Position sash to glass and install attaching nuts. Tighten to 7 N·m (60 in-lb) torque.
6. On coupe manual regulator, install tape loop to assist arm as follows:
   a. With glass in full-up position, grasp roller on assist arm and pull down to install tape loop over roller.
   b. Carefully allow counterbalance spring to take up slack in tape.
7. Remove tape from glass and check window operation for full up and down travel.
8. Install water deflector and door trim.

TAPE LENGTHS FOR WINDOW REGULATORS
(CUT SERVICE TAPE TO LENGTH NEEDED)

STYLE	DOOR TYPE	TAPE LENGTH - mm (IN)
B-C	COUPE (ELECTRIC)	1109.7 mm (43.7")
B	COUPE (MANUAL)	1385.1 mm (54.5")
B-C	SEDAN-FRONT (ELECTRIC)	1086. mm (42.8)
B	SEDAN-FRONT (MANUAL)	1223.2 mm (48.2)
B-C	SEDAN-REAR (ELECTRIC)	696.6 mm (27.4")
B	SEDAN-REAR (MANUAL)	777.6 mm (30.6")
K	SEDAN-FRONT (ELECTRIC)	1166.4 mm (45.9")
K	SEDAN-REAR (ELECTRIC)	874.8 mm (34.4")

SERVICE TAPE IS 1385 mm (54.5") 1793

Fig. 5-88-Tape Length for Window Regulators

DOOR WINDOW REGULATOR - E STYLES

Removal and Installation

Mark locations of attachments prior to loosening or removing. When reinstalling, tighten attachments 10 to 14 N·m (90 to 125 in-lb) torque.

1. Remove door trim panel and combination insulator pad and 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. 5-89). If door stops are not available, have helper hold window or support glass in another manner.
3. Mark location and remove inner panel cam attaching screws (14, Fig. 5-83). Remove inner panel cam (25, Fig. 5-84).
4. Disconnect wire harness connector at window regulator motor.
5. Locate regulator attaching rivets (19, Fig. 5-83). Drive out regulator rivet center pins with punch and drill out rivets with 6.3 mm (1/4") drill bit.
6. Slide regulator and motor assembly forward and rearward as necessary to disengage regulator rollers through notch at center of lower sash channel cam.
7. Remove regulator through largest inner panel access hole.
   CAUTION: If electric motor removal from the regulator is required, refer to the door window electric motor removal and installation procedure. The regulator lift arm is under tension from the counterbalance spring and can cause personal injury if the sector gear is not locked in position.
8. If hand rivet tool J-29022 or equivalent is available, install regulator to inner panel using 1/4"x0.500" aluminum peel type rivets (part no. 9436175 or equivalent).

   If rivet tool is not available, install regulator using U nuts and screws. Place U nuts (part no. 3916700 or 3982098 or equivalent) over each regulator attaching hole with integral nut on outboard side of regulator backplate. Some U nuts may require grinding at edges in order to line up properly with holes in backplate.

   If backplate holes do not line up with holes in inner panel, loosen up-stops on inner panel (6 and 20, Fig. 5-83), raise to full-up position and tighten. This will provide additional window adjustment for lining up holes. Readjust up stops after attaching regulator.

Attach regulator to inner panel with 1/4-20x1/2" attaching screws (part no. 9419723 or equivalent). Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque.

9. Install previously removed parts in reverse order.

DOOR WINDOW REGULATOR - G COUPE STYLES

Removal and Installation

Mark locations of attachments prior to loosening or removing. When reinstalling, tighten attachments to 10 to 14 N·m (90 to 125 in-lb) torque.

1. Remove door armrest cover, upper and lower door trim panels, insulator pad (if so equipped) and inner panel water deflector.
2. Prop window in half-up position by inserting rubber wedge door stops between window and inner panel (at belt) at front and rear of window (Fig. 5-89). If door stops are not available, remove window.
3. Mark location and remove inner panel cam attaching screws (9, Fig. 5-66).
4. Mark location and remove vertical guide attaching screws (5, Fig. 5-66), then remove vertical guide through large access hole.
5. On electric regulators, disconnect wire harness connector at window regulator motor.
6. Drive out regulator attaching rivet center pins with punch and drill out rivets with 6.3 mm (1/4") drill bit. (see Fig. 5-87 for manual regulator and Fig. 5-66 for electric regulator rivet locations).
7. Remove lower sash channel cam to glass rear attaching nut (10, Fig. 5-66).
8. Slide regulator (manual) or regulator and motor (electric) rearward to disengage regulator rollers from lower sash channel cam.
9. Remove regulator through largest inner panel access hole.
   CAUTION: 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 personal injury if the sector gear is not locked in position.
10. Place U nuts (part no. 3916700 or 3982098 or equivalent) over each regulator attaching hole with integral nut on outboard side of regulator backplate.
11. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4-20x1/2" attaching screws (part no. 9419723 or equivalent). Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque.

FRONT DOOR WINDOW REGULATOR - G SEDAN STYLES

Removal and Installation

Mark locations of attachments prior to loosening or removing. When reinstalling, tighten attachments to 10 to 14 N·m (90 to 125 in-lb) torque.

1. Remove door armrest cover, upper and lower door trim panels, insulator pad (if so equipped) and inner panel water deflector.
2. Prop window in full-up position and tape glass to upper frame.
3. Mark location and remove inner panel cam attaching screws (5, Fig. 5-68). Remove inner panel cam.
4. Remove inside remote handle to lock connecting rod (8, Fig. 5-67). On electrically operated regulators, disconnect wire harness connector at window regulator motor.
5. Drive out regulator attaching rivet center pins with punch and drill out rivets with 6.3 mm (1/4") drill bit.
   Manual window has four 1/4" rivets, electric has five. See item 3, Figure 5-68 for electric regulator rivet locations.
6. Disengage regulator rollers from lower sash channel cam.
7. Slide regulator (manual) or regulator and motor assembly (electric) rearward and remove through rear inner panel access hole.
   CAUTION: 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 personal injury if the sector gear is not locked in position.
8. Place U nuts (part no. 3916700 or 3982098 or equivalent) over each regulator attaching hole with integral nut on outboard side of regulator backplate.
9. To install regulator, reverse removal procedure. Attach regulator to inner panel with 1/4-20x1/2" screws (part no. 9419723 or equivalent). Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque.

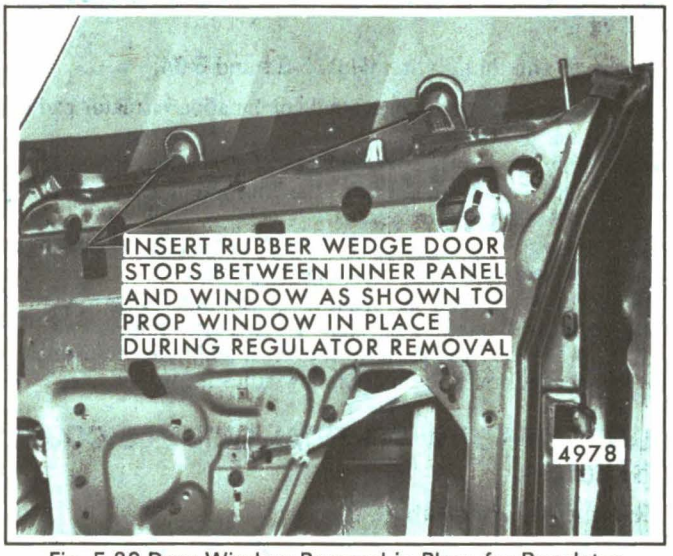


Fig. 5-89-Door Window Propped in Place for Regulator Removal

FRONT DOOR WINDOW REGULATOR - K STYLE

Removal and Installation

1. Remove front door trim panel assembly, inner panel water deflector and door insulator.
2. Lower door glass until sash attaching nuts are in line with access hole in the inner panel.
3. Loosen attaching bolts on front and rear glass stabilizer at belt line (item 8, Fig. 5-70).
4. Remove door glass to sash attaching bolts and remove glass from door. The front up stop (attached to glass) must be guided through inner panel depression at front (item 17, Fig. 5-69).
5. Punch out center pins of rivets holding regulator drive unit and drill out rivets using a 6.3 mm (1/4") drill bit.
6. Remove upper and lower regulator attaching bolts and disconnect electrical connector.
7. Rotate regulator and push upper section of the regulator into the upper rear corner of the door. Pull lower end of guide tube and sash plate out the inner panel access hole. Lower regulator until upper end of regulator assembly is also out the access hole. Move regulator rearward to complete removal.

8. Install regulator by reversing removal procedure. Tighten all attaching bolts to 10 to 14 N·m (90 to 125 in-lb) torque. Using hand rivet tool J-29022 or equivalent, attach regulator to inner panel with 1/4"x0.500" aluminum peel type rivets.
9. Align glass as required before replacing door trim.

REGULATOR TAPE REPLACEMENT

Removal and Installation

1. Remove regulator from door as described in window regulator section.
2. Remove upper and lower guide tube attaching bolts.
3. Separate guide tube and sash plate from regulator.
4. Remove plastic guide from the regulator tape. Guide is a snap fit.
5. Using a 12 volt DC power source, run the tape completely out of the regulator.
6. Disconnect the tape from the tabs on the regulator housing.
7. Cut replacement tape to required length (Fig. 5-88).
8. To install, reverse removal procedure.

DOOR WINDOW FRONT VERTICAL GUIDE - E STYLE

Removal and Installation (Figs. 5-83 and 5-84)

1. Remove door trim panel and combination insulator pad and water deflector.
2. With window fully lowered, mark location of upper and lower front vertical guide attaching screws (11 and 12, Fig. 5-83), then remove screws.
3. Raise guide (23, Fig. 5-84) through belt access hole, disengage from roller on glass, and remove from door.
4. To install, reverse removal procedure. Align guide to previously marked position. Tighten attaching screws 10 to 14 N·m (90 to 125 in-lb) torque. If additional adjustment is required, refer to door window adjustments.

DOOR WINDOW VERTICAL GUIDE - G COUPE STYLES

Removal and Installation

1. Remove door armrest cover, upper and lower trim panels, insulator pad (if so equipped) and inner panel water deflector.
2. With window in full-up position, mark location of upper and lower vertical guide attaching screws (5, Fig. 5-66), then remove screws.
3. Slide lower end of guide forward and disengage from roller on lower sash channel cam assembly (9, Fig. 5-65). Remove guide, upper end first, through largest inner panel access hole.
4. To install, reverse removal procedure. Align components to previously marked positions. Tighten attaching screws 10 to 14 N·m (90 to 125 in-lb) torque. If additional adjustment is required, refer to door window adjustments.

DOOR WINDOW REAR VERTICAL GUIDE AND SUPPORT - E STYLE

Removal and Installation (Figs. 5-83 and 5-84)

1. Remove door trim panel and combination insulator pad and water deflector.
2. With window in full-up position, mark location of upper and lower rear vertical guide attaching screws (9 and 10, Fig. 5-83), then remove screws.
3. Lower guide (22, Fig. 5-84) until disengaged from roller on lower sash channel cam. Remove guide through largest inner panel access hole.
4. Rear vertical guide upper support (31, Fig. 5-84) can be removed separately or attached to rear guide. Mark and remove screw (8, Fig. 5-83), then remove support.
5. To install, reverse removal procedure. Align rear vertical guide and support to previously marked positions. Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque. If additional adjustment is required, refer to door window adjustments.

FRONT GLASS STABILIZER (ON INNER PANEL) - E STYLE

Removal

1. Remove door trim panel and combination insulator pad and water deflector.
2. Locate stabilizer attaching rivet (18, Fig. 5-83) on inner panel. Punch out rivet center pin and drill out rivet using 6.3 mm (1/4") drill bit. Remove stabilizer (29, Fig. 5-84).

Installation

1. If hand rivet tool J-29022 or equivalent is available, install stabilizer using 1/4" x 0.500" aluminum peel type rivet (part no. 9436175 or equivalent).
2. If hand rivet tool is not available, install stabilizer using M6x1.0x14 mm (1/4-20x1/2") screw and nut. Tigten screw to 10 to 14 N·m (90 to 125 in-lb) torque.
3. Install water deflector, insulator pad and door trim panel.

FRONT GLASS RUN CHANNEL RETAINER - B,C AND G STYLES

Removal and Installation

1. Remove door trim insulator pad (if so equipped) and inner panel water deflector or combination assembly.
2. On B and C styles and G sedan, raise window to full-up position.
3. Remove front retainer upper and lower attaching screws (2, Fig. 5-64 typical).
4. Disengage the run channel and remove from door.
5. To install, reverse removal procedure. Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque.

GLASS RUN CHANNEL - B,C AND G STYLES

Removal and Installation

1. On B and C styles and G sedan, 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

Information in this section concerns operations applicable to rear doors only. Procedures for removal of sound absorbers, water deflectors (or combination assemblies), weatherstrips, door handles, door lock system components, sash channel cam, inner panel cam, window regulator motor, door trim and radio speakers are outlined in the Front and Rear Doors and Door Trim portions of this section.

Figures 5-92 through 5-95 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.

Adjustment

In-or-out and up-or-down adjustment is available at the door side hinge attaching bolts. Fore-or-aft and a slight up-or-down adjustment is available at the body side (center pillar) hinge attaching bolts. After door adjustment, tighten hinge bolts to 20 to 29 N·m (15 to 21 ft-lb) torque.

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.

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 insulator pad (if so equipped) 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. 5-96).

NOTICE: Prior to reinstalling the door to the body, clean off old sealer at hinge attaching areas and apply a coat of heavy-

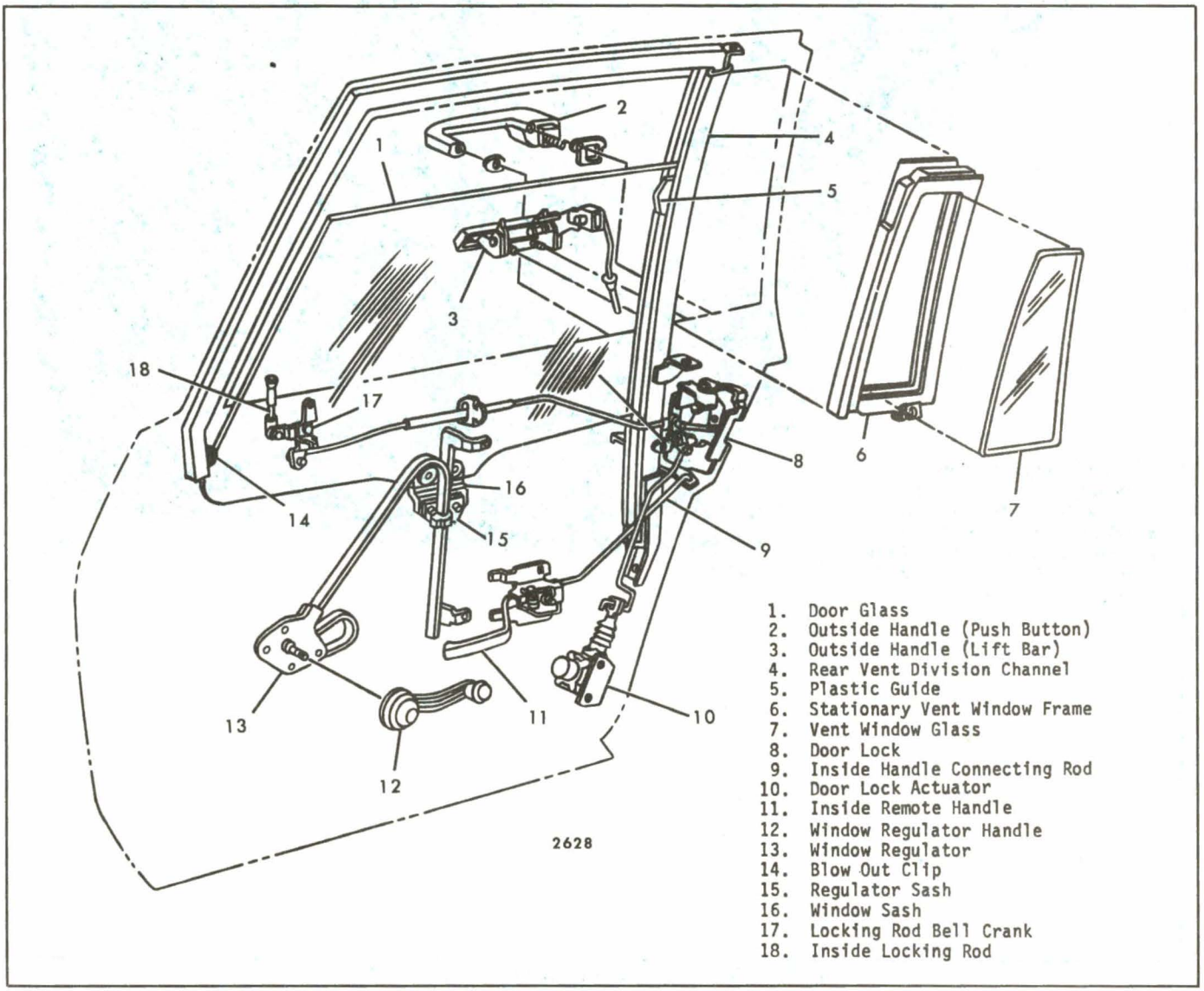
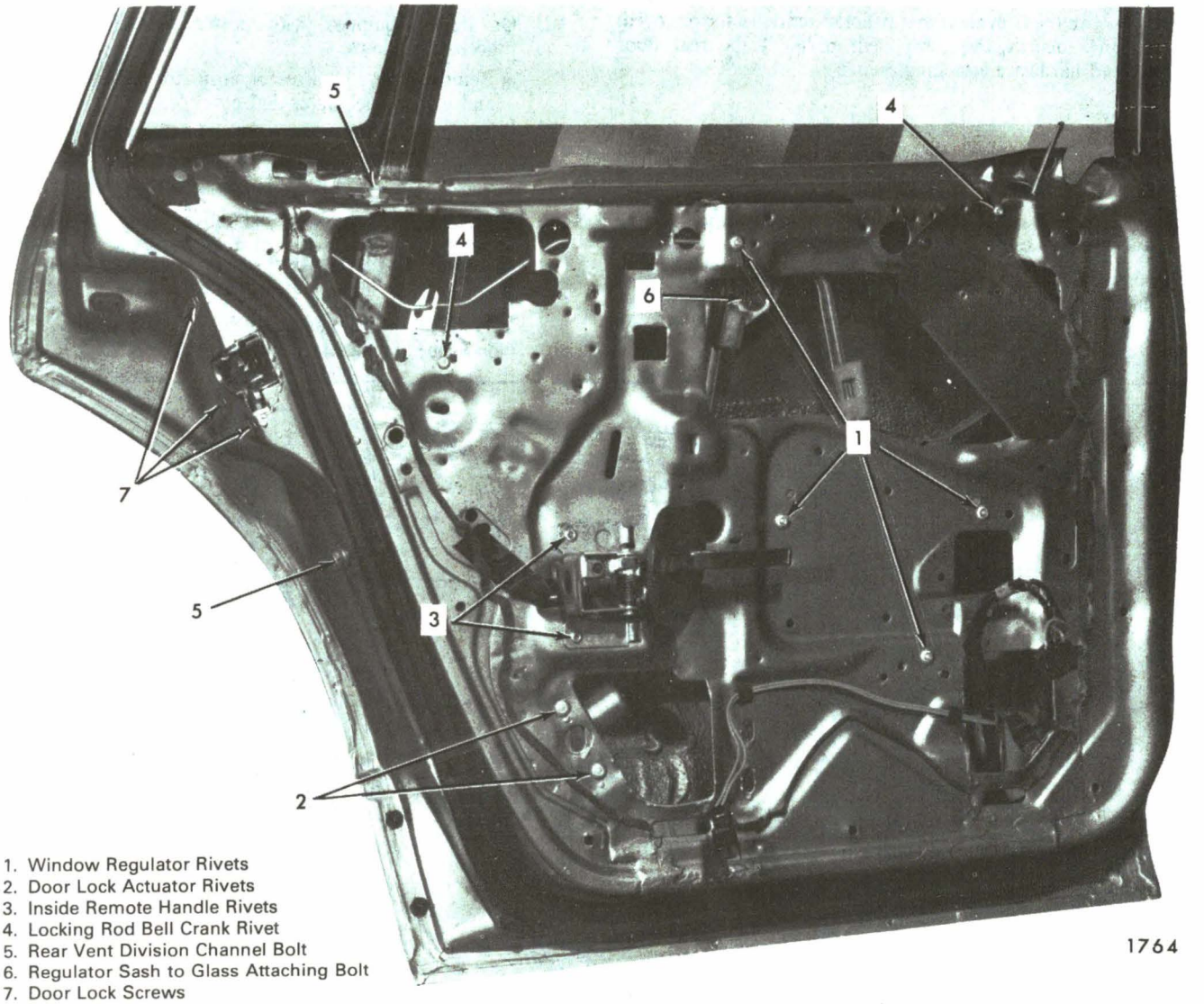
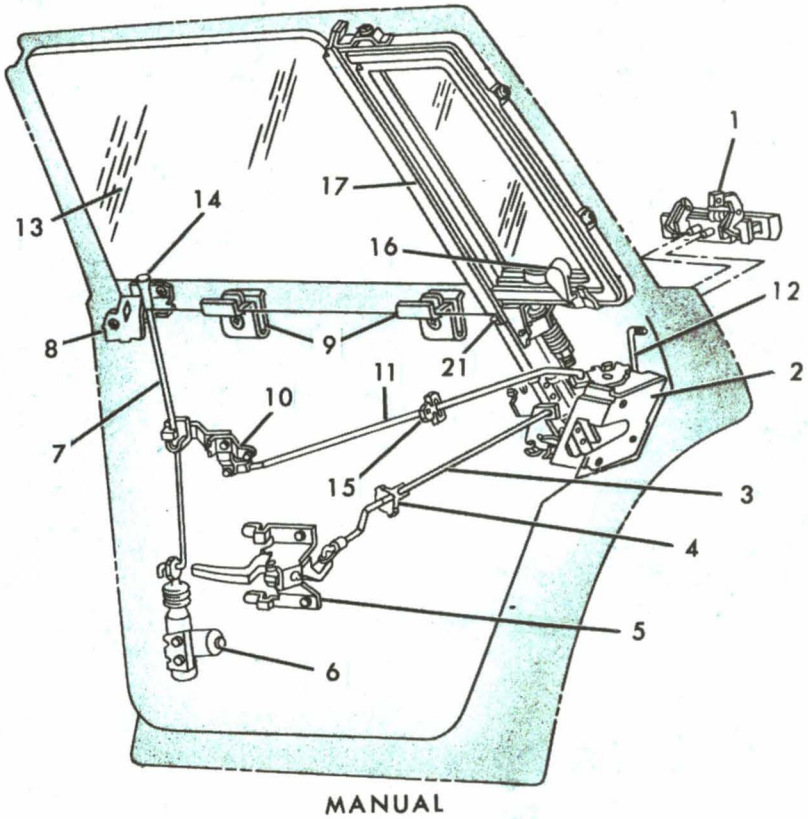


Fig. 5-90 - Rear Door Hardware - B,C Styles

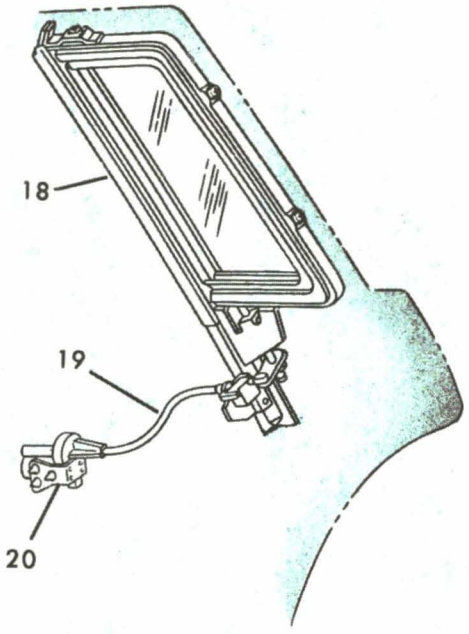


1. Window Regulator Rivets
2. Door Lock Actuator Rivets
3. Inside Remote Handle Rivets
4. Locking Rod Bell Crank Rivet
5. Rear Vent Division Channel Bolt
6. Regulator Sash to Glass Attaching Bolt
7. Door Lock Screws

Fig. 5-91 - Rear Door Hardware Attachments - B,C Styles



MANUAL

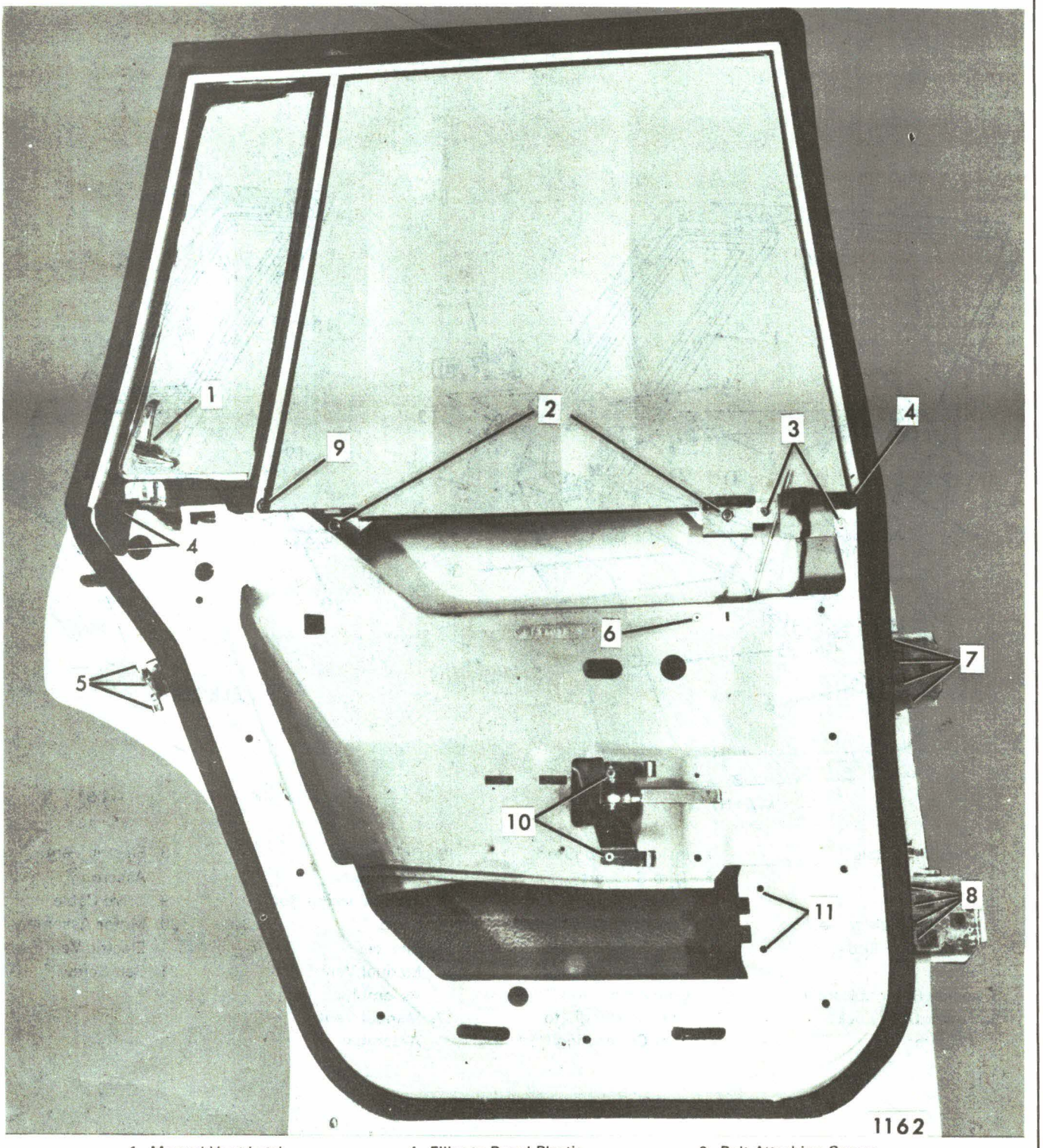


ELECTRIC

1161

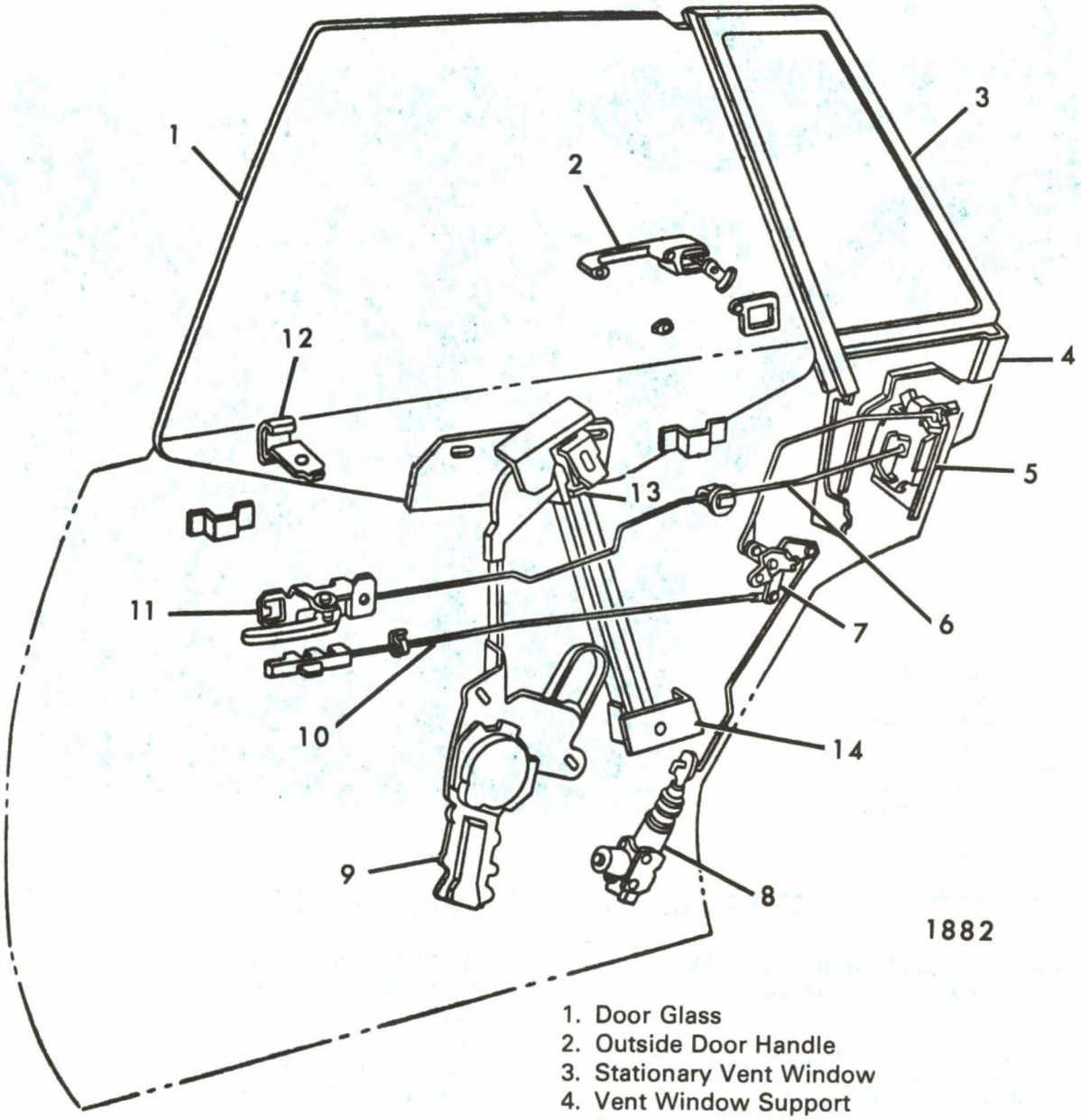
1. Outside Handle Assembly
2. Door Lock
3. Inside Handle to Lock Connecting Rod
4. Shoe
5. Inside Remote Handle
6. Power Door Lock Actuator
7. Inside Locking Rod
8. Trim Support Retainer
9. Glass Support Clips
10. Bell Crank
11. Bell Crank to Lock Connecting Rod
12. Outside Handle to Lock Connecting Rod
13. Door Glass (Stationary)
14. Inside Locking Rod Knob
15. Silencer
16. Manual Vent Latch Assembly
17. Manual Vent Assembly
18. Electric Vent Assembly
19. Drive Cable
20. Motor Assembly - Electric Vent
21. Belt Screw

Fig. 5-92-Rear Door Hardware - G Sedan Styles (G-35 Shown; G-69 Similar, see Fig. 5-98)



1. Manual Vent Latch (Wagon Styles Only)
2. Glass Support Clip Screws
3. Retainer to Panel Screws
4. Filler to Panel Plastic Nails
5. Door Lock Screws
6. Bell Crank Rivet
7. Upper Hinge Bolts
8. Lower Hinge Bolts
9. Belt Attaching Screw
10. Inside Remote Handle Rivets
11. Rivet Locations for Power Door Lock Actuator

Fig. 5-93-Rear Door Hardware Attachments - G Sedan Styles (G-35 Shown; G-69 Similar)



1. Door Glass
2. Outside Door Handle
3. Stationary Vent Window
4. Vent Window Support
5. Door Lock
6. Inside Handle Connecting Rod
7. Locking Rod Bell Crank
8. Power Door Lock Actuator
9. Power Regulator Assembly
10. Inside Locking Rod
11. Inside Remote Handle
12. Glass Stabilizer
13. Rear Up Stop
14. Regulator Lower Support

Fig. 5-94-Rear Door Hardware - K Style

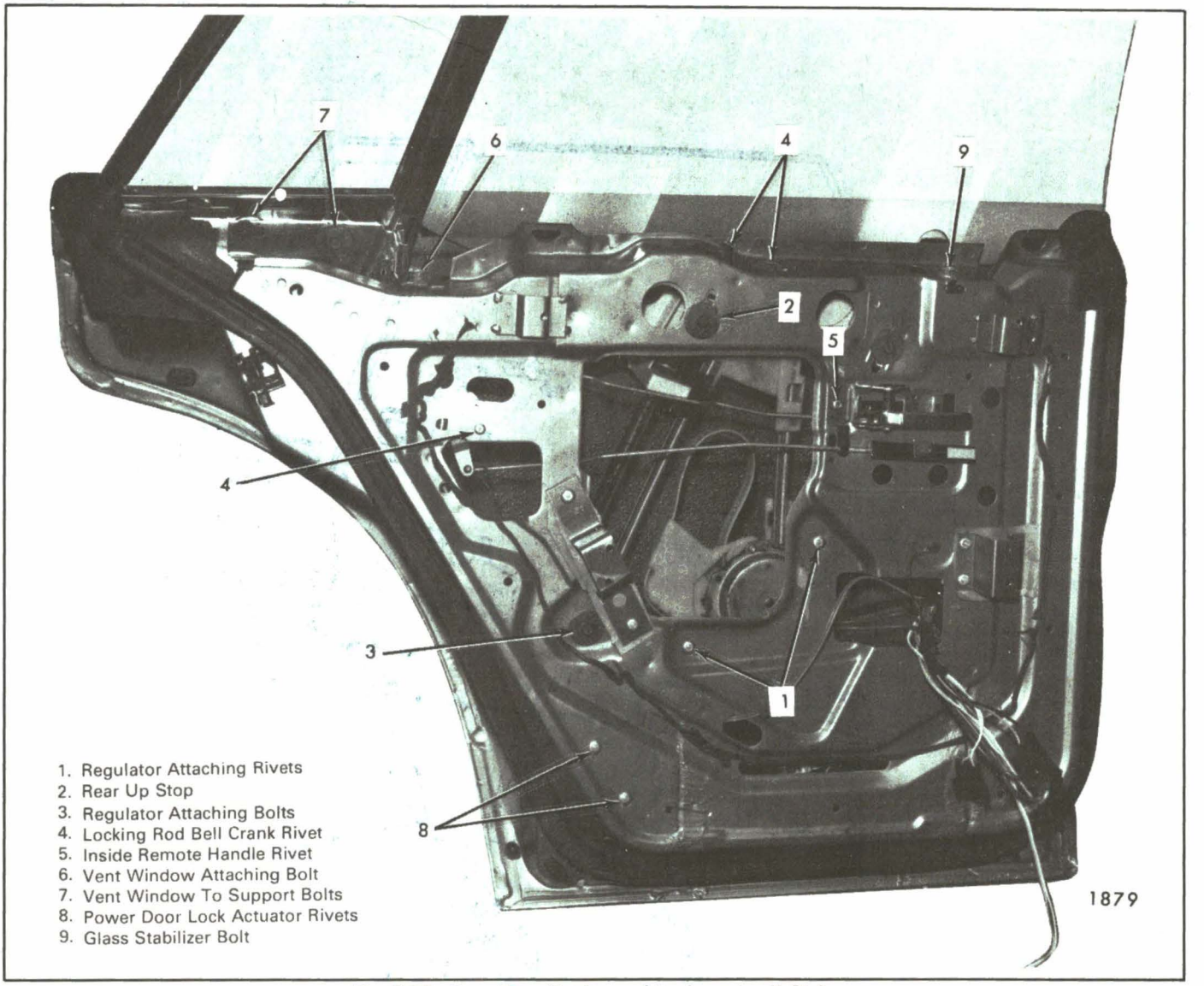


Fig. 5-95 - Rear Door Hardware Attachments - K Style

bodied sealer to surface of hinge that mates with center pillar or door hinge pillar to prevent corrosion.

4. 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.
5. Install all previously removed parts and check door for proper alignment.
6. Tighten hinge bolts to 20 to 29 N·m (15 to 21 ft-lb) torque.

REAR DOOR HINGES

All rear door hinges are constructed of steel. A two stage hold-open feature is incorporated in all lower hinges.

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.

NOTICE: Apply a coat of heavy-bodied sealer to surface of hinge that mates with the center pillar and door hinge pillar to prevent corrosion.

3. To install, reverse removal procedure. Adjust as required, then tighten bolts to 20 to 29 N·m (15 to 21 ft-lb) torque.

REAR DOOR WINDOW ASSEMBLY - B,C STYLES

The door window assembly consists of a frameless piece of solid tempered safety plate glass with an attached guide. The glass is bolted to a lower sash channel support which is bolted to the window regulator sash. With this design, the door glass and lower sash channel support are removed from the door as a unit and replacement glass is installed as a bench operation.

Adjustments

Window Not Parallel (Cocked) to Door Frame along Upper Edge - Loosen regulator sash to window sash bolts and adjust glass as needed. Tighten bolts to 7 N·m (60 in-lb) torque.

Glass adjustment is restricted by engagement of glass guide (at rear upper corner) into run channel. Down travel stop is an integral part of the tape drive regulator and is not adjustable.

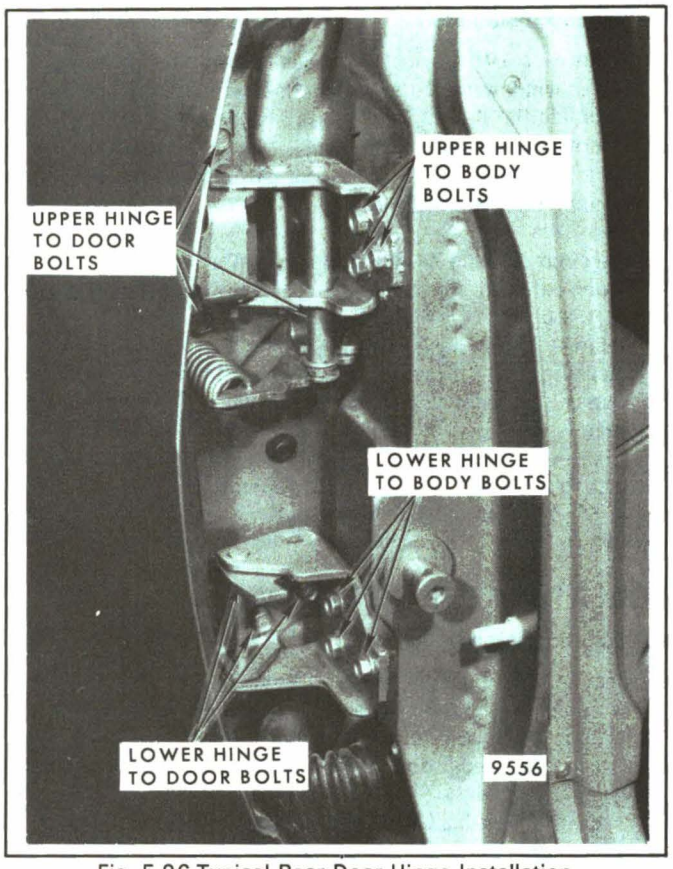


Fig. 5-96-Typical Rear Door Hinge Installation

Removal and Installation

1. Remove door trim pad and inner panel water deflector or combination assembly.
2. Raise window to full-up position and tape glass to door frame using cloth-backed body tape.
3. Remove bolts holding lower sash channel (on glass) to regulator sash.
4. Attach regulator handle and run regulator to full-down position. Remove regulator sash by rotating 90 degrees and pulling outboard.
5. While supporting glass, remove tape and lower glass to full-down position. Disengage front edge of glass from front glass run channel retainer. Slide glass forward and tilt slightly to remove guide from retainer in run channel (rear leg of door frame).
6. Using care, raise glass while tilting forward and remove glass inboard of upper frame.
7. To install, reverse removal procedure. Install guide clip to retainer as follows:
   a. Install glass and lower about halfway.
   b. With one hand on bottom edge, rotate glass rearward to snap guide into retainer.

Before installing trim parts, check window operation for proper alignment.

REGULATOR TAPE REPLACEMENT

Removal and Installation

1. Remove door trim and water deflector or combination assembly.
2. Raise glass to the full up position and tape to the door upper frame.
3. Insert a thin, flat-bladed screwdriver into slot at top of guide. While pressing down on screwdriver, push up on guide to separate guide and block. Remove block from tape.
4. Remove tape from tabs using a flat-bladed screwdriver.
5. Use crank handle or regulator motor to remove tape from regulator.
6. Cut service tape to length needed (see chart, Fig. 5-97).
7. Insert tape into regulator to engage drive gear. Use handle or motor to run tape into regulator.
8. Attach free end of tape to regulator tabs. Position last hole in tape over the last tab on regulator housing. This is required for proper glass travel.
9. Install block to tape with T section at the bottom. Lower window and guide until guide snaps over the block. A definite click will be heard when parts lock together.
10. Install water deflector and door trim.

TAPE LENGTHS FOR WINDOW REGULATORS (CUT SERVICE TAPE TO LENGTH NEEDED)		
STYLE	DOOR TYPE	TAPE LENGTH - mm (IN)
B-C	COUPE (ELECTRIC)	1109.7 mm (43.7")
B	COUPE (MANUAL)	1385.1 mm (54.5")
B-C	SEDAN-FRONT (ELECTRIC)	1086. mm (42.8)
B	SEDAN-FRONT (MANUAL)	1223.2 mm (48.2)
B-C	SEDAN-REAR (ELECTRIC)	696.6 mm (27.4")
B	SEDAN-REAR (MANUAL)	777.6 mm (30.6")
K	SEDAN-FRONT (ELECTRIC)	1166.4 mm (45.9")
K	SEDAN-REAR (ELECTRIC)	874.8 mm (34.4")
SERVICE TAPE IS 1385 mm (54.5") 1793		

Fig. 5-97-Window Regulator Tape Lengths

REAR DOOR WINDOW ASSEMBLY - G SEDAN STYLES

The door window assembly consists of a frameless solid tempered safety plate glass window retained within the window opening with two beltline support clips. This window remains in a "fixed" position. The G-35 and 69 styles have movable vent windows which can be either manual (standard) or electric (optional order).

Adjustments

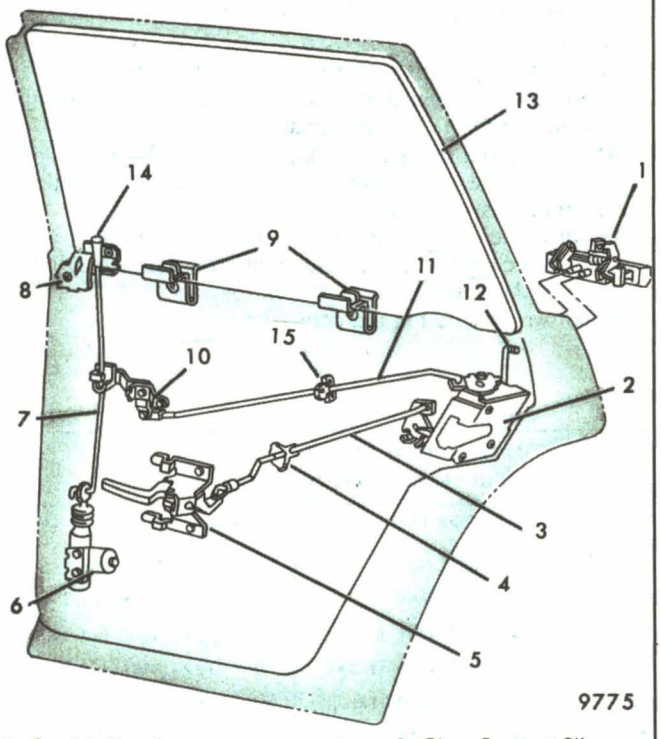
Due to the fixed nature of the sedan window, no adjustment provisions are required.

Removal and Installation

1. Remove trim assembly and detach insulator pad (if so equipped) and inner panel water deflector.
2. Remove two glass beltline support clips (9, Figs. 5-92 and 5-98) and trim support retainer (8, Figs. 5-92 and 5-98).
3. Slide glass straight down (glass suction cups may help) and remove from inboard side of door.
4. To install, first spray glass run channel with silicone spray or liquid soap solution, then reverse removal procedure. Tighten attaching screws with hand screwdriver.

REAR DOOR WINDOW ASSEMBLY - K STYLE

The door window assembly consists of a frameless solid tempered safety plate glass window and bolt-on hardware for attachment to the window regulator. After making adjustments, tighten all loosened attachments to 10 to 12 N·m (90 to 107 in-lb) torque. All adjustments are made with the trim panel and inner panel water deflector removed.



1. Outside Handle Assembly
2. Door Lock
3. Inside Handle to Lock Connecting Rod
4. Shoe
5. Inside Remote Handle
6. Power Door Lock Actuator
7. Inside Locking Rod
8. Trim Support Retainer
9. Glass Support Clips
10. Bell Crank
11. Bell Crank to Lock Connecting Rod
12. Outside Handle to Lock Connecting Rod
13. Door Glass (Stationary)
14. Inside Locking Rod Knob
15. Silencer

Fig. 5-98-Rear Door Hardware - G-69 Styles

Adjustments

Window Rotated

1. Loosen rear up stops.
2. Loosen regulator sash to window attaching nuts and adjust glass as needed.
3. Adjust up-stops as required and tighten screws.

Window Too Far Forward or Rearward

Loosen regulator sash to window attaching bolts and adjust glass as needed.

Window Too High or Low In Up Position

Adjust rear up travel stop as required.

Window Upper Edge Inboard or Outboard

1. Loosen front stabilizer attaching bolt.
2. Loosen bolt attaching base of regulator to lower support bracket.
3. Move regulator inboard or outboard as needed and tighten bolt to secure.
4. Cycle glass to assure bind-free operation. If bind occurs between glass and stationary vent window, loosen vent window attaching bolts and adjust as needed.
5. With glass in full-up position, adjust and secure front stabilizer.

Removal and Installation

1. Remove door trim panel and inner panel water deflector.
2. Lower window until the regulator sash attaching bolts are accessible through the inner panel access hole.
3. Remove rear up-stop attaching bolt and up-stop.
4. Remove remote locking lever rod and interior lock rod.
5. Remove regulator sash to glass attaching nuts and remove glass from door.
6. Disconnect wiring harness from regulator motor.
7. Punch out center pins of regulator rivets; then drill out rivets using a 6.3 mm (1/4") drill bit.
8. Remove lower regulator support adjustment screw and attaching screw. Remove support from door.
9. Remove regulator upper attaching nuts.
10. Remove regulator through access hole in inner panel.
11. To install, reverse removal procedure tightening all nuts and bolts to 10 to 14 N·m (90 to 125 in-lb) torque. Use hand rivet tool J-29022 or equivalent and 1/4"x0.500" aluminum peel type rivets to install regulator to inner panel.

REGULATOR TAPE REPLACEMENT

Removal and Installation

1. Remove door trim and water deflector.
2. Lower glass so that the guide and block assembly is accessible through the access hole in the inner panel.
3. Place rubber wedge door stops between glass and inner panel to secure the glass.
4. Insert thin, flat-bladed screwdriver into slot at top of guide. While pressing down on screwdriver, run tape in down direction to separate guide and block. Remove block from tape.
5. Remove tape from tabs on regulator housing.
6. Use regulator motor in up direction to run the tape out of the regulator.
7. Cut service tape to length shown in chart (Fig. 5-97).
8. Insert tape into regulator to engage drive gear. Use motor to run tape into regulator.
9. Attach free end of tape to the tabs on the regulator housing. Last hole in tape must fit over last tab on housing. This is required for proper glass travel.
10. Insert block into tape with T section down.
11. Lower window assembly until guide engages block. A definite click will be heard when guide and block lock together.
12. Install water deflector and door trim.

REAR DOOR OPERATING VENT WINDOW ASSEMBLY - MANUAL AND ELECTRIC - G-35 AND 69 STYLES

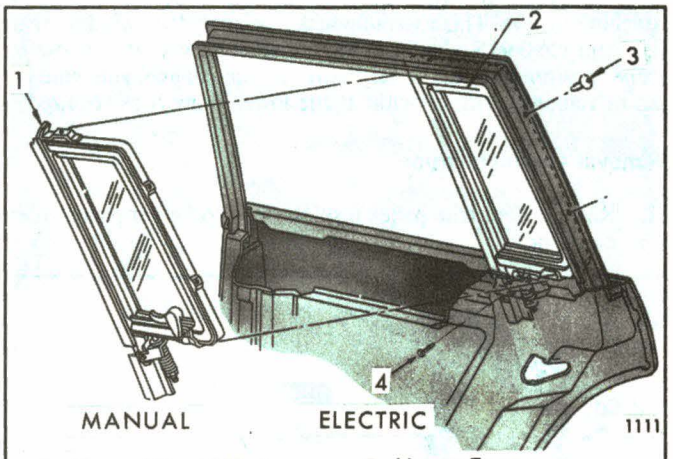
G-35 (station wagon) and G-69 (sedan) style rear doors have a movable vent window assembly which can be either manual (standard) or electric (optional order). Both types are held in place by attaching screws into the door upper frame (3, Fig. 5-99) and door belt return flange (4, Fig. 5-99). The vent assembly acts as a rear door window stationary glass channel and also holds the vent window in proper position. The vent glass is surrounded by a rubber weatherstrip in the closed position.

The manual vent window has a latch handle (Fig. 5-100) attached to a support screw by means of a roll pin. The support screw is nut retained to the glass. The latch handle is pulled upward to unlock the manual vent window.

The electric vent window is operated by an electric motor and drive cable assembly as shown in Figures 5-100 and 5-101. The actuator assembly is mounted on the outboard side of the rear door inner panel with rubber grommets (5, Fig. 5-101). It is controlled by either a master switch on the left front door armrest or a switch on the rear door trim panel.

Removal and Installation - Manual Vent Window Assembly

1. Remove door armrest, trim panel, insulator pad (if so equipped) and inner panel water deflector.
2. Remove stationary rear door window.
3. Remove upper frame attaching screws (3, Fig. 5-99) and belt attaching screw (4, Fig. 5-99).
4. Pull top of vent assembly forward and remove from inside door.
5. To install, first apply a liberal amount of silicone spray or soap and water solution to vent weatherstrip, then reverse removal procedure. Make sure vent assembly is seated entirely before installing attaching screws. Tighten belt attaching screw (4, Fig. 5-99) upper frame attaching screws (3, Fig. 5-99) with hand screwdriver.



1. Manual Vent Window
2. Electric Vent Window
3. Upper Frame Attaching Screw
4. Belt Attaching Screw

Fig. 5-99-Rear Door Vent Window Installation - G-35 and 69 Styles - Manual and Electric

Removal and Installation - Electric Vent Window Assembly

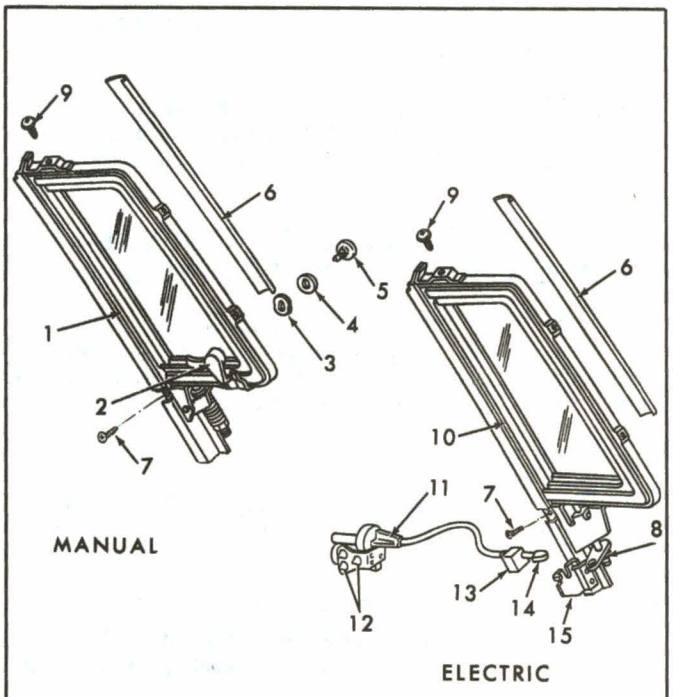
Numbers in parentheses refer to items in Figure 5-101 unless otherwise indicated.

1. Remove door armrest, trim panel, insulator pad (if so equipped) and inner panel water deflector.
2. Remove stationary rear door window.
3. Unfasten actuator rod to actuator lever plastic retaining clip (1), by rotating clip inboard with flat-bladed screwdriver.
4. Remove drive cable plastic retaining clip (2) from retainer (4) by depressing tabs (3) inward and pushing up.
5. Remove upper frame attaching screws (3, Fig. 5-99) and belt attaching screw (4, Fig. 5-99).
6. Pull top of vent assembly forward and remove from inside door.
7. To install, first apply a liberal amount of silicone spray or soap and water solution to vent weatherstrip, then reverse removal procedure. Make sure vent assembly is seated entirely before installing attaching screws. Tighten belt attaching screw (4, Fig. 5-99) and upper frame attaching screws (3, Fig. 5-99) with hand screwdriver.

REAR DOOR VENT WINDOW MANUAL LATCH ASSEMBLY - G-35 AND 69 STYLES

Removal and Installation

1. Open vent window.
2. Using a 2 mm (3/32") diameter flat end punch and needle-nose pliers, remove roll pin at base of handle.
3. Remove handle to expose retaining nut and support screw attached to glass.



1. Manual Vent Window Assembly
2. Manual Latch Handle
3. Washer (Inboard of Glass)
4. Spacer (Outboard of Glass)
5. Support Screw
6. Reveal Molding
7. Belt Attaching Screw
8. Actuator Lever
9. Upper Frame Attaching Screw
10. Electric Vent Window Assembly
11. Electric Actuator Assembly
12. Grommets - Motor Assembly to Rear Door Inner Panel
13. Retaining Clip - Drive Cable to Retainer
14. Retaining Clip - Actuator Rod to Actuator Lever
15. Retainer

Fig. 5-100-Rear Door Vent Window Hardware - G-35 and 69 Styles - Manual and Electric

4. Remove nut, washer, spacer and support screw from glass (Fig. 5-100).
5. To install, reverse removal procedure.

REAR DOOR ELECTRIC VENT WINDOW ACTUATOR ASSEMBLY - G-35 AND 69 STYLES

Removal and Installation

Numbers in parenthesis refer to items in Figure 5-101.

1. Remove door armrest and trim panel. Detach insulator pad (if so equipped) and inner panel water deflector to expose rubber grommets and beltline access hole.
2. Working through beltline access hole, unfasten actuator rod to actuator lever plastic retaining clip (1) by rotating clip inboard with flat bladed screwdriver.
3. Remove drive cable plastic retaining clip (2) from retainer (4) by depressing tabs (3) inward and pushing up.
4. Carefully unfasten actuator rubber grommets (5) from rear door inner panel. Use a flat-bladed, blunt screwdriver to work base of grommet through inner panel.
5. Disconnect wire harness connector from bottom of motor and remove actuator assembly through door beltline opening.

6. To install, first apply liquid soap to rubber grommets, then reverse removal procedure.

NOTICE: To prevent damage to rubber grommets when installing to door inner panel, use needle-nose pliers to grip base of grommet, then carefully twist to pull base of grommet through hole.

REAR DOOR STATIONARY VENT DIVISION CHANNEL AND WINDOW - B,C STYLES

The stationary vent division channel is held in place by attaching screws. 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

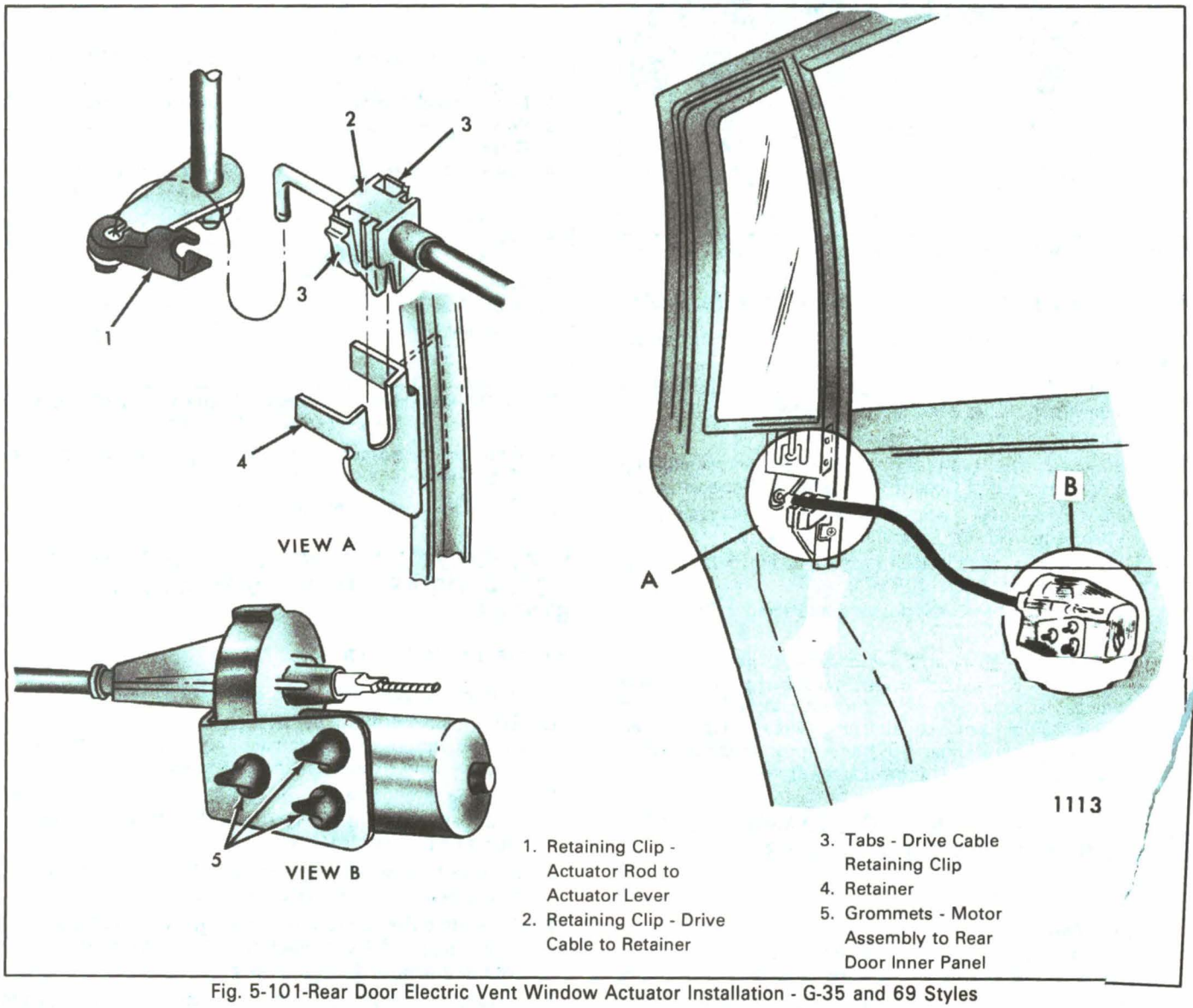
1. Remove armrest, door trim assembly, insulator pad (if so equipped) and water deflector or combination assembly.
2. Remove door glass.
3. Pull run channel out of door upper frame along top of frame.
4. Remove division channel attaching screws and pull forward off rubber channel. Rotate divison channel 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. Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque except cross recess screw at top of division channel (tighten with hand screwdriver).

REAR DOOR STATIONARY VENT DIVISION CHANNEL AND WINDOW - K STYLE

The stationary vent division channel is held in place by attaching screws. This assembly acts as a rear door window rear glass run channel and also holds the stationary vent window in proper position. The stationary vent division channel and window can be removed with or without the lower support as required.

Removal and Installation

1. Remove door trim panel, insulator pad and inner panel water deflector.



1. Retaining Clip - Actuator Rod to Actuator Lever
2. Retaining Clip - Drive Cable to Retainer
3. Tabs - Drive Cable Retaining Clip
4. Retainer
5. Grommets - Motor Assembly to Rear Door Inner Panel

Fig. 5-101-Rear Door Electric Vent Window Actuator Installation - G-35 and 69 Styles

2. Remove stationary vent division channel attaching screws or the vent window support attaching screws if support removal is required.
3. Remove stationary vent division channel and window. If removing support, pull assembly as a unit.
4. To install, reverse removal procedure. Tighten channel attaching screws 10 to 14 N·m (90 to 125 in-lb) torque.

REAR DOOR WINDOW REGULATOR - B,C STYLES

Removal and Installation

1. Remove door trim, insulator pad (if so equipped) and inner panel water deflector.
2. With glass in the full-up position, tape glass to door frame.
3. Remove lower sash bolts.
4. Punch out center pins of regulator rivets; then drill out rivets using 6.3 mm (1/4") drill bit.
5. Disconnect wiring harness (if so equipped) and remove regulator through access hole in inner panel.
6. To install, reverse removal procedure using hand rivet tool J-29022 or equivalent and 1/4"x0.500" aluminum peel type rivets to secure regulator to inner panel.
7. Tighten screws to 10 to 14 N·m (90 to 125 in-lb) torque. Adjust glass as required prior to installing trim.

REAR DOOR WINDOW REGULATOR - K STYLE

Removal and Installation

1. Remove door trim panel, insulator pad and inner panel water deflector.
2. Disengage the inside remote rod spring clip from the door lock assembly and from the remote handle. Remove rod from door.
3. Disengage the inside locking rod from the bell crank and attaching clip. Remove rod from door.
4. Lower glass until regulator sash to glass attaching nuts are accessible through the inner panel access hole.
5. Remove glass attaching nuts and remove glass from door.
6. Drive out rivet center pins with a punch and drill out regulator to inner panel attaching rivets using a 6.3 mm (1/4") drill bit.
7. Remove regulator lower support attaching screw and adjustment screw. Remove support from door.
8. Remove rear up stop.
9. Remove regulator upper attaching nuts.
10. Rotate regulator so that the regulator motor wiring connector is accessible through the access hole in the inner panel and disconnect wiring harness.
11. Position regulator in its normal operating location. Rotate upper portion of regulator to the upper front corner of the door. Pull lower guide tube out of access hole in the inner panel. Rotate regulator rearward, working sash plate and upper part of regulator out the access hole. Sliding regulator rearward, remove regulator from door.
12. To install, reverse the removal procedure. Tighten all attaching nuts and bolts to 10 to 14 N·m (90 to 125 in-lb) torque. Use hand rivet tool J-29022 or equivalent and 1/4" x 0.500" aluminum peel type rivets to attach regulator to inner panel.

REAR DOOR WINDOW GLASS RUN CHANNEL RETAINER - B,C STYLES

Removal and Installation

1. Remove door trim, insulator pad (if so equipped) and inner panel water deflector or combination assembly. Raise door window.
2. Remove retainer attaching screws on hinge pillar.
3. Disengage retainer from run channel and remove from door.
4. To install, reverse removal procedure. Tighten attaching screws to 10 to 14 N·m (90 to 125 in-lb) torque.

REAR DOOR WINDOW GLASS RUN CHANNEL - B, C, G AND K STYLES

Removal and Installation

1. For B and C styles, remove front run channel retainer, then lower glass. For K style, lower glass. For G styles, remove rear door stationary window.
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

CONTENTS

Quarter Trim
Armrest 6-1
Lower Trim 6-1
Lock Pillar Finishing Molding or Windlace 6-2
Upper Trim 6-2
Wheelhouse Panels, Spare Tire Covers, Stowage Pocket and Back Body Pillar Upper Trim 6-4
Exterior Moldings 6-14
Quarter Window (Nonoperable) 6-20

QUARTER TRIM

QUARTER ARMREST ASSEMBLY - B AND C TWO-DOOR STYLES

The 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, remove screw under armrest ash tray securing pad to armrest to gain access to the upper attaching screws (Fig. 6-1).

   NOTICE: Steps 2, 2a, b and c must be followed to avoid damage to ash tray assembly/armrest assembly.

2. On C styles remove ash tray/cigar lighter assembly to gain access to the 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 6-2 and pull forward until ash tray assembly is disengaged from armrest.
   c. Disconnect cigar lighter electrical connector (Fig. 6-2).
3. Remove armrest to quarter trim panel attaching screws and remove armrest.
4. To install, reverse removal procedure.

QUARTER ARMREST AND PAD ASSEMBLY - E STYLES

All 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 (Figs. 6-3 and 6-4).

Removal and Installation

1. Remove the following:
   a. Door sill plate.
   b. Body lock pillar finishing lace, upper and lower.
   c. Rear seat cushion and seat back assemblies.
2. Remove armrest pad self-drilling attaching screw and slide pad forward disengaging tab from quarter lower trim assembly (Fig. 6-4).
3. Remove upper trim assembly and/or quarter sail trim.
4. Remove screws securing armrest/cigar lighter cover plate, lift cover plate and detach electrical wiring, then remove trim assembly (Fig. 6-3).
5. To install, connect electrical wiring and reverse removal operations.

QUARTER LOWER TRIM ASSEMBLY - B AND C TWO-DOOR STYLES

Removal and Installation

1. Remove quarter armrest.
2. Remove rear seat cushion and back assemblies.
3. On B and C styles, remove quarter upper trim panel to gain access to concealed beltline quarter trim attaching screws (Fig. 6-1), then remove quarter finishing lace (Fig. 6-9).
4. On B and 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. 6-1 and 6-2), then remove.
5. To install, reverse removal operations.

QUARTER LOWER TRIM ASSEMBLY - E STYLES

Removal and Installation

1. Remove quarter armrest pad.
2. Remove quarter armrest cigar lighter assembly.
3. Remove quarter upper trim panel and sail panel to gain access to concealed quarter trim attaching screws.
4. Remove attaching screws at top and rear center of lower quarter trim, then remove assembly (Fig. 6-5).
5. To install, reverse removal operations.

QUARTER LOWER TRIM ASSEMBLY - G STYLES

The quarter lower trim panel on G styles is a one-piece panel. The armrest cover is applied before panel installation and is retained by screws (Fig. 6-6).

Removal and Installation

1. Remove the following components:
   a. Rear seat cushion and back
   b. Door sill plate
   c. Body lock pillar finishing lace
2. Remove screws retaining quarter lower trim panel and remove panel.
3. To install, reverse removal procedure.

QUARTER LOWER TRIM FINISHING PANEL

Removal and Installation

1. Remove rear door sill plate, rear seat cushion and back assemblies. Remove body lock pillar finishing lace.

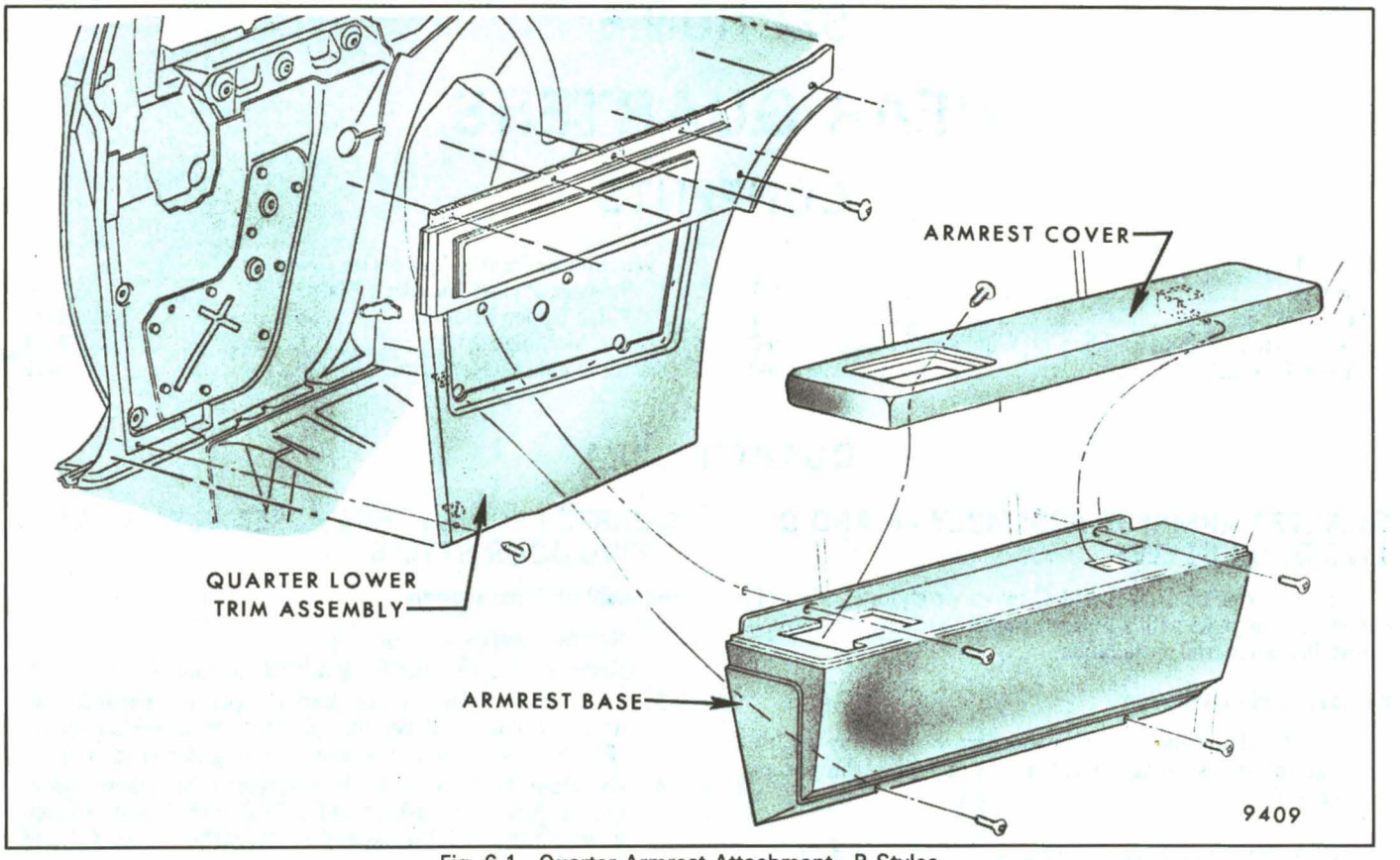


Fig. 6-1 - Quarter Armrest Attachment - B Styles

2. Remove attaching screws from trim panel (Fig. 6-7) and remove trim panel. On B and C styles, slide top of trim finishing panel from engagement with side roof rail garnish molding (B styles) or body lock pillar finishing molding (C styles).
3. To install, reverse removal procedure.

REAR BODY LOCK PILLAR TRIM FINISHING PANEL - K STYLE

Removal and Installation

1. Remove door sill plate.
2. Remove rear seat cushion and back assemblies.
3. Remove attaching screws that retain rear body lock pillar trim finishing panel (Fig. 6-8).
4. Remove trim.
5. To install, reverse removal procedures.

QUARTER LOCK PILLAR FINISHING LACE - B,C AND G TWO-DOOR STYLES

Removal and Installation

1. Remove door sill plate.
2. On G styles, remove screws retaining trim and pull forward (Fig. 6-10).
3. On B and C styles, remove quarter upper trim.
4. Remove finishing lace attaching screws (Fig. 6-9), pull lace forward and remove.
5. To install, reverse removal procedure.

REAR BODY LOCK PILLAR TRIM FINISHING LACE - K STYLE

Removal and Installation

1. Remove rear body lock pillar trim finishing panel.
2. Pull lace forward to disengage from pinchweld flange and remove (Fig. 6-8).
3. To install, reverse removal procedure.

QUARTER UPPER TRIM/SAIL TRIM (ABOVE BELT)

Removal and Installation

1. On G-37 and 47 styles, remove the following:
   a. Door sill plate
   b. Lock pillar trim lace
   c. Rear seat cushion and back
   d. Back glass upper garnish molding
2. Remove screws retaining trim assembly and pull trim panel inboard until plastic clips disengage from quarter inner panel.
3. Remove screws retaining trim assembly and pull inboard until plastic clips disengage from quarter.
4. On Chevrolet B-47 styles, detach garnish molding from side of back window opening adjacent to quarter upper trim assembly.
5. 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.
6. To remove, loosen adjacent moldings where required and remove visible attaching screws (Fig. 6-12).

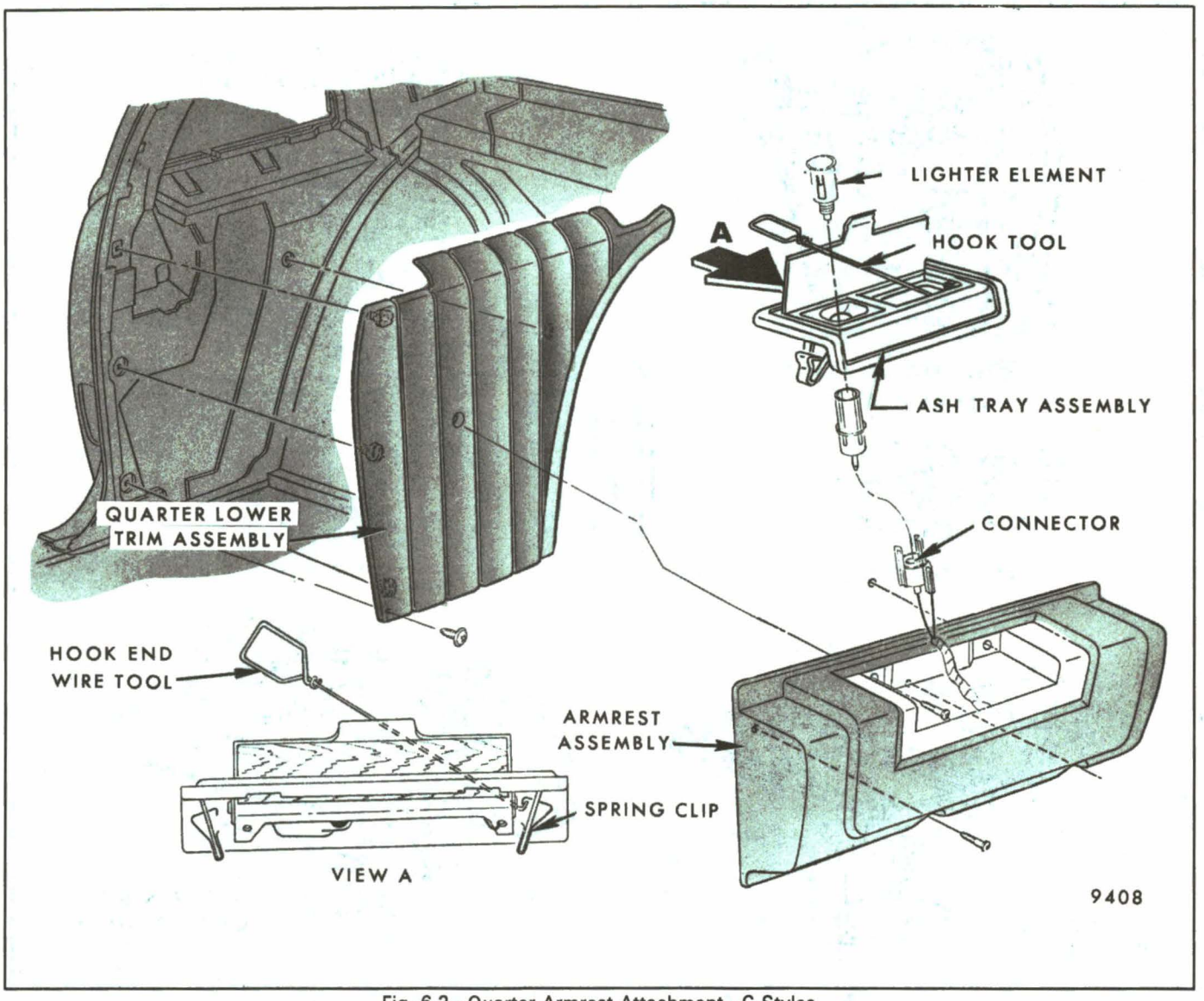


Fig. 6-2 - Quarter Armrest Attachment - C Styles

7. 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 (Fig. 6-12).

   On G 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. 6-11).
   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. 6-11).

   On B and 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. 6-12).

   To remove B,C and K-69 style 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. 6-13 and 6-14).

   On styles with courtesy lamps in the quarter upper trim (except G coupe), 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. 6-13).

8. 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).

QUARTER UPPER TRIM AND/OR QUARTER SAIL TRIM (ABOVE BELT) - E STYLE

Removal and Installation

1. Insert tool BT 7323 or equivalent under the front edge of quarter sail trim until tool engages around fasteners, then pry to remove fasteners and trim panel.
2. Firmly grasp front and rear of trim and pull inboard until two-piece interlocking fasteners separate, then remove quarter upper trim (Fig. 6-15).
3. Insert a flat-bladed screwdriver or similar tool between courtesy lamp lens and lamp housing. Press outboard to disengage lens retaining tabs from housing.

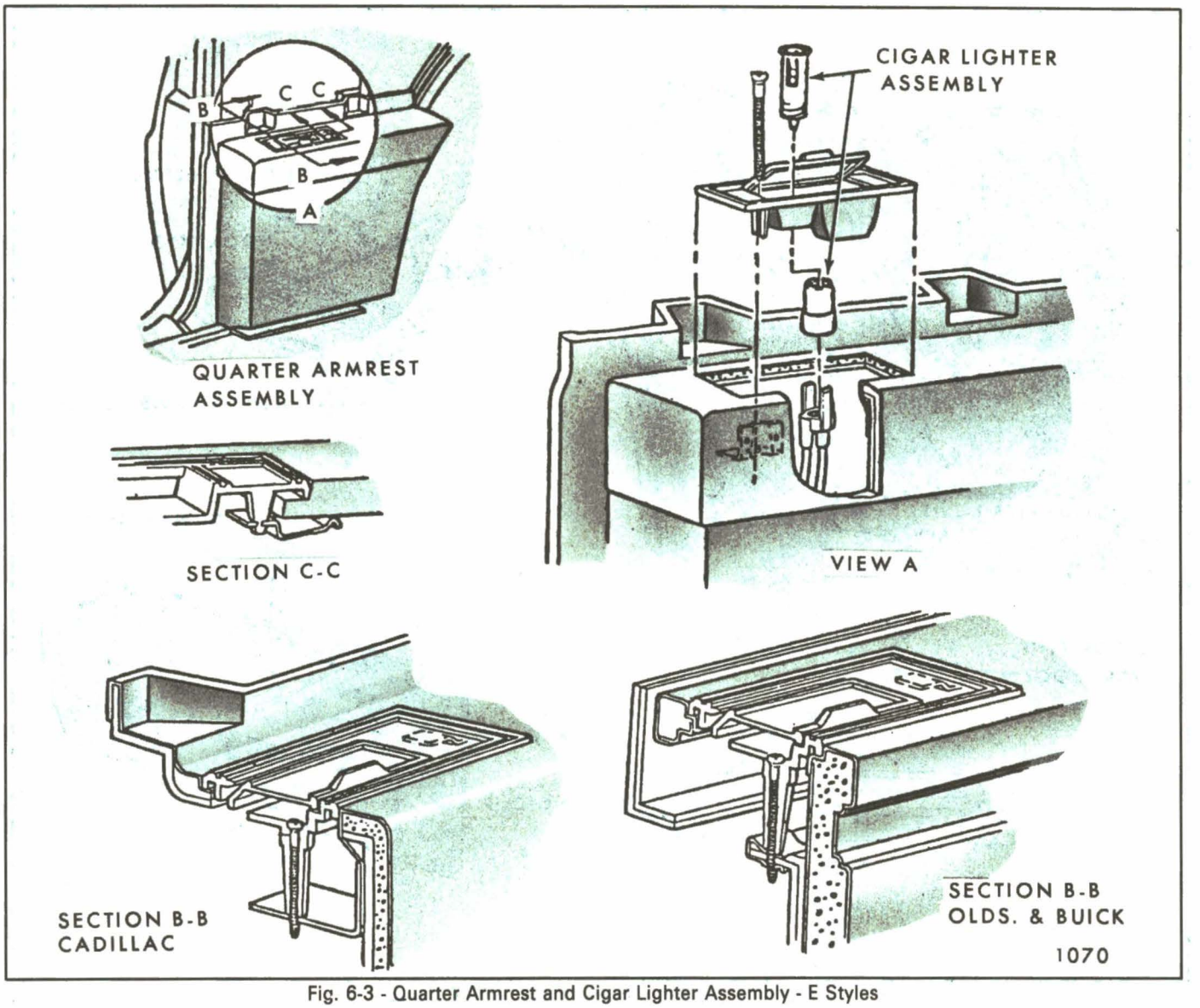


Fig. 6-3 - Quarter Armrest and Cigar Lighter Assembly - E Styles

4. Remove bulb from terminal clip.
5. Disconnect lamp feed wire connectors. If lamp removal is required, the lamp is detachable by removing the attaching nut retainers from the nuts on the back side of the quarter upper trim (Fig. 6-15).
6. Remove attaching screws from upper trim panel.
7. Grasp panel with hands and lift up and inboard to disengage from inner panel (Section CC, Fig. 6-16) also from upper edge of lower trim (Section BB, Fig. 6-16).
8. If equipped with a rear attaching pull strap, remove escutcheon and screws prior to performing step 9 (Fig. 6-17).
9. Remove quarter upper trim assembly.
10. To install, reverse removal procedures.

QUARTER WHEELHOUSE AND REAR BODY LOCK PILLAR COVERS - UPPER AND LOWER - B-35 STYLES

Removal and Installation (Fig. 6-18)

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.

QUARTER WHEELHOUSE TRIM COVER PANEL - G STATION WAGON STYLES

Removal and Installation (Fig. 6-19)

1. Remove rear seat back.
2. Remove screws retaining trim panel as shown in Figure 6-19.
3. Pull trim panel forward and up to disengage from lock pillar and load floor.
4. Then pull panel inboard to disengage from quarter panel retainer.
5. To install, reverse removal procedure.

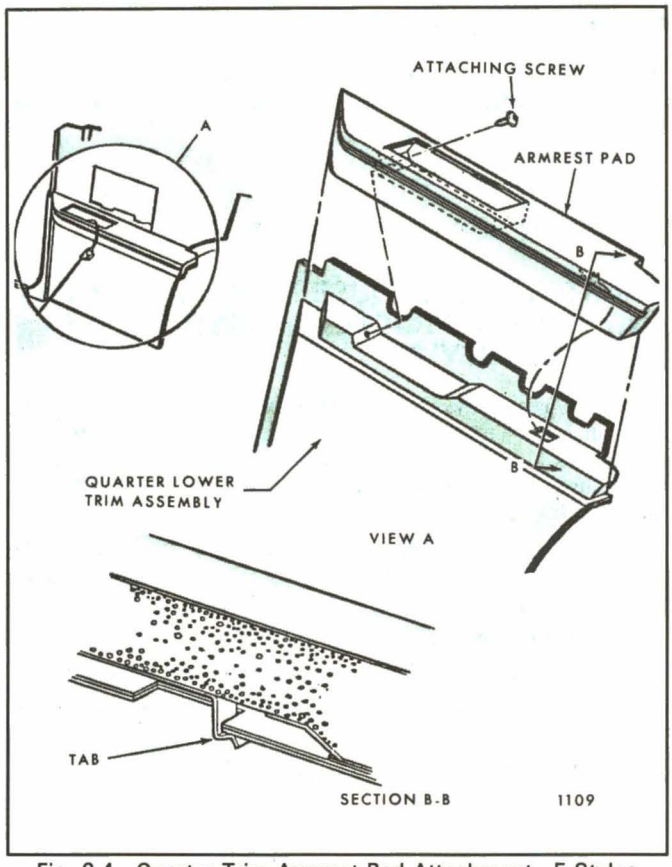


Fig. 6-4 - Quarter Trim Armrest Pad Attachment - E Styles

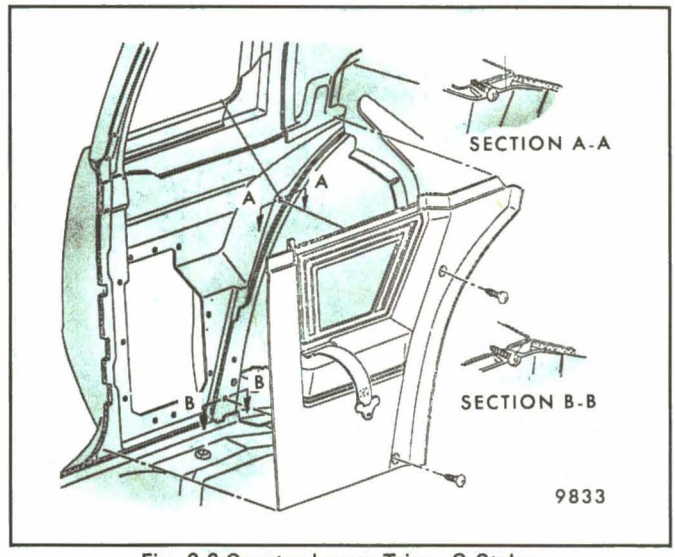


Fig. 6-6-Quarter Lower Trim - G Styles

SPARE TIRE COVER PANEL - B AND G STATION WAGON STYLES

On G styles, the spare tire is located under the load floor. 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. 6-20).

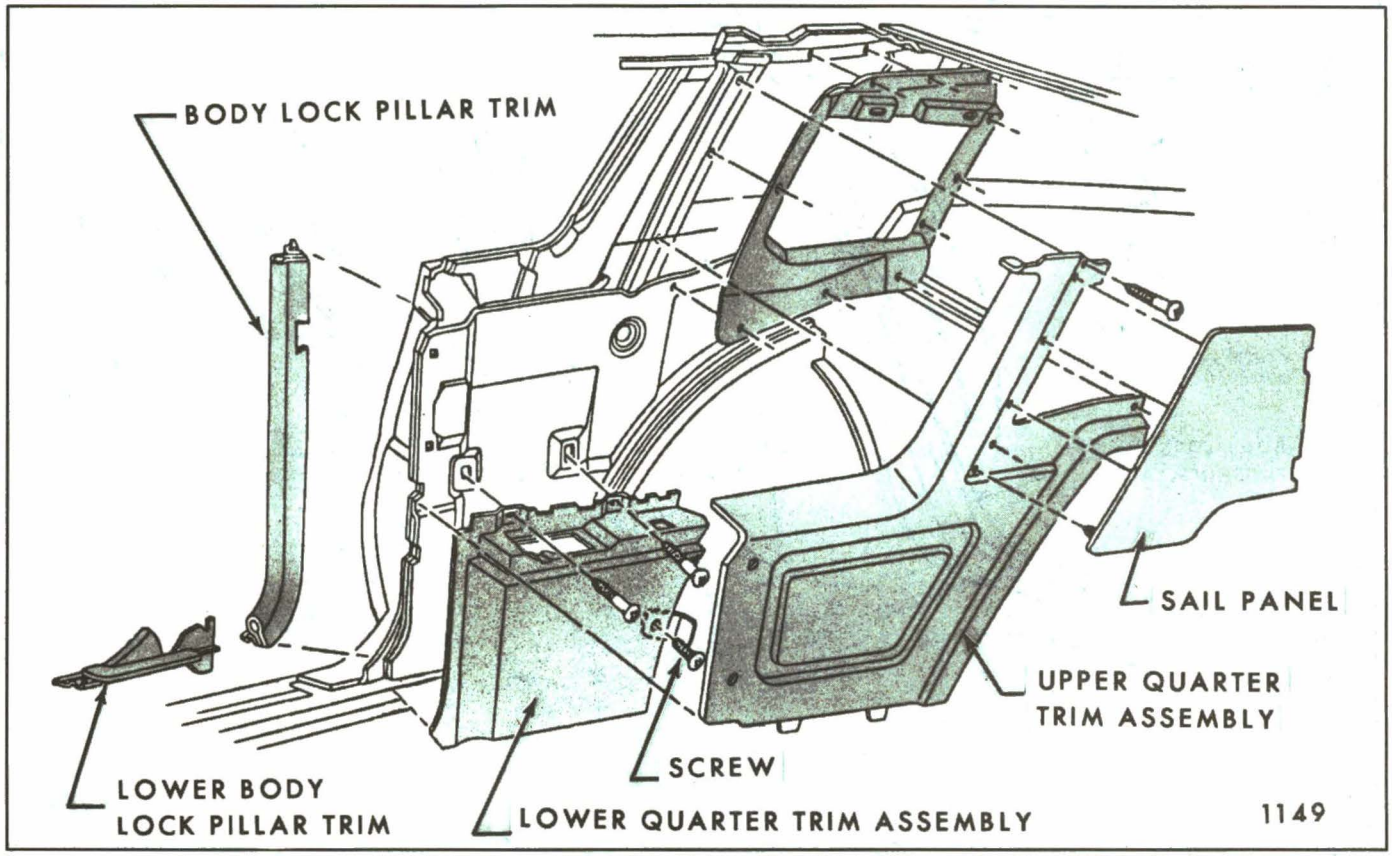


Fig. 6-5 - Lower Quarter Trim Assembly - Buick, Oldsmobile E Styles Shown, Cadillac E Style Similar

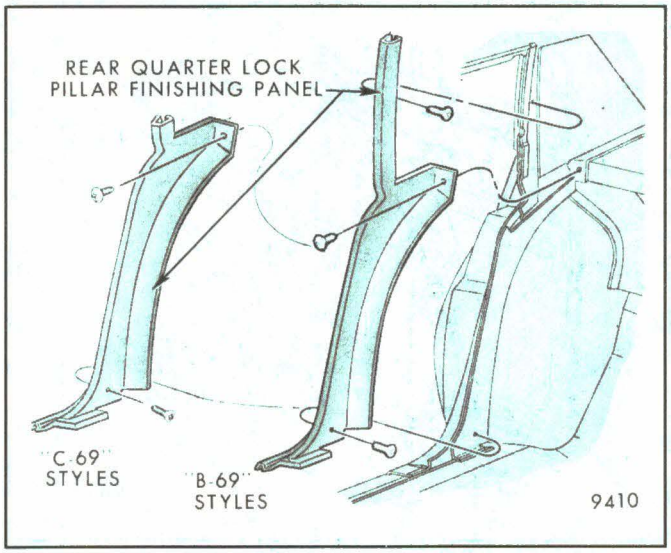


Fig. 6-7-Quarter Trim Assembly Attachment - B and C-69 Styles

Removal and Installation

1. Grasp trim at back body opening and pull inboard to disengage from rear tabs and upper and lower retaining channels.
2. Pull rearward to complete removal.
3. To install, engage two front tabs over body lock pillar upper trim cover, then reverse removal procedure.

QUARTER WHEELHOUSE TRIM COVER PANEL AND STOWAGE POCKET ASSEMBLY (LEFT SIDE) - B-35 STYLES

The 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. 6-21). The left wheelhouse trim cover is retained in a manner similar to the right side as follows:

- At the front by three integral tabs which engage under the quarter wheelhouse and rear body lock pillar upper cover.
- At the beltline by sliding into a channel in the quarter window lower finishing molding.
- At the floor by sliding into a channel in the load floor.

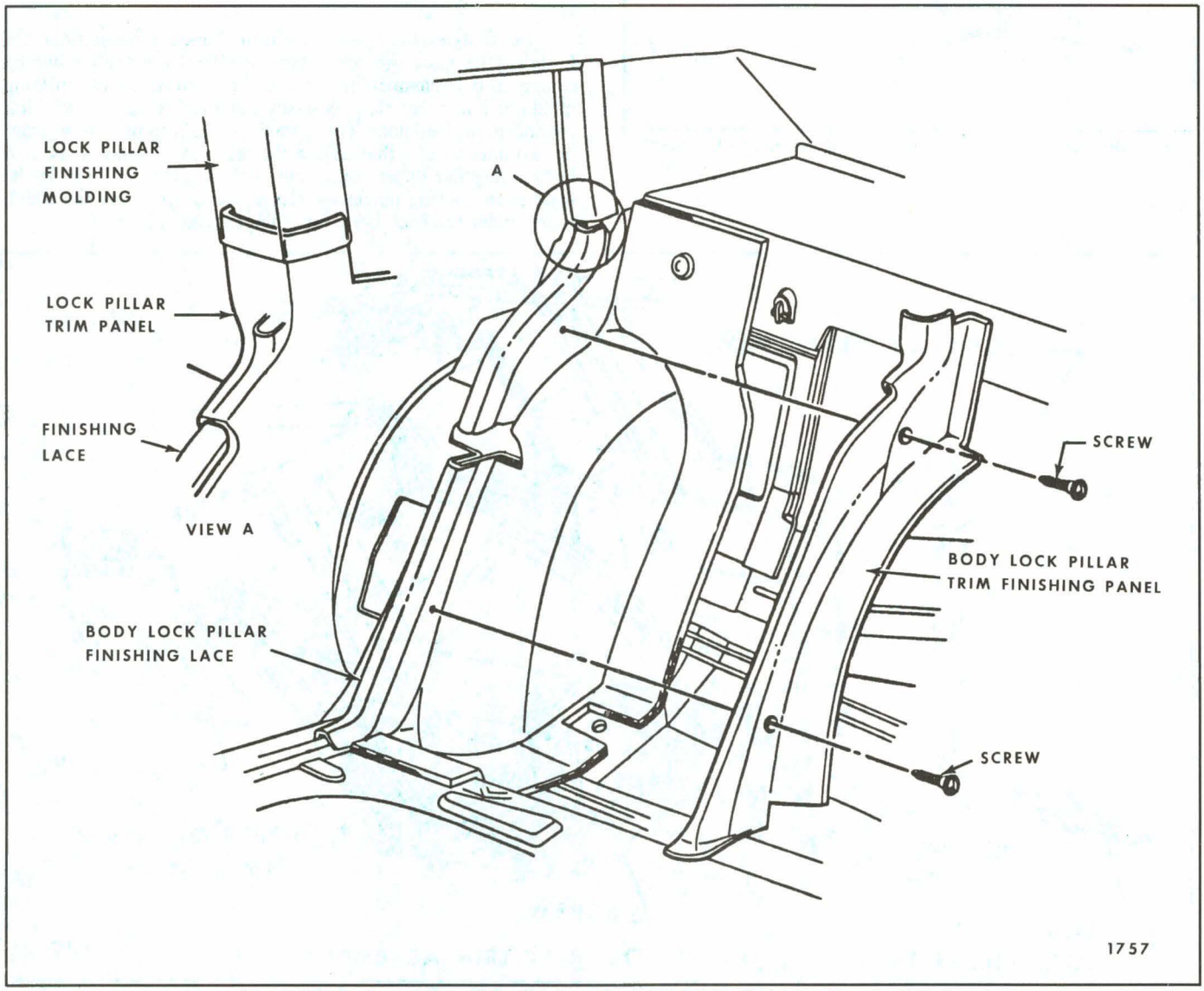


Fig. 6-8-Rear Body Lock Pillar Finishing Lace and Trim Finishing Panel - K Style

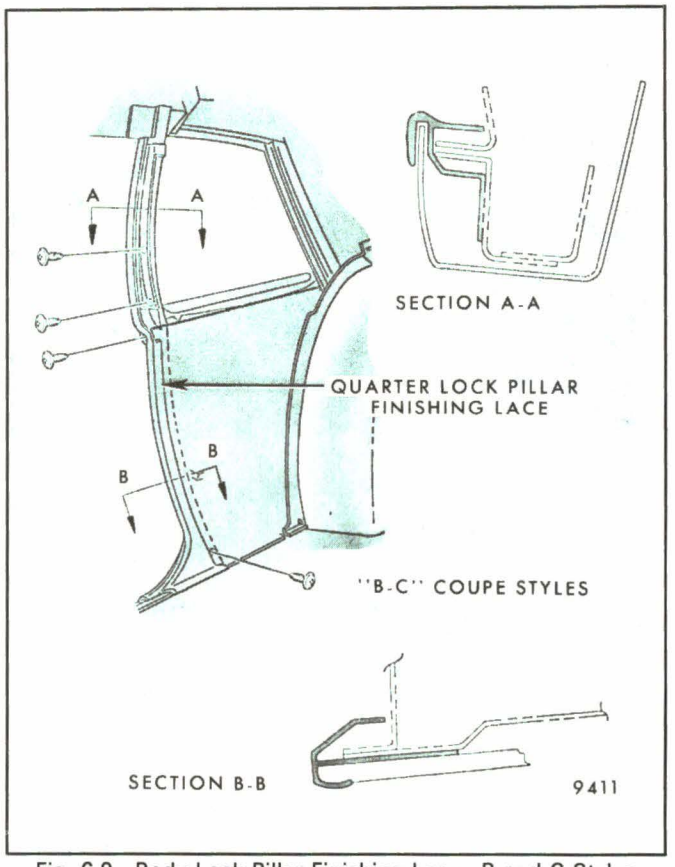


Fig. 6-9 - Body Lock Pillar Finishing Lace - B and C Styles

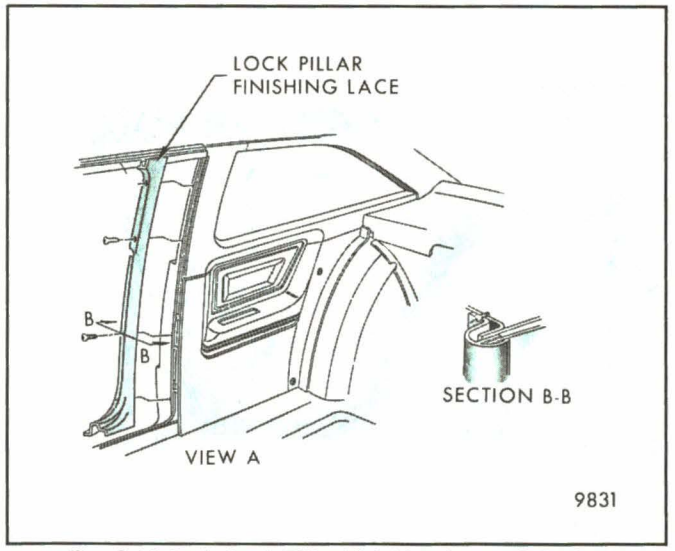


Fig. 6-10-Body Lock Pillar Finishing Lace - G Styles

- At the rear by overlapping the back body opening pinchweld flange and an integral tab which slides under the back body pillar upper trim.

- Two attaching screws in outboard (back) wall of stowage pocket assembly.

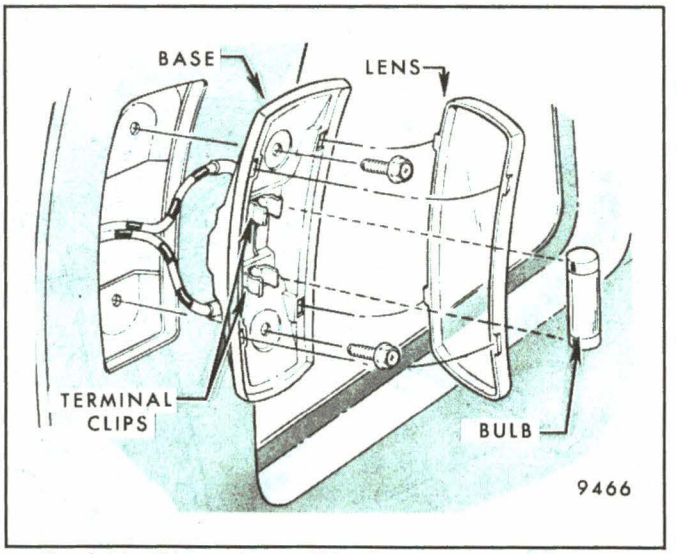


Fig. 6-11 - Quarter Upper Trim Courtesy Lamp - G Styles

Removal and Installation

1. Grasp back body opening upper garnish molding near center and at left end, then slide molding to the right until telescoping end of back body upper finishing panel is exposed (Fig. 6-22).
2. Open stowage compartment door and remove screws that secure left wheelhouse trim panel to quarter belt rail (Fig. 6-21, view B).
3. Grasp wheelhouse trim panel and pull top inboard to separate top edge from between quarter garnish molding and molding retainer. Lift panel upward to disengage bottom edge from slot in load floor, then pull panel rearward to complete removal (Fig. 6-21, view B).
4. Remove attaching screws at bottom of back body upper finishing panel (Fig. 6-22).
5. Grasp end of roof side molding and rotate inboard to release from forward end of back body upper finishing panel (Fig. 6-21, view A).
6. Load stowage pocket into pocket well, then engage retaining tabs under rear body lock pillar upper cover.
7. 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.
8. To complete installation, reverse removal procedures.

BACK BODY PILLAR UPPER TRIM PANEL - B-35 STYLES

1. Remove wheelhouse trim cover panel.
2. Remove back body opening garnish molding.
3. Remove upper attaching screw and two lower attaching screws (Figs. 6-22 and 6-23).
4. Slide trim panel rearward from under quarter window garnish molding then lift trim panel away.
5. To install, reverse removal procedure.

REAR SPEAKERS AND BACK WINDOW DEFOGGER (BLOWER TYPE)

For installation and removal of rear speakers and back window defogger (blower type), refer to Section 9 of this manual.

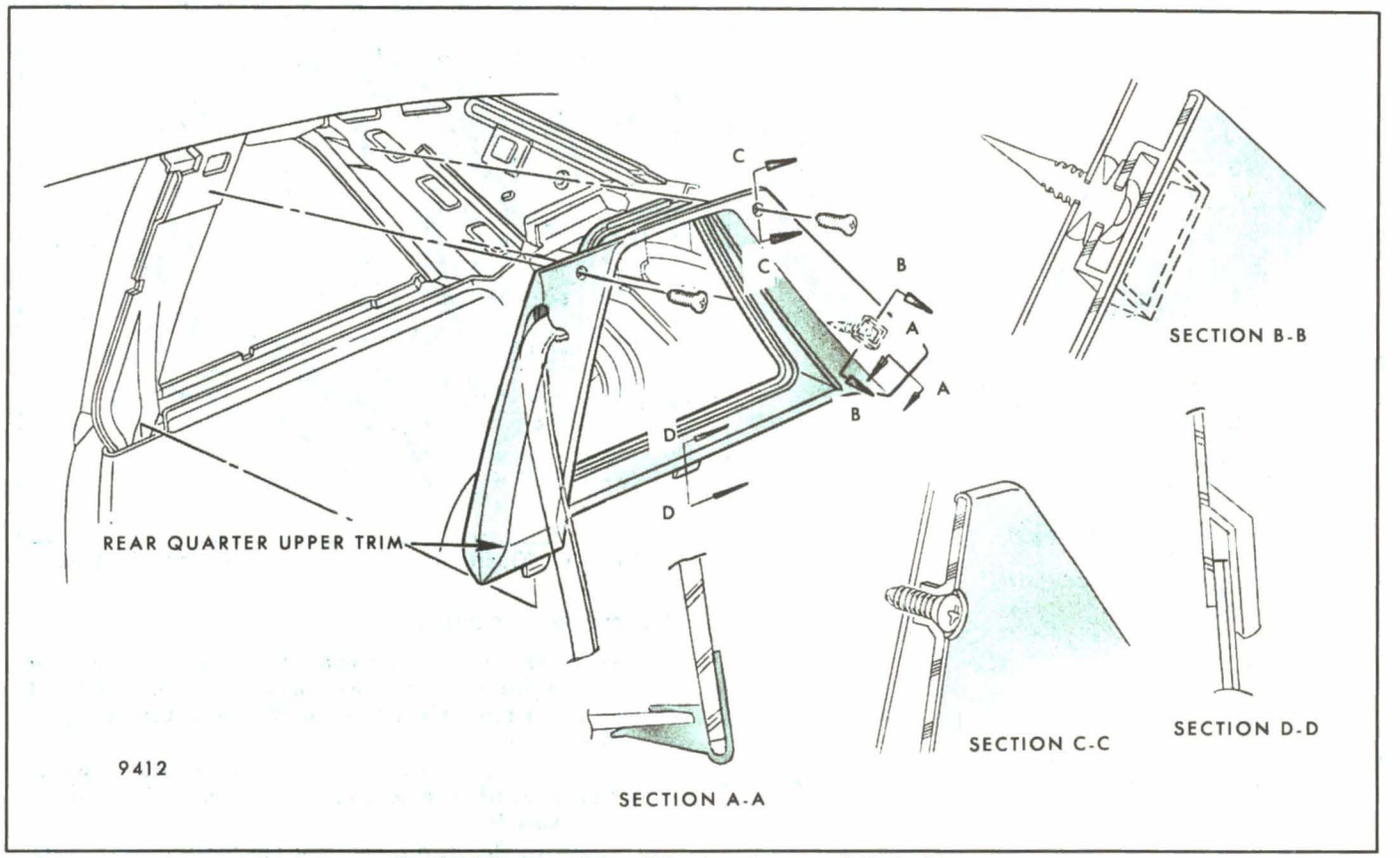


Fig. 6-12-Quarter Upper Trim Attachment - C Style Shown

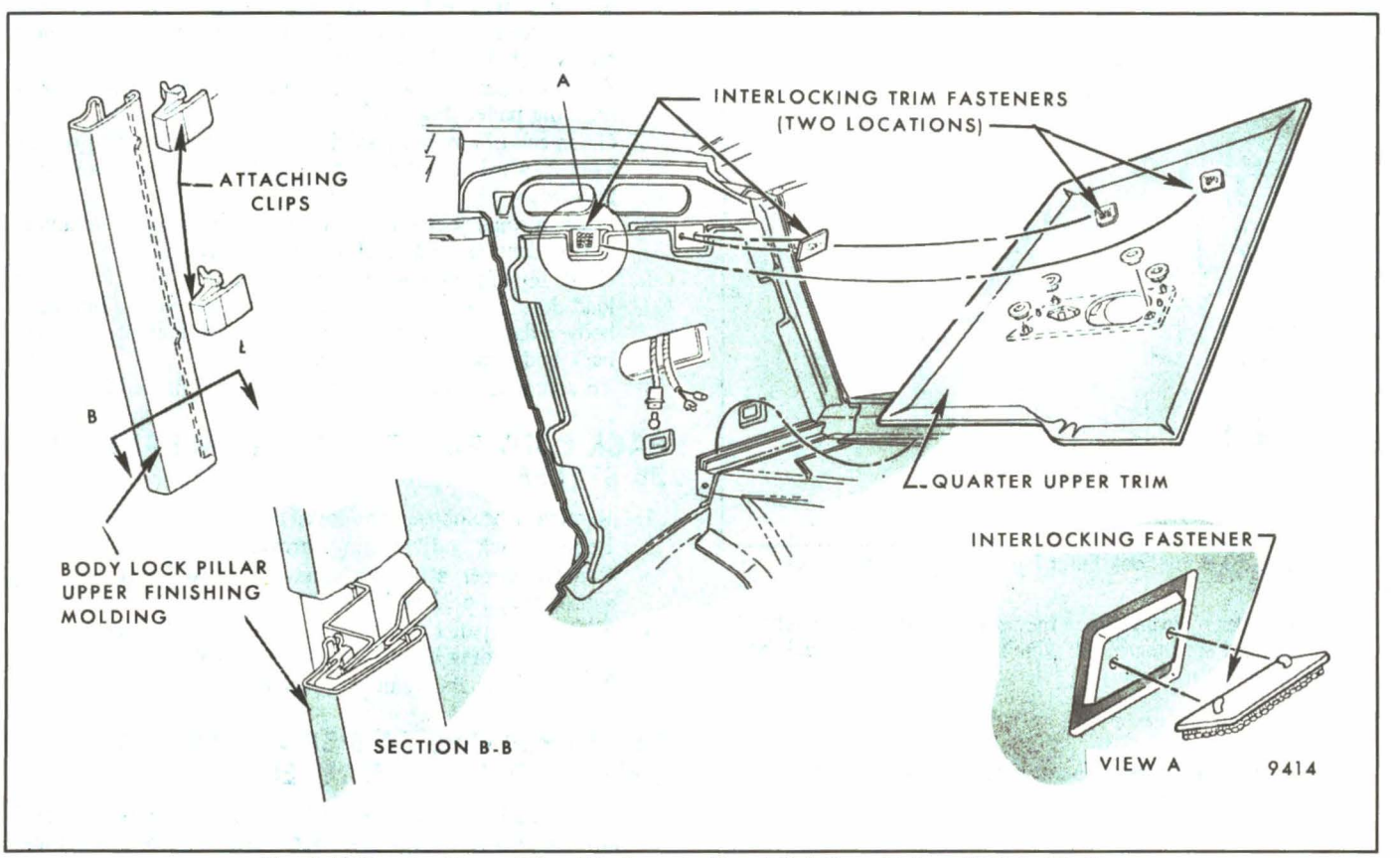


Fig. 6-13-Quarter Upper Trim Attachment - B and C 4-Door Styles - K Style Similar

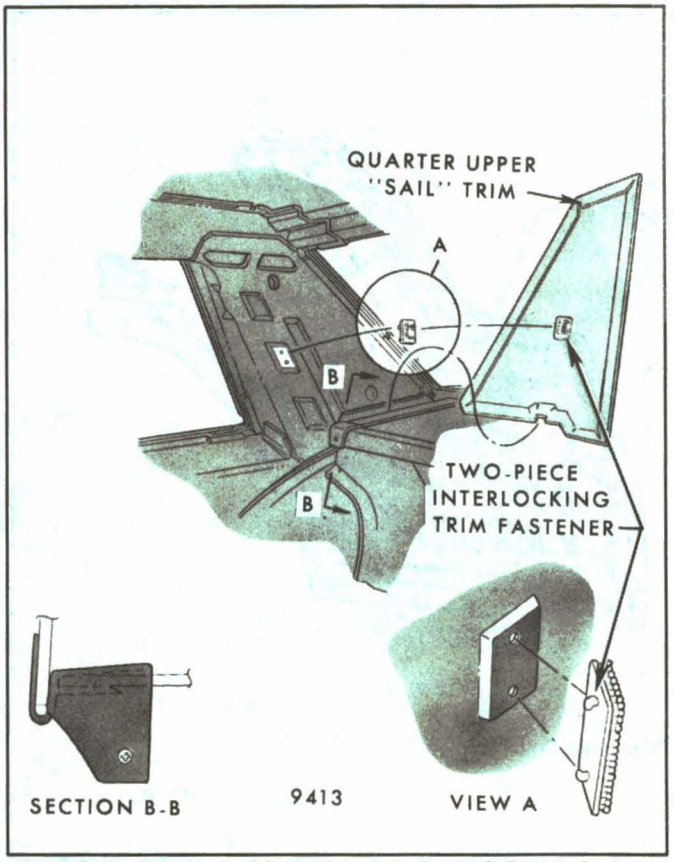


Fig. 6-14-Quarter Sail Trim Attachment - B,C Coupe Styles

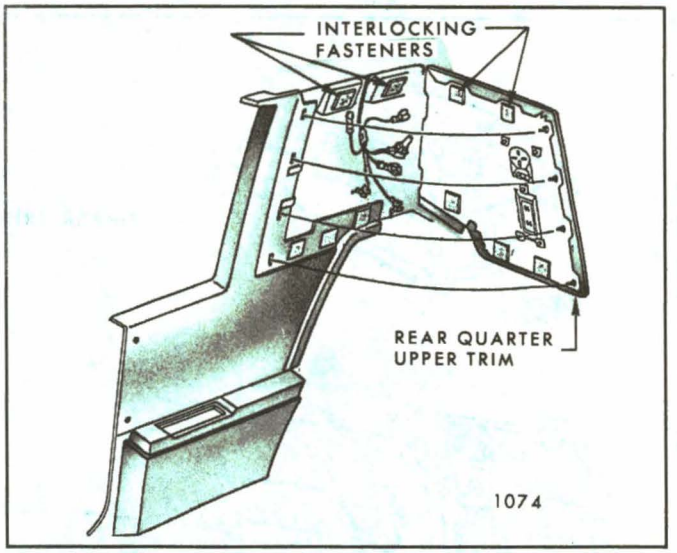


Fig. 6-15 - Quarter Upper Trim Attachment - Typical - E Style

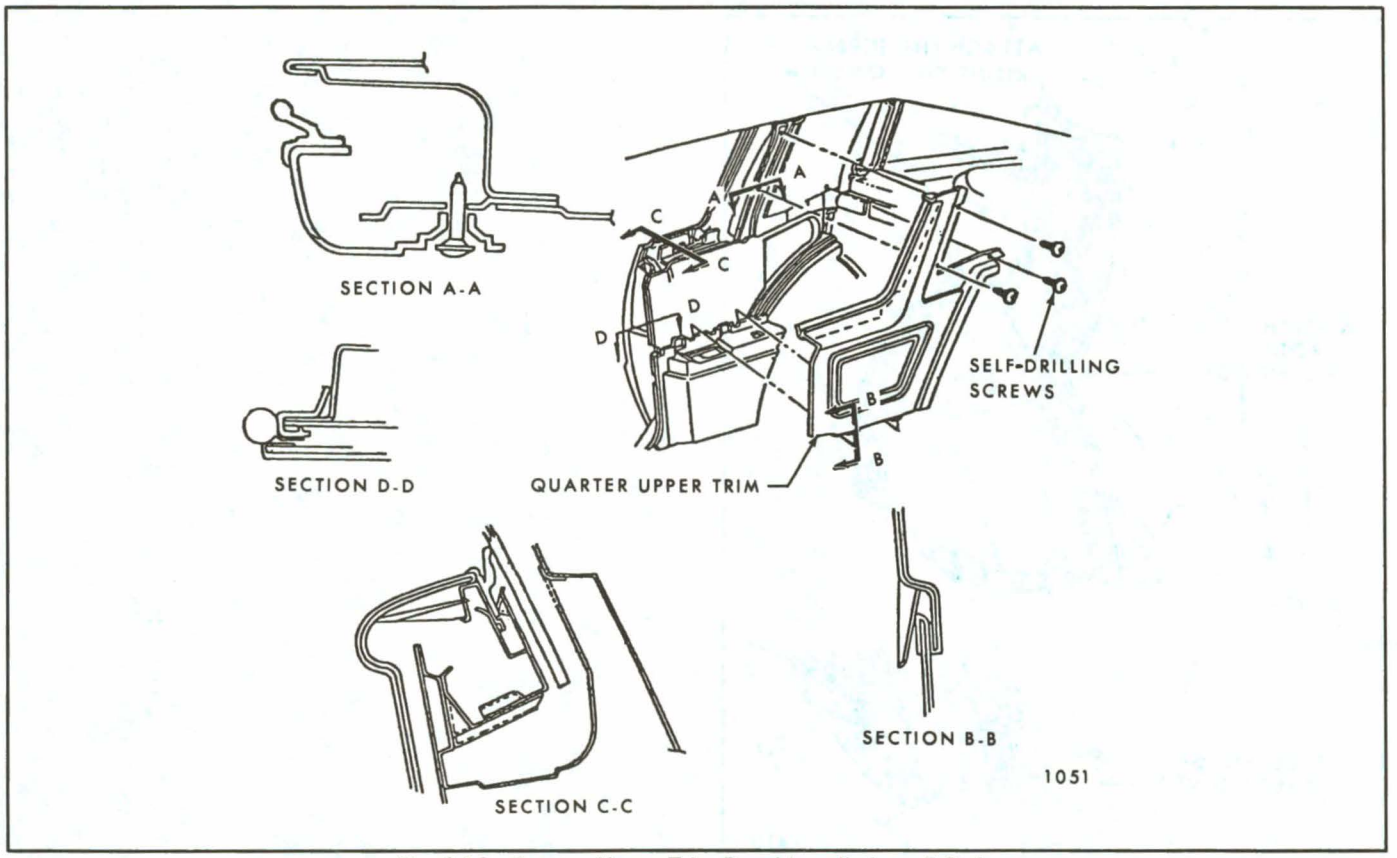


Fig. 6-16 - Quarter Upper Trim Panel Installation - E Style

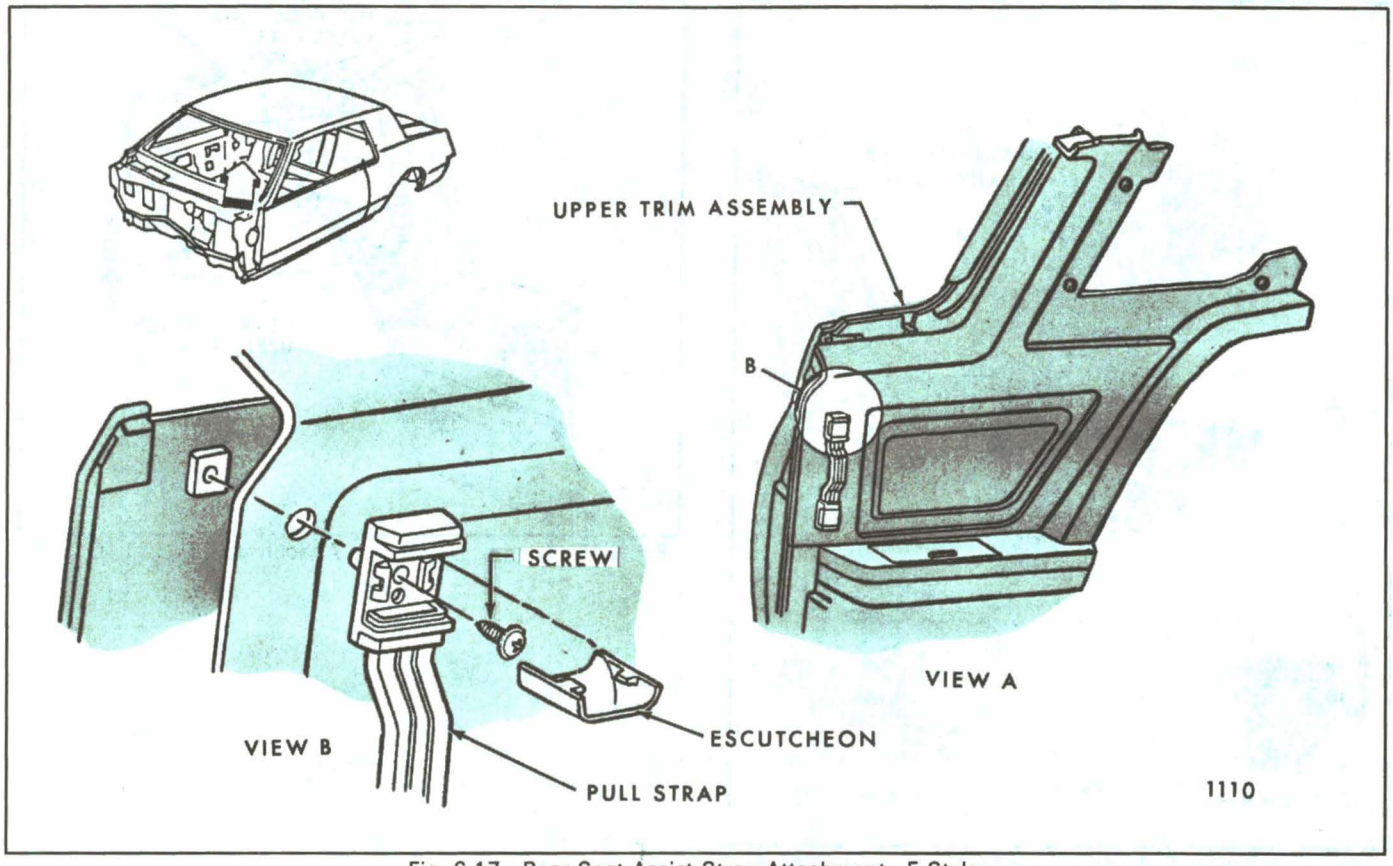


Fig. 6-17 - Rear Seat Assist Strap Attachment - E Style

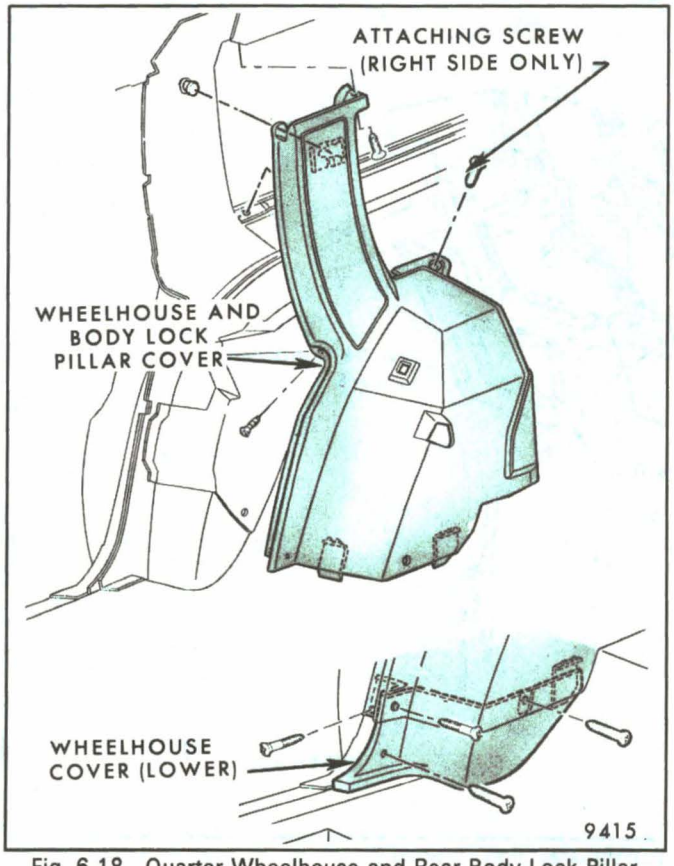


Fig. 6-18 - Quarter Wheelhouse and Rear Body Lock Pillar Covers (Upper and Lower) - B-35 Styles

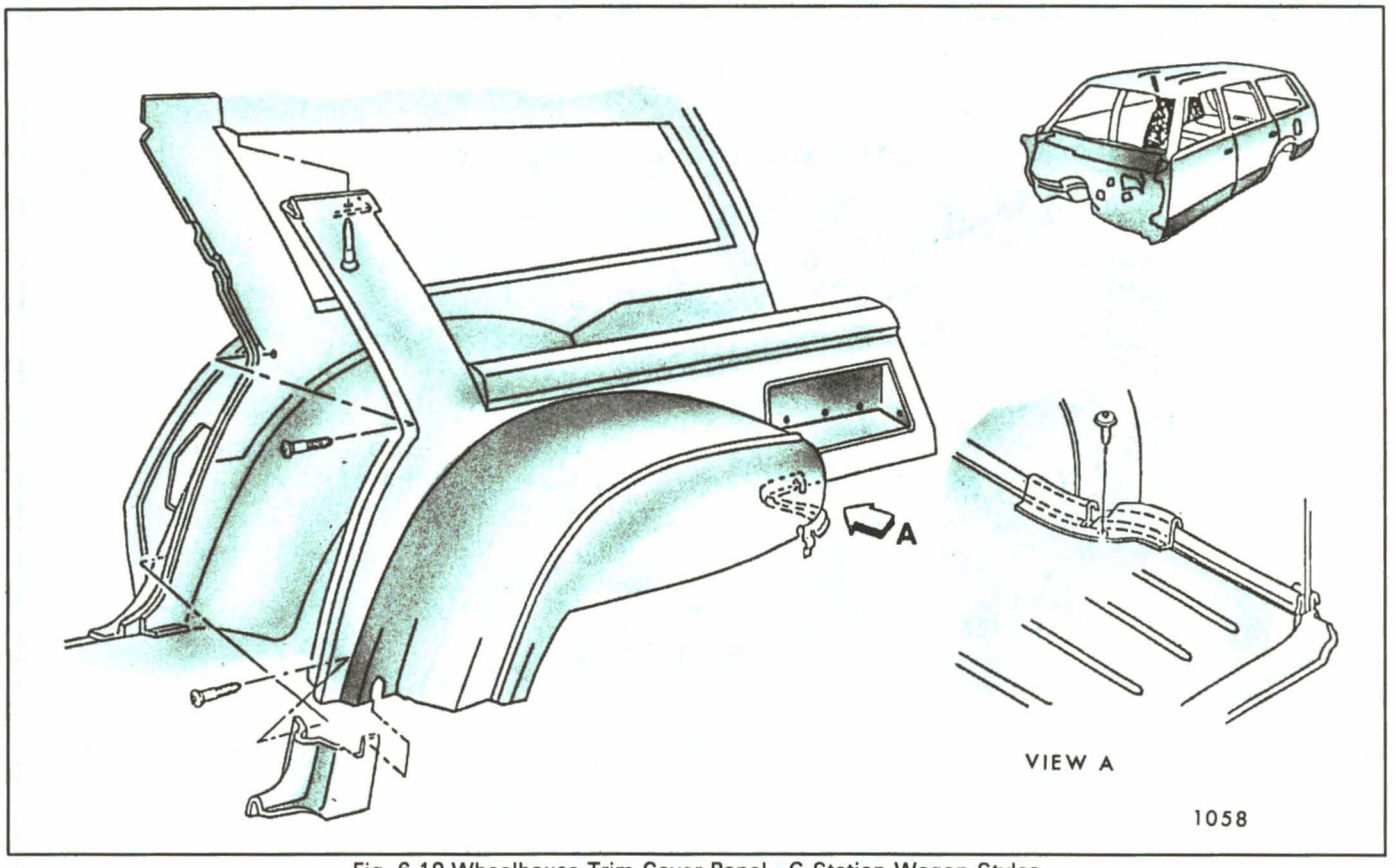


Fig. 6-19-Wheelhouse Trim Cover Panel - G Station Wagon Styles

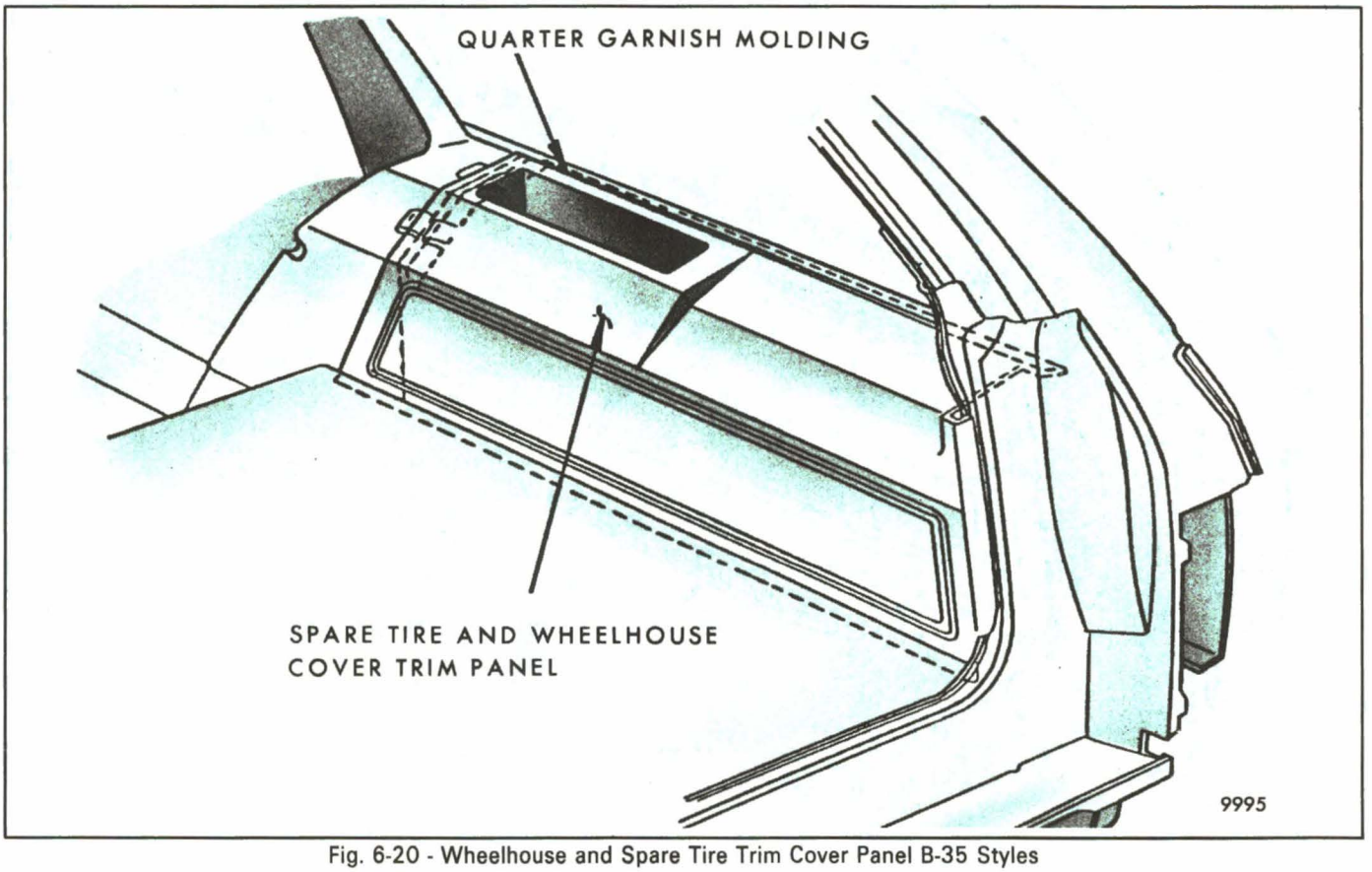
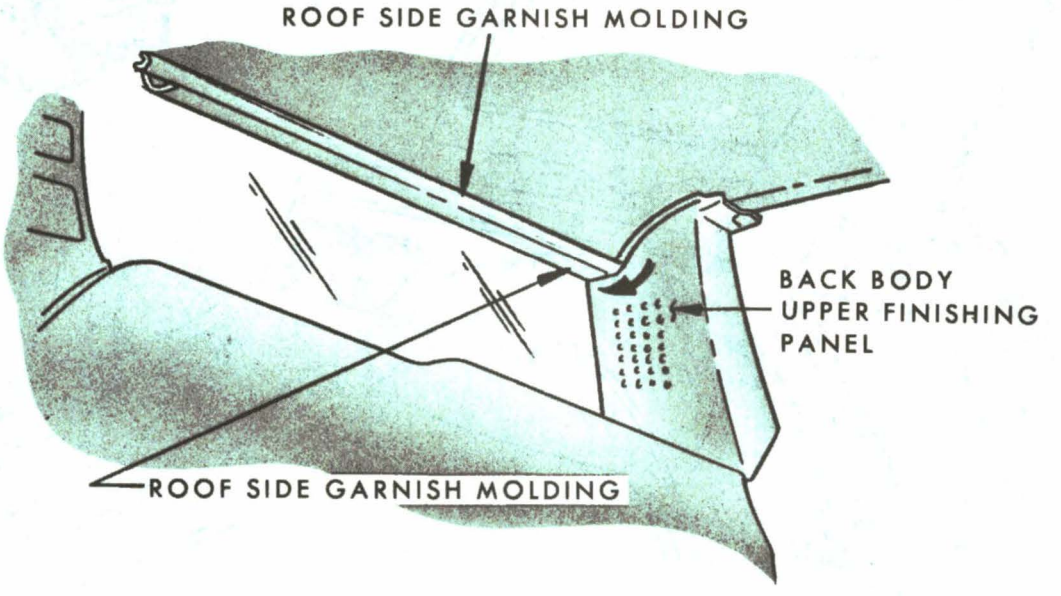
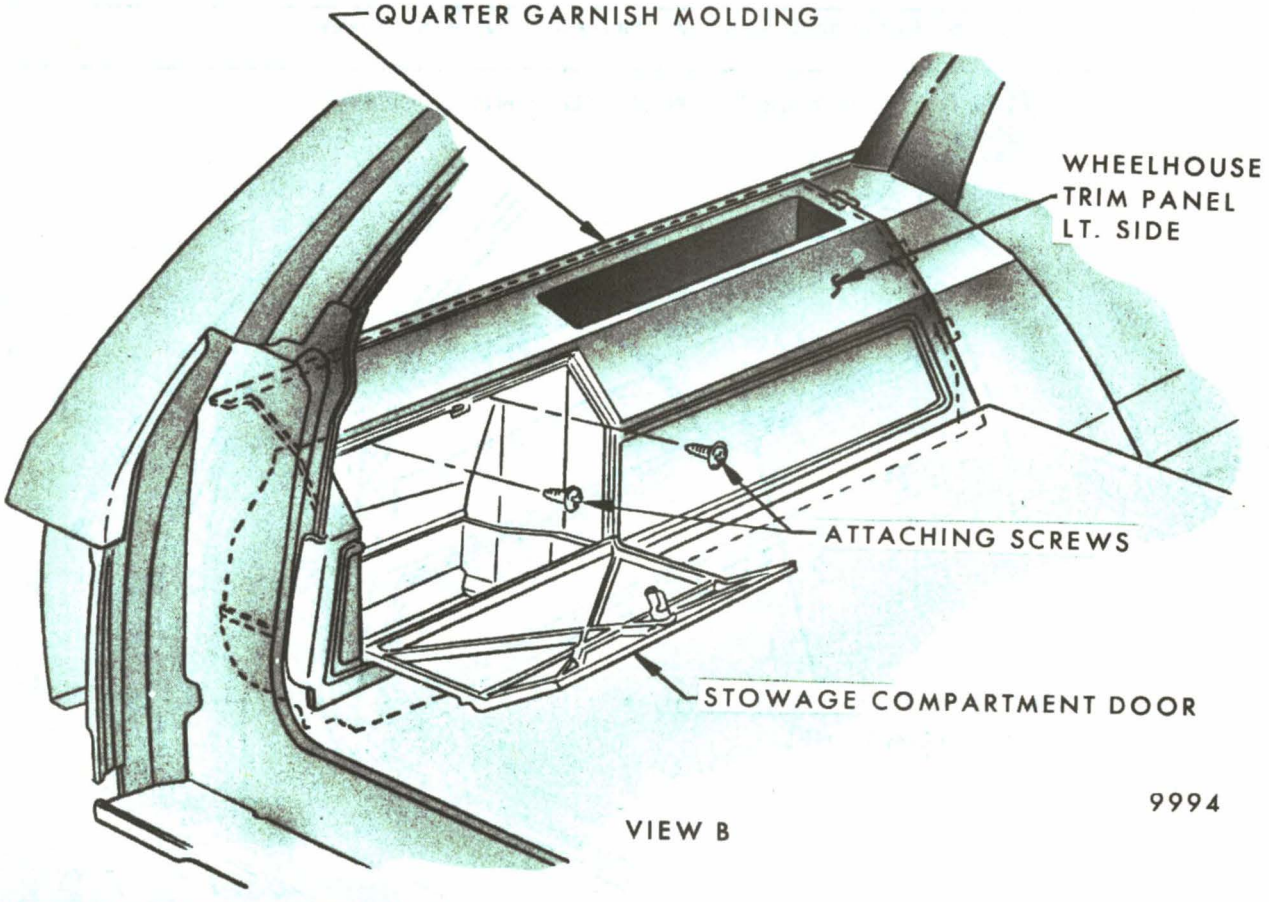


Fig. 6-20 - Wheelhouse and Spare Tire Trim Cover Panel B-35 Styles



VIEW A



VIEW B

Fig. 6-21 - Quarter Wheelhouse Trim Cover and Stowage Pocket Assembly - B-35 Styles (Left Side)

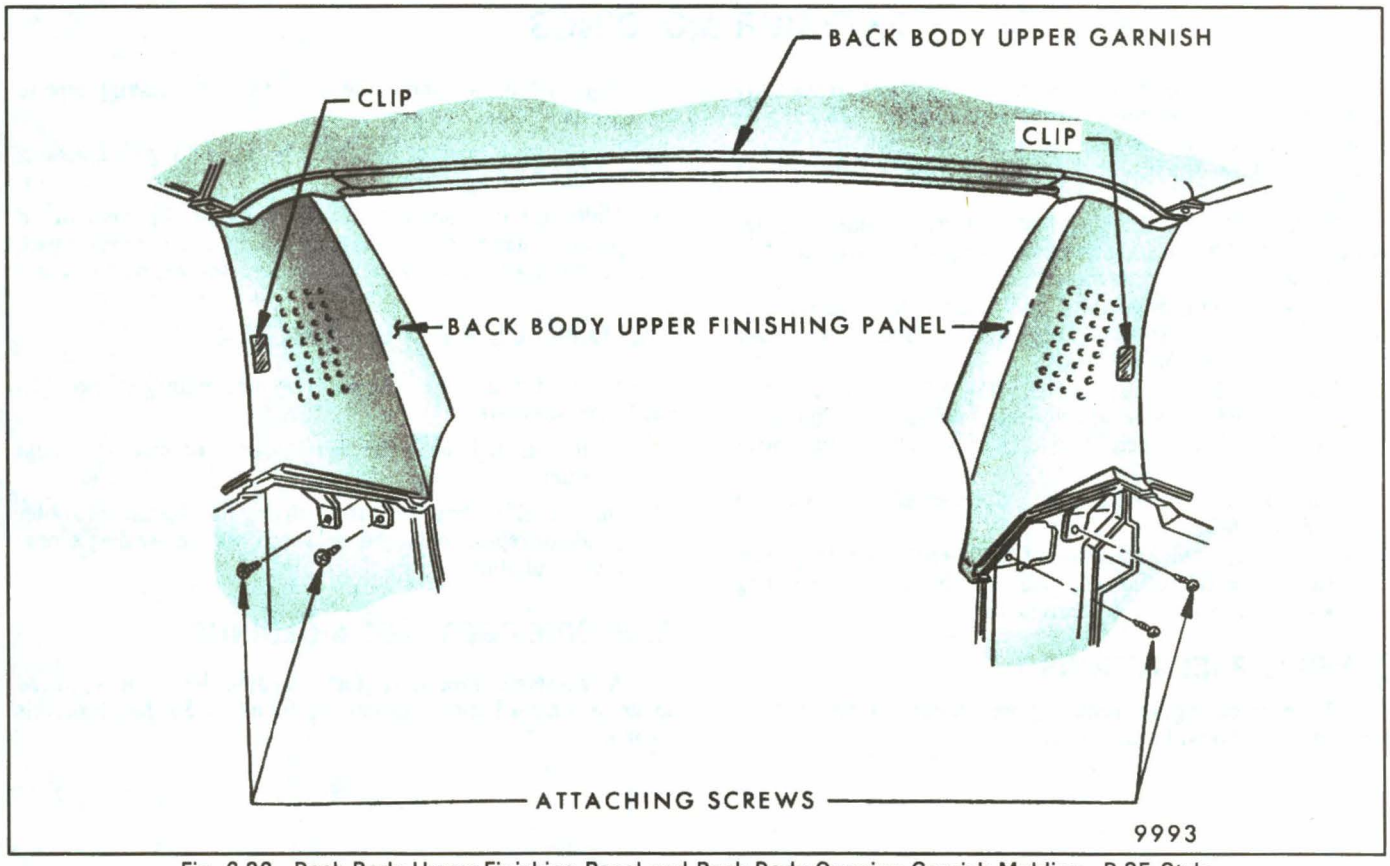


Fig. 6-22 - Back Body Upper Finishing Panel and Back Body Opening Garnish Molding - B-35 Style

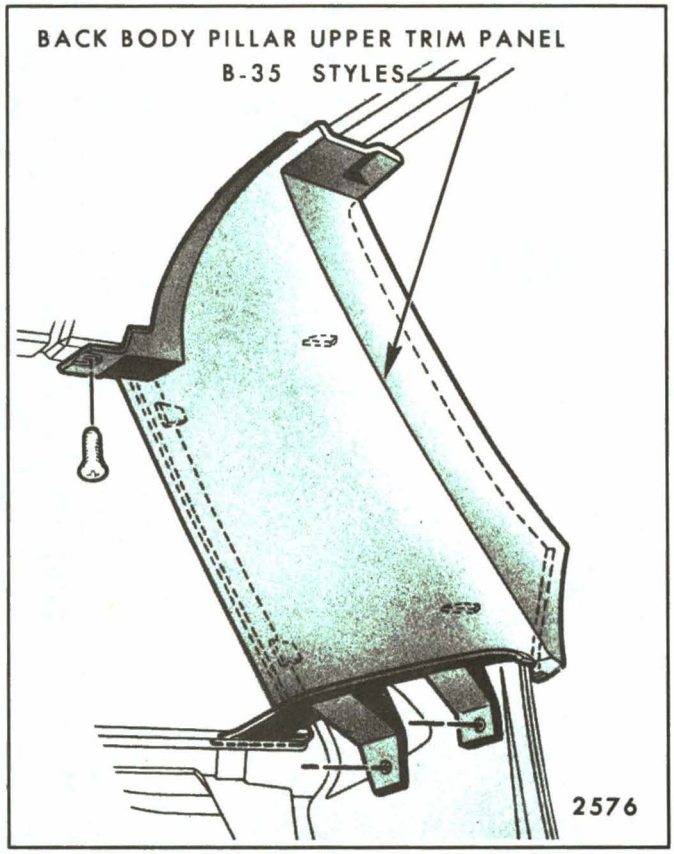


Fig. 6-23 - Back Body Pillar Upper Trim Panel - B-35 Styles

EXTERIOR MOLDINGS

The quarter lower outside moldings are secured to the body by any one or a combination of attachments. Figures 6-26 and 6-27 show the various quarter molding attachments for most styles. Figure 6-28 shows the installation of the quarter molding for the K style.

Figure 6-24 lists all typical lower quarter outside moldings by number. Molding installation chart (Fig. 6-25) gives molding description and specific attachment.

To use molding installation chart, follow these steps.

1. Using typical outside molding drawing (Fig. 6-24), locate number of specific molding(s).
2. Locate molding number on chart (Fig. 6-25). Chart will then supply molding name, attachment(s) reference to Figures 6-26 and 6-27 and specific style (if difference in attachment exists).

The quarter upper emblems for E styles are attached as shown in Figure 6-29.

For removal and installation of fabric roof cover or quarter window reveal moldings, refer to the exterior molding portions of Section 8 or Section 11.

GENERAL PRECAUTIONS

When removing or installing any lower quarter outside molding, care should be exercised.

1. Adjacent finishes should be protected with masking tape to prevent damage to finish.
2. Proper tools and care should be used 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, follow these steps.

1. Drill a small hole in the panel next 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 screw-type weld stud.

ADHESIVE BODY SIDE MOLDINGS

A complete procedure for attaching loose or removed adhesive attached moldings can be found in Section 1 of this manual.

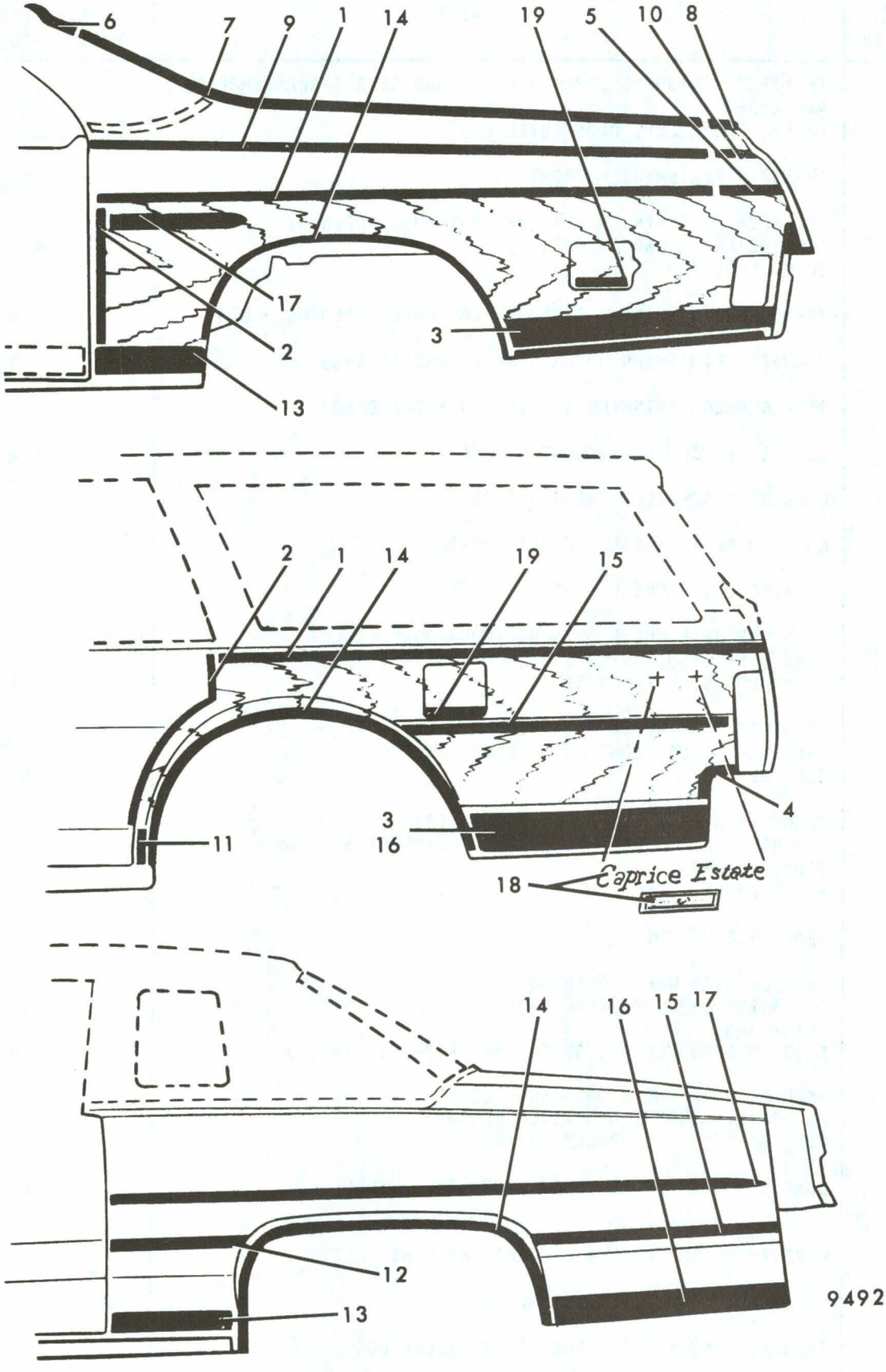


Fig. 6-24 - Typical Lower Quarter Exterior Moldings

MOLDING REFERENCE NUMBER FIG. 6-24	MOLDING DESCRIPTION (USAGE)	ATTACHMENT REFERENCE FIGS. 6-26, 6-27
1	TRANSFER FINISHING UPPER - FRONT AND REAR (PREASSEMBLED)	
	ALL G-35	G
	BUICK, CHEVROLET, OLDSMOBILE B-35	A-G
2	TRANSFER FINISHING - FRONT	A
3	TRANSFER FINISHING - REAR OF REAR WHEEL OPENING	
	OLDSMOBILE 35 AND BUICK G-35	A,G
	BUICK B-35	G
4	TRANSFER FINISHING - REAR OF REAR WHEEL OPENING - G-35	E,G
5	TRANSFER FINISHING UPPER - REAR PONTIAC G-35	F,G
6	ROOF CORNER FINISHING (AT BACK WINDOW) G-80	A,G
7	QUARTER PINCHWELD - FRONT - G-80	A,B
8	QUARTER PINCHWELD - REAR - G-80	A
9	QUARTER BELT REVEAL - FRONT - G-80	A,G
10	QUARTER BELT REVEAL - REAR - G-80	A,J
11	FRONT OF REAR WHEEL OPENING (FOUR-DOOR STYLES)	
	CHEVROLET G-35, BUICK G-35, CHEVROLET B-69, OLDSMOBILE, CHEVROLET B, BUICK B-35	A,G
12	FRONT OF REAR WHEEL OPENING	
	CHEVROLET G-80, PONTIAC G, OLDSMOBILE B	A,G,E
	CHEVROLET B	E
13	FRONT OF REAR WHEEL OPENING - LOWER	
	CHEVROLET G-37, OLDSMOBILE 47, CHEVROLET B	A,G
	CADILLAC E-K	F
	BUICK B-C-E	A,D
14	REAR WHEEL OPENING	A
15	REAR OF REAR WHEEL OPENING	E
	CHEVROLET G-37, PONTIAC G-35	A,G
	BUICK G-35	G
	E-57, OLDSMOBILE B-C 37-69, BUICK B-35, C-37,69	A,D
16	REAR OF REAR WHEEL OPENING - LOWER	
	ALL STYLES EXCEPT AS LISTED BELOW	A,D
	PONTIAC G-37, CHEVROLET, BUICK G-47	A,G
17	QUARTER OUTER PANEL (BODY SIDE) ALL STYLES	E
18	QUARTER OUTER PANEL - EMBLEMS AND NAME PLATES	
	E-57	K,H
	CHEVROLET B, BUICK B, C, ALL G	K
19	TRANSFER FINISHING - FUEL TANK FILLER DOOR	I

2340

Fig. 6-25 - Quarter Molding Installation Chart

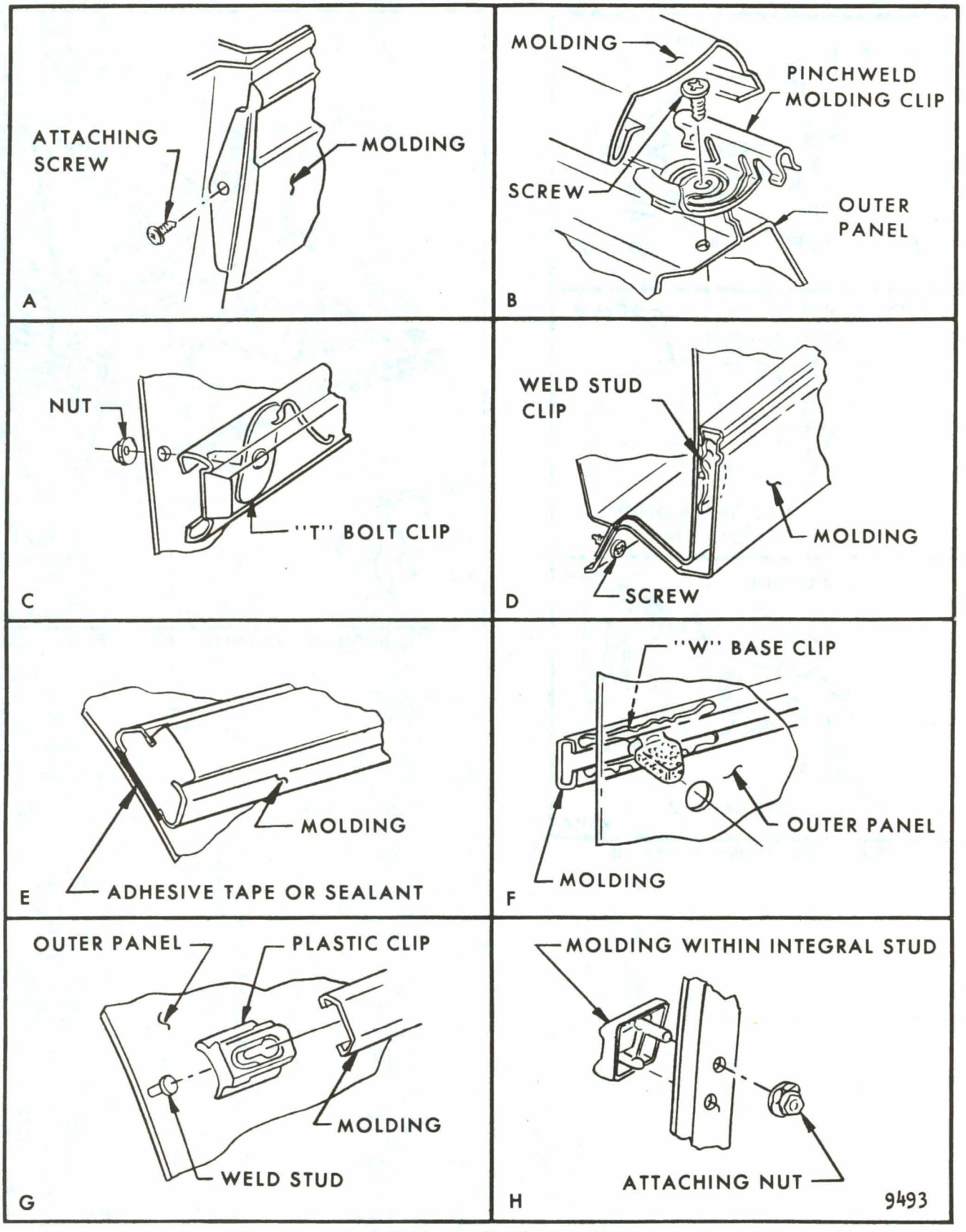


Fig. 6-26 - Quarter Molding Attachments

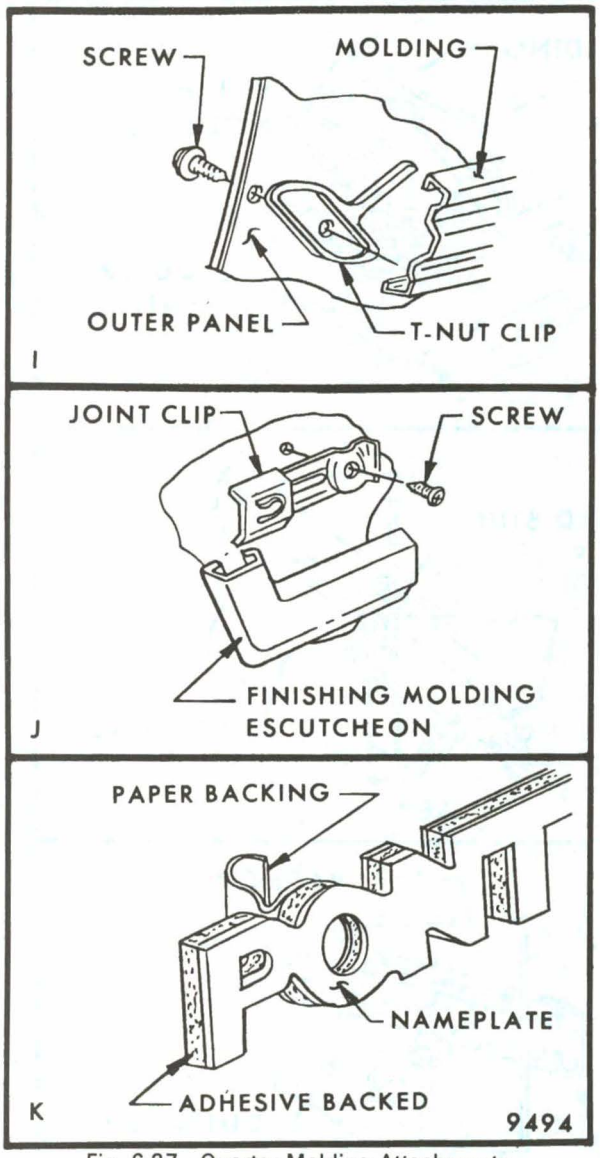


Fig. 6-27 - Quarter Molding Attachments

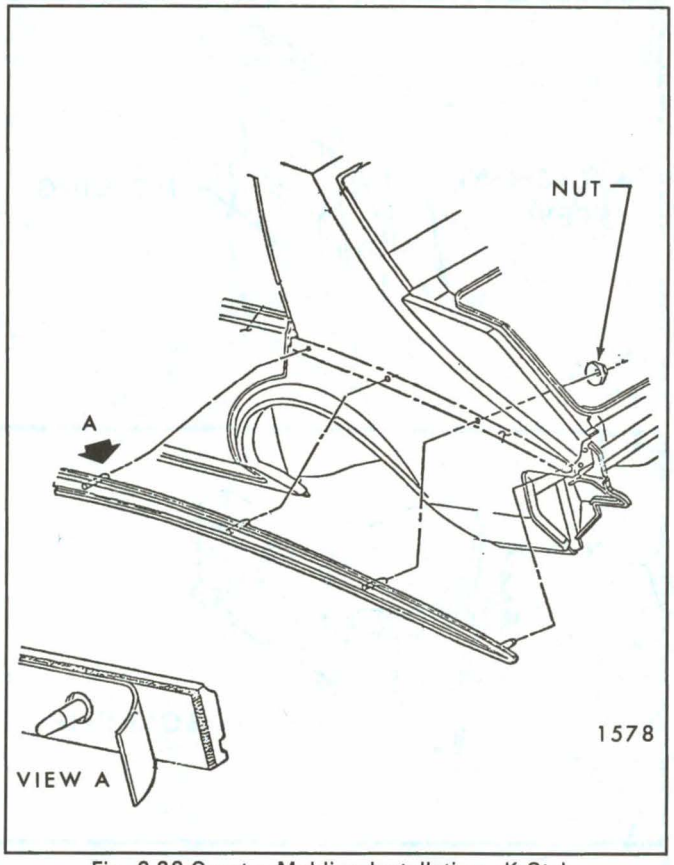


Fig. 6-28-Quarter Molding Installation - K Style

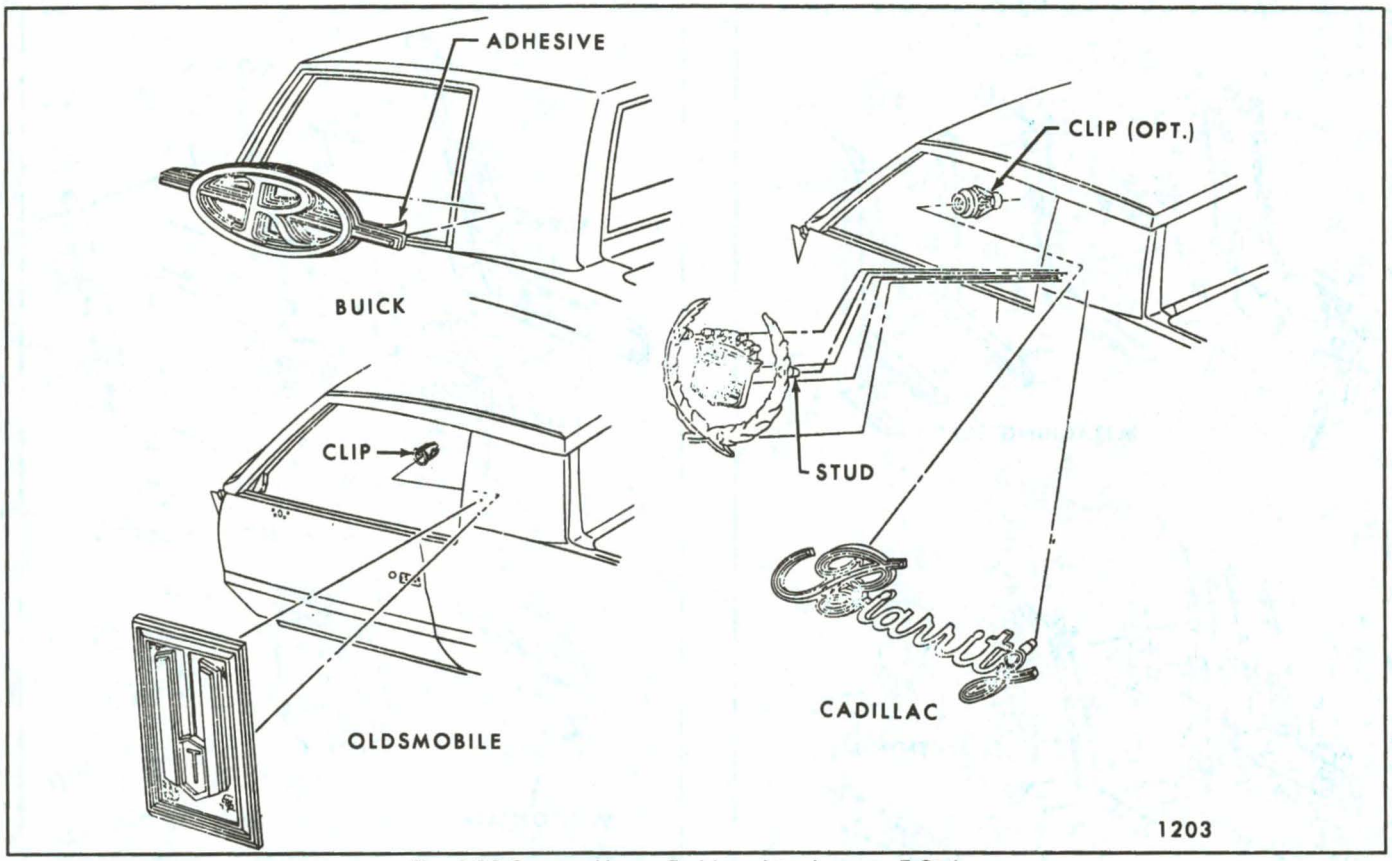
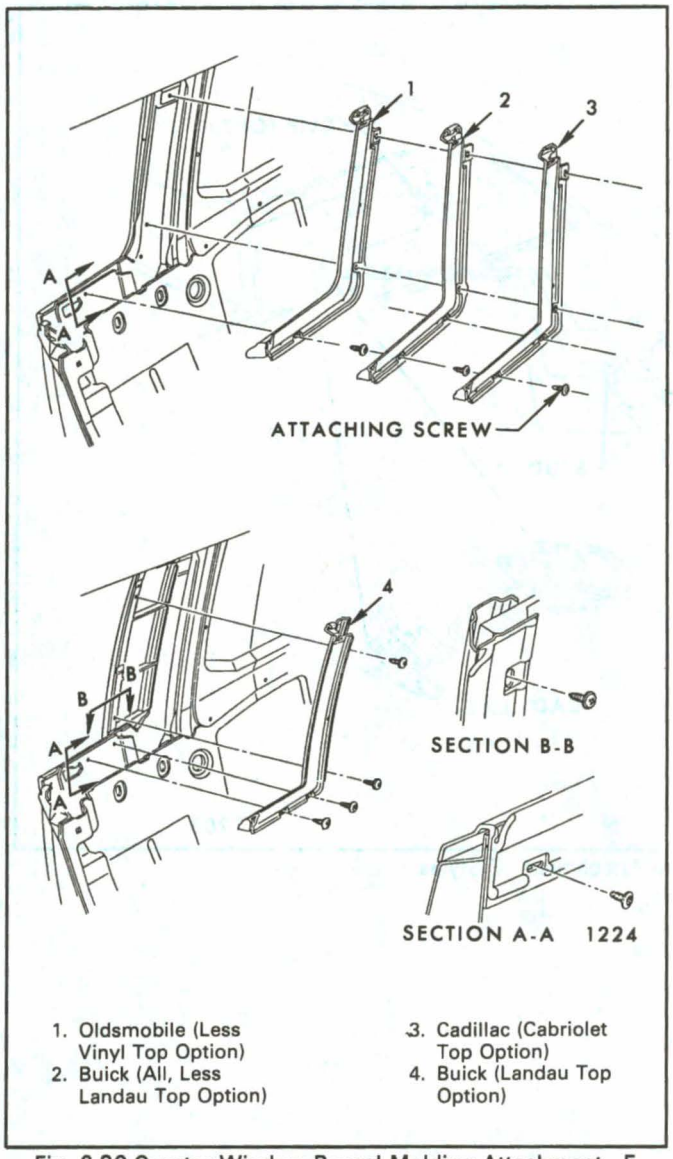


Fig. 6-29-Quarter Upper Emblem Attachment - E Styles



1. Oldsmobile (Less Vinyl Top Option)
2. Buick (All, Less Landau Top Option)
3. Cadillac (Cabriolet Top Option)
4. Buick (Landau Top Option)

Fig. 6-30-Quarter Window Reveal Molding Attachment - E Styles

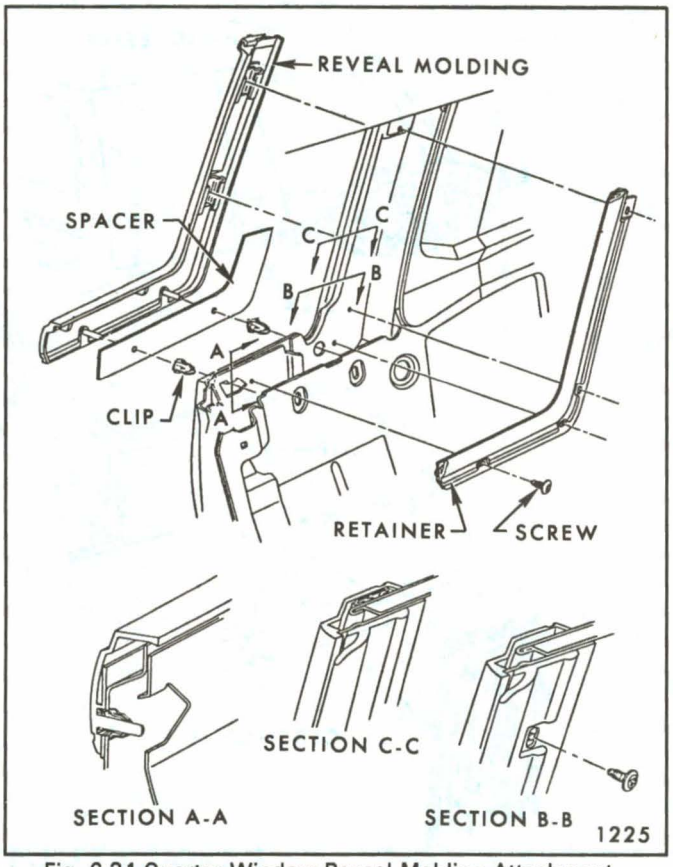


Fig. 6-31-Quarter Window Reveal Molding Attachment - Cadillac Biarritz Option

QUARTER WINDOW (NONOPERABLE) - E STYLES

The quarter window is nonoperable but can be adjusted for a proper seal with the rear vertical edge of the door window glass. Fore and aft, in and out, and up and down adjustments are available.

The following component parts are serviceable: quarter glass, front sash channel, weatherstrip, upper support, lower sash and lower support (Fig. 6-33).

The following rivet parts are available for installation of lower sash to quarter glass (Fig. 6-35):

- Rivet - part no. 9437938 or equivalent
- Rivet Bushing - part no. 20096584 or equivalent
- Rivet Retainer - part no. 20096585 or equivalent

The following bolt-on parts are available for installation of lower sash to quarter glass (Fig. 6-37):

- Spanner Bolt - part no. 20083325 or equivalent
- Bushing - part no. 1705300 or equivalent
- Washer - part no. 7734899 or equivalent
- Spanner Nut - part no. 20083326 or equivalent
- Attaching Nut (M6.3 x 1) - part no. 11501106 or equivalent

Adjustment

The quarter window glass assembly can be adjusted forward and rearward, inboard and outboard, and up and down by performing the following steps:

1. Remove quarter upper trim assembly. Pull back sound deadening material to gain access to lower support adjusting screws (Fig. 6-32).
2. Mark all adjusting screws (Fig. 6-32).
3. The following adjustments can now be made:
   a. **Window Too Far Forward Or Rearward** - Loosen attachments labeled A (Fig. 6-32), adjust window as required and tighten attachments.
   b. **Window Too Far Inboard Or Outboard** - Loosen attachments labeled B (Fig. 6-32), adjust window as required and tighten attachments.
   c. **Window Too High Or Low** - Loosen attachments labeled C (Fig. 6-32), adjust window as required and tighten attachments.

   After making adjustments, tighten all loosened attachments 10 to 14 N·m (90 to 125 in-lb).
4. Reinstall trim assembly.

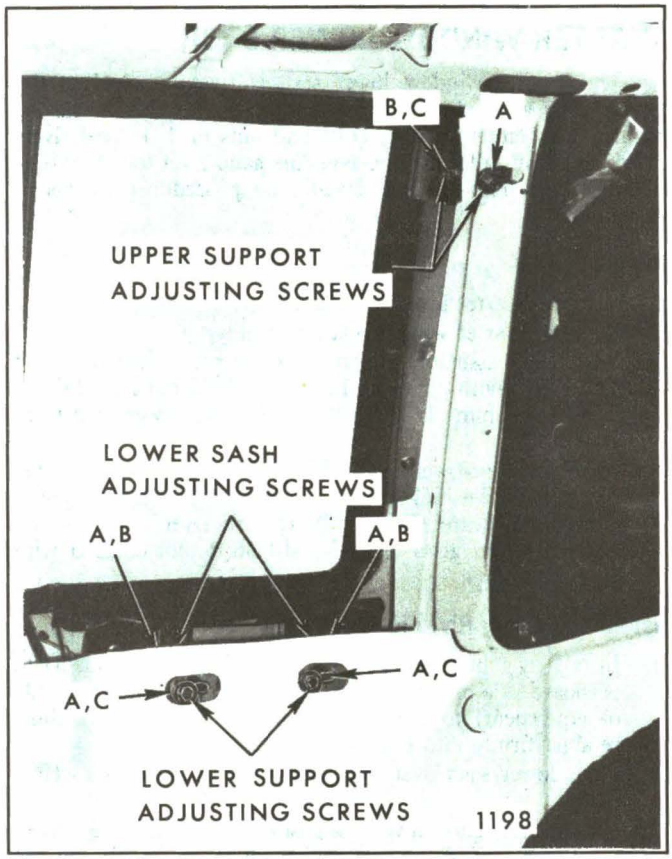


Fig. 6-32 - Quarter Window Adjustment

Removal and Installation

1. Remove quarter upper trim assembly.
2. Remove weatherstrip end detail screws (10, Fig. 6-34).
3. Mark attaching screws, then remove upper support screw and lower sash screws (Fig. 6-32).
4. Detach front upper clip from weatherstrip retainer.
5. Pull back sound deadening material to gain access to lower support screws, then mark and loosen screws enough to remove quarter window assembly.
6. To install, reverse removal procedure. Align quarter window assembly for proper seal with rear edge of door window in full-up position.

QUARTER WINDOW ROOF RAIL WEATHERSTRIP

The quarter window roof rail weatherstrip is an integral part of the side roof rail weatherstrip. Refer to Section 5 for removal and installation procedures.

QUARTER WINDOW WEATHERSTRIP

Removal

1. Remove weatherstrip end detail attaching screws (10, Fig. 6-34).
2. Carefully remove end detail from inboard side of quarter window reveal molding by pulling gently.
3. Carefully remove weatherstrip from front sash channel by sliding downward.

Installation

1. Apply liquid soap to back side of weatherstrip.
2. Insert weatherstrip into bottom of channel and slide upward until top of weatherstrip is tight to top of channel.

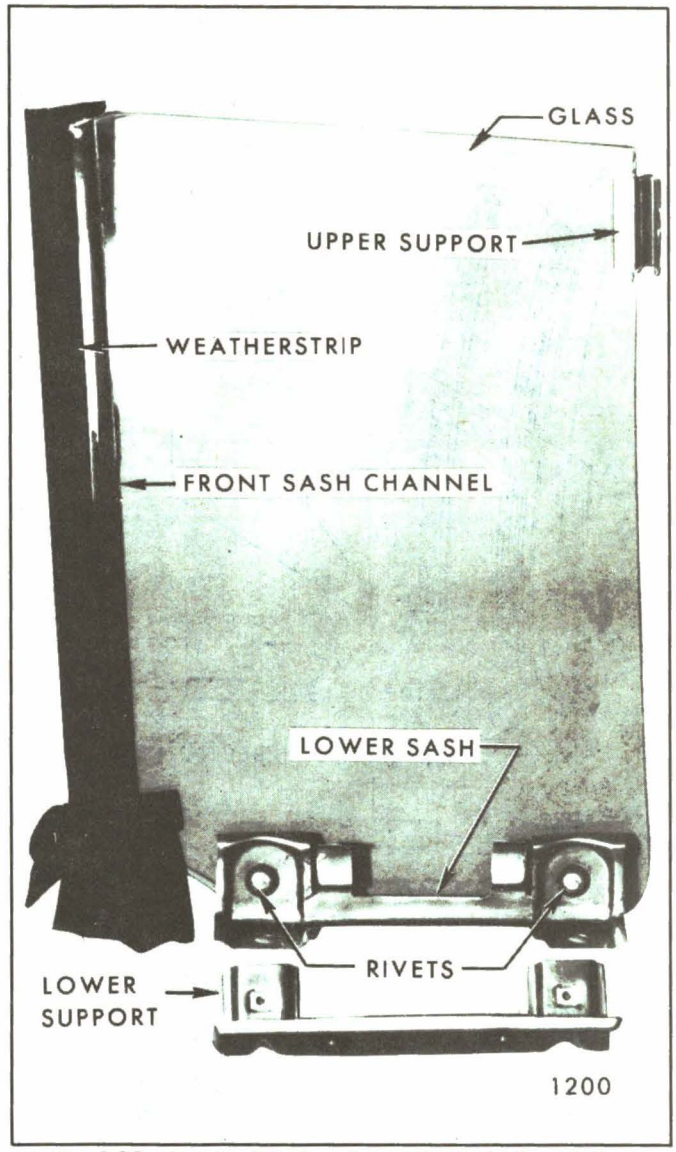


Fig. 6-33 - Quarter Window Assembly Parts Description

3. Carefully install weatherstrip end detail behind quarter window reveal molding using a dull putty knife or flat-bladed screwdriver.
4. Install attaching screws to weatherstrip end detail.

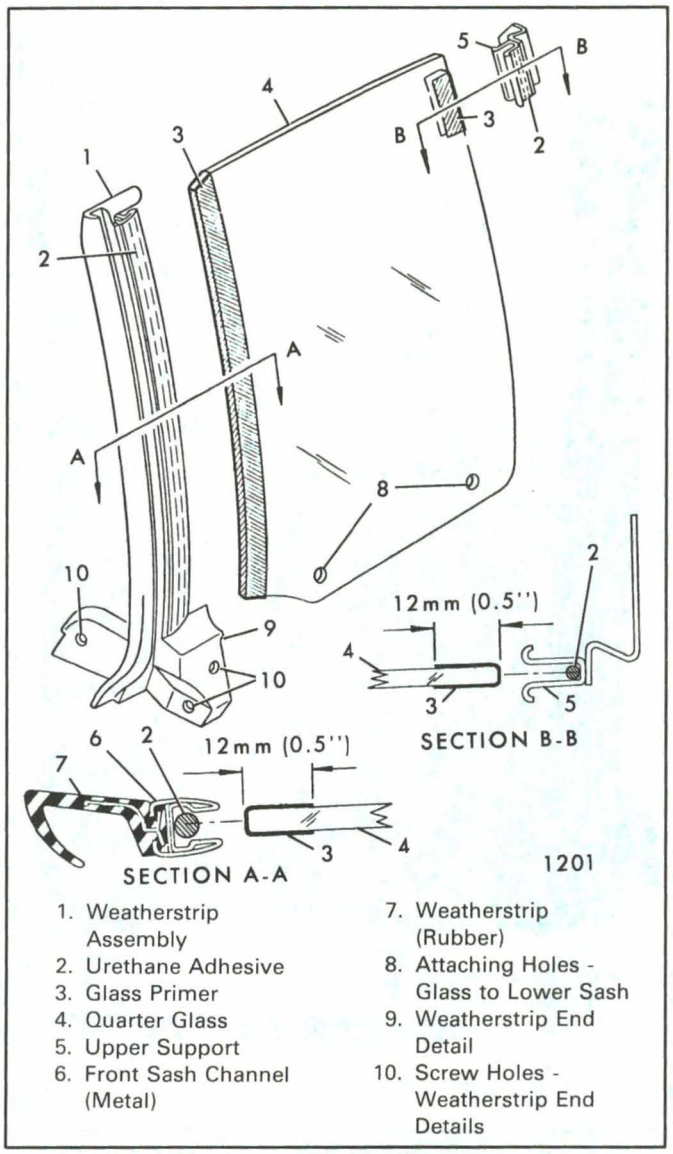
FRONT SASH CHANNEL

The front sash channel is bonded to the quarter glass with urethane adhesive (Fig. 6-34). Removal and installation procedures are performed as bench operations.

Removal and Installation

1. Remove weatherstrip from front sash channel.
2. Remove quarter window assembly. Be sure to mark attaching screws before removing.

   CAUTION: During burn-out operation, avoid direct inhalation of the fumes being emitted as these fumes may be hazardous.
3. Remove front sash channel from glass by applying heat from welding torch with no. 2 or 3 tip along full 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 separate, repeat heating operation.
4. Clean replacement glass. If original glass is to be reused, scrape off all traces of adhesive with sharp bladed tool.



1. Weatherstrip Assembly
2. Urethane Adhesive
3. Glass Primer
4. Quarter Glass
5. Upper Support
6. Front Sash Channel (Metal)
7. Weatherstrip (Rubber)
8. Attaching Holes - Glass to Lower Sash
9. Weatherstrip End Detail
10. Screw Holes - Weatherstrip End Details

Fig. 6-34 - Quarter Window Glass Assembly

Remove adhesive film from glass with lacquer thinner. Complete cleaning operation with water.

5. Install weatherstrip to front sash channel.
6. Install front sash channel to glass using part no. 9636067 windshield adhesive kit or equivalent. This kit includes the urethane adhesive and glass primer which are required for a proper bond. Primer must be applied to 12 mm (0.5") of both glass surfaces for full length of glass (3, Fig. 6-34). Adhesive must be applied to full length of channel (2, Fig. 6-34). Follow instructions included with kit. Clean excess adhesive from glass using cloth dampened with lacquer thinner. Allow adhesive to cure for one hour minimum prior to reinstallation into car. Vehicle must remain at normal room temperature (20°C or 72°F) for six hours to complete proper cure of urethane adhesive.
7. Install quarter window assembly, align to door window and reinstall quarter upper trim assembly.

QUARTER WINDOW UPPER SUPPORT

The quarter window upper support is bonded to the quarter glass with urethane adhesive and is serviced as a separate part (Fig. 6-34). To service, follow removal and installation procedures for front sash channel.

QUARTER WINDOW LOWER SASH

The quarter window lower sash is rivet attached to the quarter glass at production. For service, the lower sash can be installed with either spanner bolts and nuts or 1/4" peel rivets (provided the installer has the available hand rivet tool J-29022). In either case, removal and installation procedures are bench operations.

Removal

1. Remove quarter upper trim assembly.
2. Remove quarter window glass assembly.
3. With glass assembly supported on bench, drive out rivet center pins with punch and hammer. Drill out rivet centers using a 6.3 mm (1/4") drill bit. Remove lower sash from glass.
4. If reinstalling lower sash with rivet hardware, leave rivet retainers and bushings (Fig. 6-35) in place. If reinstalling with bolt-on hardware (Fig. 6-37), remove rivet retainers and bushings from glass using a flat-bladed tool covered with cloth body tape.

Installation Using Rivet Hardware (Fig. 6-35)

1. Install rivet bushing (part no. 20096584 or equivalent) to outboard side of glass and rivet retainer (part no. 20096585 or equivalent) to inboard side of glass (Fig. 6-35). Snap retainer firmly into bushing.
2. Place lower sash over rivet retainers and align holes (Fig. 6-35).
3. With quarter glass in vertical position, install 1/4" peel rivets (part no. 9437938 or equivalent) to inboard side of lower sash using hand rivet tool no. J-29022 or equivalent. "Peel" end of rivet will be on outboard side of quarter glass (Fig. 6-36). Rivets must securely fasten lower sash to glass. If a rivet is loose, install a new rivet.
4. Install quarter window assembly to body and reinstall trim.

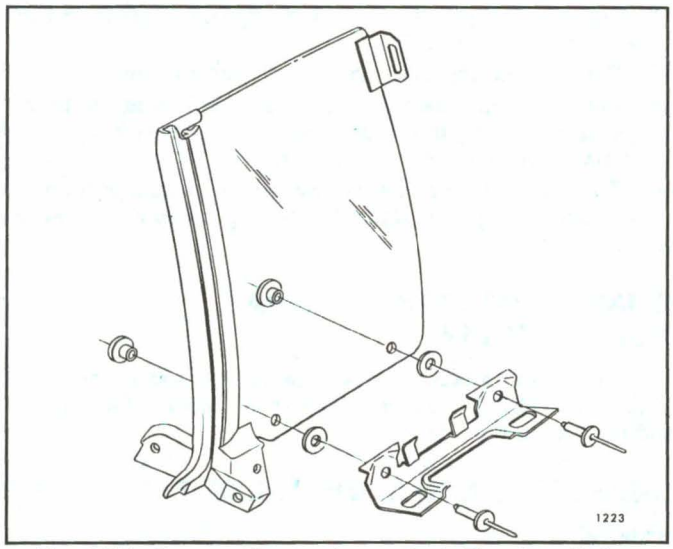


Fig. 6-35 - Quarter Glass to Lower Sash Rivet Installation

Installation Using Bolt-on Hardware (Fig. 6-37)

1. Remove rivet retainers and bushings from glass using a flat-bladed tool covered with cloth body tape.
2. Install spanner bolts (part no. 20083325 or equivalent), bushings (part no. 1705300 or equivalent), washers (part no. 7734899 or equivalent) and spanner nuts (part no. 20083326 or equivalent) to glass as shown in Figure 6-37. Tighten spanner nuts to 8 N·m (72 in-lb) torque using tool no. 22055 or equivalent.

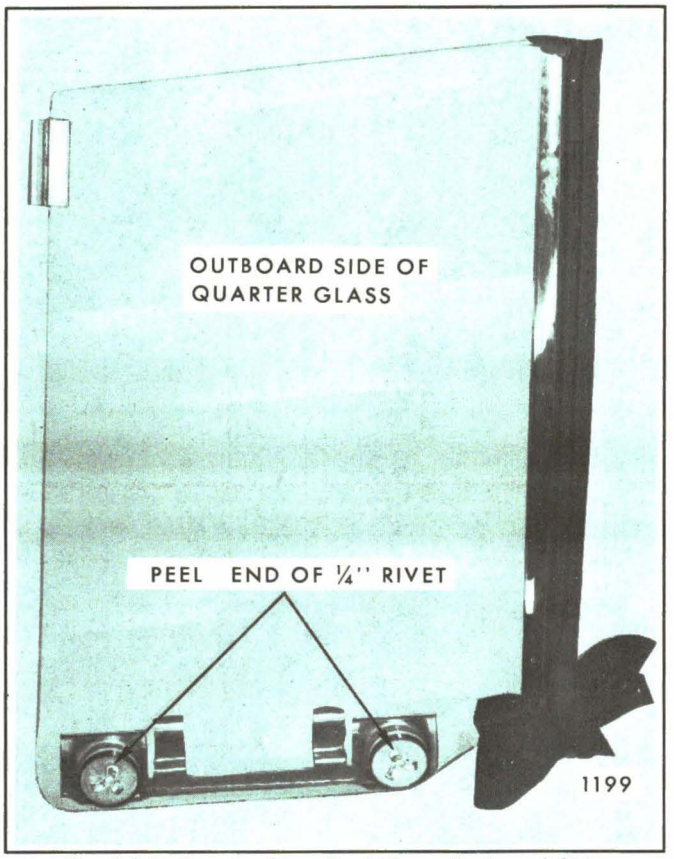


Fig. 6-36 - Quarter Glass Peel Rivet - Outboard Side

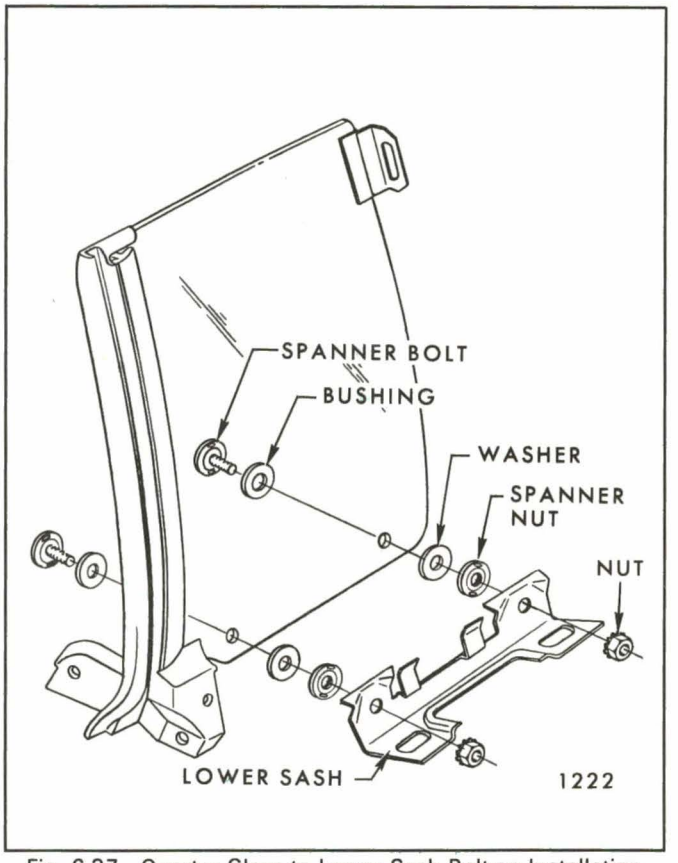


Fig. 6-37 - Quarter Glass to Lower Sash Bolt-on Installation

3. Install lower sash to spanner bolts and attach with M6.3x1 nuts (part no. 11501106 or equivalent). Tighten attaching nuts to 8 N·m (72 in-lb) torque.
4. Install quarter window assembly to body and reinstall trim.

QUARTER WINDOW LOWER SUPPORT

The quarter window lower support (Fig. 6-33) attaches to the body and supports the quarter window glass assembly in proper position.

Removal and Installation

1. Remove quarter upper trim assembly.
2. Remove quarter window glass assembly.
3. Mark screw locations, then remove lower support attaching screws (C, Fig. 6-32). Remove lower support.
4. To install, reverse removal procedure.

STATIONARY QUARTER WINDOW - ALL EXCEPT E STYLES

For removal and installation procedures covering the stationary quarter window, refer to Section 11 of this manual.

SECTION 7

REAR END

CONTENTS

Rear Compartment
Moldings, Emblems and Name Plates 7-1
Rear Compartment Lid 7-3
Gas Support 7-3
Lock Cylinder Emblem 7-4
Lid Lock Cylinder 7-4
Lid Lock 7-4
Lid Lock Release 7-5
Lid Lock Striker 7-7
Lid Electric Closing and Release Unit 7-7
Weatherstrip 7-9
Front Panel 7-10
Fiber Optic Monitor System 7-11
Electric Locking Fuel Filler Door 7-12
Exterior Lamps 7-13
Single Acting Tailgate - G-80 Style 7-23
Station Wagon Tailgate - G-35 Style 7-26
Three-Way Tailgate B-35 Style 7-32

REAR COMPARTMENT

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

The moldings, emblems and name plates used on the rear compartment lids and rear end panels are attached by several different means. Figures 7-1 and 7-2 illustrate the different types of attachment.

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.

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, screw type weld stud.

ADHESIVE MOLDINGS

A complete procedure for attaching loose or removed adhesive attached moldings can be found in Section 1 of this manual.

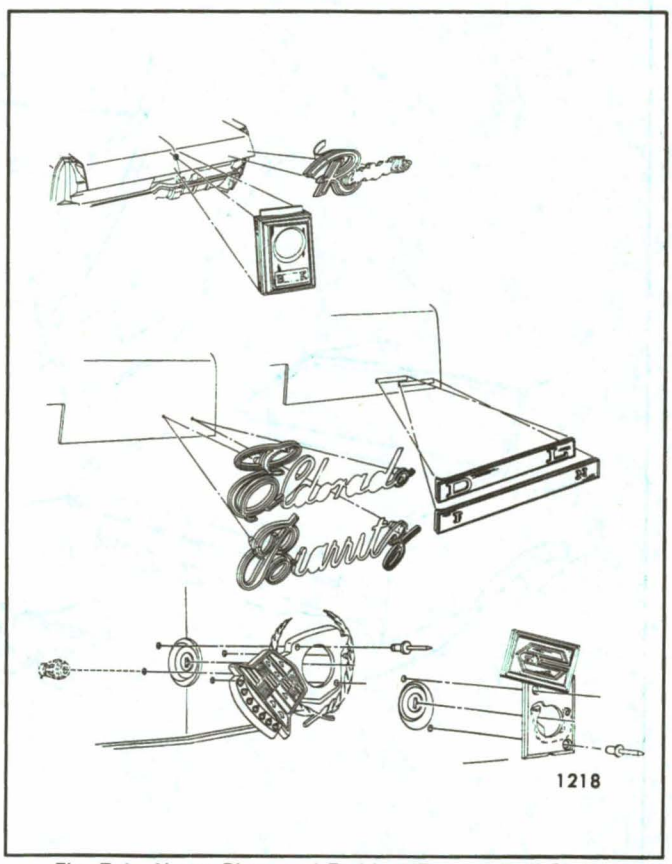


Fig. 7-1 - Name Plate and Emblem Retention, E Styles

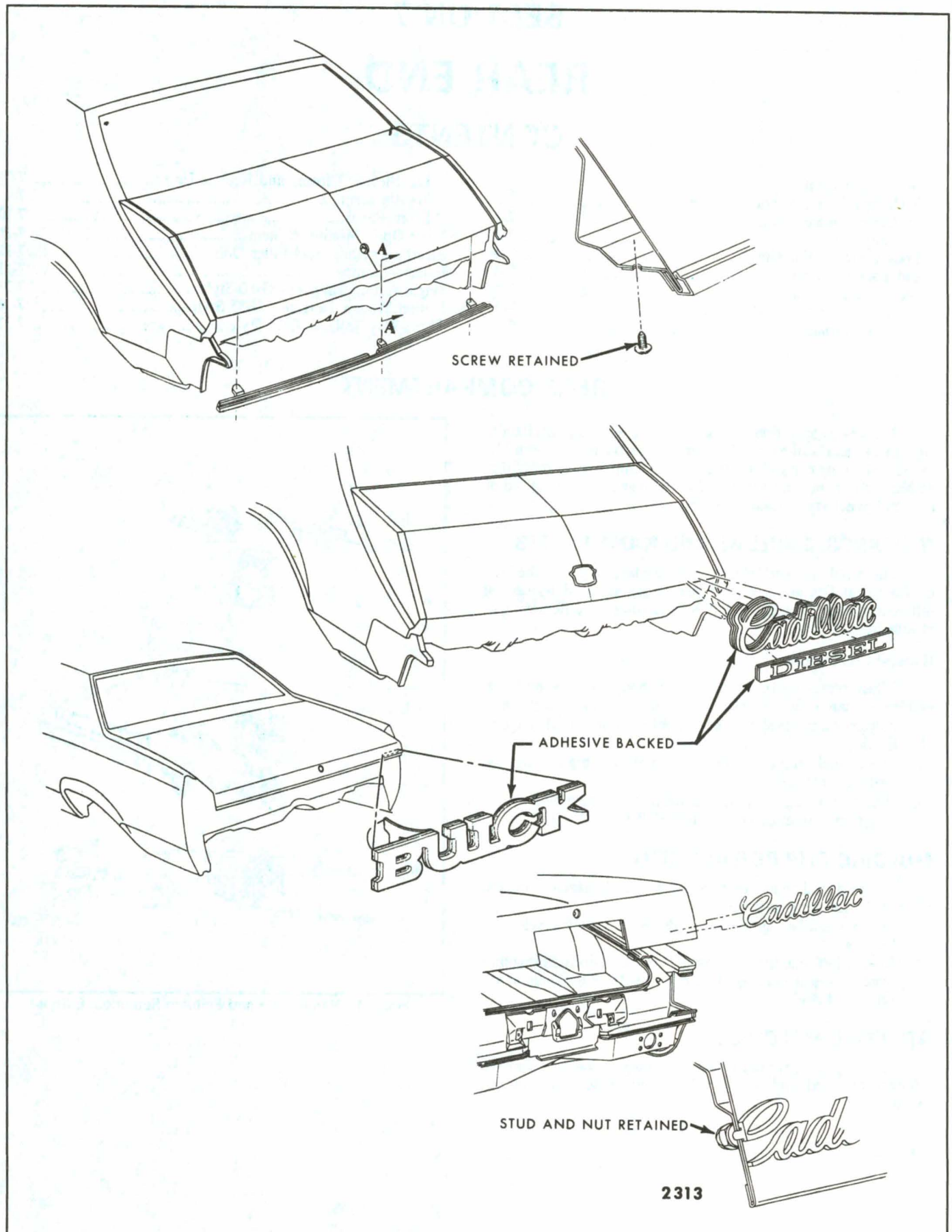


Fig. 7-2 - Molding, Name Plate, Emblem Retention

REAR COMPARTMENT LID

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. Opening assist is performed by tubular gas support assemblies mounted at each side of the lid and attached to the body. The lid up-stop is incorporated within the support assembly.

Adjustments

Fore and aft adjustment of the lid assembly is controlled by the hinge strap to lid attaching bolts. To adjust lid, loosen hinge to lid attaching bolts and shift lid to desired position; then tighten bolts. All adjustments are made at lid to hinge attachment locations (Fig. 7-3).

Removal and Installation

1. Prop lid open and place protective covering along edges of rear compartment opening to prevent damage to painted surfaces.
2. Mark location of hinge strap attaching bolts to lid and disconnect electrical wire harness from rear compartment lid if so equipped.
3. While helper supports lid, remove attaching bolts securing hinges to lid and remove lid (Fig. 7-3).
4. To install, reverse removal operations.

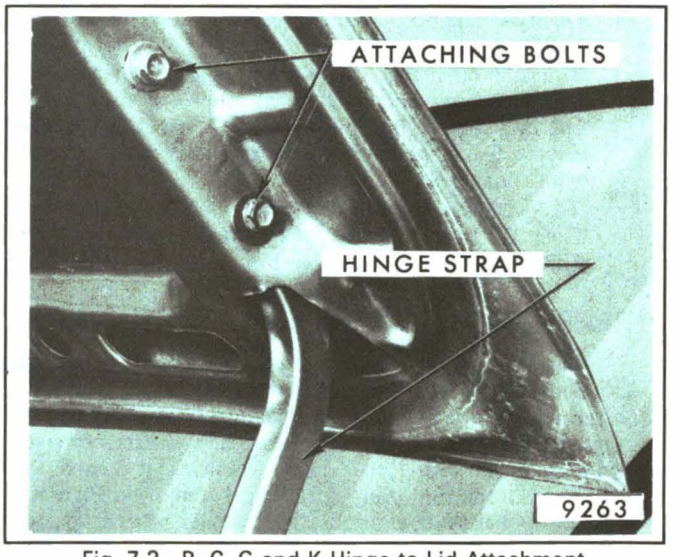


Fig. 7-3 - B, C, G and K Hinge to Lid Attachment

REAR COMPARTMENT LID GAS SUPPORT ASSEMBLY

The gas support assemblies used to assist opening the rear compartment lid attach to the lid hinge and the body and are secured by retaining clips.

Different gas support assemblies are used for each body style and because of different output levels MUST NOT be intermixed. A higher output support is used if the car is equipped with a deck lid release solenoid, a closing unit or if a spoiler is attached to the lid. If the car has an aluminum lid, the support will have a lower output than one used for a steel lid of the same size.

CAUTION: Do not attempt to remove or loosen gas support assembly attachments with rear compartment lid in any position other than fully open as personal injury may result.

Removal and Installation

1. Prop lid in full-open position.

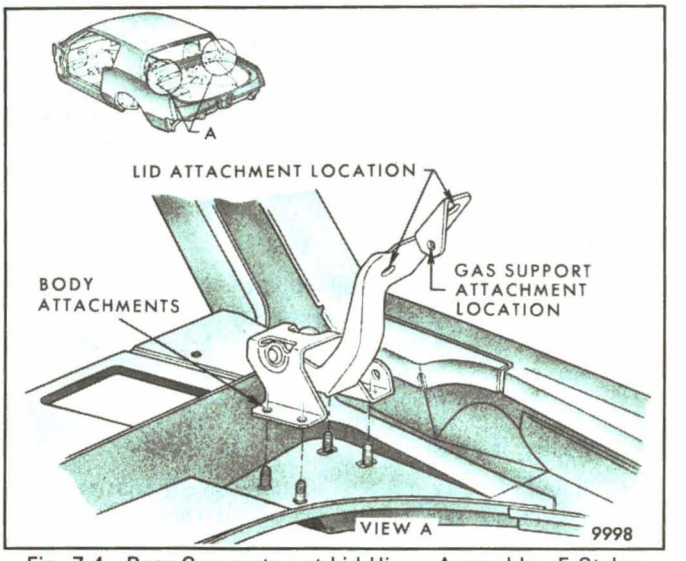


Fig. 7-4 - Rear Compartment Lid Hinge Assembly - E Styles

2. Disengage lid and body side retaining clips from ends of gas support assemblies by using tool J-29144 or equivalent and remove support.
3. To install, reverse removal procedure.

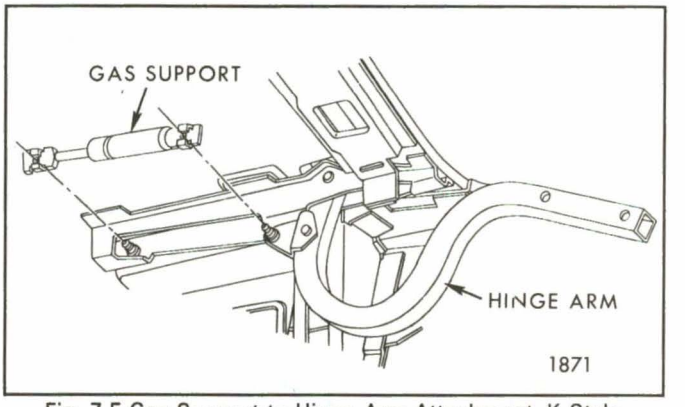


Fig. 7-5-Gas Support to Hinge Arm Attachment, K Style

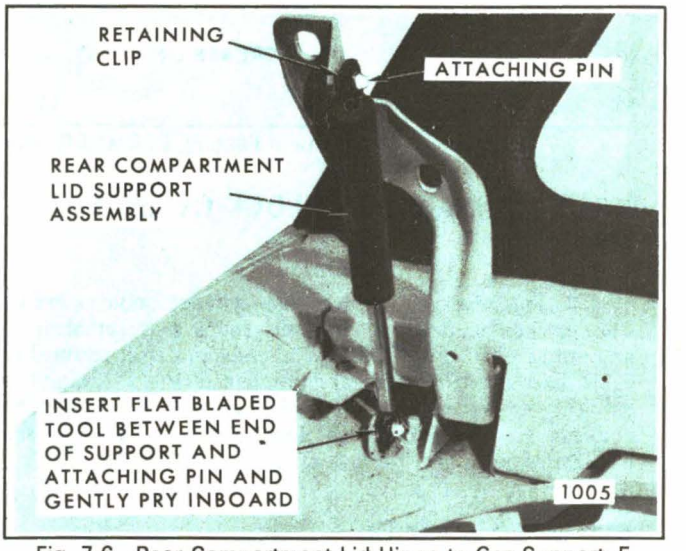


Fig. 7-6 - Rear Compartment Lid Hinge to Gas Support, E Styles

Adjustments

An adjustment feature is available on B, C, E, G and K styles which will increase the lid pop-up force. This adjustment may be used to satisfy slow-rising lid complaints. It should be noted, however, the adjustment feature for B, C, G and K styles will decrease the size of the opening by limiting the upward travel of the lid by 51 to 76 mm (2″ to 3″). Also, this adjustment may have been performed at the assembly plant and, therefore, cannot be repeated.

B, C and G Styles (Fig. 7-7)

1. Release lid lock and prop lid open.
2. Rotate the hinge arm bracket away from the arm.
3. Using a pair of pliers, break tab off bracket at crease line. Repeat above operation on opposite side.
4. Check lid for proper lid operation.

K Style (Fig. 7-8)

1. Release lid lock, prop lid open, remove trim as required.
2. Loosen nut securing gas support attaching stud enough to allow stud to be rotated 180 degrees, retighten nut 12 to 16 N·m (9 to 12 ft-lb).
3. Check lid for proper operation, replace any trim removed.

E Style (Fig. 7-9)

1. Release lid lock and prop lid in full open position.
2. Remove clip retaining adjustable end of support and reposition support as required.

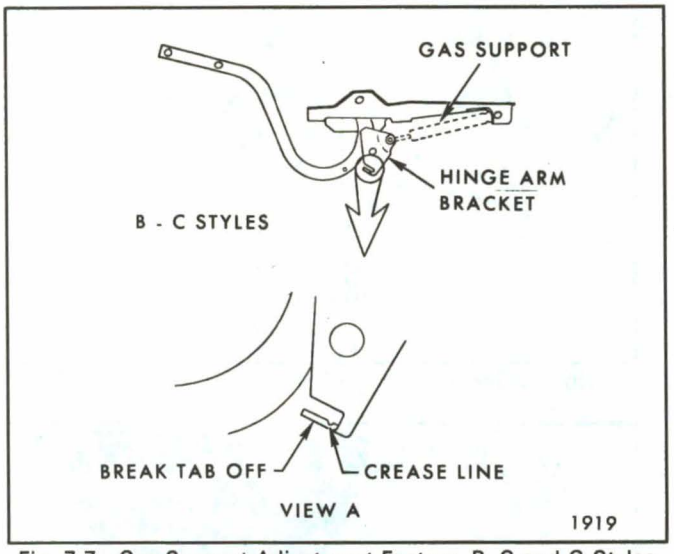


Fig. 7-7 - Gas Support Adjustment Feature, B, C and G Styles

REAR COMPARTMENT LOCK CYLINDER EMBLEM

Various rear compartment lock cylinder emblems are used. They can be classified into four basic groups: swivel emblem - stud and nut retained (Fig. 7-10), swivel emblem - rivet retained (Fig. 7-11), fixed emblem - integral clip retained (Fig. 7-12), and fixed emblem - adhesive backed retained (Fig. 7-13). 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.

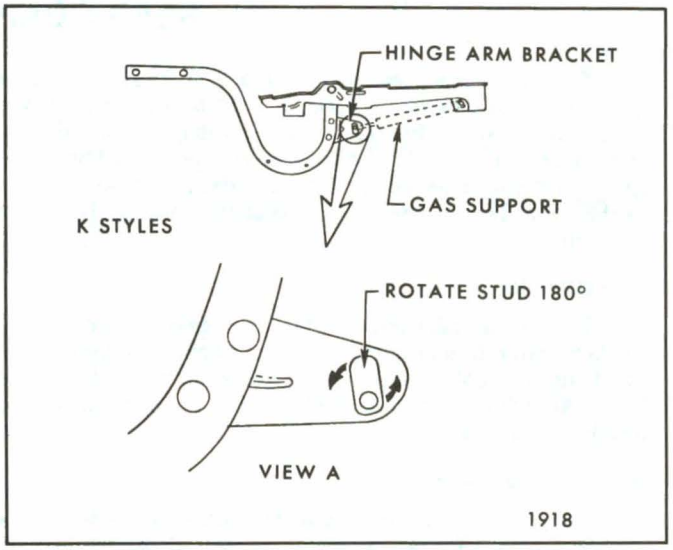


Fig. 7-8 - Gas Support Adjustment Feature, K Style

2. On styles equipped with swivel emblems retained by rivets, drill out rivets with 4 mm (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.
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″ 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 Loctite adhesive (part no. 1052283) or equivalent to emblem and press in place.

REAR COMPARTMENT LID LOCK CYLINDER

On most styles, the rear compartment lid lock cylinder is located in the lid assembly. On a few 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. On styles equipped with lock cylinder emblems, it is necessary to remove the emblem prior to cylinder removal. Figures 7-18 through 7-21 illustrate various lock cylinder retainer locations.

Removal and Installation

1. Open rear compartment lid.
2. On styles so equipped, remove lock cylinder emblem.
3. Remove lock cylinder retainer attaching screw, stud nuts or, using a 4 mm (5/32″) 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″ rivet or equivalent where rivet is specified.

REAR COMPARTMENT LID LOCK

The rear compartment lids have an open face lock. Open face refers to the construction of lock frame which does not completely encase the lock mechanism. The lock mechanism becomes encased

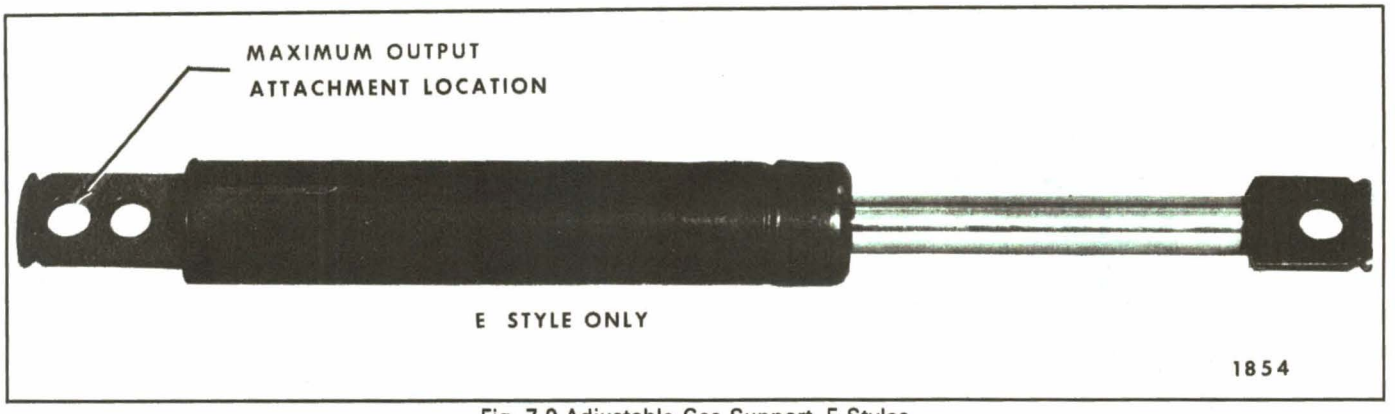


Fig. 7-9-Adjustable Gas Support, E Styles

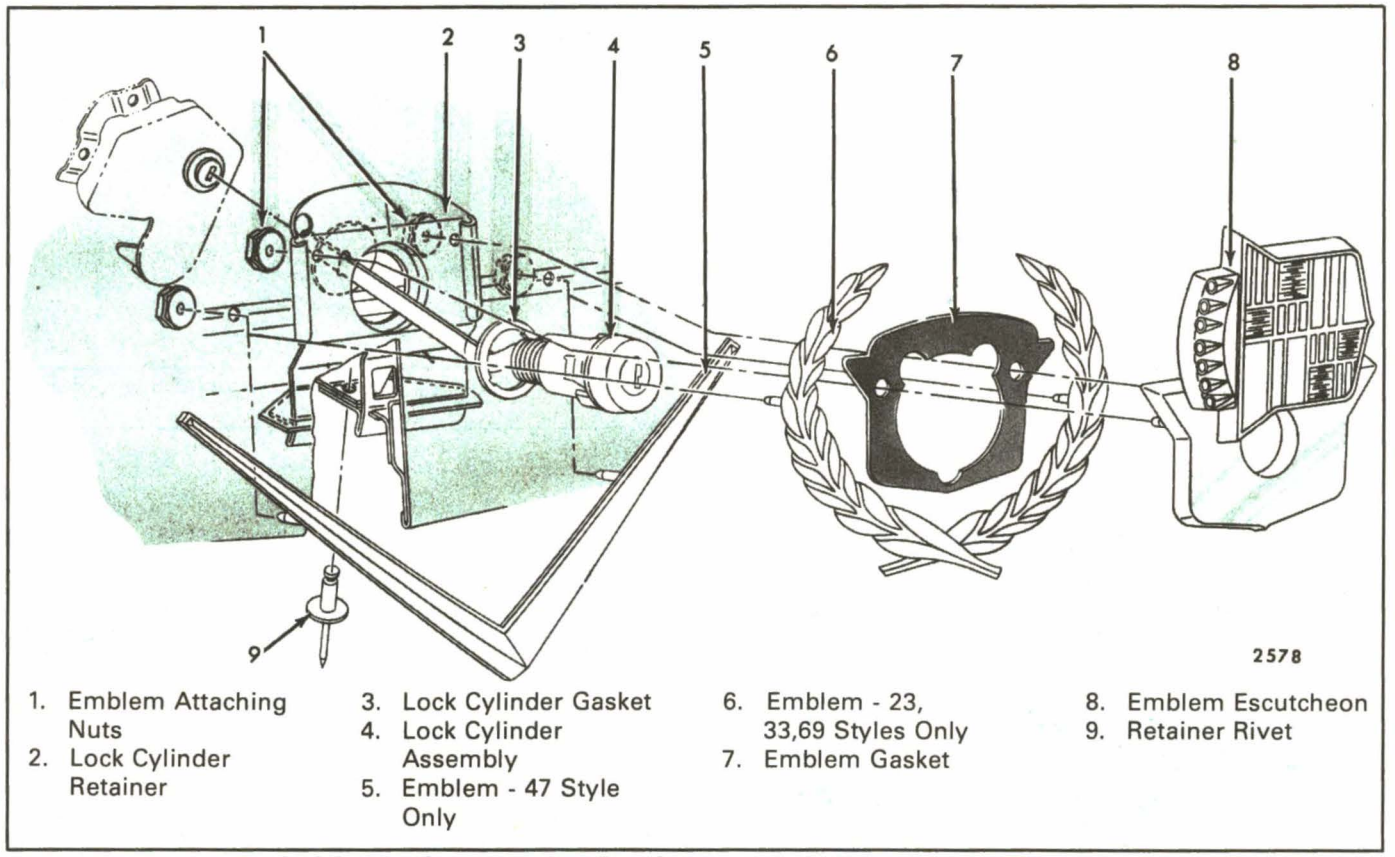


Fig. 7-10-Cadillac C and D Styles - Rear Compartment Swivel Emblem and Lock Cylinder

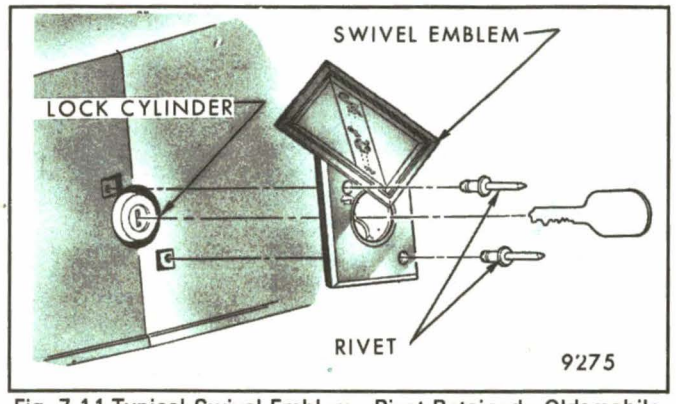


Fig. 7-11-Typical Swivel Emblem - Rivet Retained - Oldsmobile C Style Shown

by the panel or reinforcement to which it is attached. When electric lid release option is specified, a solenoid assembly is bolted onto the existing lock. Most styles have the rear compartment lock mounted in the lid.

REAR COMPARTMENT LID LOCK RELEASE

The rear compartment lid release allows the lid to be unlocked from either the inside of the vehicle by means of a switch in the glove compartment or from the outside of the vehicle with the key.

The rear compartment lid lock release consists of a solenoid and a single wire harness. The harness is routed from the glove compartment area to the rear compartment lid and connected to the solenoid release mechanism. When the glove box switch is pressed, the release solenoid coils are energized, the release lever pulls back and unlatches the rear compartment lid lock. The lid then raises off the striker and may be raised to the open position.

The entire solenoid assembly is protected against overheating and internal shorts by an internal circuit breaker.

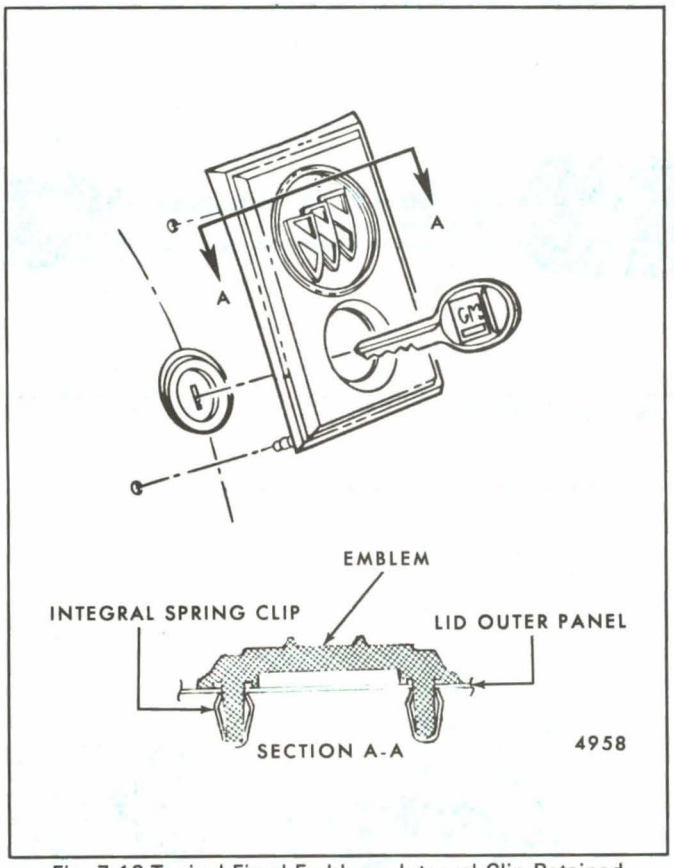


Fig. 7-12-Typical Fixed Emblem - Integral Clip Retained

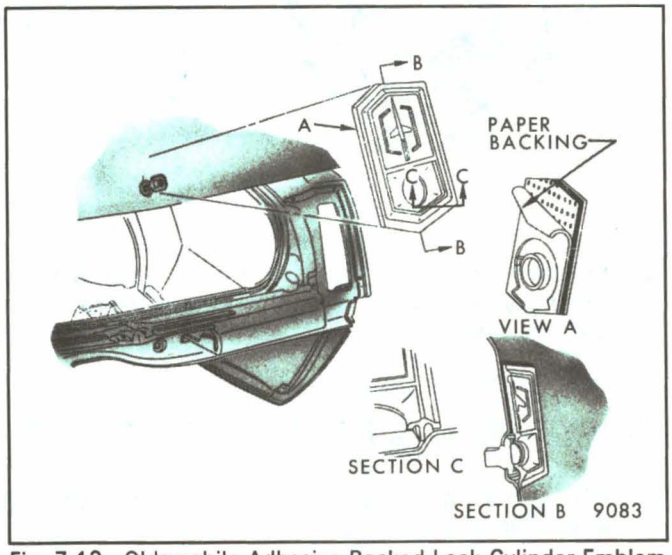


Fig. 7-13 - Oldsmobile Adhesive Backed Lock Cylinder Emblem

Adjustments

Rear compartment lid locks are adjustable, 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. Loosen lock attaching bolts and move lock assembly to desired position.
3. Secure lock attaching bolts 7 to 9 N·m (57 to 87 in-lb) torque.
4. Close lid and check for proper lid and key operation.

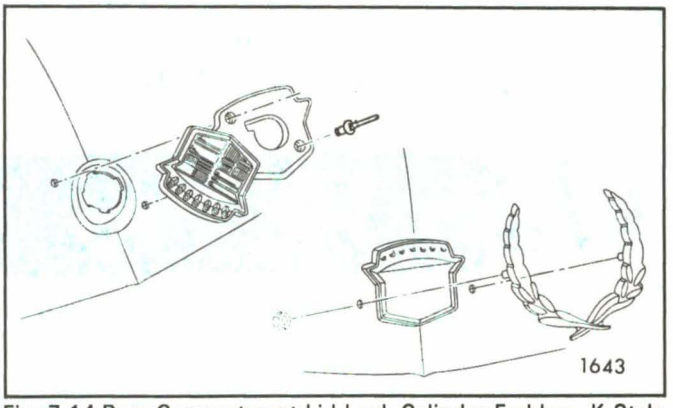


Fig. 7-14-Rear Compartment Lid Lock Cylinder Emblem, K Style

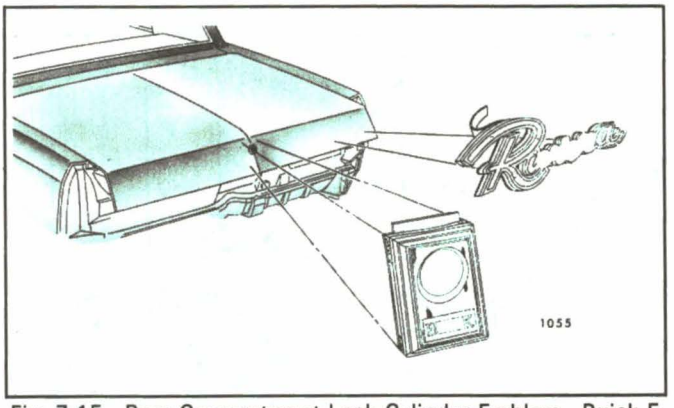


Fig. 7-15 - Rear Compartment Lock Cylinder Emblem - Buick E Style

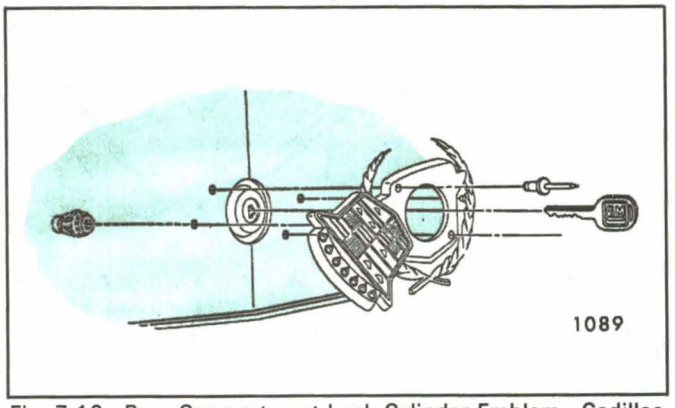


Fig. 7-16 - Rear Compartment Lock Cylinder Emblem - Cadillac E Style

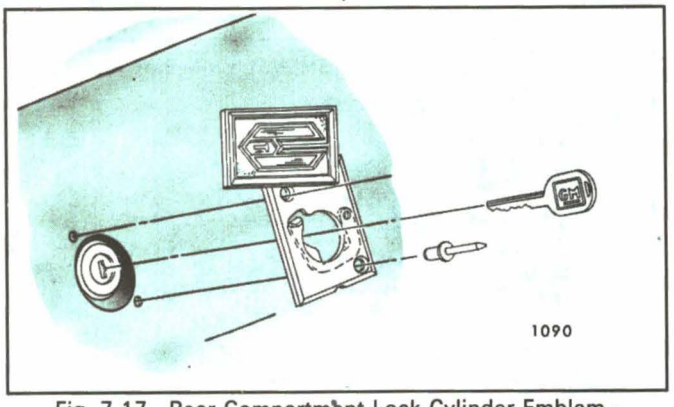


Fig. 7-17 - Rear Compartment Lock Cylinder Emblem - Oldsmobile E Style

Removal and Installation

1. Open rear compartment lid and remove lock cylinder and shaft.

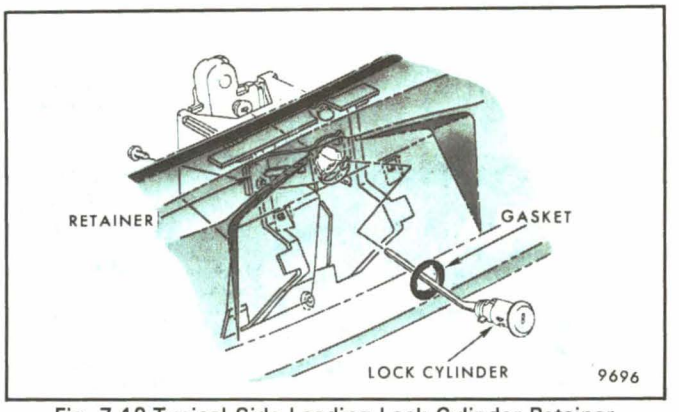


Fig. 7-18-Typical Side Loading Lock Cylinder Retainer

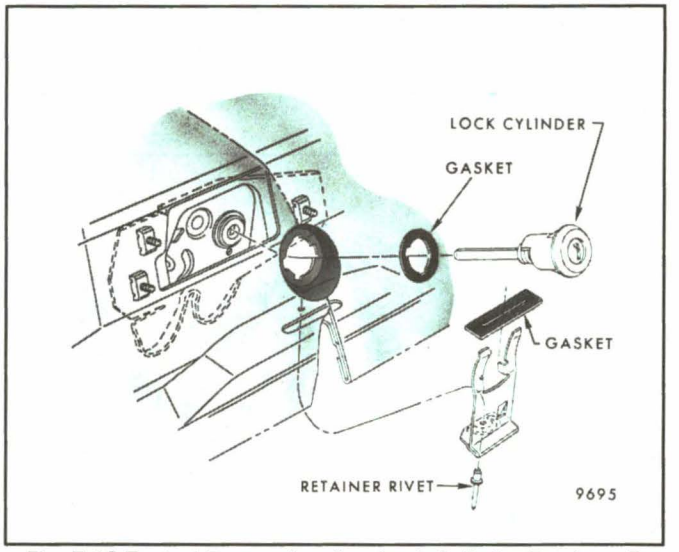


Fig. 7-19-Typical Bottom Loading Lock Cylinder Retainer, E Styles

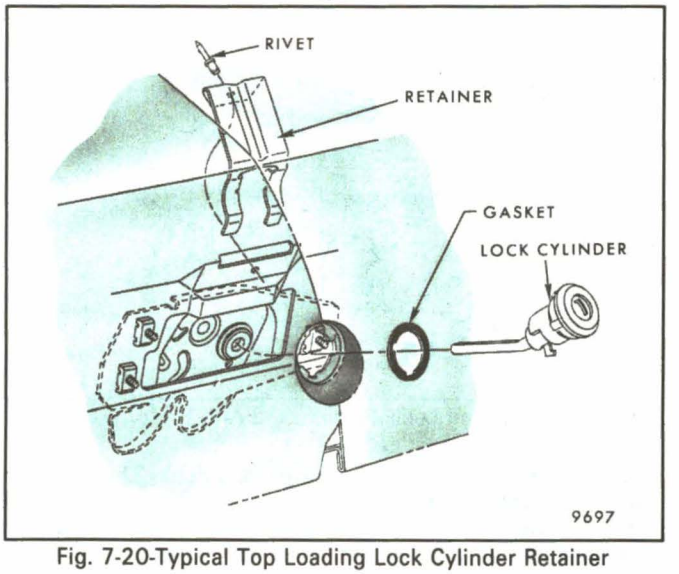


Fig. 7-20-Typical Top Loading Lock Cylinder Retainer

2. Remove attaching bolts securing lock to rear compartment lid or rear end panel.

   On styles equipped with electric lid release units, disconnect electric 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 adjustments as necessary.

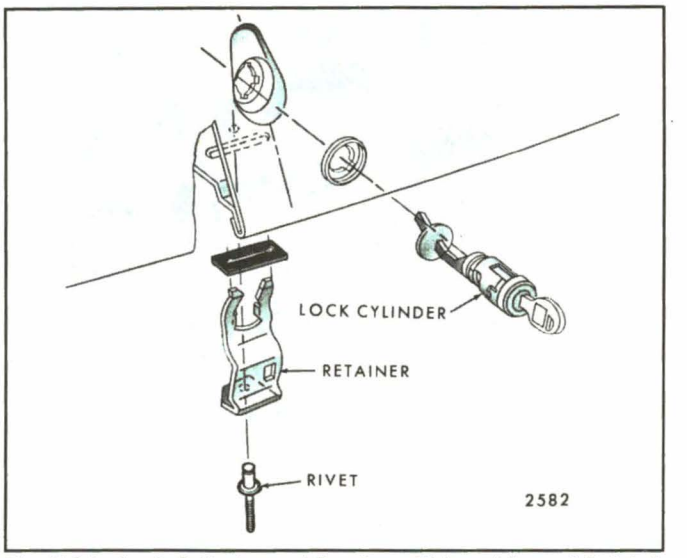


Fig. 7-21 - Lock Cylinder and Retainer, Oldsmobile and Buick E Styles

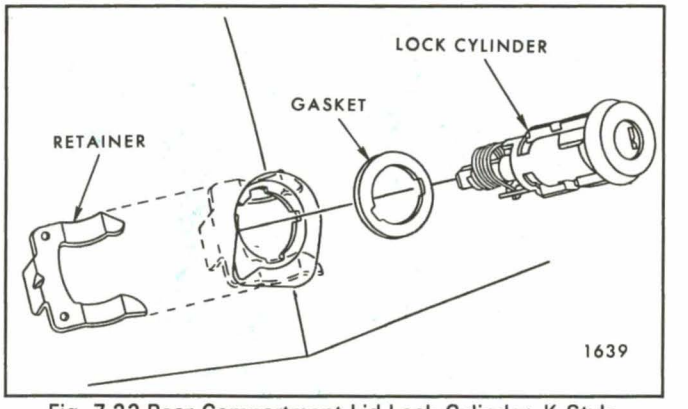


Fig. 7-22-Rear Compartment Lid Lock Cylinder, K Style

REAR COMPARTMENT LID LOCK STRIKER - STYLES WITHOUT ELECTRIC CLOSING UNIT

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.

REAR COMPARTMENT LID ELECTRIC CLOSING UNIT

The rear compartment lid closing and release system consists of a permanent magnet motor 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.

The motor used to drive the closing unit is a permanent magnet, reversible-type motor which is attached to the pull down

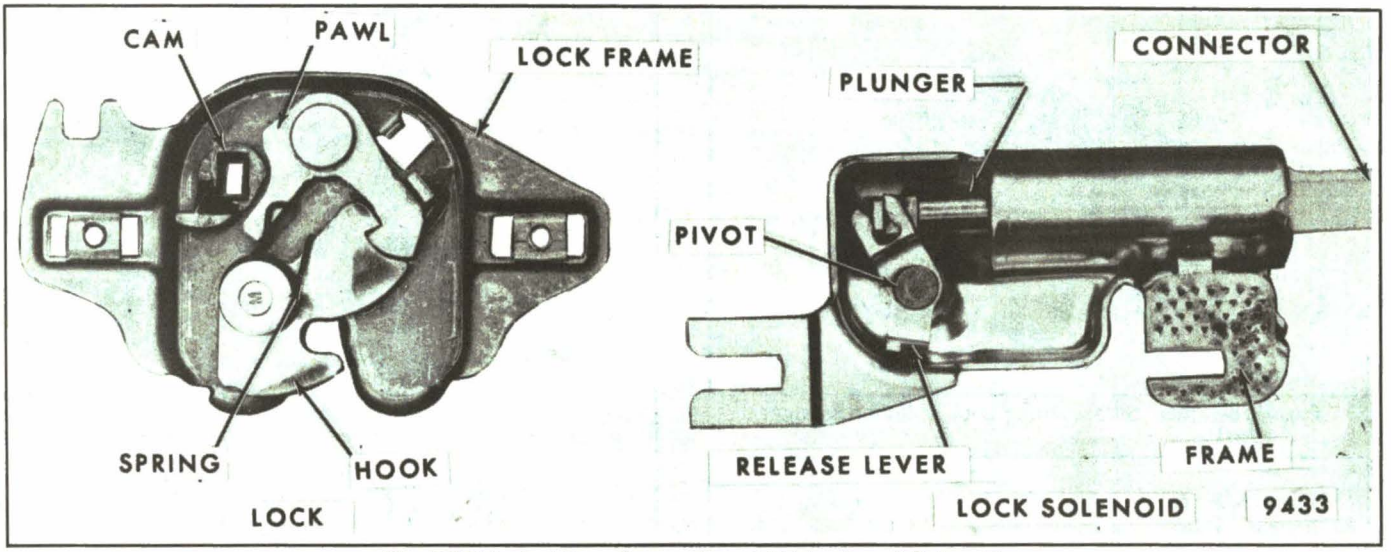


Fig. 7-23-Typical Rear Compartment Lid Lock and Solenoid

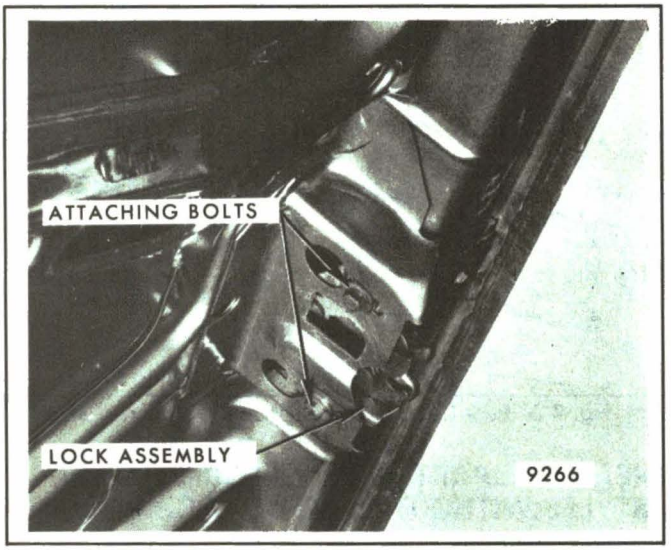


Fig. 7-24 - Typical B,C Deck Lid Lock Attachment

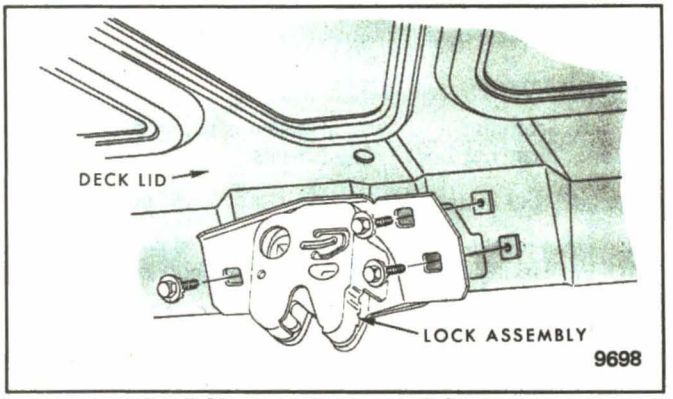


Fig. 7-25 - Deck Lid Lock - G-37 Style

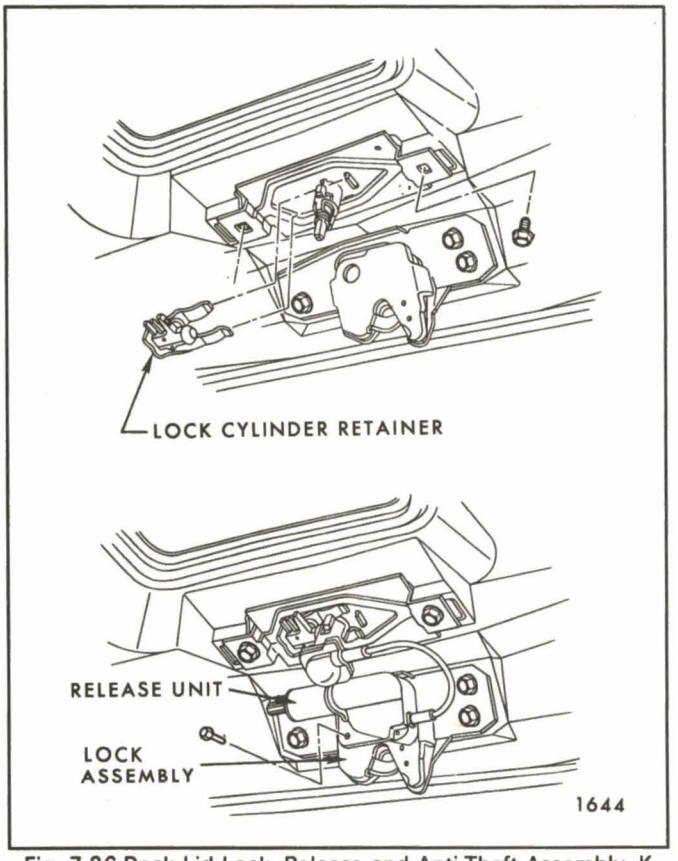


Fig. 7-26-Deck Lid Lock, Release and Anti-Theft Assembly, K Style

unit. An internal circuit breaker protects the motor if a stall condition is encountered.

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.

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. The lid is then raised to the full-open position by the force of the gas support.

When the lid is closed and the lock hook engages the striker of the closing unit, the motor is energized causing the striker to move downward and pull the lid downward to the fully closed position. When the lid reaches the closed position, the lock frame depresses the plunger switch breaking the circuit to the motor and the closing cycle is completed.

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

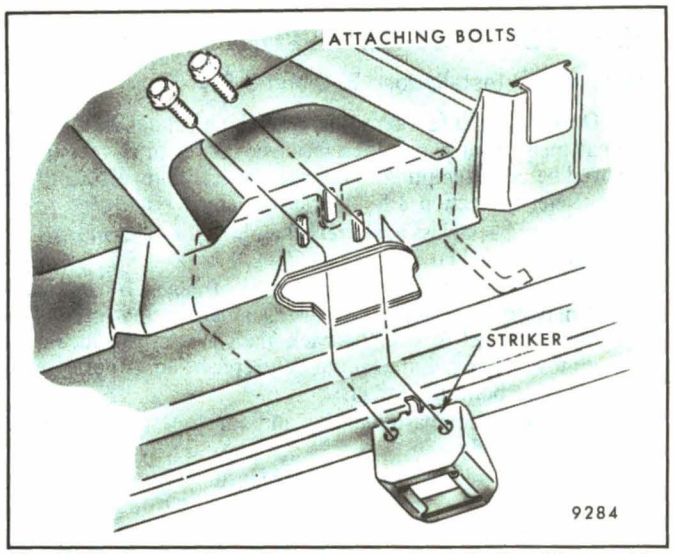


Fig. 7-27 - Typical Rear Compartment Lock Striker Mounted in Lid

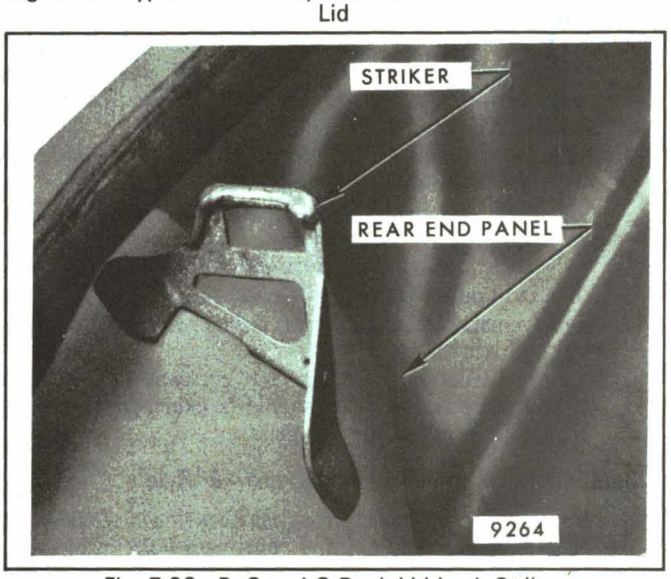


Fig. 7-28 - B, C and G Deck Lid Lock Striker

striker by means of elongated holes in the lid inner panel and sliding nuts on the lock assembly.

The rear compartment lid must be properly aligned to the rear compartment opening through hinge adjustment prior to performing lock adjustment.

Removal and Installation

1. Open rear compartment lid, remove trim cover from pull down unit assembly (Fig. 7-29).
2. Disengage electrical connector and ground wire.
3. Remove striker pull down unit attachments and remove unit.
4. To install, reverse removal procedure.

   Refer to Section 10 for electrical diagnostic procedures.

REAR COMPARTMENT WEATHERSTRIP

A supersoft foam clinch type weatherstrip is used on all styles (Fig. 7-32). The supersoft foam has an integral metal reinforced section 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, remove and retain plug from old weatherstrip if present.

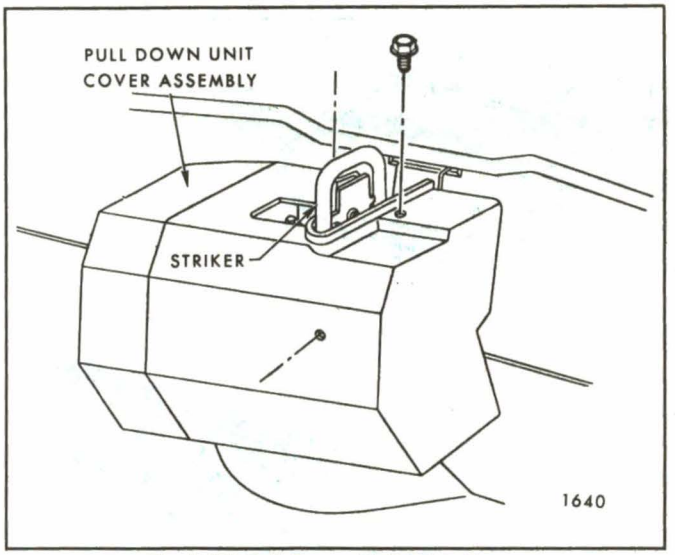
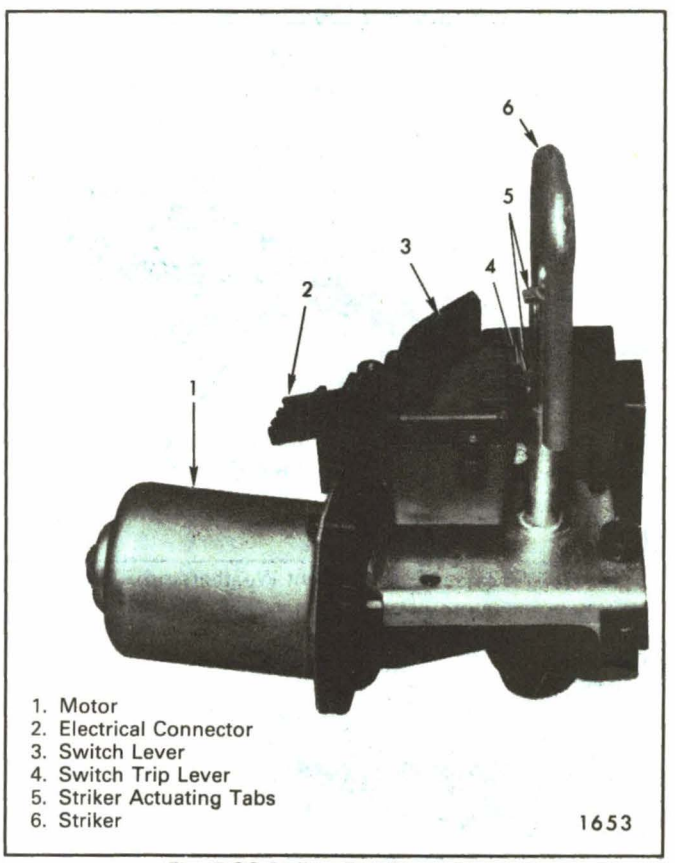


Fig. 7-29-Pull Down Unit Trim Cover



1. Motor
2. Electrical Connector
3. Switch Lever
4. Switch Trip Lever
5. Striker Actuating Tabs
6. Striker

Fig. 7-30-Striker Pull Down Unit

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 completely seated to the flange around the entire opening.
4. Insert plug from old weatherstrip into new weatherstrip to maintain shape at butt end.
5. Cement butt ends together.

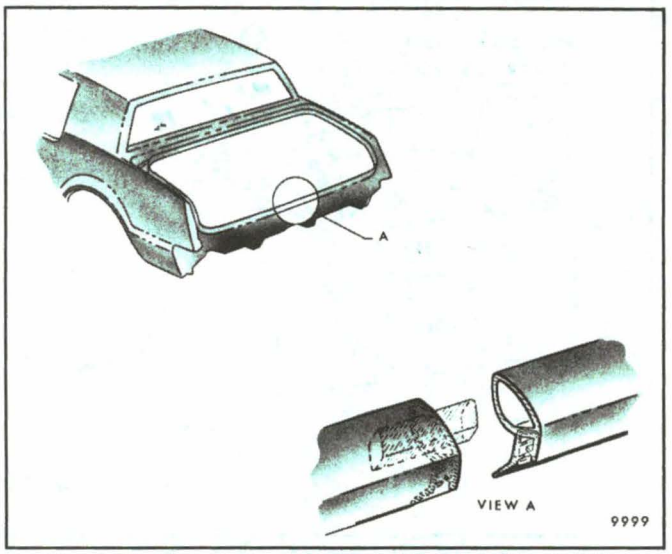


Fig. 7-31 - Rear Compartment Lid Weatherstrip, E Style

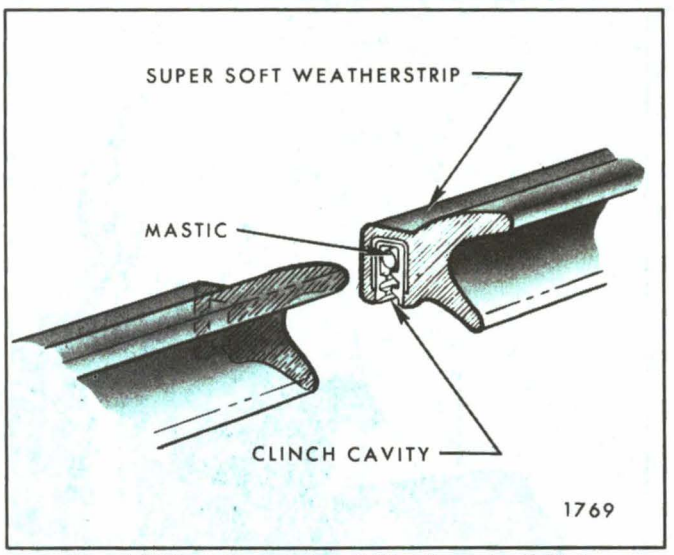


Fig. 7-32-Rear Compartment Weatherstrip, K Style

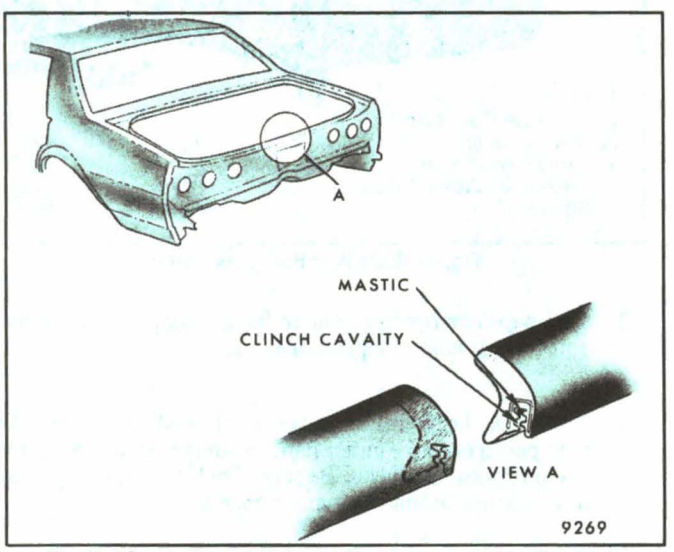


Fig. 7-33 - B, C, and G Rear Compartment Weatherstrip

REAR COMPARTMENT FRONT PANEL

Removal and Installation - B, C and G Styles

On styles with fabric roof covers which extend over the rear compartment front panel, the fabric roof cover must be partially removed before attempting to remove the rear compartment front panel. Refer to Section 8 for fabric roof cover removal.

1. Remove back glass lower reveal molding on B, C and G styles (see Section 11).
2. Remove screws from forward edge of panel. 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.

Removal - E Style

The rear compartment front panel is a screw-retained panel which covers the rear compartment lid hinge to body attachments and also serves as the back glass opening lower finishing panel.

On units with fabric roof covers, the back glass plastic plug lower edge is riveted to the rear compartment front panel.

1. Remove rear compartment lid.
2. Remove rear compartment front panel belt molding. If the car has a fabric roof cover, follow steps 2a and b.
   a. If after removing belt molding, the back glass plug lower retaining rivets are not exposed, carefully peel roof cover from panel until rivets are exposed.
   b. Drill out rivets retaining back window plug.
3. Remove panel retaining screws. Swing rear of panel upward and pull rearward.

   It may be necessary in some cases to cut away a small amount of back glass sealant. Care should be exercised so as not to break adhesive bond of rear glass.

Installation - With Fabric Roof Cover - E Style

1. Insert rear compartment front panel leading edge under back glass plug and align holes in panel with holes in plug.
2. Rivet back glass plug to rear compartment front panel using 1/8" rivet or equivalent.
3. Reinstall retaining screws, reglue fabric cover as required, and replace belt molding.

Installation - Without Fabric Roof Cover - E Style

Reverse removal procedure.

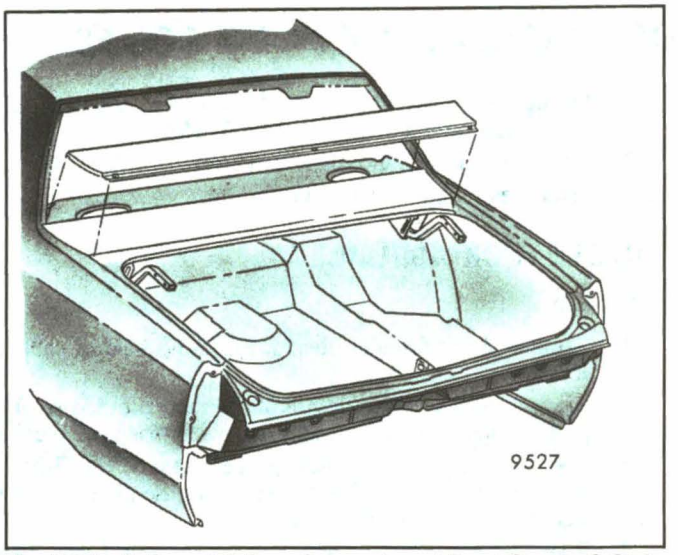


Fig. 7-34 - B, C, and G Rear Compartment Front Panel - C Style Shown

FIBER OPTIC MONITOR SYSTEM - REAR END

The optional fiber optic system monitors tail, stop and directional lamp illumination from the passenger compartment. The fiber optic conductor 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. Refer to Figures 7-35 and 7-36 for conductor routing as well as monitor and sender installations.

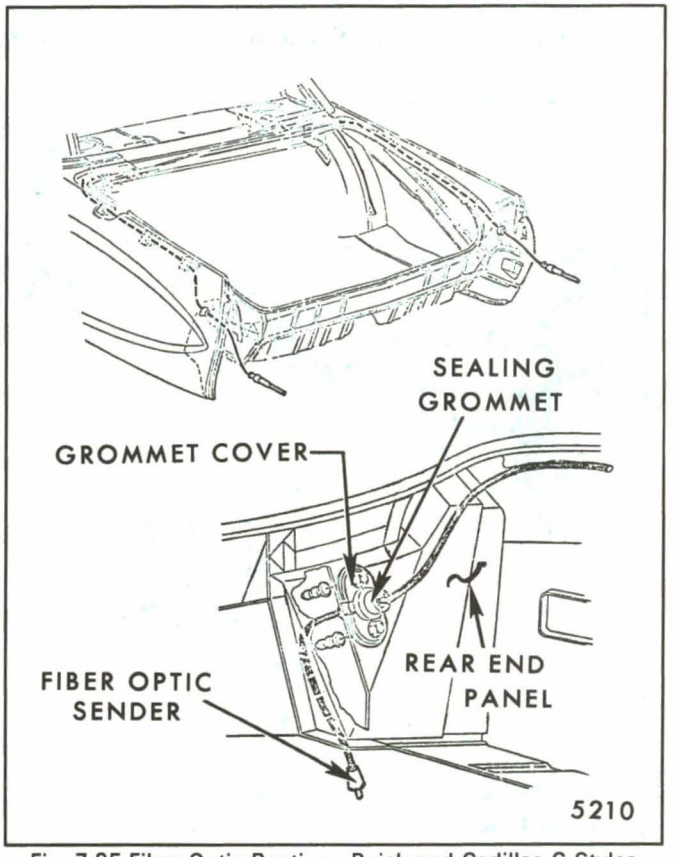


Fig. 7-35-Fiber Optic Routing - Buick and Cadillac C Styles

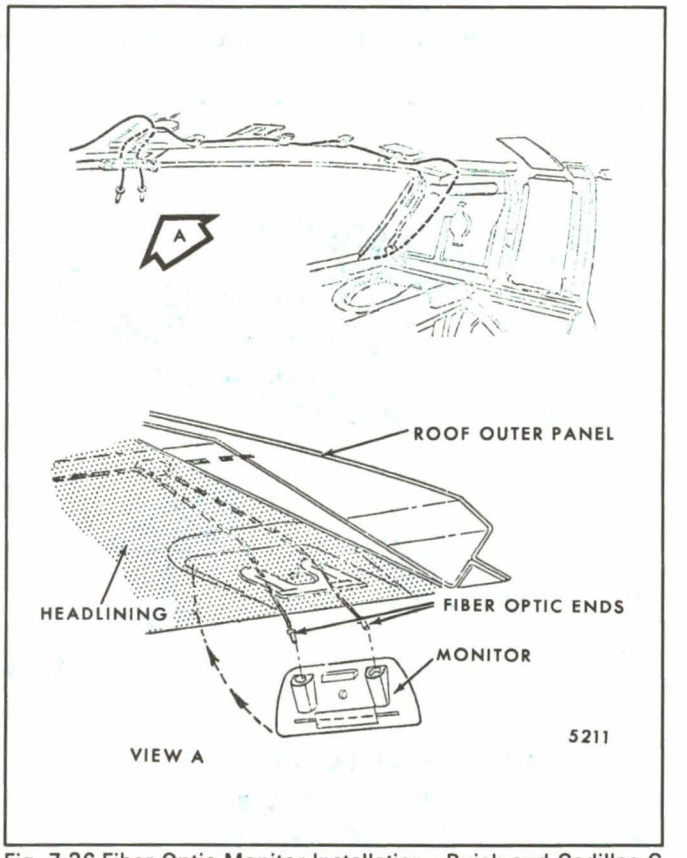


Fig. 7-36-Fiber Optic Monitor Installation - Buick and Cadillac C Styles

ELECTRIC LOCKING FUEL FILLER DOOR - CADILLAC C, E AND K STYLES

The electric locking fuel filler door is activated by the door lock switch. When the switch is activated and the doors are locked, the door lock relay supplies the power to the fuel filler lock actuator in the rear compartment. This causes the fuel filler door lock to lock. A manual mechnanical override is supplied on the fuel filler lock actuator. This allows the fuel filler door lock to be operated from the actuator, if there is a problem in the electrical system. For electrical problem diagnosis, refer to Section 10 of this manual.

FUEL FILLER DOOR LOCK ACTUATOR - E STYLE, C AND K STYLES SIMILAR

The fuel filler door lock actuator is located on the left-hand side of the rear compartment and is secured to the rear end panel by studs and nuts.

Removal

1. Loosen trim in rear compartment at rear end panel to gain access to actuator.
2. Disconnect electrical connector (item 1, Fig. 7-38) from actuator.
3. Remove nuts (item 3, Fig. 7-38) securing actuator to rear end panel.
4. Remove plastic fastener (item 3, Fig. 7-39) and pull cable assembly out of actuator.
5. Remove actuator.

Installation

1. Connect cable assembly to actuator and install plastic fastener.
2. Locate holes in actuator over studs in rear end panel and torque nuts to 7 to 9 N·m (5 to 6.5 ft-lb).
3. Install electrical connector to actuator.
4. Install rear compartment trim.

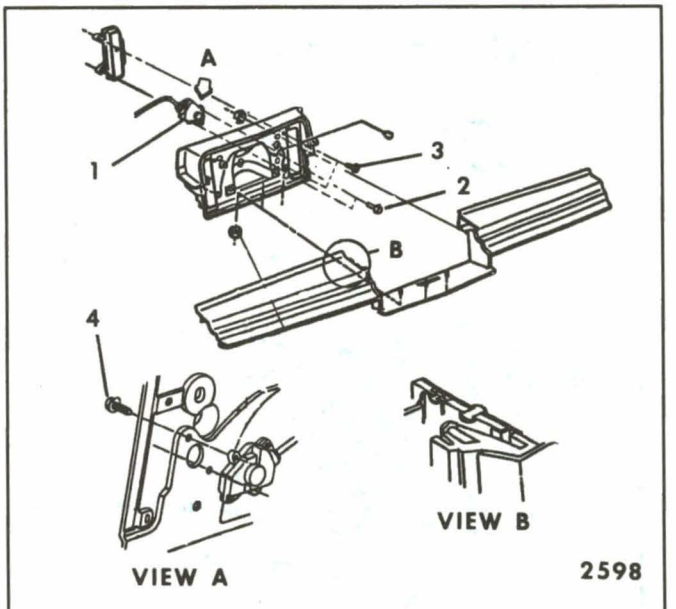
CABLE LOCK ASSEMBLY

Removal

1. Remove plastic fastener (item 3, Fig. 7-39) holding cable to actuator.
2. Remove bolts securing license plate bracket to license plate pocket. (item 2, Fig. 7-37) and remove license plate bracket.
3. Remove bolts holding license pocket (item 3, Fig. 7-37) to rear end panel and pull outboard on license plate pocket to gain access to cable lock bolts.
4. Remove bolts securing cable lock assembly to license plate pocket (item 4, Fig. 7-37).
5. Remove grommet from rear end panel and pull cable lock assembly outboard of body to remove.

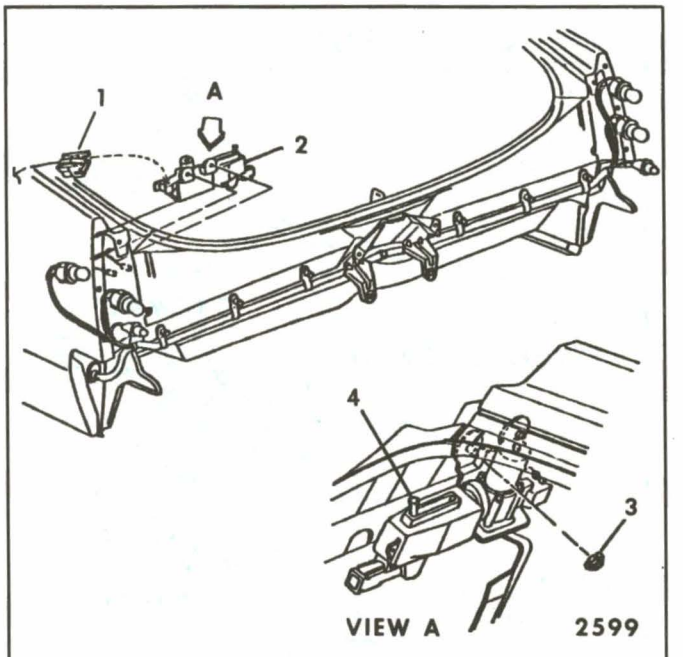
Installation

1. Install cable lock assembly through hole in rear end panel and secure grommet to body.
2. Bolt cable lock assembly to license plate pocket.
3. Install bolts holding license plate pocket to body (item 3, Fig. 7-37). Tighten bolts to specified torque of 6 to 8 N·m (4.5 to 6.0 ft-lb).
4. Install bolts holding license plate bracket to license plate pocket (item 2, Fig. 7-37).
5. Install cable lock assembly to actuator and install plastic fastener.



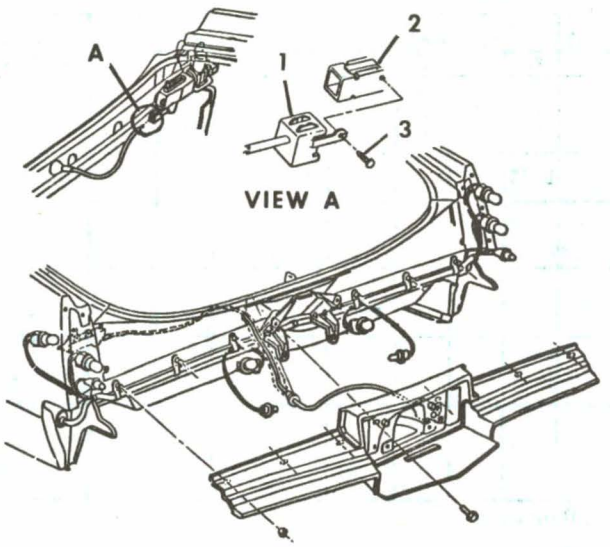
1. CABLE LOCK ASSEMBLY
2. LICENSE PLATE BRACKET BOLTS
3. LICENSE PLATE POCKET BOLTS
4. CABLE LOCK TO LICENSE PLATE POCKET BOLTS

Fig. 7-37-Locking Fuel Filler Door Cable and Lock Assembly



1. ELECTRICAL CONNECTOR
2. ACTUATOR FUEL FILLER DOOR LOCK
3. RETAINING NUTS
4. MANUAL MECHANICAL OVERRIDE

Fig. 7-38-Locking Fuel Filler Door Actuator



1. CABLE ASSEMBLY
2. ACTUATOR ASSEMBLY
3. PLASTIC FASTENER

Fig. 7-39-Locking Fuel Filler Door Cable to Actuator Installation

EXTERIOR LAMPS

TAIL LAMPS

Various methods are employed to remove and install the components of tail lamp assemblies. Figures 7-43 through 7-51 will provide a quick reference for performing the basic service operations for 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. To replace a burned-out bulb, refer to chart (Fig. 7-40).

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 have 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 three basic methods of retention for these lamp housings:

1. Studs with nuts accessible from the rear compartment.
2. Studs with nuts accessible after rear end finishing panel removal.
3. External screws - used on all B station wagons.

OPERA LAMP

The lamp assembly mounted on the quarter panel sail area is attached with screws accessible under the screw attached lens.

	TAIL LAMP BULB REPLACEMENT												
	CHEVROLET		PONTIAC	OLDSMOBILE				BUICK				CADILLAC	
	B	G	G	B	C	E	G	B	C	E	G	E	K
REMOVE WING NUTS IN REAR COMPARTMENT. THEN REMOVE LAMP ASSEMBLY FROM REAR END PANEL	X		X	X		X		X	X	X	G-47		
REMOVE SCREW RETAINED LENS	B-35			B-35							G-69	X	
REMOVE ACCESS PANEL FROM TOP AND/OR SIDE OF LAMP ASSEMBLY		X											
LAMP SOCKETS ACCESSIBLE INSIDE REAR COMPARTMENT					X		G-47						
LAMP SOCKETS ACCESSIBLE BENEATH AND BEHIND REAR BUMPER													X
REMOVE NUTS RETAINING LAMP ASSEMBLY INSIDE REAR COMPARTMENT, THEN REMOVE ASSEMBLY FROM REAR END PANEL							G-69						2349

Fig. 7-40 - Tail Lamp Bulb Replacement

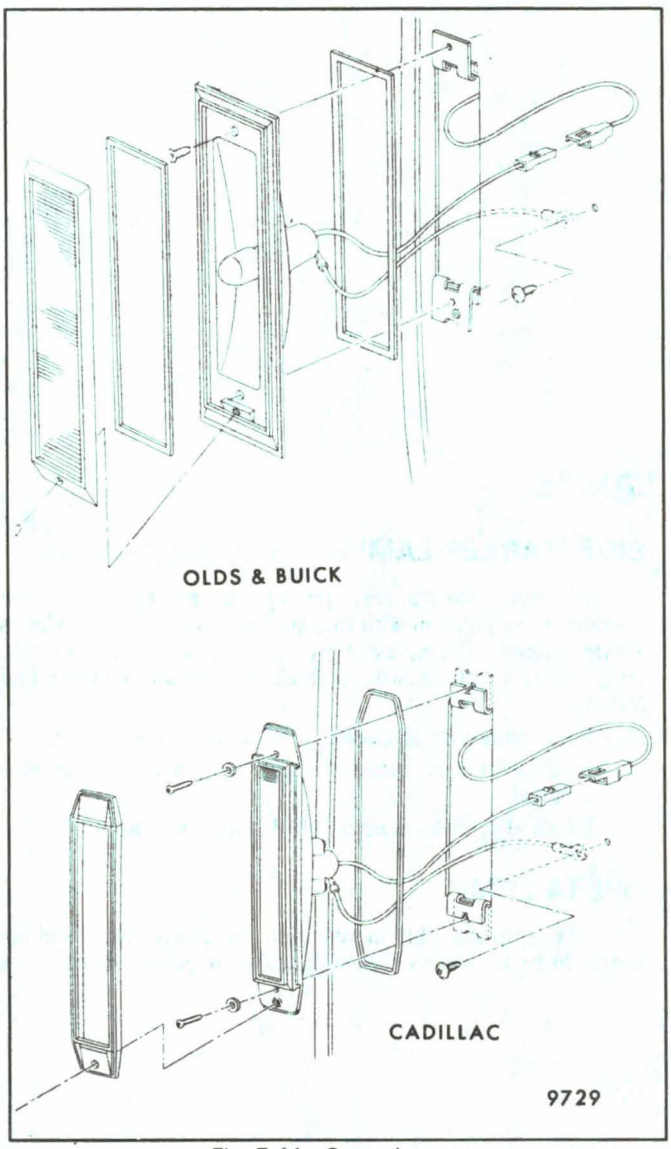


Fig. 7-41 - Opera Lamps

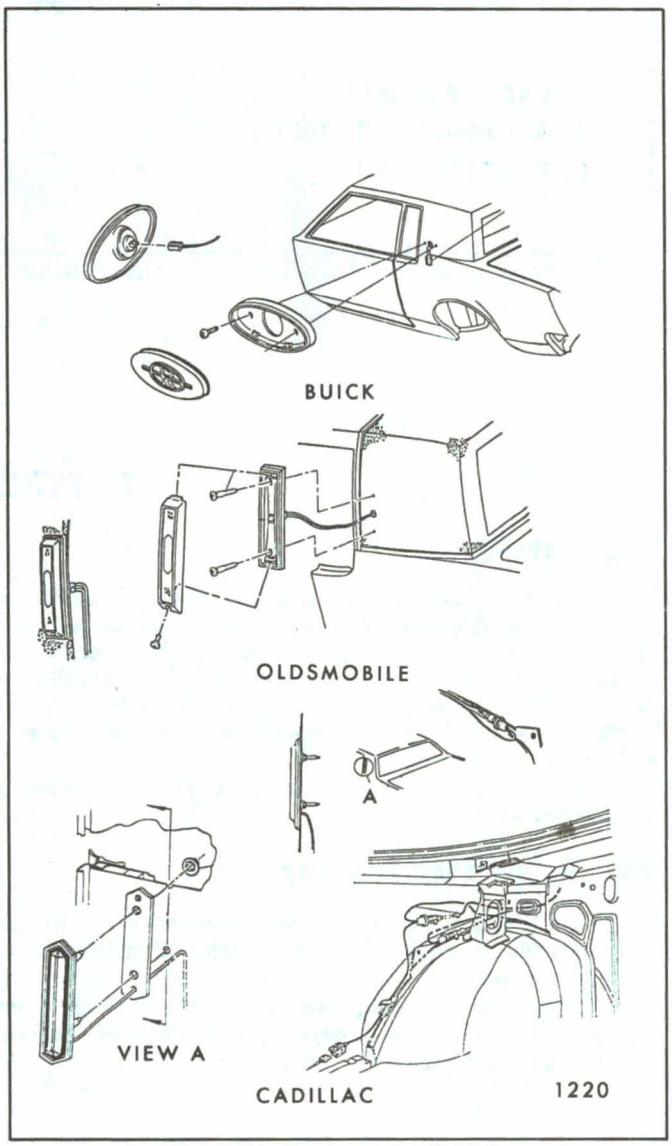
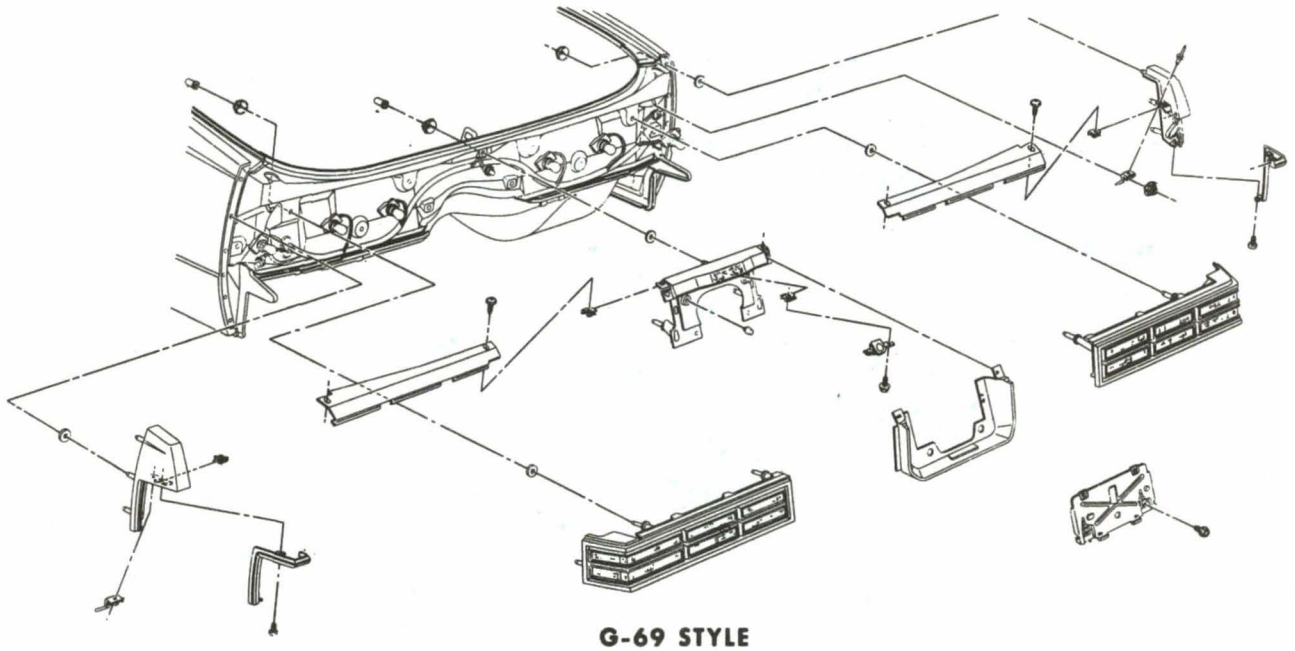
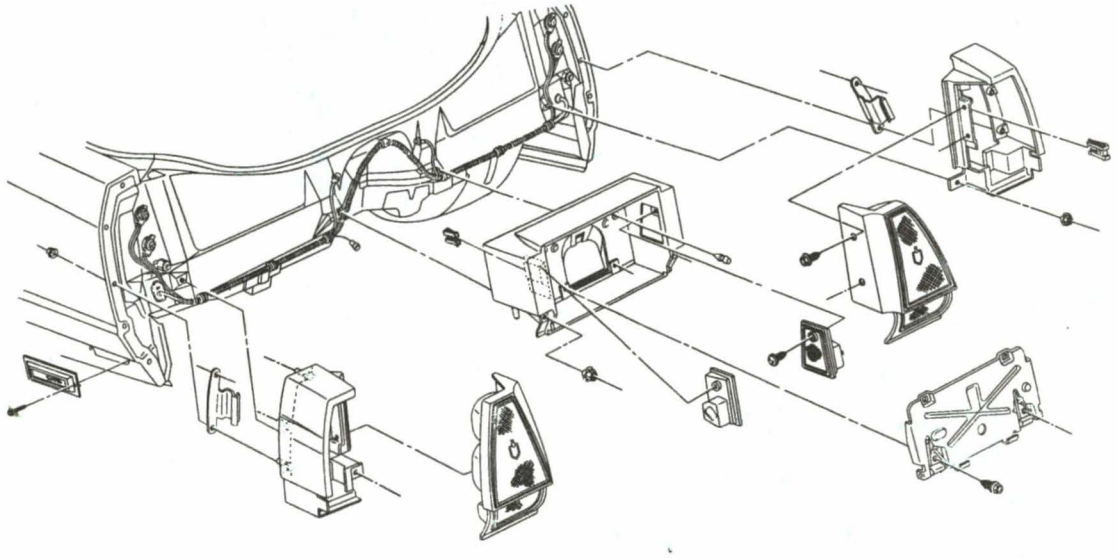


Fig. 7-42 - Opera Lamps, E Style



G-69 STYLE



G-37 STYLE

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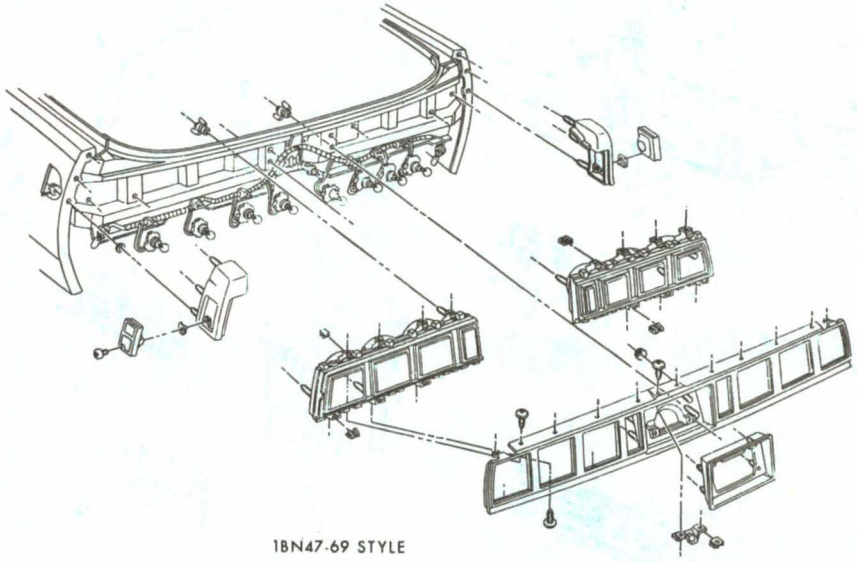
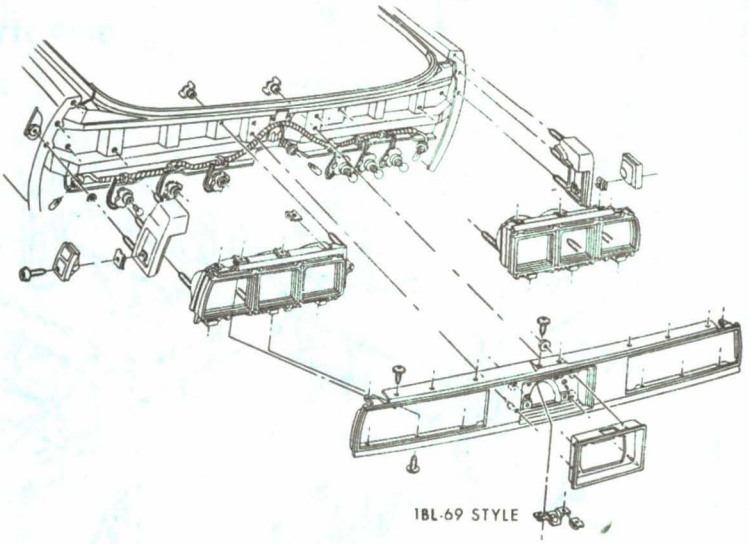
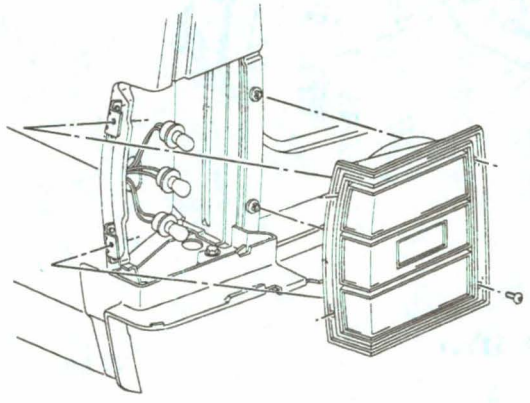
Fig. 7-43-Exterior Lamp Installation - Chevrolet Styles



1BN47-69 STYLE



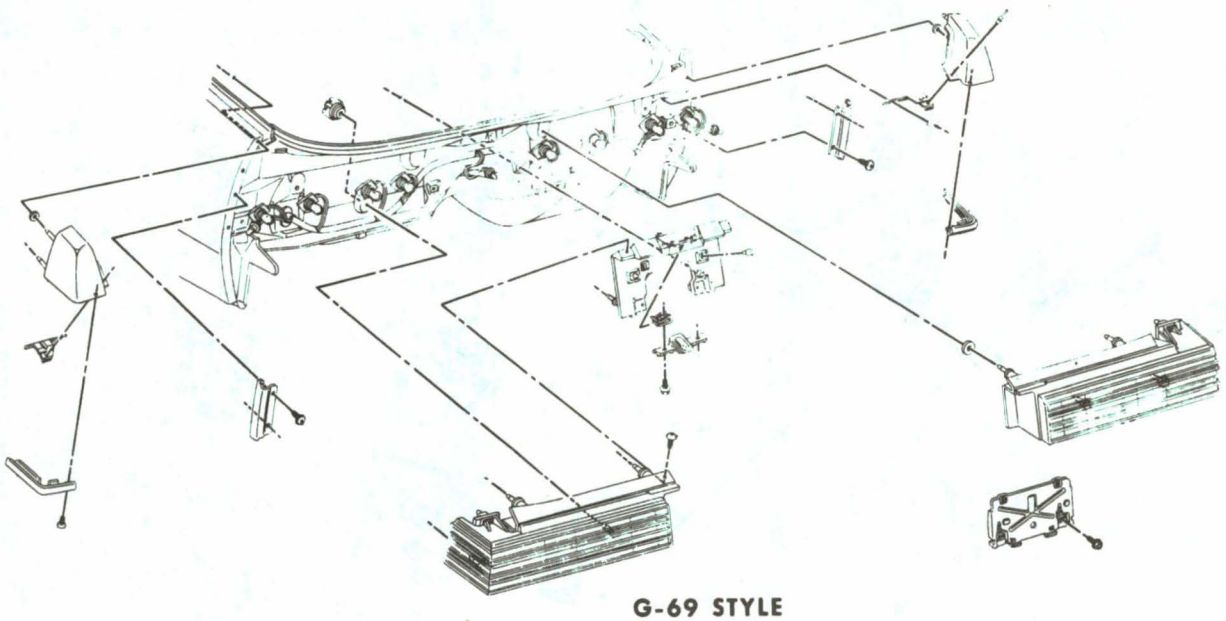
1BL-69 STYLE



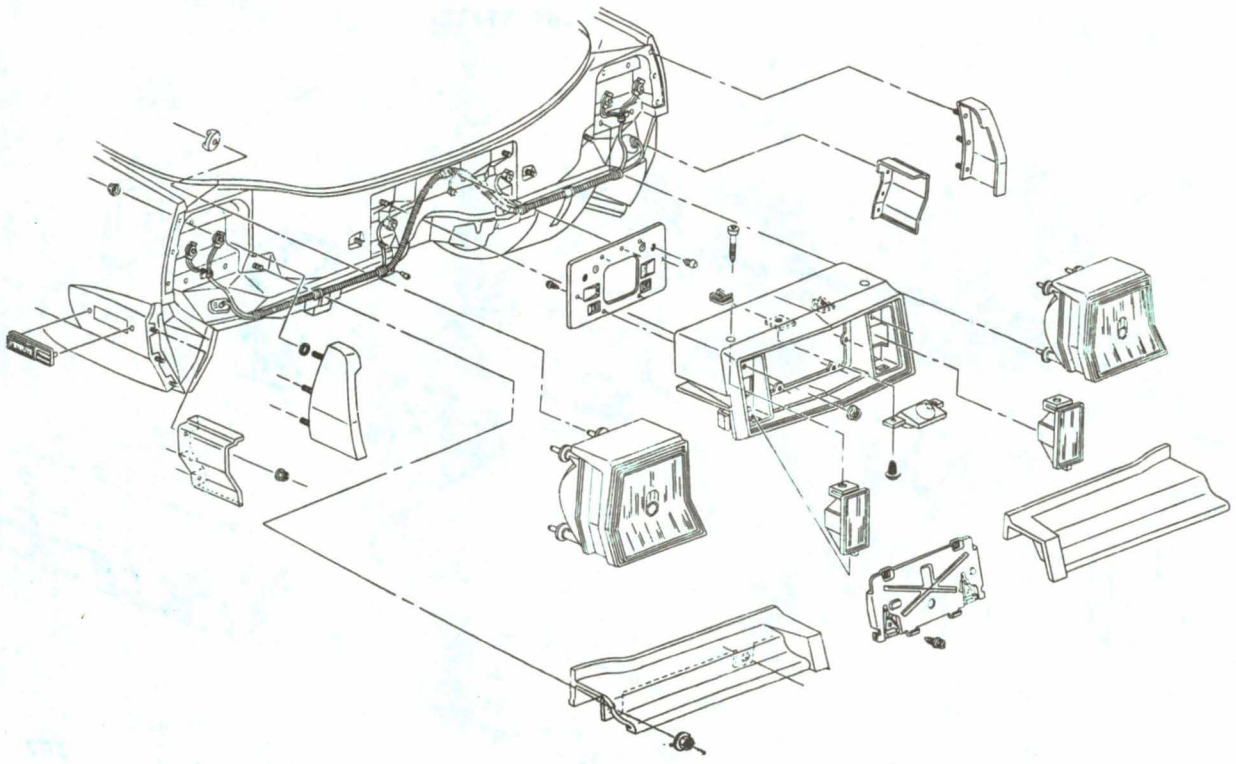
1BL-1BN-35 TAIL LAMP

2345

Fig. 7-44-Exterior Lamp Installation - Chevrolet Styles



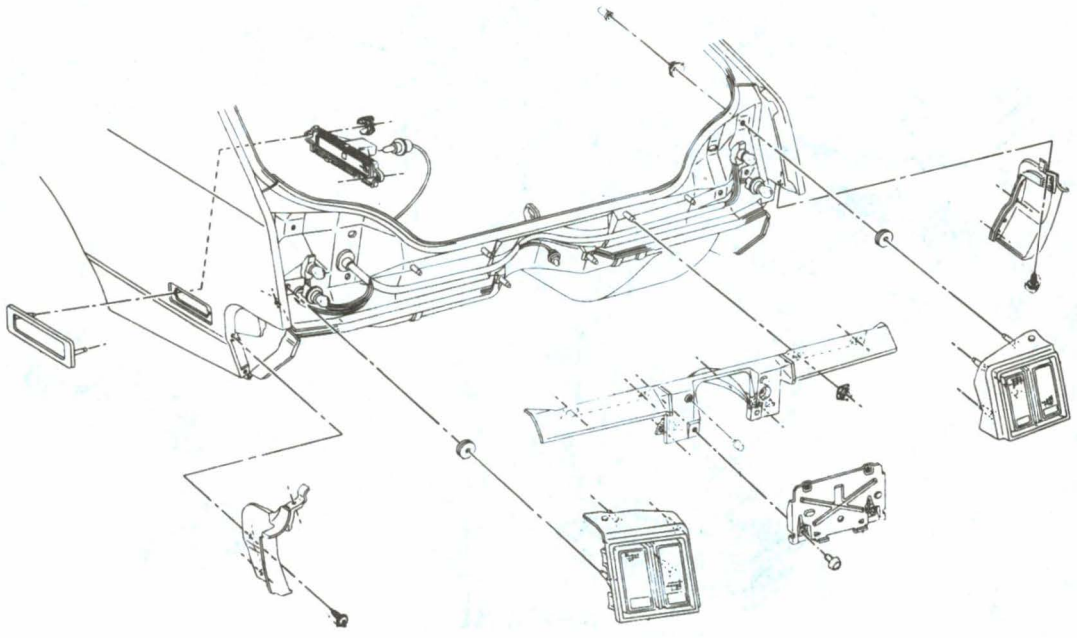
G-69 STYLE



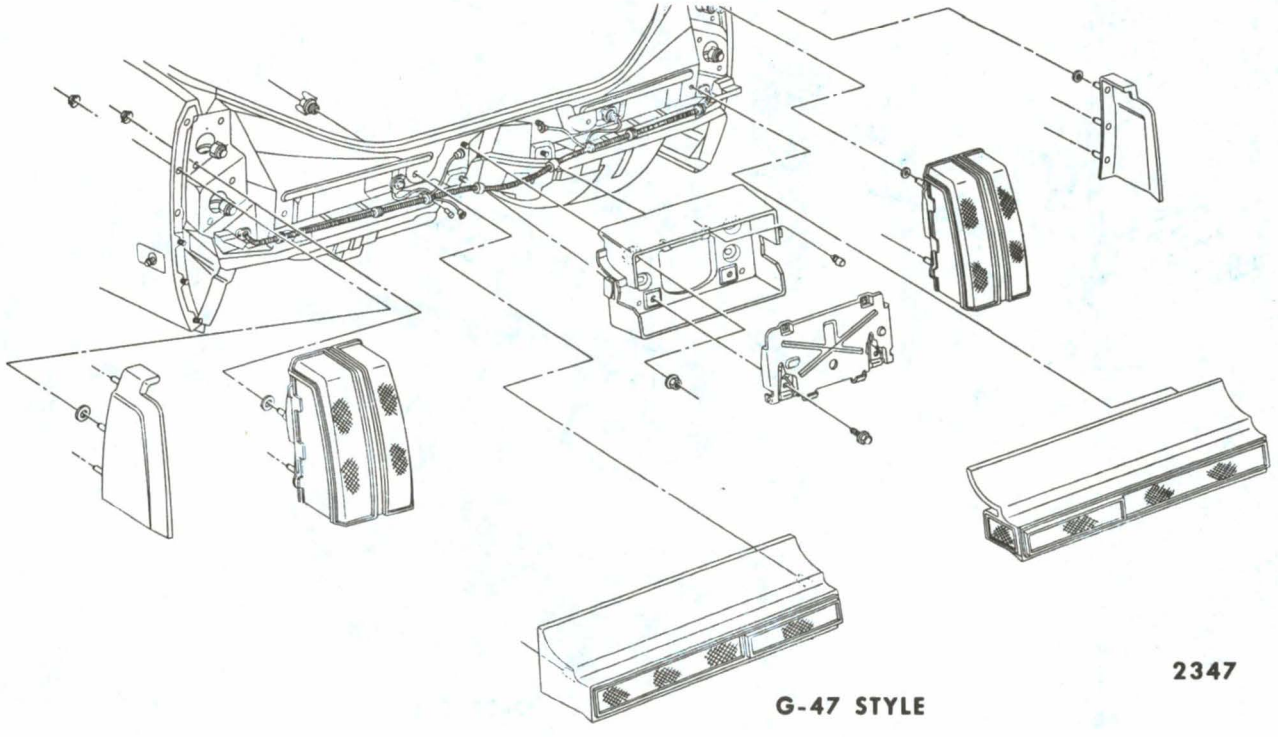
G-37 STYLE

2346

Fig. 7-45-Exterior Lamp Installation - Pontiac Styles



G-69 STYLE



2347

G-47 STYLE

Fig. 7-46-Exterior Lamp Installation - Oldsmobile Styles

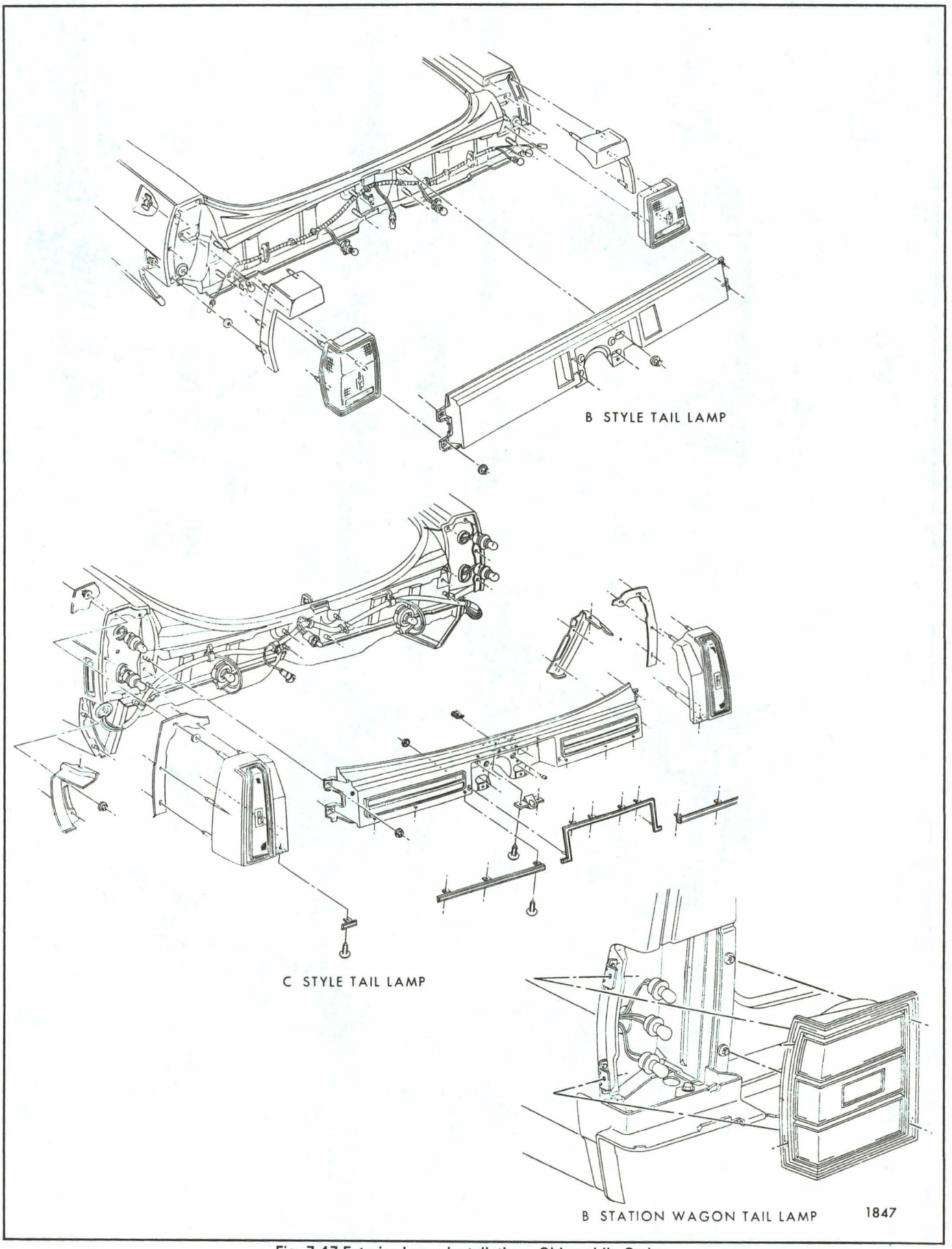


Fig. 7-47-Exterior Lamp Installation - Oldsmobile Styles

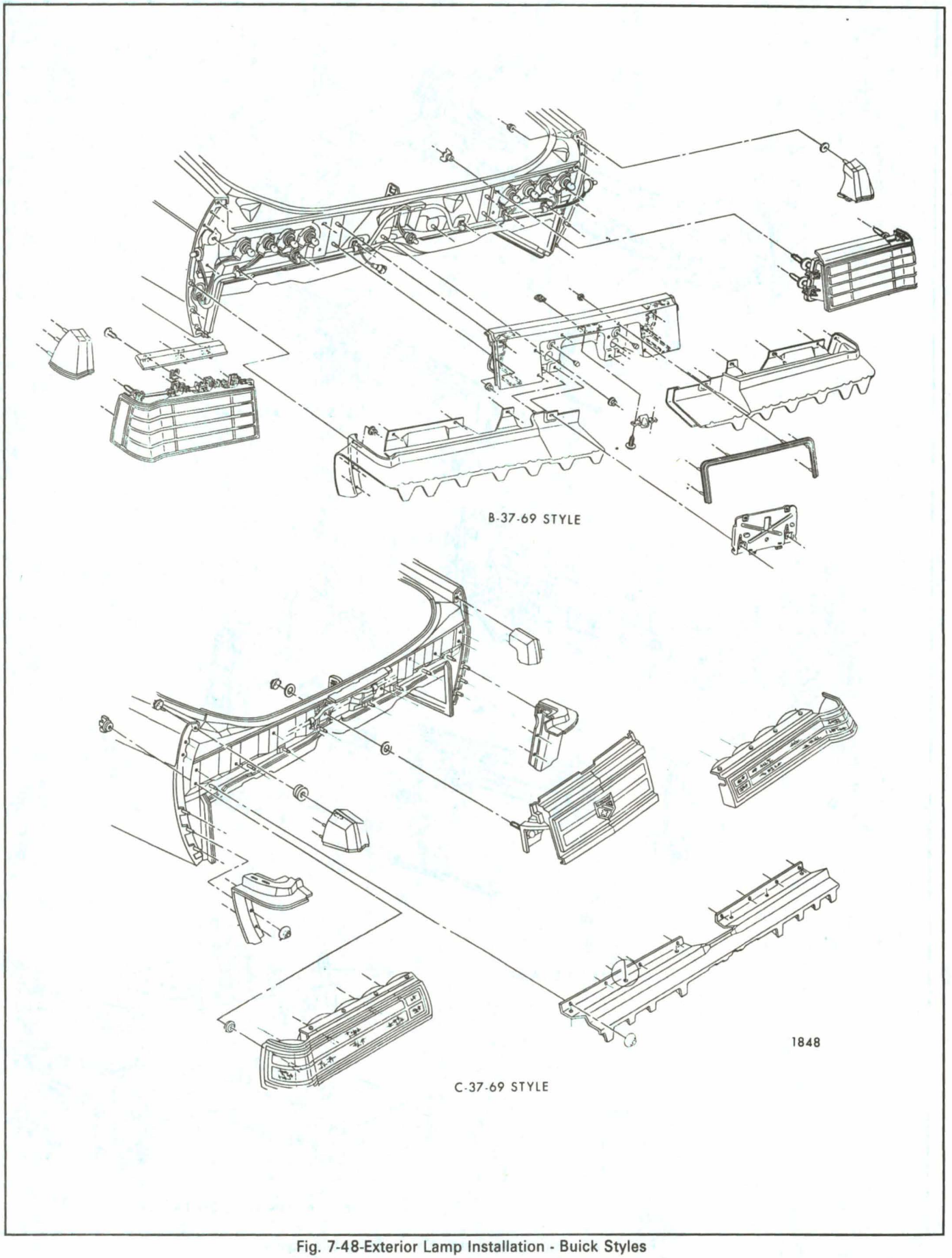
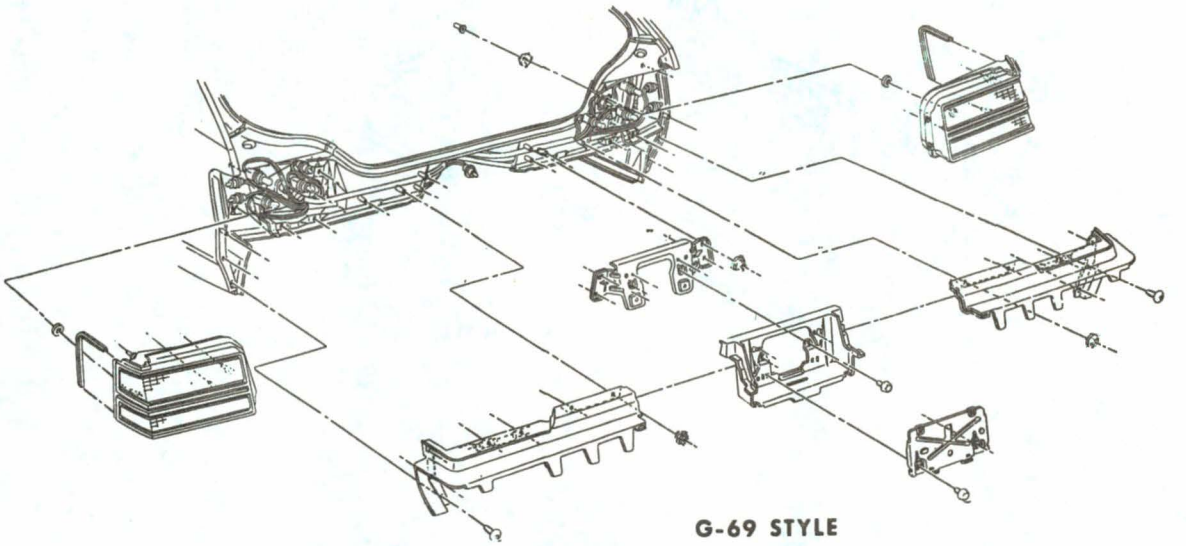
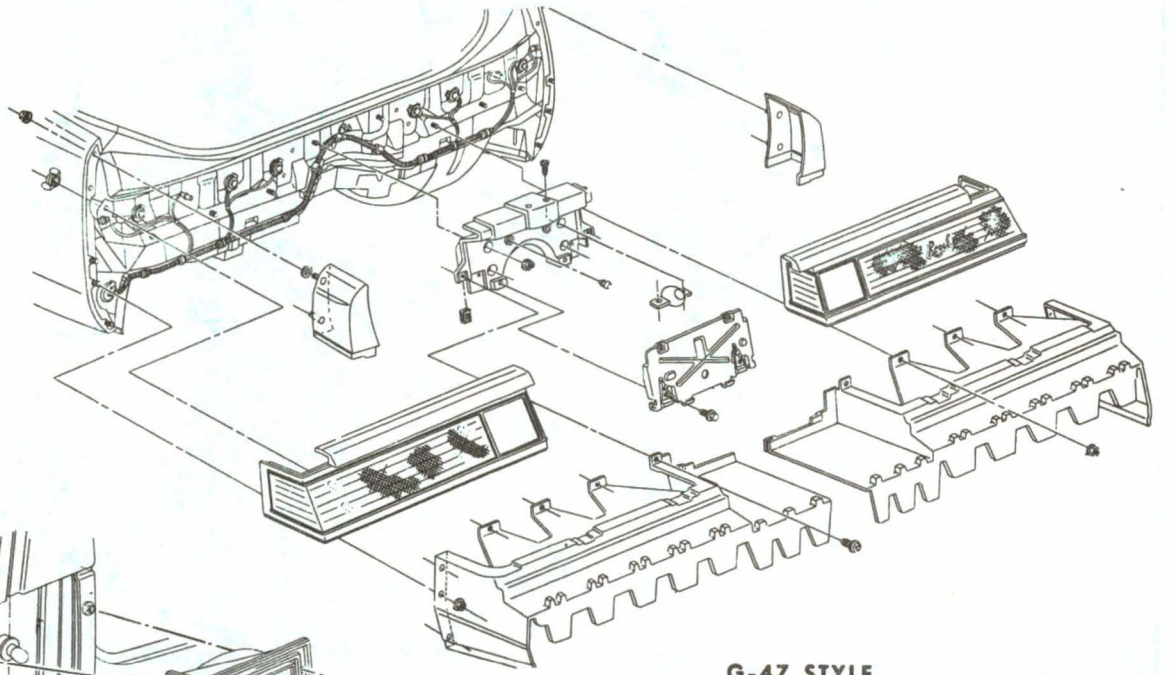


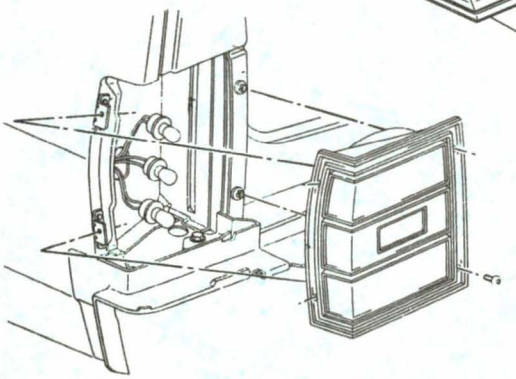
Fig. 7-48-Exterior Lamp Installation - Buick Styles



G-69 STYLE



G-47 STYLE



B STATION WAGON TAIL LAMP

2348

Fig. 7-49-Exterior Lamp Installation - Buick Styles

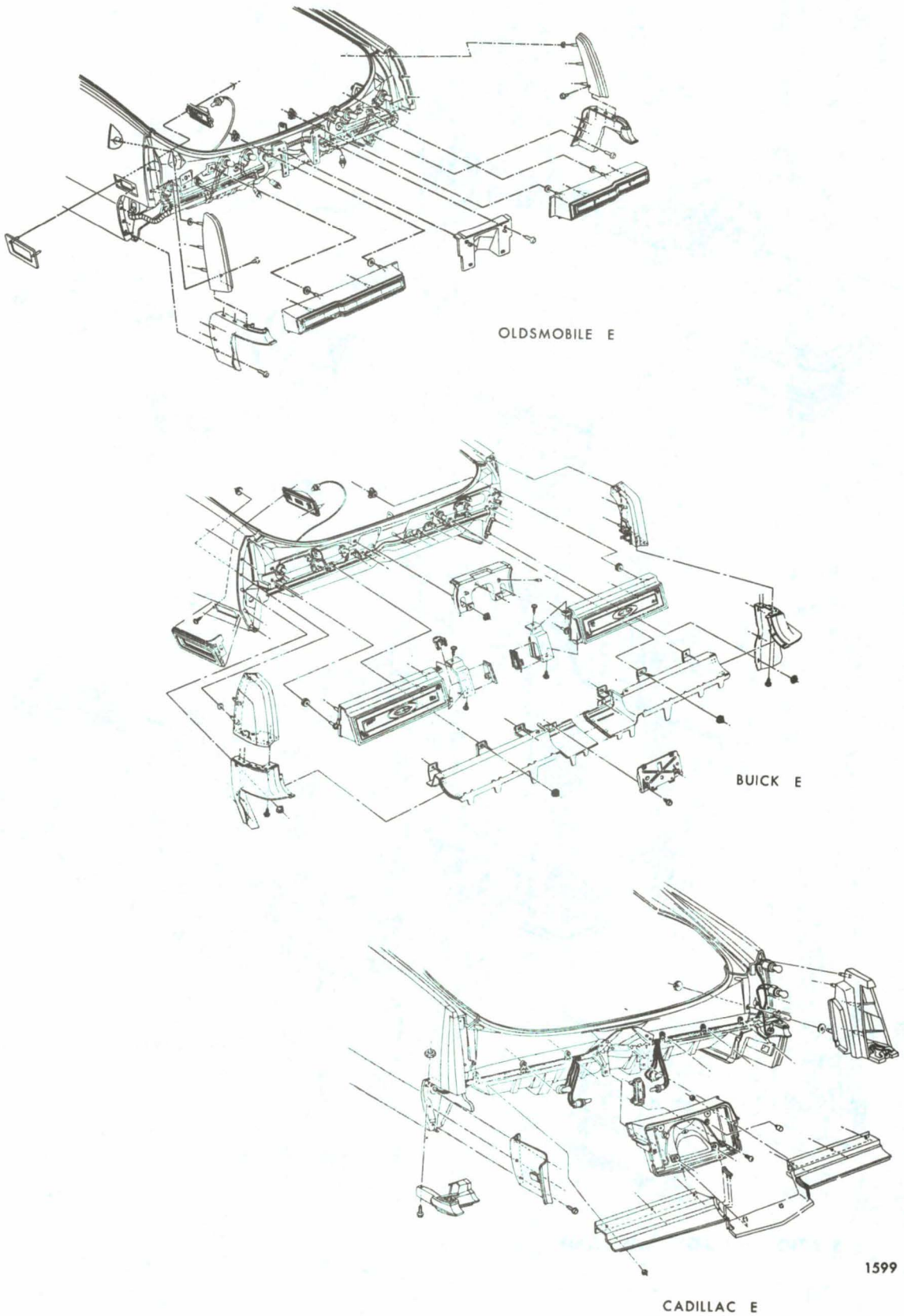


Fig. 7-50-Exterior Lamp Installation - E Styles

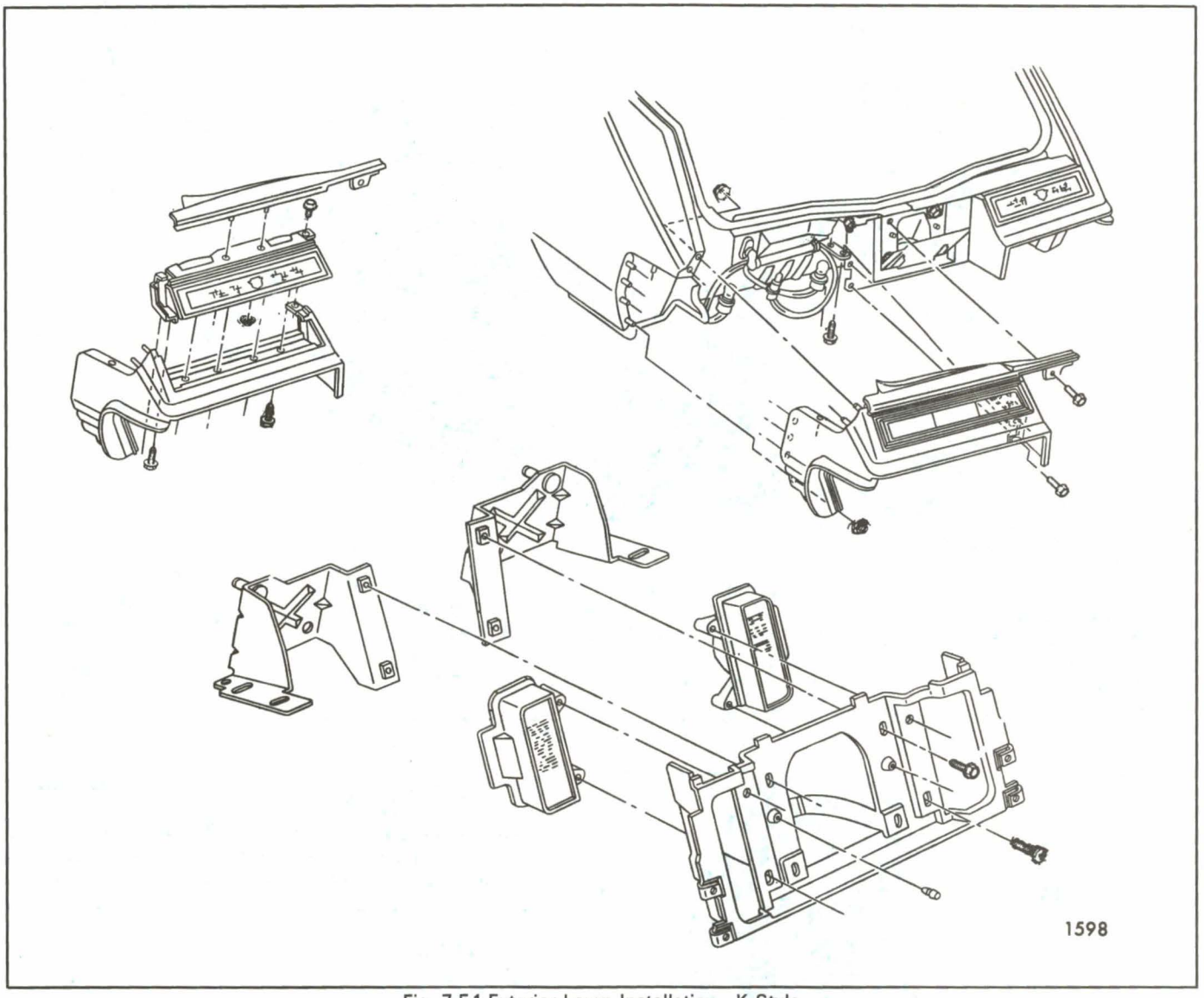


Fig. 7-51-Exterior Lamp Installation - K Style

SINGLE ACTING TAILGATE - G-80 STYLE

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. Removal of the license plate pocket 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 inner panel and is supported in the open (horizontal) position by support cables on each side of the gate.

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. 7-53). Remove support cable.
3. To install, reverse removal procedure.

TAILGATE ASSEMBLY

Removal and Installation

1. Open tailgate and support in horizontal position.
2. Disengage support cable attaching bolts on tailgate.
3. Mark location of hinge to body and with the aid of a helper, remove right and left tailgate hinge to body bolts and remove tailgate from body.
4. To install, reverse removal procedure. Torque bolts to 20 to 29 N·m (14 to 22 ft-lbs).

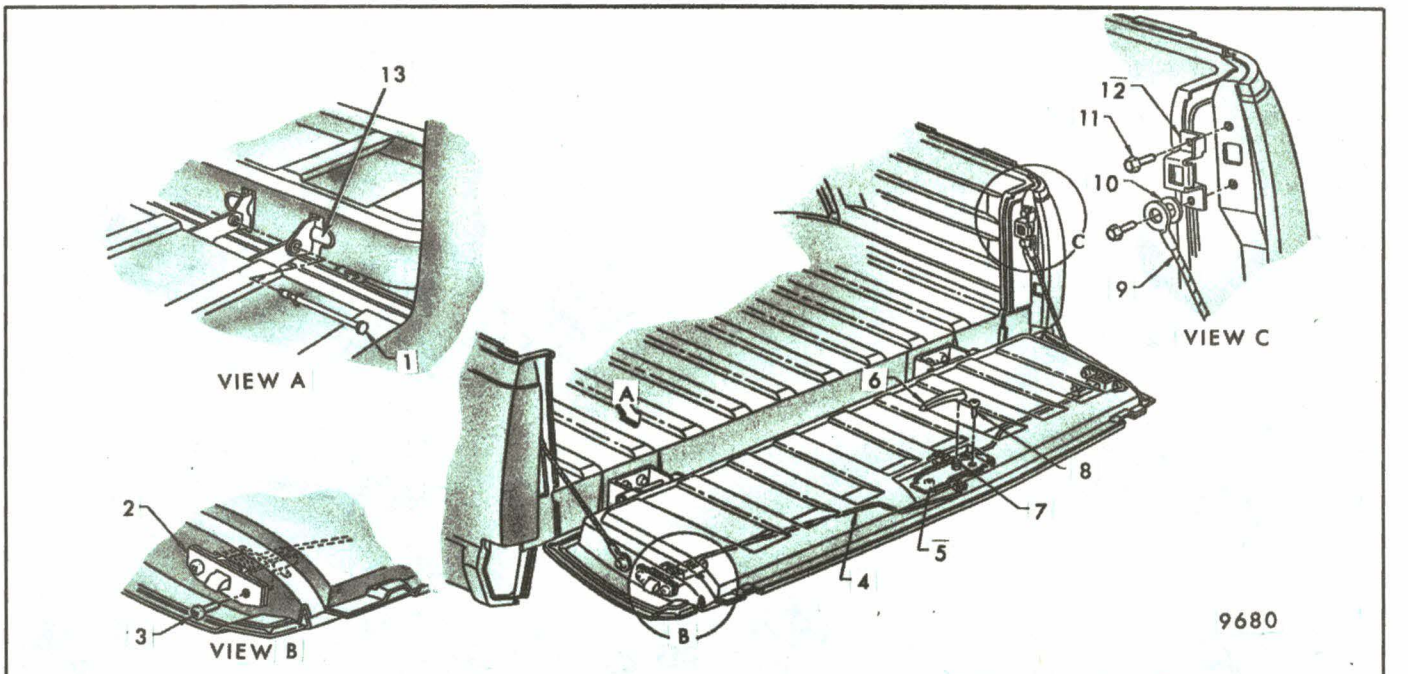
TAILGATE HINGE ASSEMBLY

The tailgate hinge assemblies consist of two hinge halves joined and retained by a hinge pin and clip. Body side attachment is accomplished by bolting the hinge to cage nuts in the rear cross bar. This attachment is adjustable.

The gate side hinge half is an integral part of the gate assembly and has no adjustment.

Removal and Installation

1. Support tailgate in the open position and remove support cables from tailgate.
2. Use a length of rod 4 mm (3/16″) diameter 304 mm (12″) long to remove hinge pins from hinges. Place end of rod against pointed end of hinge pin; then strike rod firmly to



1. Pin
2. Latch Assembly
3. Screw (Latch Assembly)
4. Rod - Tailgate Remote Control to Lock
5. Control Assembly - Tailgate Lock Remote
6. Handle Tailgate Lock Remote
7. Spindle - Remote Control
8. Screw - Remote Control Attaching
9. Cable - Tailgate Support
10. Washer - Spacer
11. Screw - Striker Retainer
12. Striker - Tailgate Lock
13. Strap - Tailgate Hinge - Gate Side

Fig. 7-52 - Tailgate Hardware G-80 Style

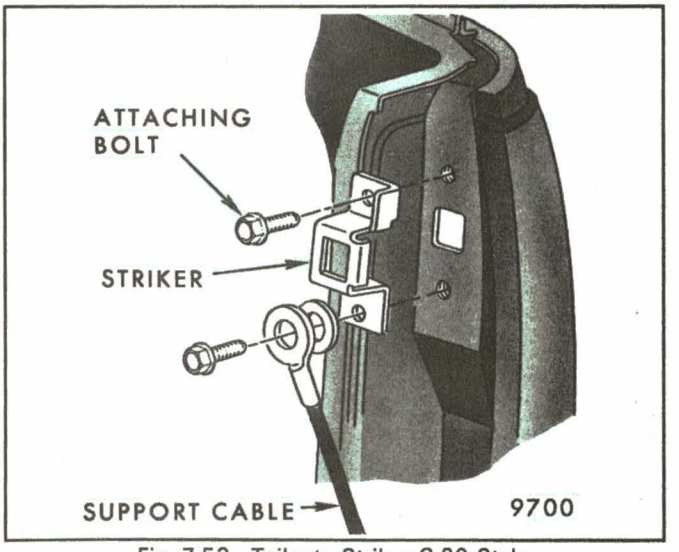


Fig. 7-53 - Tailgate Striker G-80 Style

shear retaining ring tabs and drive pin through hinge. Repeat operation on opposite hinge and remove gate.

3. If replacing body side hinge, mark outline of hinge on body and remove bolts securing hinge.
4. To install body side hinge, locate hinge within premarked outline and drive bolts.
5. If replacing gate side hinge, remove the "ear" portion (Fig. 7-54) flush with gate.

   Service replacement hinges for gate side have slots for nut and bolt attachment (Fig. 7-68). Proper hinge alignment to tailgate is accomplished by aligning slots in hinge with premarked dimples in tailgate.
6. Using a 11 mm (7/16") drill bit, drill a hole through the gate at the dimpled location.
7. Install hinge using 8 mm nut and bolt. Torque to 20 to 29 N·m (14 to 22 ft-lbs).
8. Align gate to body. Prior to installing hinge pins, install new retaining ring in notches provided in pins. Position retaining ring so that tabs point toward head of pins (Fig. 7-54).

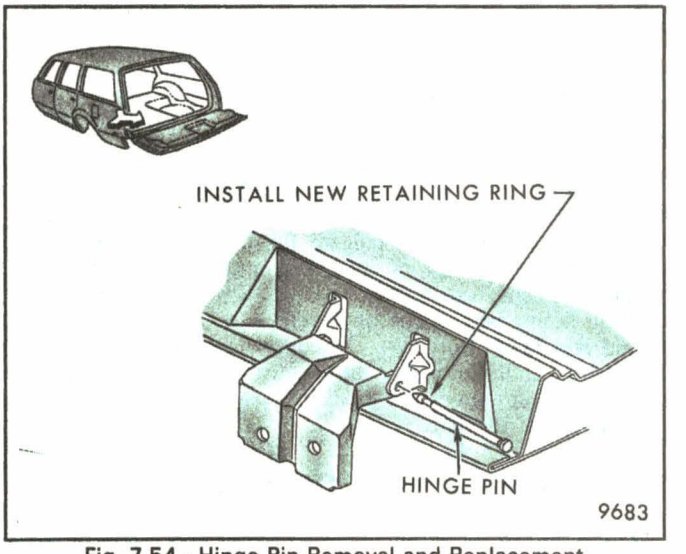


Fig. 7-54 - Hinge Pin Removal and Replacement

TAILGATE LOCK REMOTE CONTROL ASSEMBLY

Removal and Installation

1. Remove tailgate license plate pocket.
2. Disconnect remote control-to-latch rods at remote assembly by sliding rod attaching clips out of engagement (Fig. 7-55).

3. Remove screw securing handle to lock remote control assembly and remove handle.
4. Remove remote control attaching screws and withdraw assembly from tailgate through license plate pocket hole. Refer to Figure 7-56 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 rods and tighten remote control bolts.

TAILGATE LATCH ASSEMBLY - RIGHT OR LEFT

Removal and Installation

1. Remove tailgate license plate pocket.
2. Disengage remote control-to-latch rods at remote control assembly.
3. Remove screws 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.
4. To install, reverse removal procedure.

TAILGATE LATCH STRIKER - RIGHT OR LEFT

Removal and Installation

1. Open tailgate and mark position of striker on body pillar. The 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 to prevent damage to the tailgate.
2. Remove latch striker attaching screws and remove striker from body pillar.
3. To install, align striker within marked area and install attaching screws (Fig. 7-53).

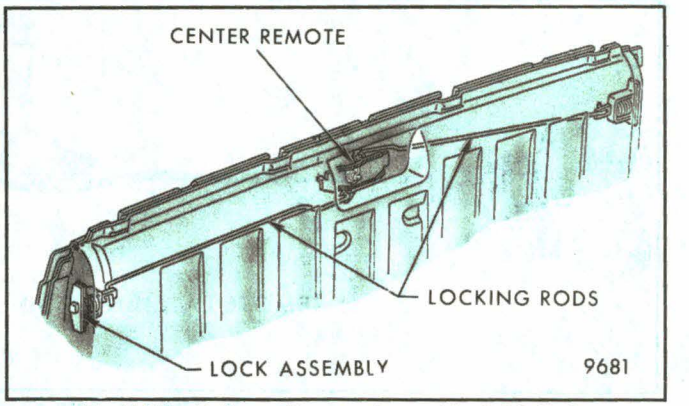


Fig. 7-55 - Tailgate Remote Assembly G-80 Style

Adjustments

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.

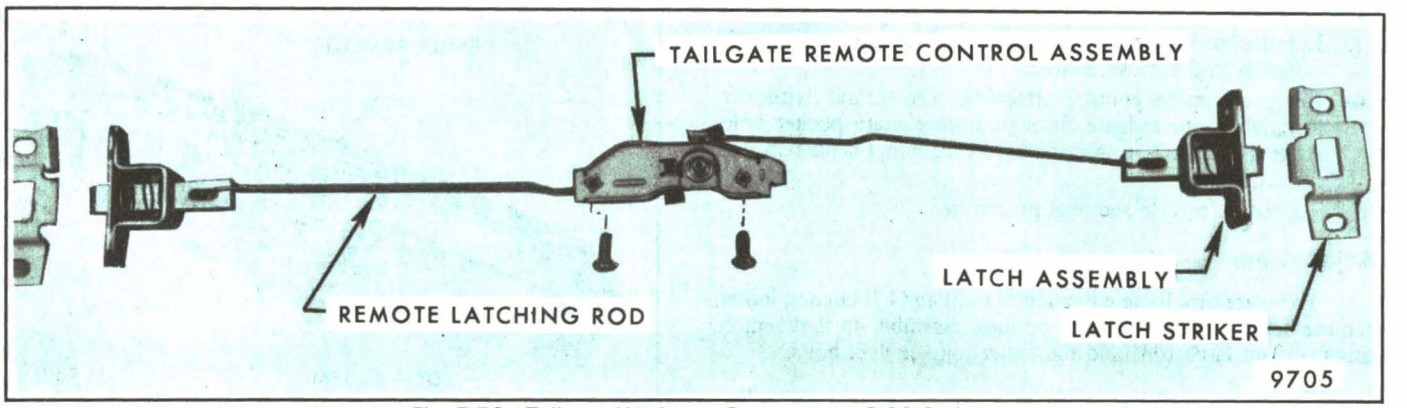


Fig. 7-56 - Tailgate Hardware Components G-80 Style

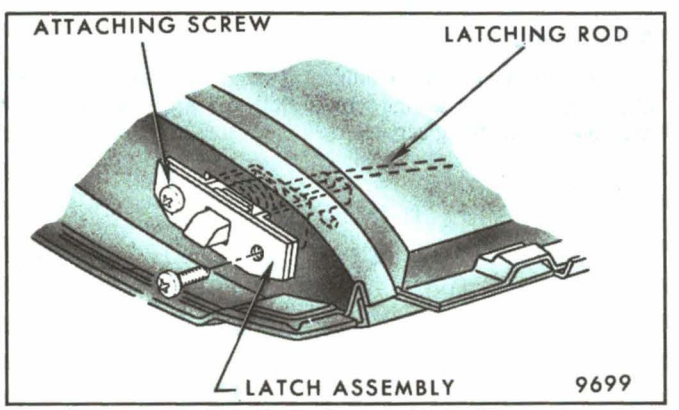


Fig. 7-57 - Tailgate Latch Bolt

STATION WAGON TAILGATE G-35 STYLE

The G-35 style tailgate consists of two separate assemblies; a conventional single-acting drop gate and a lift glass hinged at the top of the rear opening and supported in the open position by two gas support assemblies.

The tailgate assembly is constructed of inner and outer panels with reinforcements provided at critical locations. The tailgate is supported in the open position by support cables attached to each side of the gate and body. The tailgate lock assemblies are located between the inner and outer panels at each side of the tailgate. A tailgate glass lock is located in the center of the tailgate at the belt line.

The tailgate lock cylinder is located in the center of outer panel. Unlocking is accomplished by inserting the oval key into the lock cylinder and rotating the cylinder counterclockwise (left) to release the glass, rotate clockwise to release the gate. A built-in blockout feature prevents unlocking the gate before the glass is released. On some styles an optional instrument panel mounted glass release switch is available.

TAILGATE INNER TRIM PANEL

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.

Removal

Using tool J-24595 or BT-7323 or equivalent, loosen plastic trim retainers from gate inner panel and remove trim assembly.

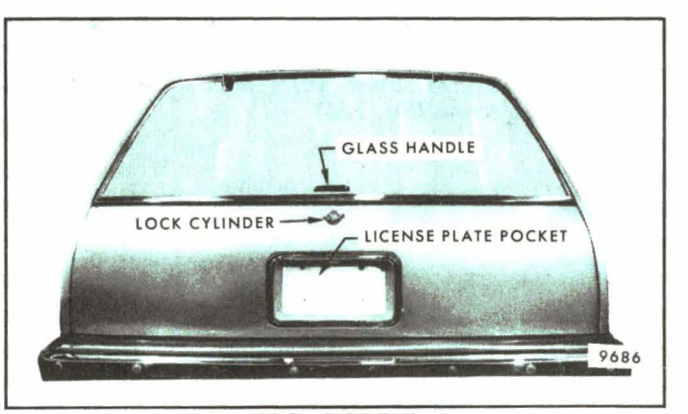


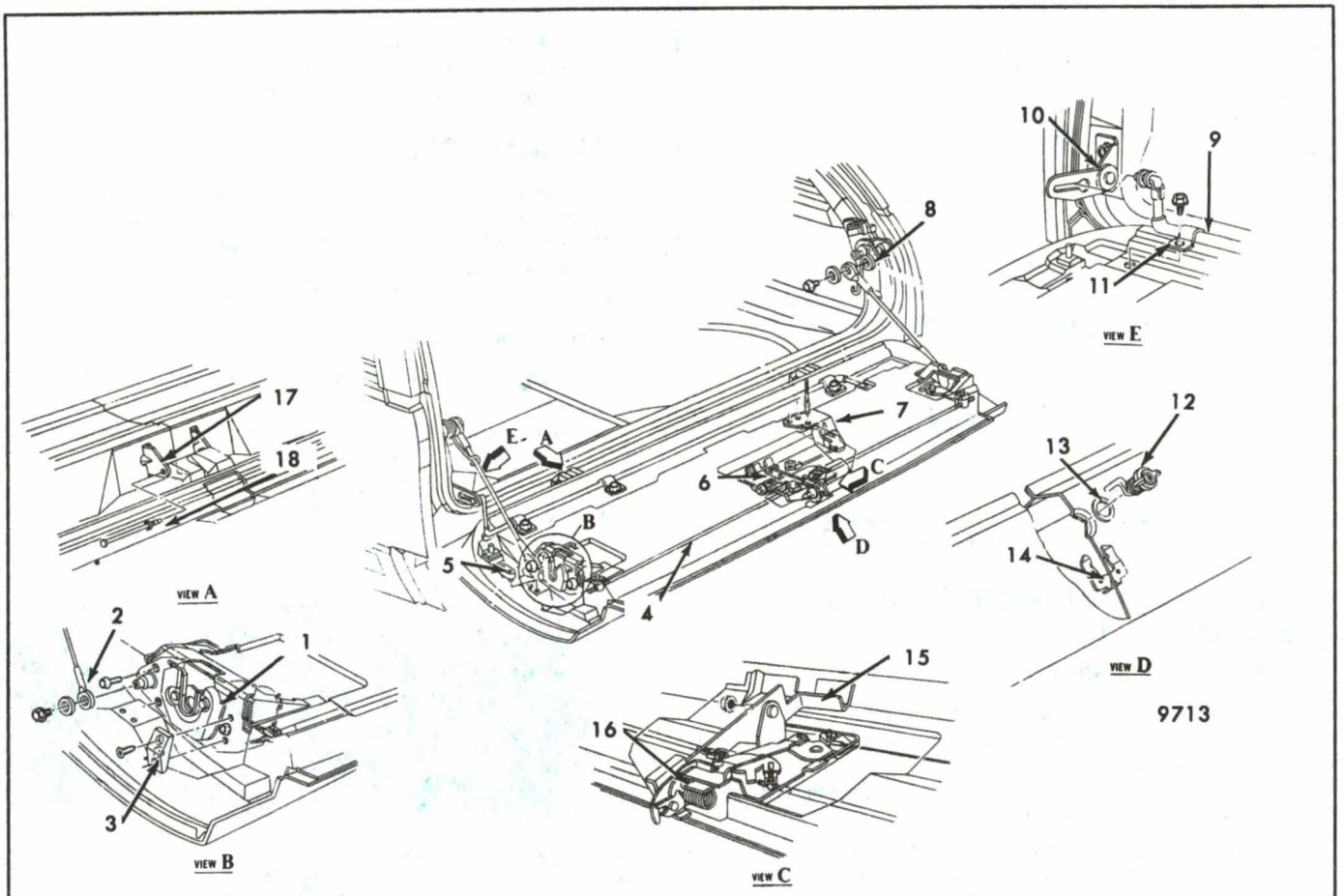
Fig. 7-58 - G-35 Tailgate

Installation

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.

BODY BACK OPENING WEATHERSTRIP

A one-piece weatherstrip, constructed of sponge rubber, seals the tailgate in the body back opening. An additional weatherstrip is attached to the tailgate assembly pinchweld at the belt line and provides a cross body sealing surface for the tailgate glass. Both the body back opening weatherstrip and the tailgate belt weatherstrip snap over a pinchweld flange. A mastic material is incorporated within the clinch cavity which seals the weatherstrip to the pinchweld flange. The tailgate belt weatherstrip is further retained at each outboard end by a plastic fastener.



1. Lock Assembly
2. Support Cable
3. Wedge
4. Locking Rod
5. Bumper
6. Remote Assembly
7. Solenoid - Tailgate Glass Release
8. Spring
9. Torque Rod
10. Link Assembly - Tailgate Torque Rod
11. Torque Rod Retainer
12. Lock Cylinder
13. Gasket - Lock Cylinder
14. Retainer - Lock Cylinder
15. Reinforcement - Tailgate Center
16. Lock and Control - Tailgate Window
17. Hinge - Tailgate - Body Side
18. Pin - Tailgate Hinge

Fig. 7-59 - G-35 Tailgate Hardware

Removal and Installation (Body Back Opening)

1. Separate butt joint at center bottom of the body back opening.
2. Peel weatherstrip from pinchweld flange. Do not pull on bulbular section of weatherstrip as it may tear.
3. To install, begin inserting center of weatherstrip (marked with paint) onto the gutter flange at the top center of opening between glass hinges. Be sure clinch is completely seated to the flange around the entire opening.
4. Seal with black weatherstrip adhesive.

Weatherstrip cement may be specified at specific locations; it may also be used at any point where additional retention or sealing is required.

TAILGATE BELT WEATHERSTRIP

Removal and Installation

1. Open tailgate to the horizontal position and remove trim cover.
2. Remove tailgate belt trim retainer.
3. Using tool J-21104 or equivalent, remove plastic fasteners from ends of weatherstrip and peel from pinchweld flange. Kent Products Special Release Agent (part no. SRA), 3M Release Agent (part no. 08971) or equivalent may be used to loosen/dissolve weatherstrip cement.

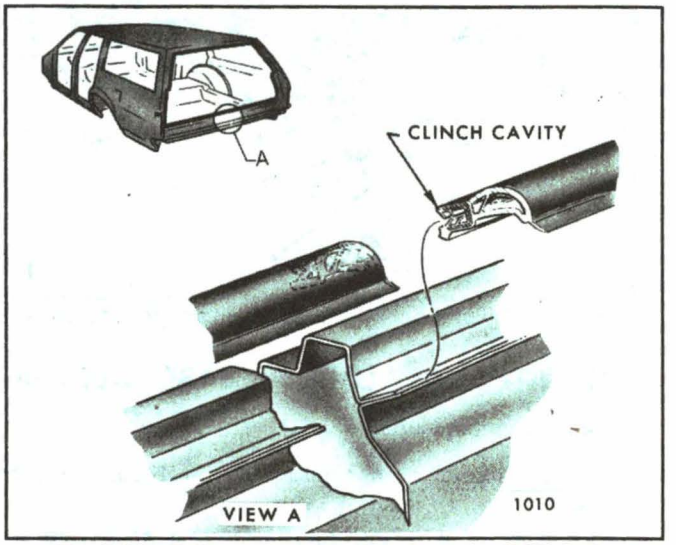


Fig. 7-60 - Tailgate Opening Weatherstrip, G-35 Style

4. To install, reverse removal procedure.

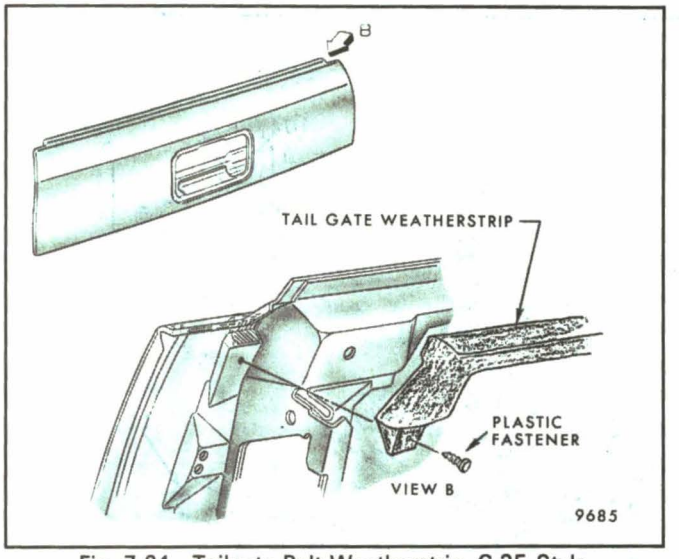


Fig. 7-61 - Tailgate Belt Weatherstrip, G-35 Style

TAILGATE CENTER REMOTE AND GLASS LOCK ASSEMBLY

Removal and Installation

1. Open tailgate and remove inner trim panel.
2. Outline with pencil and remove tailgate inner panel center reinforcement.
3. Disengage right and left locking rods (and glass release cable, if so equipped) Figure 7-71.
4. Mark location of and remove nuts securing assembly to inner panel and remove from tailgate (Fig. 7-59).
5. To install, reverse removal procedure.

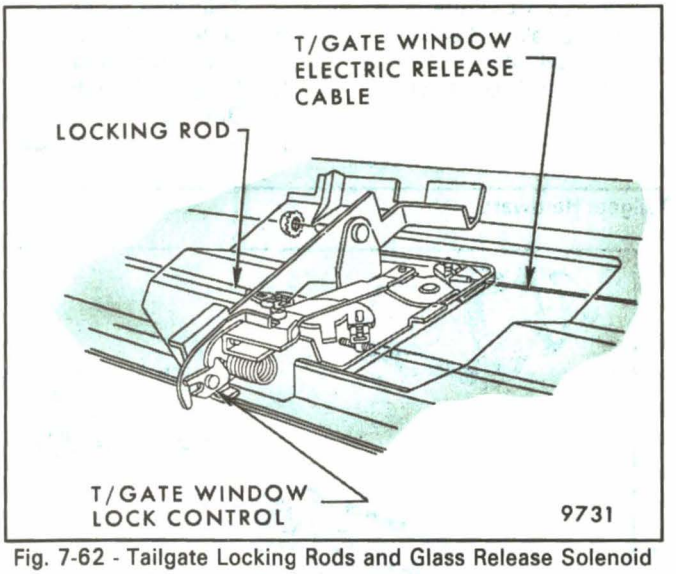


Fig. 7-62 - Tailgate Locking Rods and Glass Release Solenoid

TAILGATE GLASS LOCK RELEASE SOLENOID

Removal and Installation

1. Open tailgate, remove inner trim panel and access hole covers.
2. Remove tailgate inner panel reinforcement at glass lock, disengage clip retaining lock release cable and disconnect electrical connector from solenoid.
3. Drive out solenoid attaching rivet center pins with punch, then drill out rivets with 6.3 mm (1/4") drill bit. Remove solenoid through access hole.
4. To install, reverse removal procedure. Attach solenoid with 1/4-20x7/16" attaching screws (part no. 9642853 or equivalent) and U nuts (part no. 3916700 or equivalent). Torque attaching screws to 8 N·m (72 in-lb).

TAILGATE LOCK CYLINDER

The tailgate lock cylinder is mounted in the center of the tailgate outer panel just below the belt line. It is secured to the outer panel by a lock cylinder retainer. The lock is actuated by the oval key. Rotate the lock cylinder counterclockwise to release the tailgate glass, then clockwise to release the tailgate.

Removal and Installation

1. Open tailgate and remove inner cover trim panel and access hole covers.
2. Working through the access hole, remove lock cylinder retainer (Fig. 7-59, view D).
3. Remove lock cylinder through outer panel.
4. To install, reverse removal procedure.

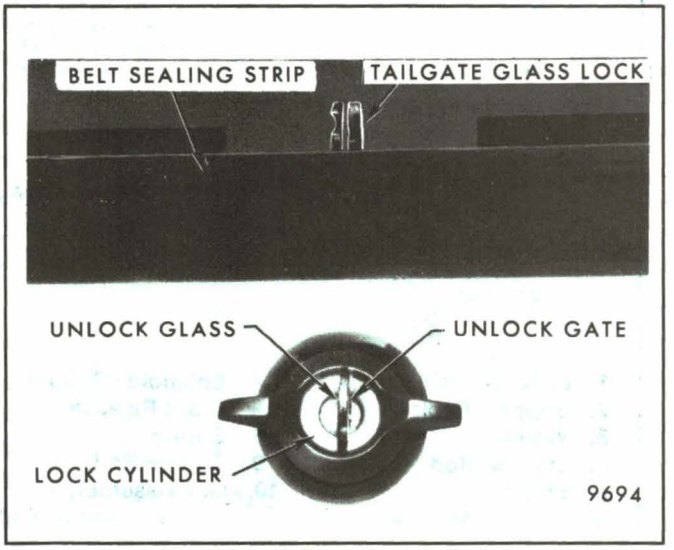


Fig. 7-63 - Tailgate Lock Cylinder

TAILGATE LOCK ASSEMBLY - RIGHT OR LEFT

Removal and Installation

1. Open tailgate to the horizontal position and remove inner trim panel and access hole covers.
2. Working through access hole, disconnect remote locking rod at lock.
3. Remove wedge from gate, and remove bolts securing lock to gate.
4. Remove lock assembly through access hole in tailgate inner panel (Fig. 7-59).
5. To install, reverse removal procedure. Torque to 6 to 8 N·m (5 to 6 ft-lbs).

LOCK SYNCHRONIZATION

Tailgate lock synchronization is required to prevent the tailgate from unlatching with the lift glass down and locked.

Lock Synchronization Check

With tailgate and lift glass locked and key removed, rotate lock cylinder assembly clockwise to release gate. If gate unlocks, synchronization is required.

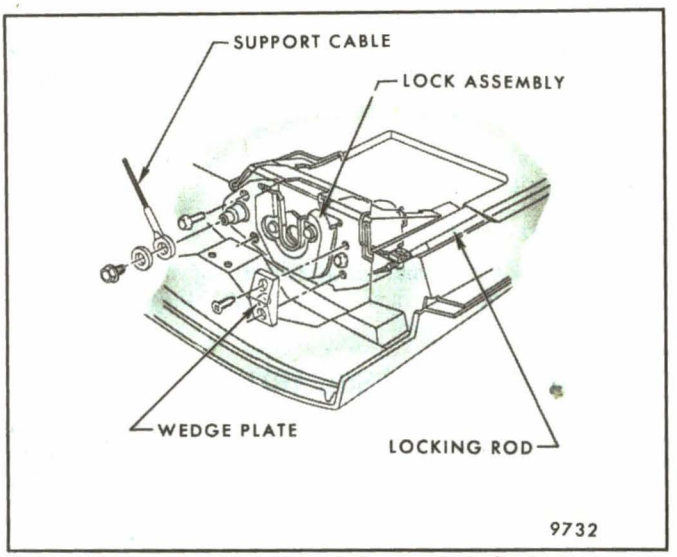


Fig. 7-64 - Tailgate Lock Assembly, G-35 Style

Lock Synchronization Procedure

1. Open the lift glass and the tailgate. Manually lock the lift glass lock and both right and left tailgate locks.
2. Remove the tailgate inner panel trim and the access hole covers.
3. Working through the access holes, disconnect remote locking rod at lock assemblies.
4. Adjust swivel on locking rods to align with hole in lock lever. Reengage swivel to lock.
5. Unlock the lock assemblies by inserting the oval key into the lock cylinder and rotating the cylinder counterclockwise and then clockwise.
6. Close the tailgate and the lift glass; perform lock synchronization check. Reinstall all previously removed trim.

TAILGATE ASSEMBLY

Removal and Installation

1. Position tailgate so as to achieve a neutral torque rod position, or until tension on torque rod has been relieved. Mark position of torque rod assist link on back body pillar and remove assist link (Fig. 7-65).
2. Support tailgate in open position and remove support cables from sides of tailgate.
3. Use a length of rod 4.8 mm (3/16″) diameter 304 mm (12″) long to remove hinge pins from hinges. 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 hinge and remove the gate (Fig. 7-66).
4. To install, align gate to body. Prior to installing hinge pins, install new retaining ring in notches provided in pins. Position retaining ring so that tabs point toward head of pins.

Adjustments

Tailgate adjustments are available at the hinge to body attachment locations. Horizontal and vertical adjustment may be accomplished by loosening hinge to body bolts and repositioning gate to desired location.

TAILGATE HINGE ASSEMBLY

The tailgate hinge assemblies consist of two hinge halves joined and retained by a hinge pin and clip. Body side attachment is accomplished by bolting the hinge to cage nuts in the rear cross bar. This attachment is adjustable. The gate side hinge half is an integral part of the gate assembly and has no adjustment.

Removal and Installation

1. Support tailgate in the open position and remove support cables from the tailgate.
2. Use a length of rod 4.8 mm (3/16″) diameter 304 mm (12″) long to remove hinge pins from hinges. Place end of rod against pointed end of hinge pin; then strike the rod firmly to shear retaining ring tabs and drive pin through hinge. Repeat operation on opposite hinge and remove gate (Fig. 7-66).
3. If replacing body side hinge, mark outline of hinge on body and remove bolts securing hinge.
4. To install body side hinge, locate the hinge within premarked outline and drive the bolts.
5. If replacing gate side hinge, remove the ″ear″ portion flush with gate (Fig. 7-67).
   Service replacement hinges for gate side have slots for nut and bolt attachment (Fig. 7-68). Proper hinge alignment to tailgate is accomplished by aligning slots in hinge with premarked dimples in tailgate.
6. Using a 10 mm (25/64″) drill bit, drill a hole through the gate at the dimpled location.
7. Install hinge using 8 mm (5/16″) nut and bolt. Torque to 20 to 29 N·m (14 to 22 ft-lb).
8. Align gate to body. Prior to installing hinge pins, install new retaining ring in notches provided in pins. Position retaining ring so that tabs point toward head of pins.

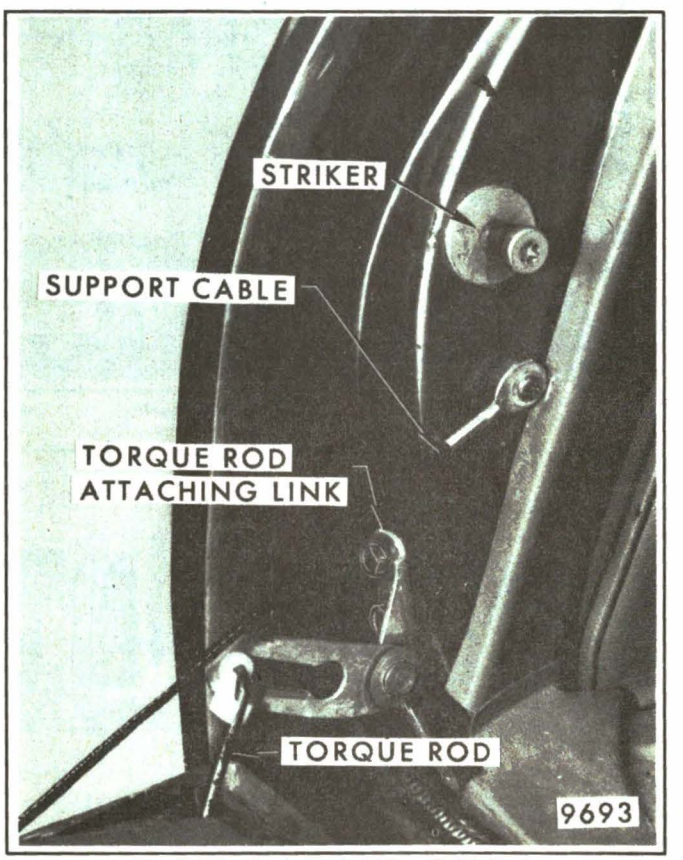


Fig. 7-65 - Back Body Pillar, G-35 Style

TAILGATE LOCK STRIKERS - RIGHT OR LEFT

The right and left striker assemblies consist of a single metal bolt and washer assembly that is threaded into back pillar (Fig. 7-65). With this design, the tailgate is secured in the closed position when the right and left tailgate locks engage with the striker bolts.

Removal and Installation

1. Mark position of striker on back body pillar.

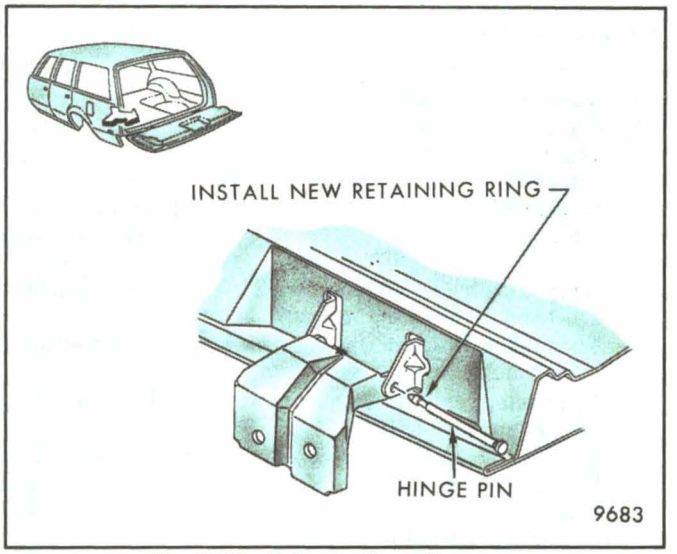


Fig. 7-66 - Tailgate Hinge Removal

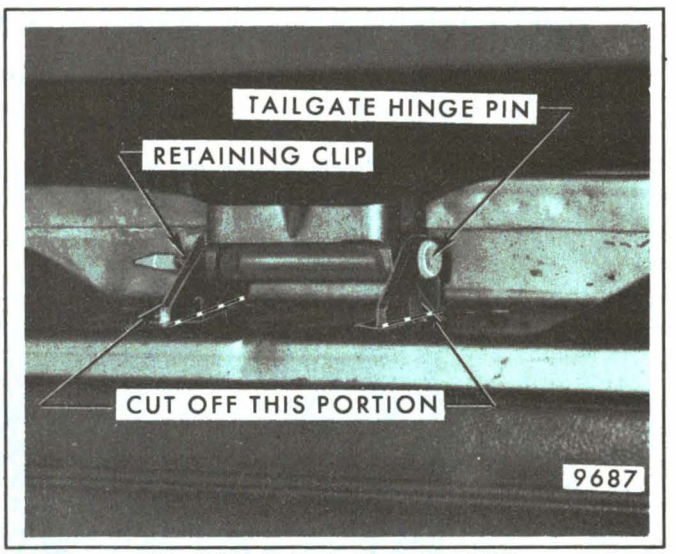


Fig. 7-67 - Tailgate Hinge Pin, G-35

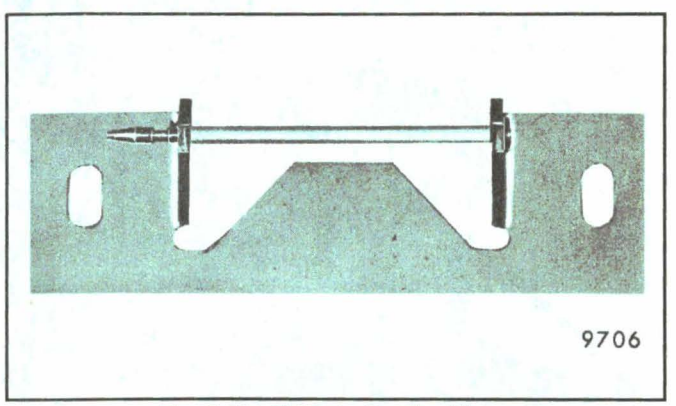


Fig. 7-68 - Tailgate Service Hinge

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.

NOTICE: 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.

3. To install, reverse removal procedure, making certain the lock striker is torqued to 45 to 60 N·m (33 to 45 ft-lb).

Adjustments

The tailgate right and left strikers are adjustable up or down, fore or aft. In and out adjustment is accomplished through use of spacers.

TAILGATE GLASS ASSEMBLY

The tailgate glass assembly consists of a solid tempered safety plate glass window with urethane attached bright moldings. The top of the glass has two oversized holes provided for hinge attachment and some glass adjustment (Fig. 7-69).

The tailgate glass lock striker, guide pin and outside handle assembly are attached to the glass through holes provided in the glass near the center of the lower edge.

Gas support assemblies are used to assist opening the tailgate glass and support the glass in the full-open position.

Most styles have as optional equipment air deflectors and grid defoggers.

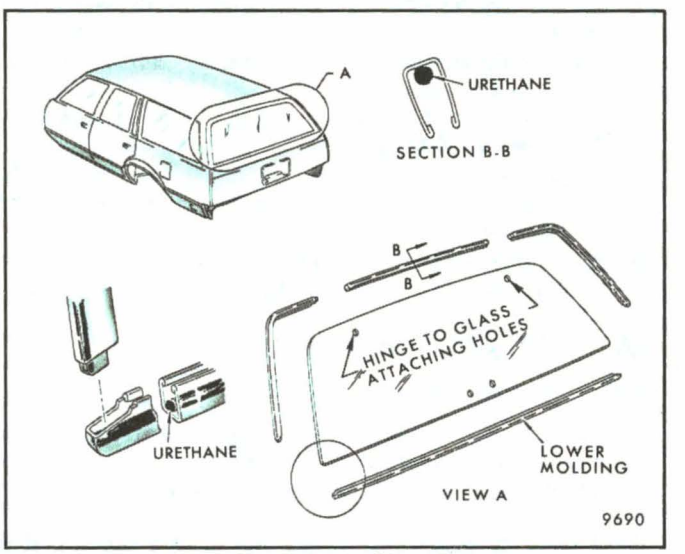


Fig. 7-69 - Tailgate Glass Frame

Removal and Installation - Tailgate Glass

1. Open tailgate glass, mark location of the hinge strap on outside surface of glass with a grease pencil.
2. While helper supports glass in the open position, remove glass side retaining clips (using scratch awl or similar tool) from both gas support assemblies and disengage supports from glass side attachments.
3. With helper still supporting glass, remove glass to hinge attachments and remove glass.
4. To install, reverse removal procedure. Align hinge within premarked outline. Torque to 8 N·m (72 in-lbs).

Adjustments

The tailgate glass adjustment provisions are located in the hinge to glass attachments. Loosen glass to hinge attachments, and position glass to desired location and tighten attachments.

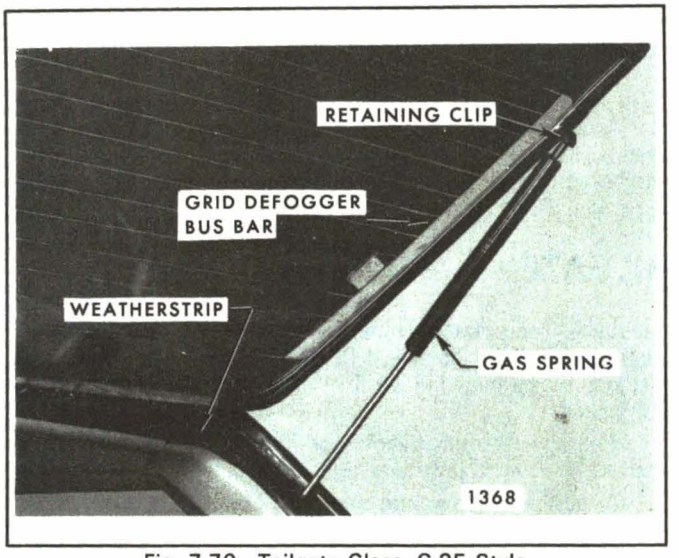


Fig. 7-70 - Tailgate Glass, G-35 Style

TAILGATE GLASS WINDOW FRAME

The tailgate glass window can be serviced as a complete assembly (glass and frame) or any of the moldings can be replaced individually. The tailgate glass moldings (frame) are urethane retained and fixture loaded to the glass. Fixture loading the moldings to the glass is required because of the critical location of the ball studs on each side of the assembly.

Although all four moldings are available as service parts, use these moldings only when replacing a damaged or defective molding on a tailgate glass assembly. Because of the critical location of the ball studs, do not attempt to install new and/or used moldings as a complete set on a tailgate glass less moldings.

Removal

1. Remove tailgate window assembly.

   CAUTION: During the urethane burn-out operation, avoid direct inhalation of the fumes being emitted as these fumes may be hazardous.

2. Using a welding torch with a no. 1 tip, apply heat along both sides and the edge the full length of the molding. Slowly pass the tip back and forth for 60 to 90 seconds, then caulk molding from glass. If molding does not separate easily, repeat heating operation.

   Molding discoloration caused by applying heat can be removed by polishing with 3M number 40 Emery polishing paper or equivalent. Do not attempt to reuse moldings which have been previously removed from any G-35 glass.

Installation

1. Before installing new molding, remove all traces of urethane from glass. Lacquer thinner may be used to remove urethane, then wash area with clear water only.
2. Install molding on glass and check for proper fit and alignment. Remove molding and apply masking tape to bright surface to avoid adhesive smears.
3. Use 3M Structural Adhesive, part number 8101, or equivalent to replace molding. Mix according to instructions on package.
4. After mixing adhesive, apply to molding cavity every few inches. DO NOT fill cavity.
5. Remove masking tape and install molding. Be sure molding is completely seated to glass. Clean off any excess adhesive with lacquer thinner before it hardens.

TAILGATE GLASS LOCK

The tailgate glass lock assembly is located in the center of the tailgate at the belt line and is an integral part of the center remote assembly. To unlock the glass manually, insert oval key in lock cylinder and rotate counterclockwise. For removal and installation, refer to center remote assembly.

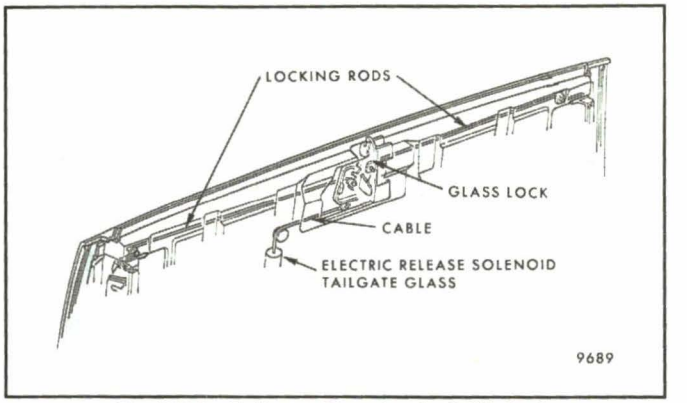


Fig. 7-71 - Tailgate Glass Lock, G-35 Style

TAILGATE GLASS LOCK STRIKER GUIDE PIN AND OUTSIDE HANDLE

The tailgate glass lock striker engages with the tailgate glass lock located in the tailgate. At the same time lock and striker engagement occur, the guide pin enters the locator guide, which is a part of the tailgate inner panel reinforcement. The purpose of the guide pin is to insure proper glass alignment during the closing and locking cycle.

The tailgate glass outside handle is retained by the glass striker and guide pin attachments.

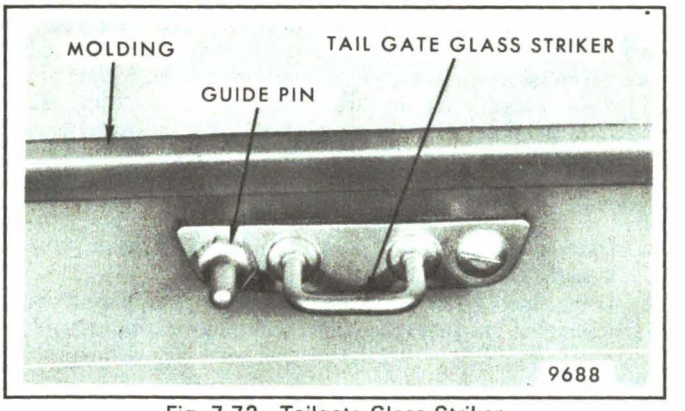


Fig. 7-72 - Tailgate Glass Striker

TAILGATE GLASS GAS SUPPORT ASSEMBLY

The gas support assemblies used to assist opening the tailgate glass are attached to the glass frame and the body by means of a ball and socket type attachment and are secured by retaining clips.

The gas support assemblies are color coded (lettering on each support) for each body style because of different output levels and MUST NOT be intermixed. Dark blue lettering is used for the G-35 styles.

CAUTION: Do not attempt to remove or loosen gas support assembly attachments with glass in any position other than fully open as personal injury may result.

Removal and Installation

1. While helper supports glass in open position, remove glass and body side retaining clips (using scratch awl or similar tool) from ends of gas support assemblies.
2. Disengage ball from socket attachment at each end of support and remove from body.
3. To install, reverse removal procedure.

TAILGATE GLASS GRID DEFOGGER

A heated grid type defogger tailgate glass is available on all styles. It consists of a number of element lines and two vertical bus bars baked into the inside surface of a tinted tailgate glass. Refer to Section 10 for repair procedure.

THREE-WAY TAILGATE

The three-way tailgate has 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 station wagons have 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 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 upper and lower quarter trim.

The three-way tailgate uses an inside locking knob similar to the one used on the door. 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 7-73 and 7-74 identify the component parts of the three-way tailgate.

TAILGATE INNER TRIM PANEL

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 (Fig. 7-75). 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 (Fig. 7-76).
2. Using tool J-24595 or BT-7323 disengage plastic trim retainers from gate inner panel and remove trim assembly.

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

Removal and Installation

1. Remove tailgate inner panel cover.
2. Remove inner access hole cover attaching screws and remove cover (Fig. 7-77).
3. To install access hole covers, reverse removal procedure.

TAILGATE OPENING WEATHERSTRIP

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 (Figs. 7-78 and 7-79). The butt joint uses 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.

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 4 mm (5/32") drill, drill out rivets attaching rear cross bar to side rails. Remove rear cross bar.
3. Remove weatherstrip attaching screws at belt from right and left sides, Figure 7-79.
4. Separate butt joint at center bottom of the opening, remove and retain plug, Figure 7-78, view A.
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. 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 7-78, Section A-A, and reverse removal procedure.

TAILGATE WINDOW GUIDE TUBES

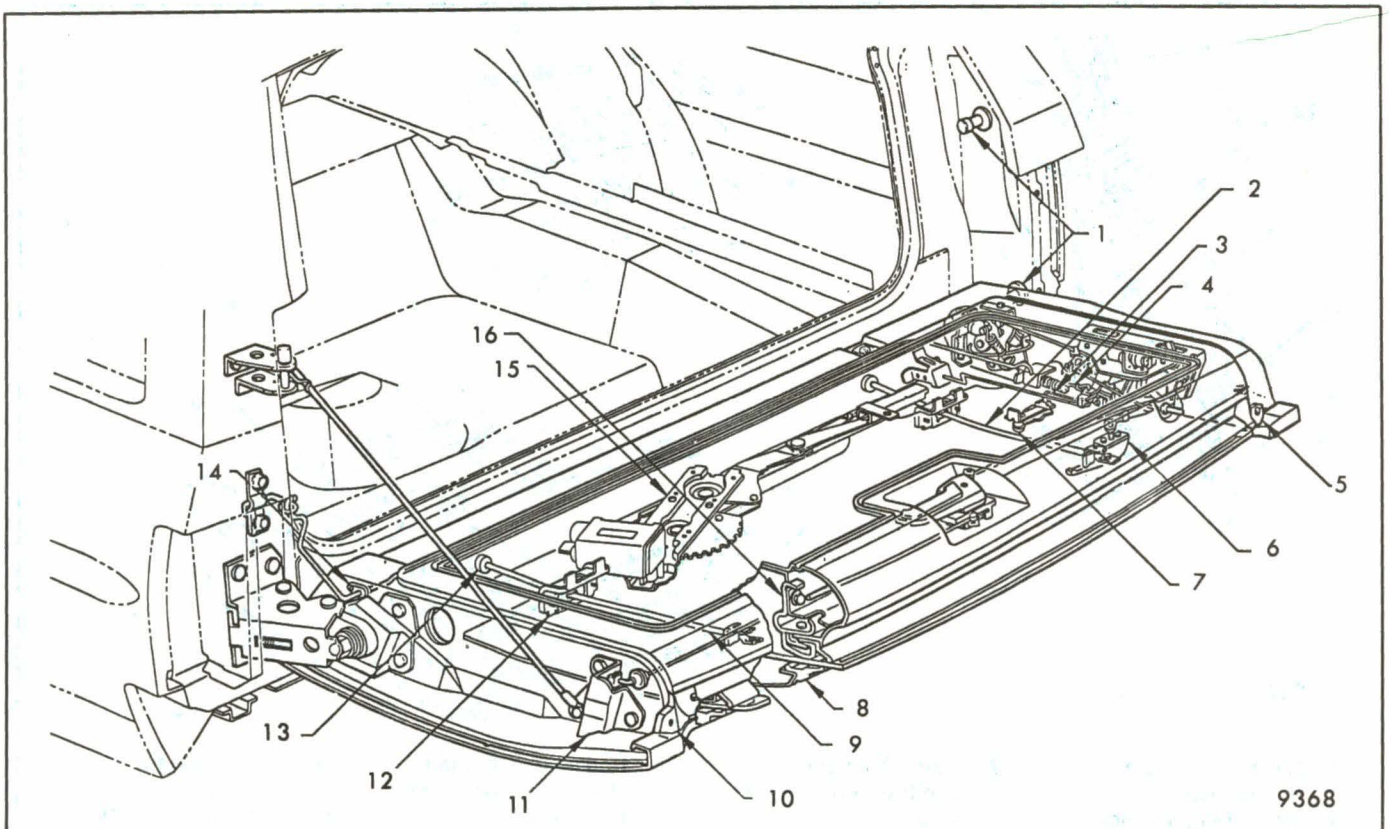
Removal and Installation

1. Remove tailgate window.
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.

When installing glass attachment, torque nuts to 8 N·m (72 in-lb). Also, when replacing a tailgate glass, replace spacers and washers.



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. 7-73 - B-35 Tailgate Hardware

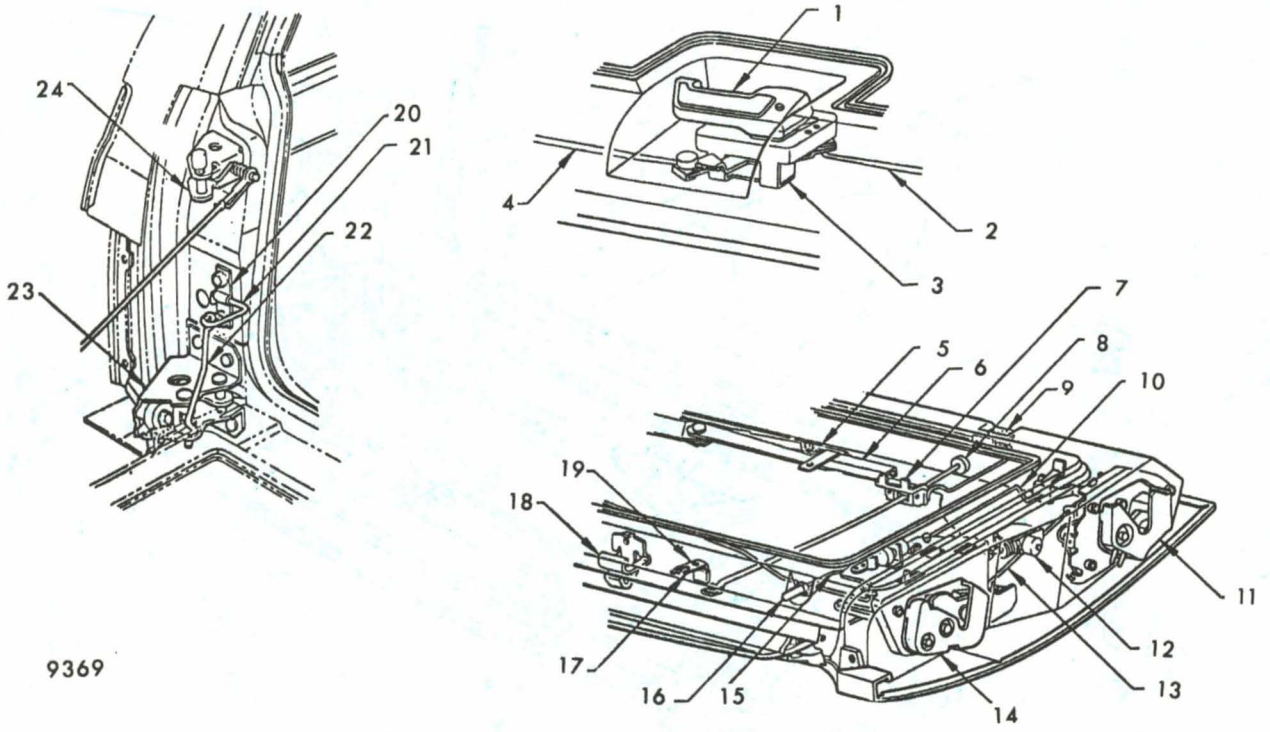
Removal and Installation

1. Open tailgate as a gate, remove inside remote handle, trim cover and inner panel access hole covers. If heated tailgate glass option is specified, disconnect power feed and ground wire from glass (Fig. 7-80).
2. Mark location of up-travel stop attaching bolts and remove up stops, Figure 7-82, item 1.
3. Mark location of belt trim support retainers, loosen attaching bolts and slide away from glass, Figure 7-82, item 2.
4. Manually latch left upper lock, Figure 7-81.
   CAUTION: 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.
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 7-82, item 3.
6. Remove guide plate to glass attachments working through left and right access holes, Figure 7-82, 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 7-82, item 2.
3. Mark location and remove inner panel cam attaching bolts, Figure 7-82, item 5.
4. Remove sash panel cam to glass attaching nuts and pull cam from glass, Figure 7-82, item 3.
5. Drive out regulator and motor attaching rivet center pins with punch, then drill out rivets with 6.3 mm (1/4") drill bit. Remove regulator and motor as an assembly through access hole, Figure 7-82, item 6 and 7.



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

Fig. 7-74 - B-35 Tailgate Hardware

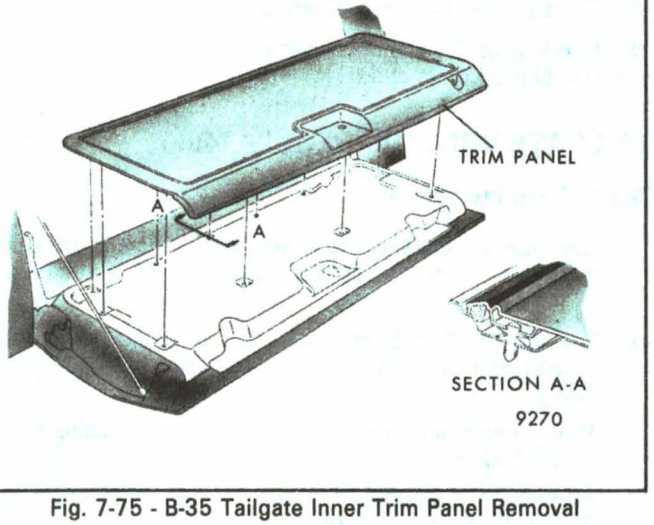


Fig. 7-75 - B-35 Tailgate Inner Trim Panel Removal

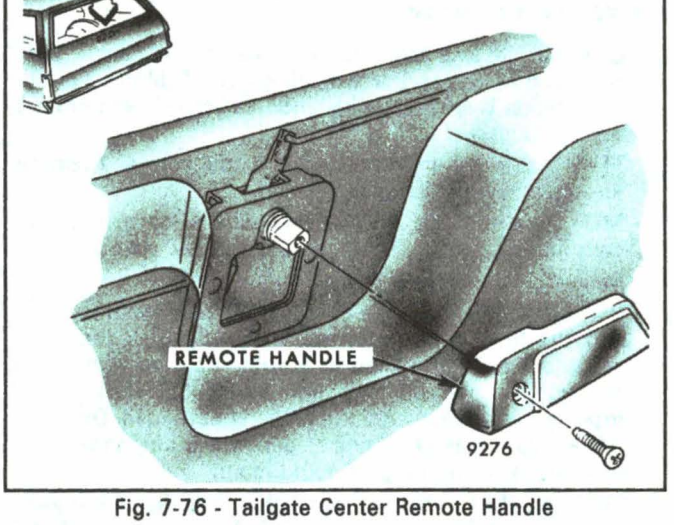


Fig. 7-76 - Tailgate Center Remote Handle

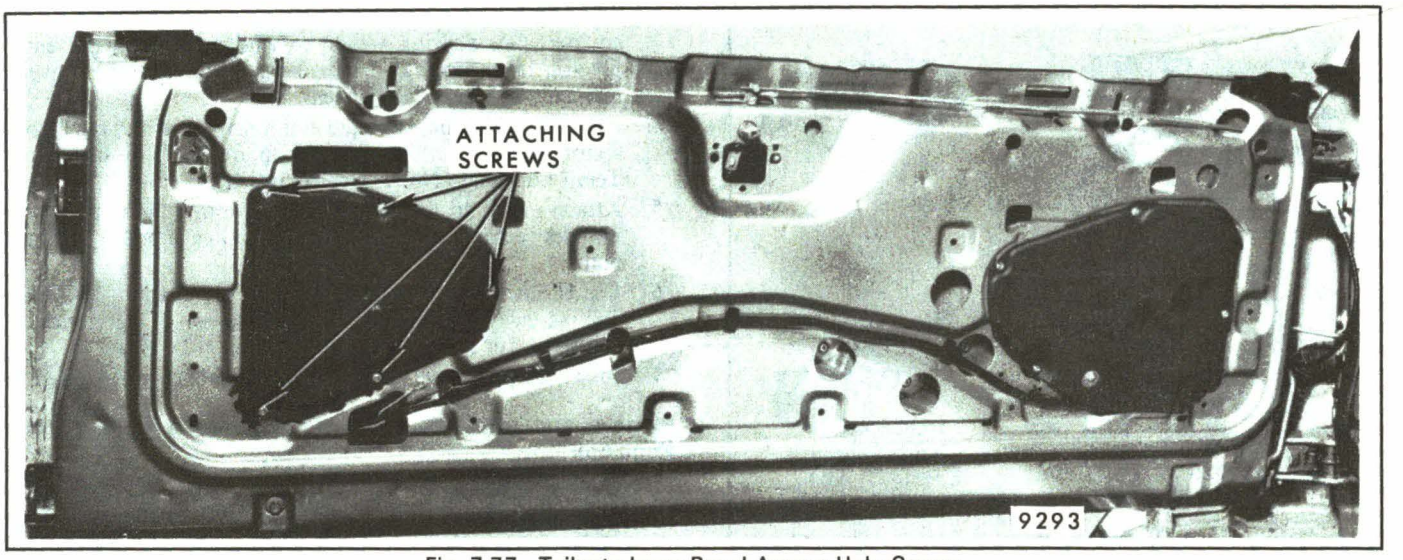


Fig. 7-77 - Tailgate Inner Panel Access Hole Covers

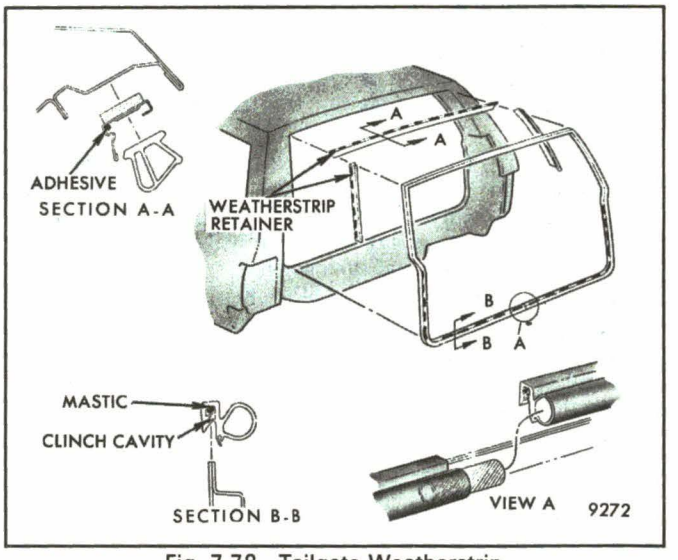


Fig. 7-78 - Tailgate Weatherstrip

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 backplate.
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).
   CAUTION: 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 has 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 12V, 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.

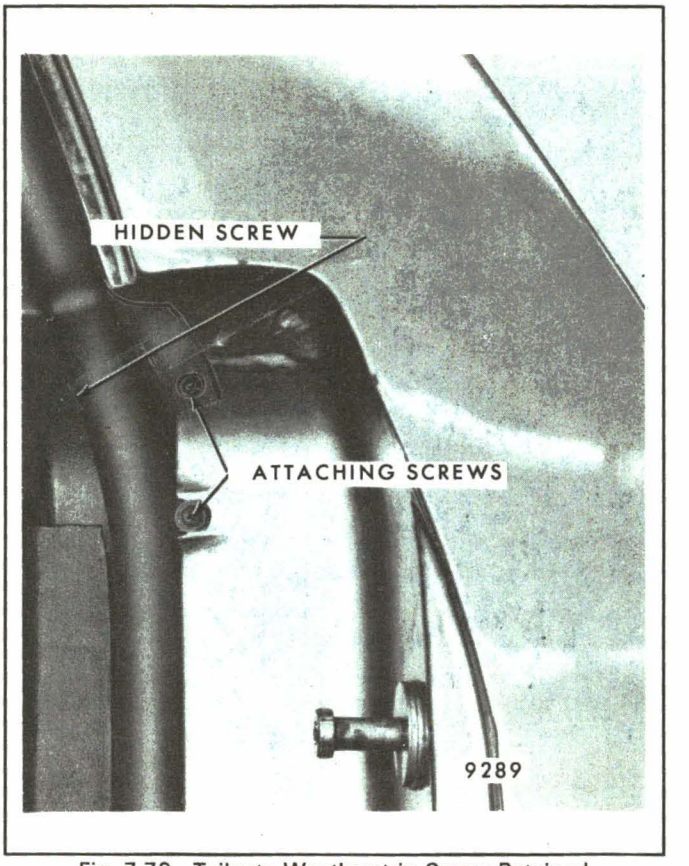


Fig. 7-79 - Tailgate Weatherstrip Screw Retained

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

CAUTION: 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

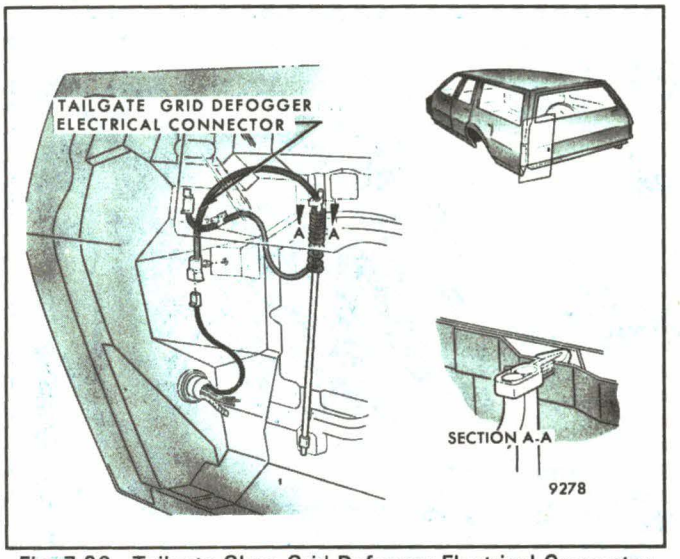


Fig. 7-80 - Tailgate Glass Grid Defogger Electrical Connector

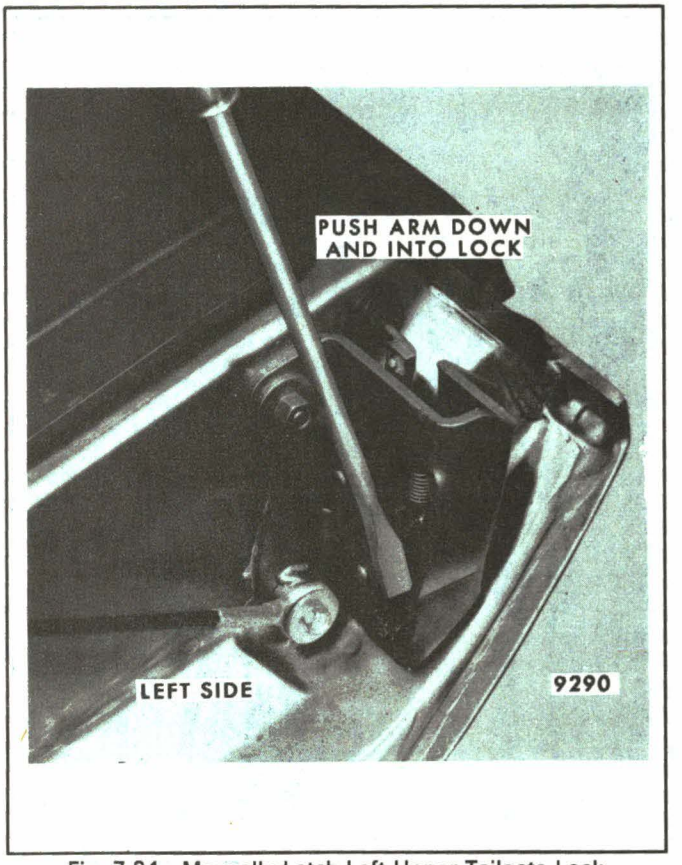


Fig. 7-81 - Manually Latch Left Upper Tailgate Lock

removal. If glass has been broken or removed, the sector gear must be securely fastened to regulator backplate 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.

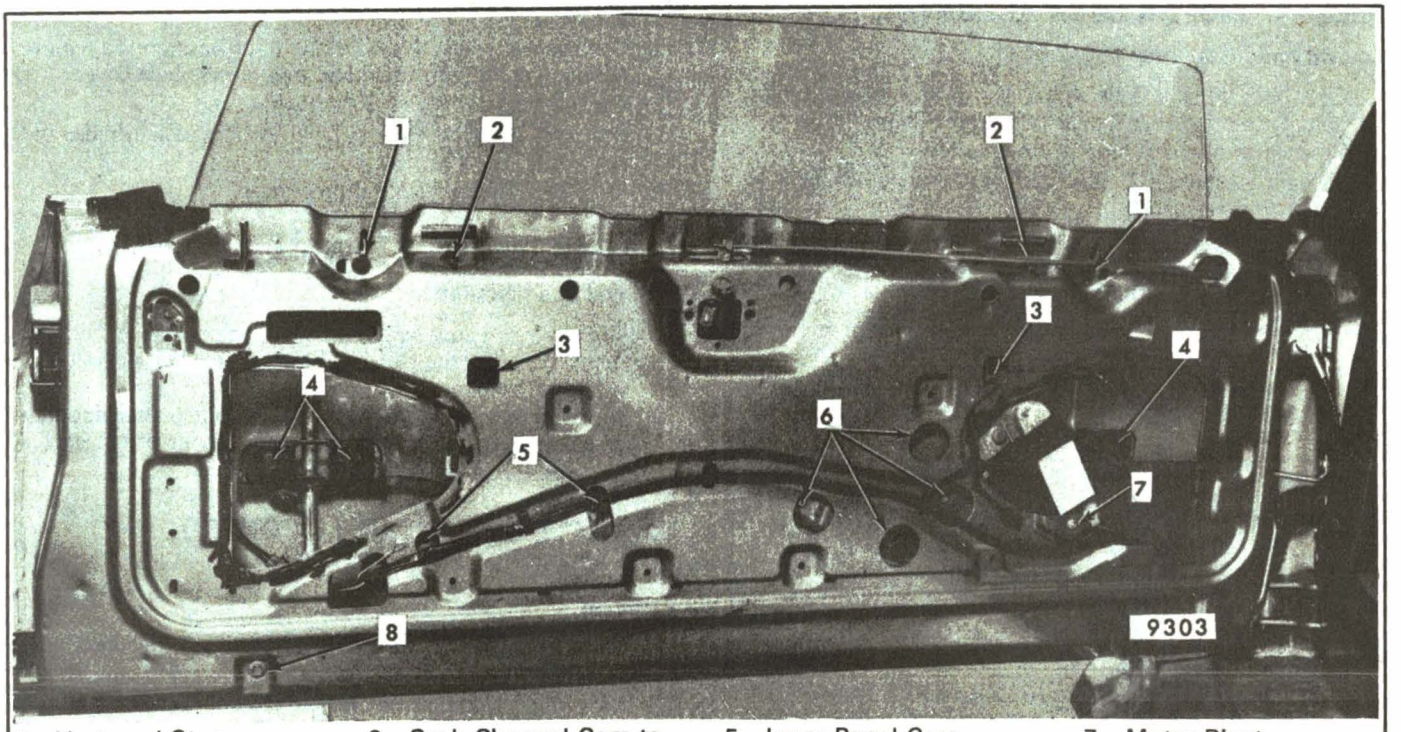
1. Open the tailgate as a door with the glass up. Remove remote handle, trim and left access hole cover, disconnect harness at motor.
2. Drive out motor attaching rivet center pin with punch, then drill out rivet with 6.3 mm (1/4") drill bit.
3. Working through left access hole, remove bolts attaching motor to regulator and remove motor through access hole. 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. Make 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 1/2" screw (part no. 1655270 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.
   CAUTION: 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 3 mm (1/8") hole through the regulator sector gear and backplate (Fig. 7-83). DO NOT drill hole closer than 13 mm (1/2") to edge of sector gear or backplate. 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. The lubricant used must be cold weather approved to a minimum of -29°C (-20°F).
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. 1655270 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 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 7-84, 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).
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).



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

Fig. 7-82 - Tailgate Glass Removal

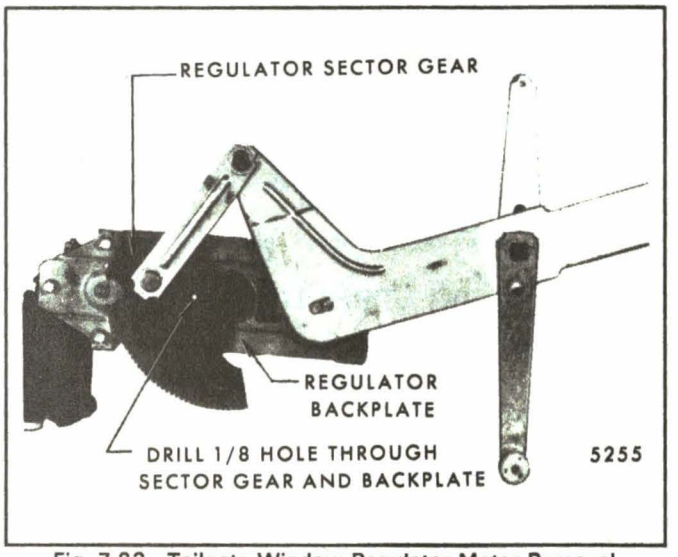


Fig. 7-83 - Tailgate Window Regulator Motor Removal

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, 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 enough to stabilize glass but not restrict ease of window operation. Torque all previously loosened attachment components to 8 N·m (72 in-lb).

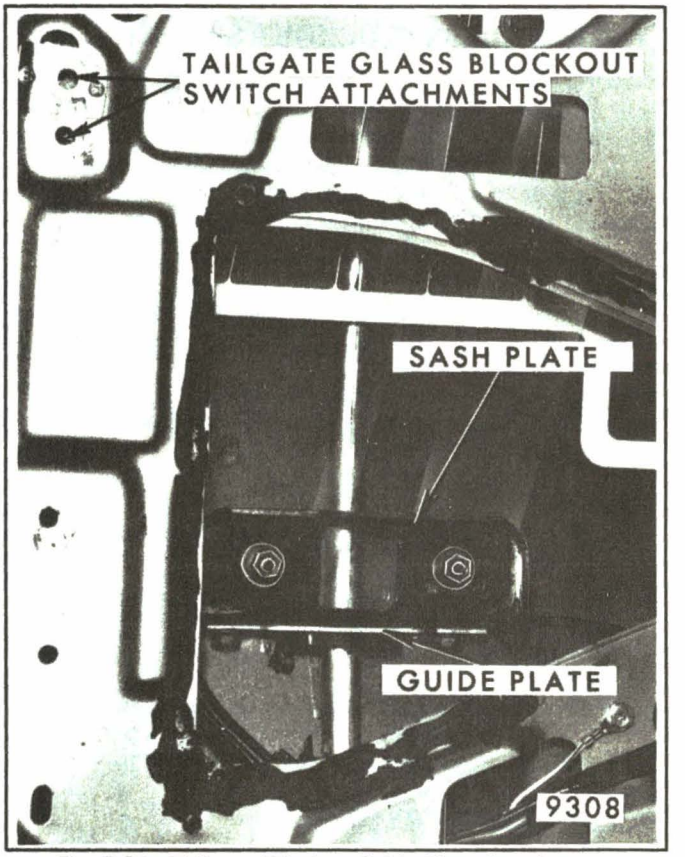


Fig. 7-84 - Tailgate Window Guide Plate Attachments

TAILGATE MOTOR LOCK ACTUATOR

Removal and Installation (Fig. 7-85)

1. Open tailgate as a door with glass up and remove remote handle, trim panel and right access hole cover.
2. Disengage electric connector from motor.
3. Using a 6.3 mm (1/4") drill, drill out rivets attaching P.M. motor to inner panel.
4. Disengage lock actuating rod from upper lock lever.
5. To install, reverse removal procedure. Use 1/4-20x7/16" screw and U nut in place of rivets.

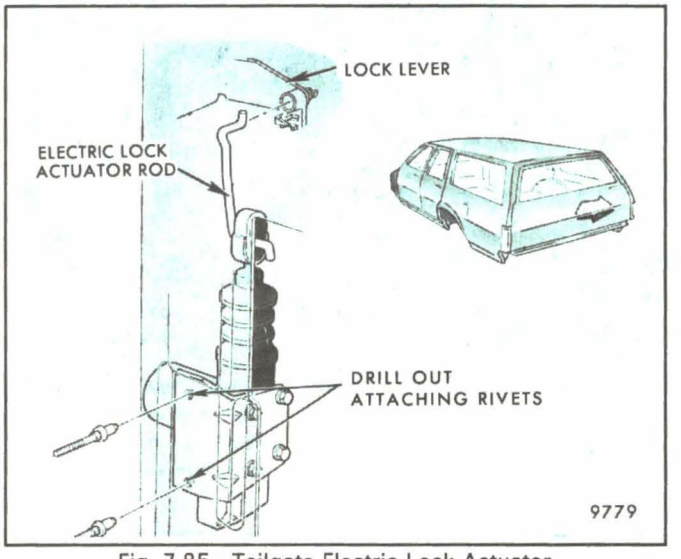


Fig. 7-85 - Tailgate Electric Lock Actuator

TAILGATE GLASS BLOCKOUT SWITCH

All station wagons have power tailgate windows and use an electrical blockout switch which prevents upward movement of the glass when the tailgate is opened as a gate (Fig. 7-86).

If 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.
2. Remove screws securing switch to right upper lock as shown in Figure 7-84. 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 (Fig. 7-86). This adjustment is 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

The tailgate lock cylinder may be used to lock and unlock the tailgate as well as raise and lower the tailgate glass. To lock the tailgate and raise the glass, rotate the key fully clockwise. To unlock the tailgate and lower the glass, rotate the key fully counterclockwise (Fig. 7-87).

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

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 (Figs. 7-87 and 7-88).
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

Removal

1. Open tailgate to door position, remove inside remote handle, trim panel right access hole cover (Fig. 7-89).
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. 7-82).

Installation

1. With 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 1/4-20x1/2" attaching bolts, part number 1655270 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 Procedure in this section.
4. Replace all previously removed components.

TAILGATE RIGHT UPPER LOCK ASSEMBLY

Removal (Figs. 7-86 and 7-90)

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 all rods from the right upper lock assembly (Fig. 7-91).
3. Disconnect electrical connectors.
4. Remove outside handle and motor actuator.
5. Remove gate to lock attaching screws and remove lock through access hole (Fig. 7-92).

Installation

All locks must be installed in the latched position to accomplish proper lock synchronization. Service replacement locks will have a synchronization wire installed and be in the latched position when received (Fig. 7-90). This wire must be removed after lock installation and synchronization for proper lock operation.

CAUTION: 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

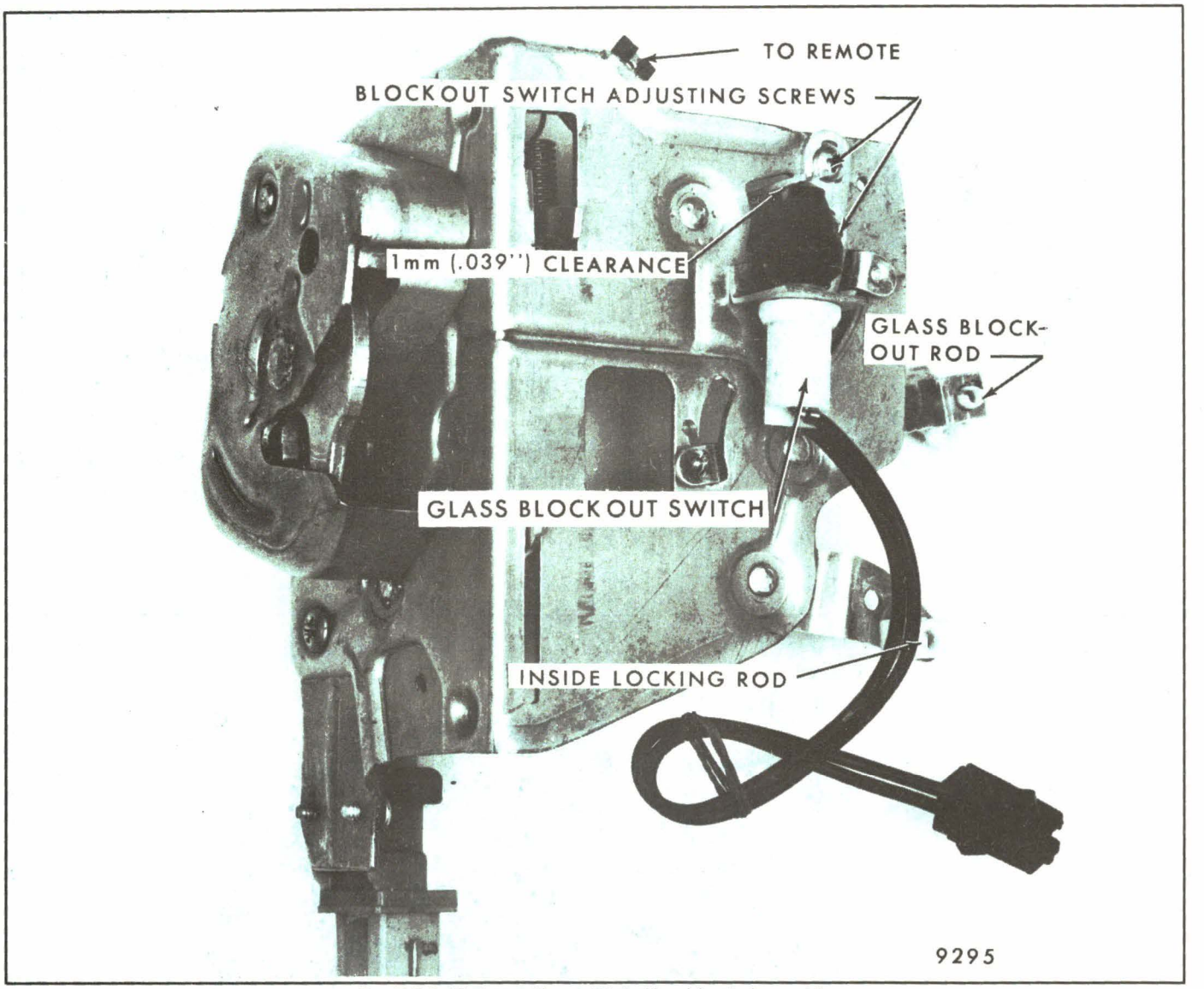


Fig. 7-86 - Tailgate Upper Right-Hand Lock Assembly

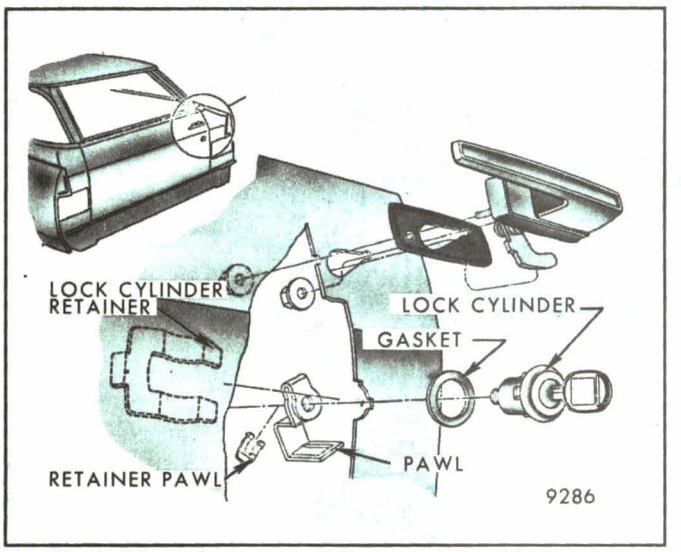


Fig. 7-87 - Tailgate Lock Cylinder and Outside Handle

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.

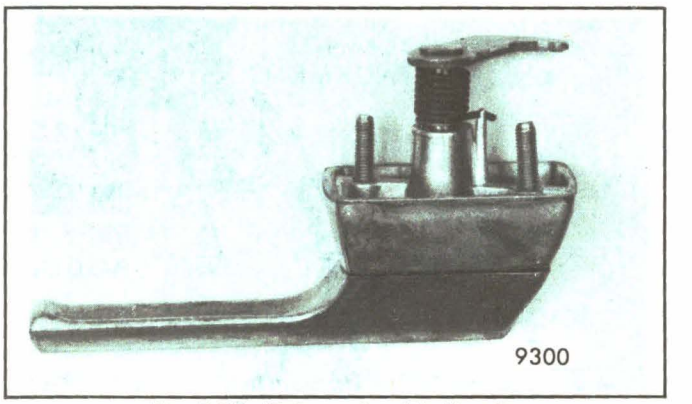


Fig. 7-88 - Tailgate Outside Handle

1. With tailgate open in the door position, install screws securing lock to tailgate (Fig. 7-92). Torque to 9 to 11 N·m (80 to 100 in-lb).

2. Engage all previously removed rods and electrical connectors except right upper to lower locking rod (2, Fig. 7-93).

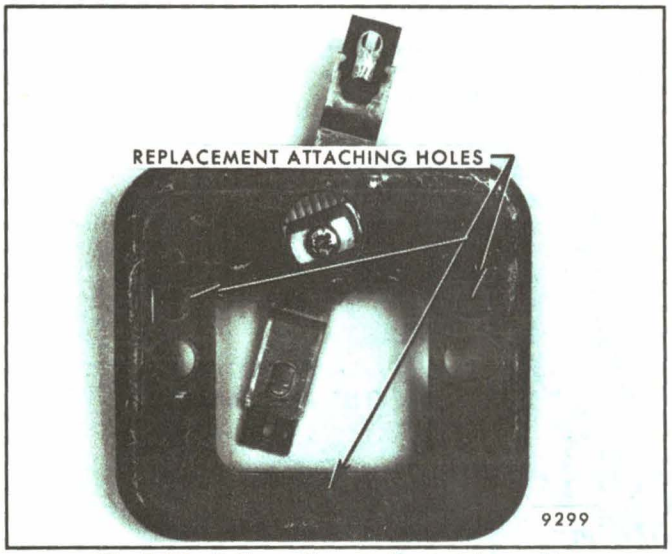


Fig. 7-89 - Tailgate Remote Control Assembly

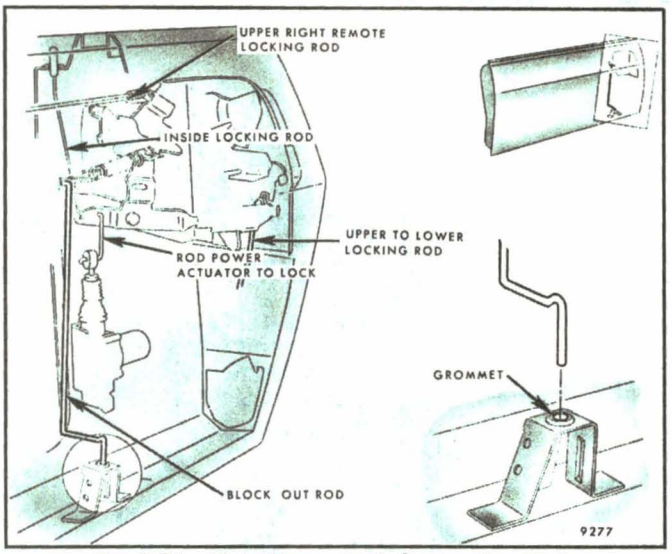


Fig. 7-91 - Right Upper Lock Connecting Rods

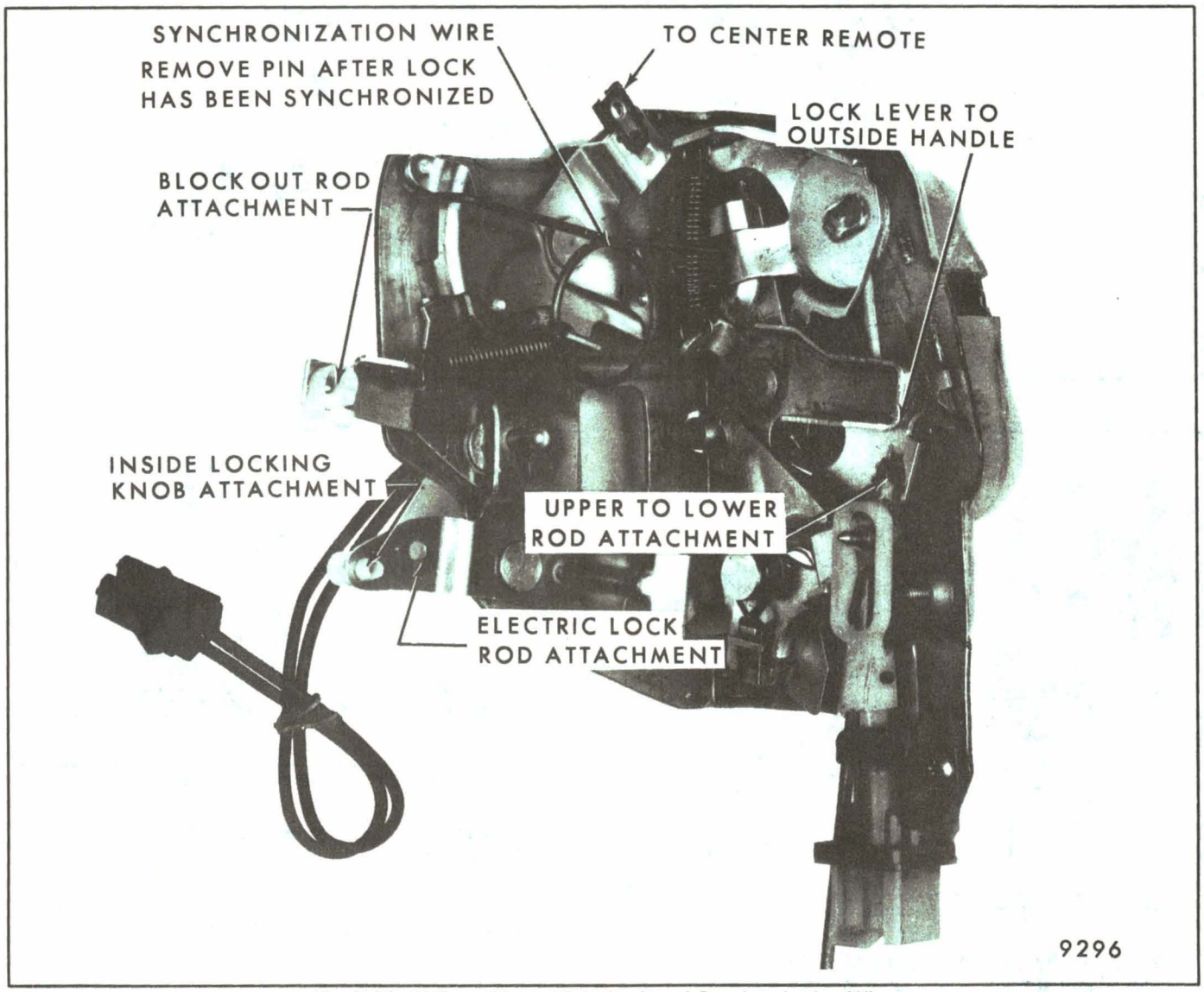


Fig. 7-90 - Tailgate Upper Right Lock and Synchronization Wire

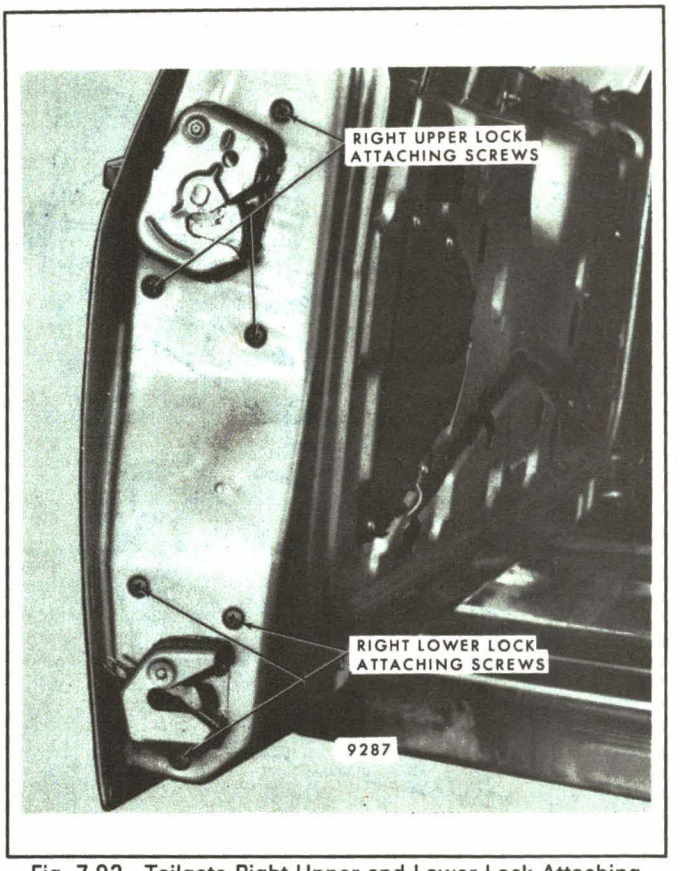


Fig. 7-92 - Tailgate Right Upper and Lower Lock Attaching Screws

3. Disengage left upper remote synchronization locking rod attaching swivel from clip at center remote assembly (Fig. 7-94, item 1).
4. Manually latch right lower lock assembly.
   CAUTION: 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.
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.
8. Reinstall all previously removed components.

TAILGATE RIGHT LOWER LOCK ASSEMBLY

Removal (Fig. 7-95)

1. Open tailgate as a door with the glass in the full-up position and remove inside remote handle, trim panel and access hole cover.
2. Remove P.M. motor lock actuator assembly.
3. Disengage right upper to lower synchronization locking rod swivel from lock clip (Fig. 7-93, 2). Disconnect electrical connector for tailgate ajar switch.

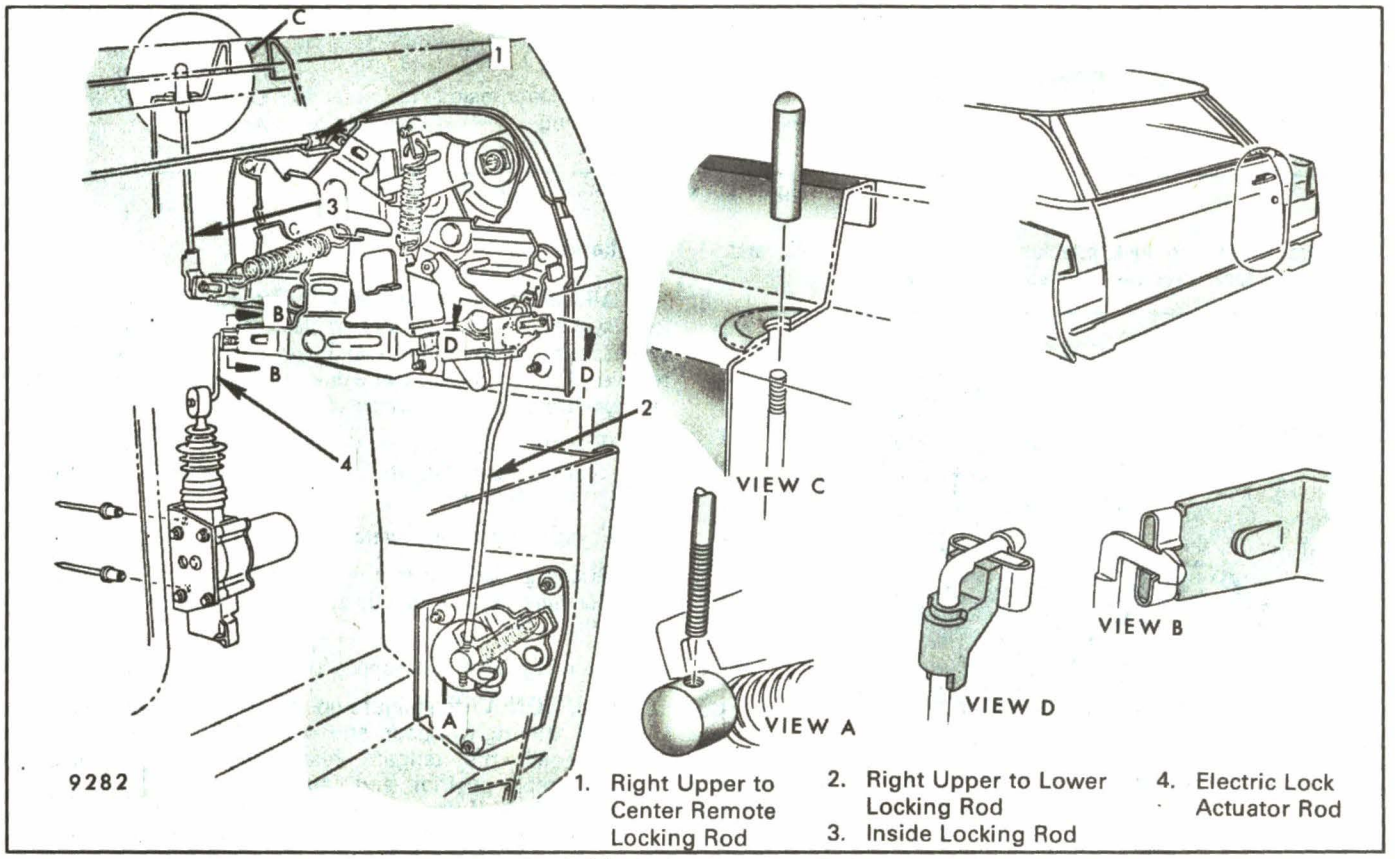
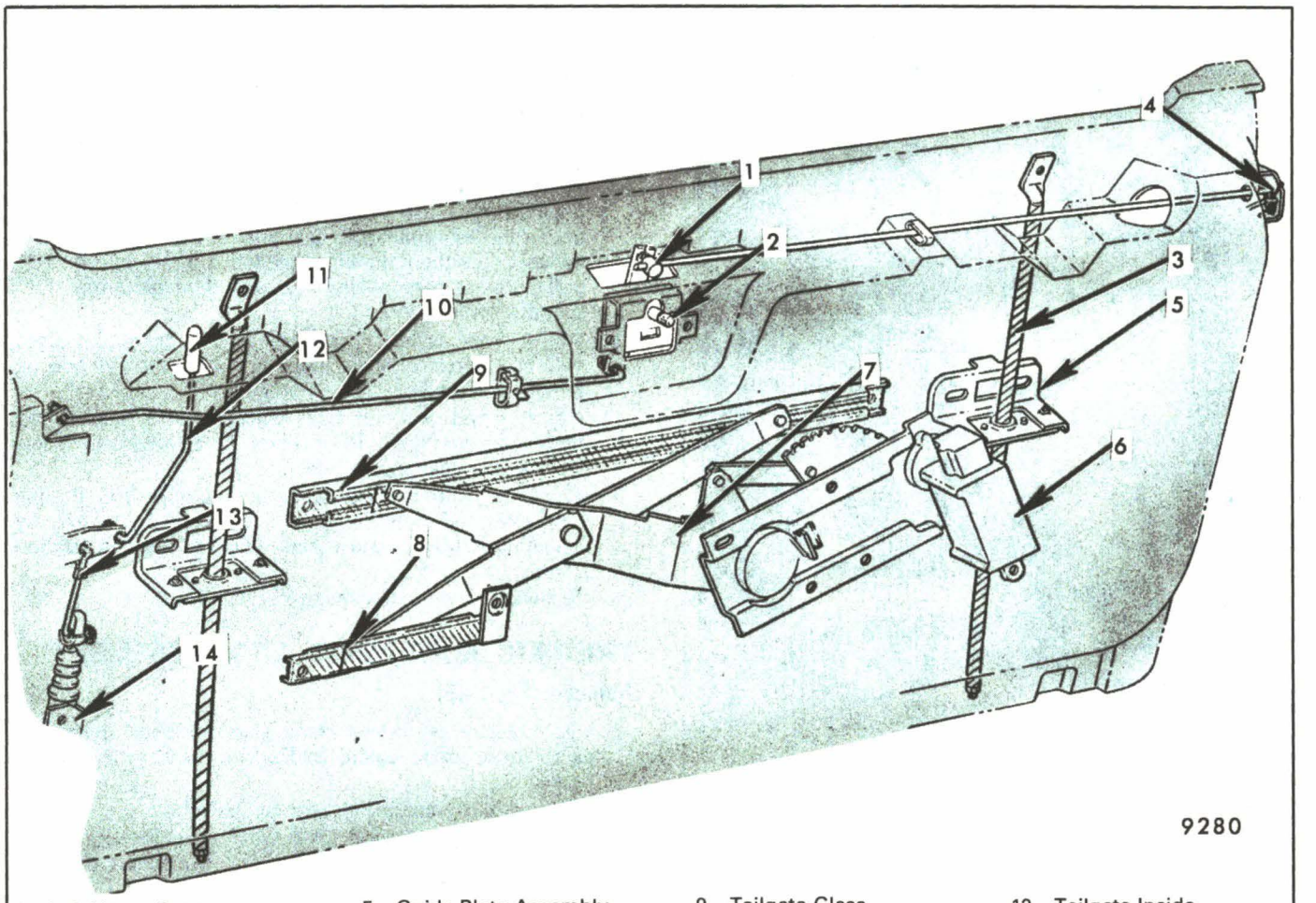


Fig. 7-93 - Tailgate Locking Rods



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

Fig. 7-94 - Tailgate Lock Synchronization Rods

4. Remove gate to lock attaching screws, Figure 7-92, and remove lock assembly through access hole.

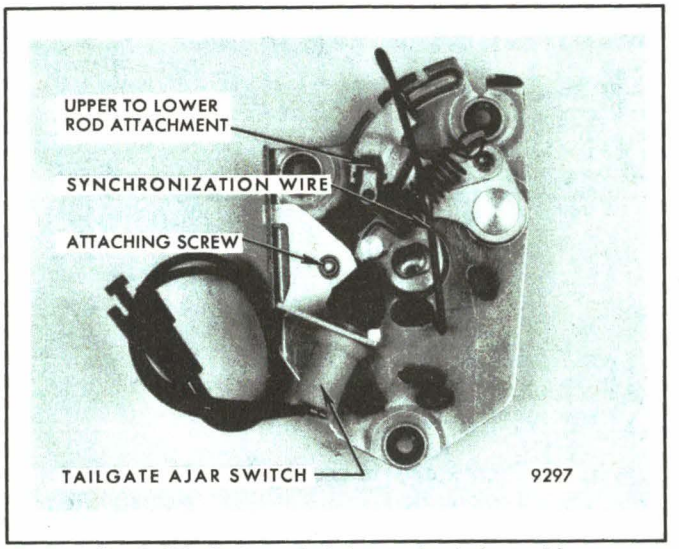


Fig. 7-95 - Tailgate Left Lower Lock Assembly

Installation

All locks must be installed in the latched position for proper lock synchronization. Service replacement locks will have a synchronization wire installed and be in the latched position when received, Figure 7-95. This wire must be removed after installation and synchronization for proper lock operation.

1. With tailgate open in the door position, install screws securing lock to tailgate, Figure 7-92. Torque to 9 to 11 N·m (80 to 100 in-lb).
2. Engage tailgate ajar switch harness (Fig. 7-95).
3. Disengage left upper remote synchronization locking rod attaching swivel from clip at center remote assembly, Figure 7-94.
4. Manually latch right upper lock as shown in Figure 7-96.

CAUTION: 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.

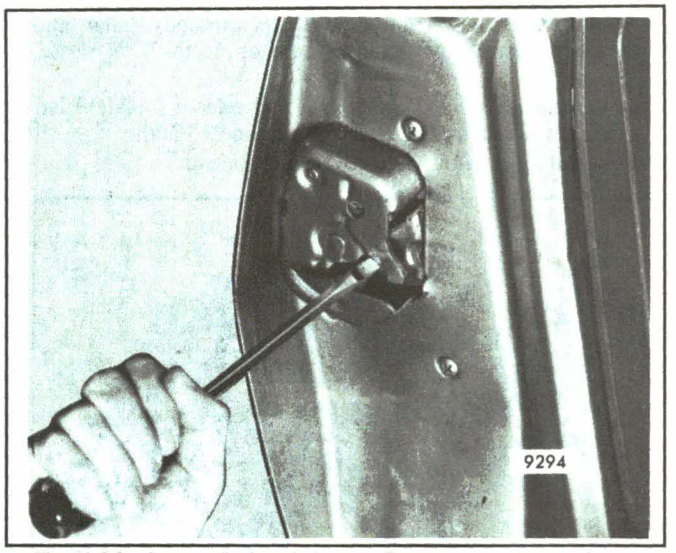


Fig. 7-96 - Manually Latch Upper Right Lock - Upper Lock Shown, Lower Lock Same

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 actuating tailgate outside handle. Perform synchronization checks.
8. Reinstall all previously removed components.

TAILGATE LEFT UPPER HINGE LOCK ASSEMBLY - GATE SIDE

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 (Fig. 7-97). Lock right upper lock with locking knob.
3. Mark a line around outer perimeter of hinge lock assembly on the tailgate.
4. Manually latch right and left upper lock assemblies as illustrated in Figures 7-81 and 7-96 prior to removal.
5. Working through the access hole, remove hinge to tailgate attaching nuts, remove support cable attaching bolt on outside of gate and remove hinge.

Installation

The hinge lock assembly must be installed in the latched position for proper lock synchronization. Service hinge lock assemblies will have a (plastic) synchronization pin installed when received, Figure 7-98. 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.

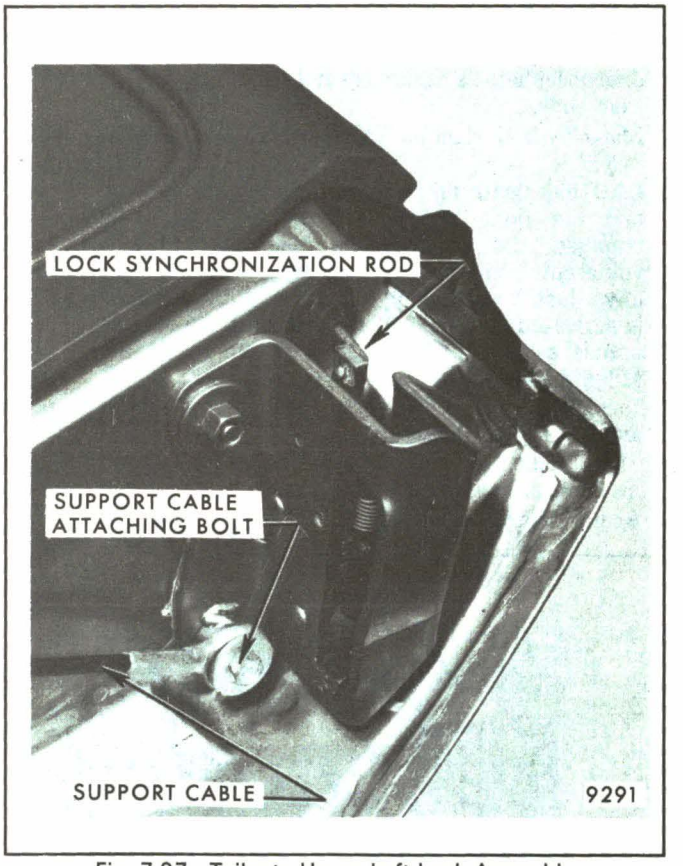


Fig. 7-97 - Tailgate Upper Left Lock Assembly

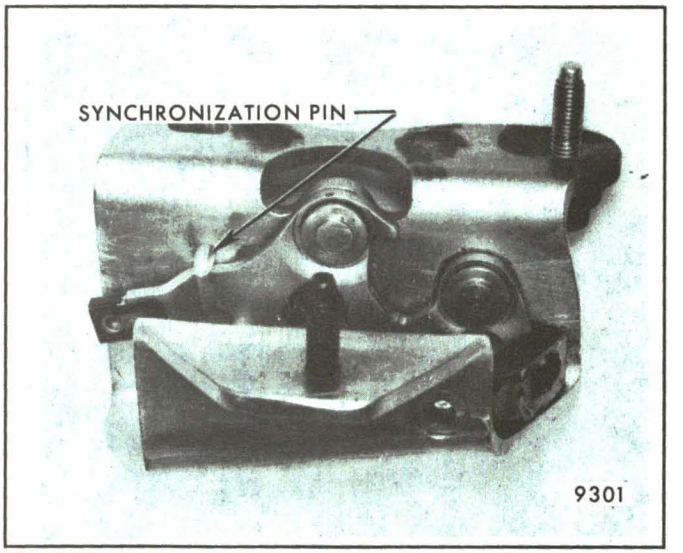


Fig. 7-98 - Tailgate Left Upper Hinge Lock Synchronization Pin

6. Check tailgate operations as outlined under Lock Synchronization Checks.
7. Reinstall all previously removed components.

TAILGATE LEFT LOWER HINGE ASSEMBLY

Removal (Figs. 7-99 and 7-100)

1. Open tailgate as a door and remove remote handle, trim cover, left access hole cover and left quarter trim. (For quarter trim removal, refer to Section 6 of this manual.)
2. With gate open as a door, 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. Remove tailgate electrical conduit attaching screws, disconnect harness connectors and remove harness assembly from body.

4. Manually latch right and left upper locks, Figures 7-81 and 7-96.

   CAUTION: 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. Raise tailgate glass enough 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.

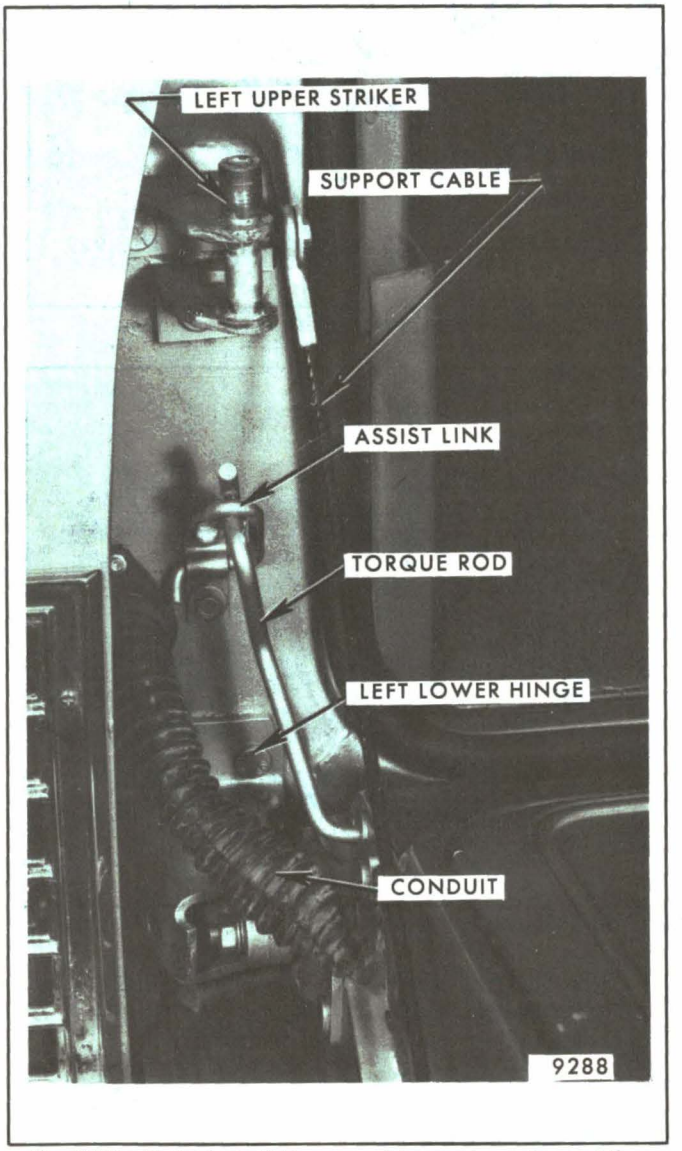


Fig. 7-99 - Tailgate Left Upper and Lower Lock Assemblies

Installation

New left lower hinge assemblies are serviced with a shear pin, Figure 7-100, 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.

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.

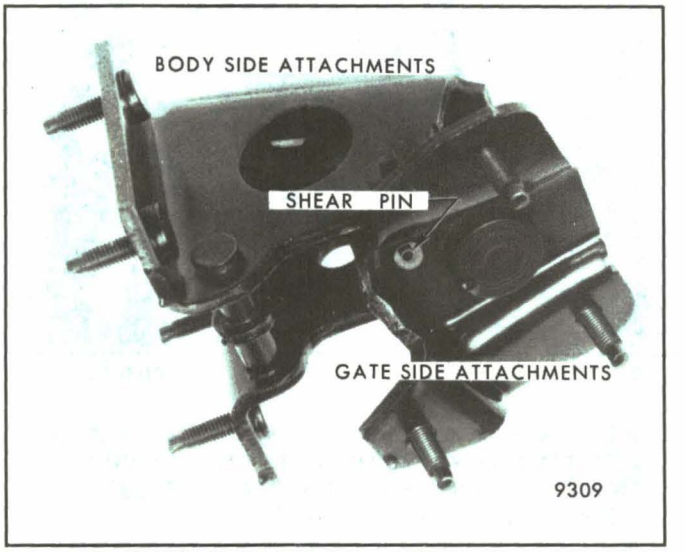


Fig. 7-100 - Tailgate Left Lower Hinge Assembly

TAILGATE LEFT UPPER HINGE AND STRIKER ASSEMBLY - BODY SIDE

Removal and Installation (Fig. 7-99)

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).

NOTICE: 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

The right upper and lower striker assemblies consist of a single metal bolt and washer assembly that is threaded into back pillar (Fig. 7-101). 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).

NOTICE: 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.

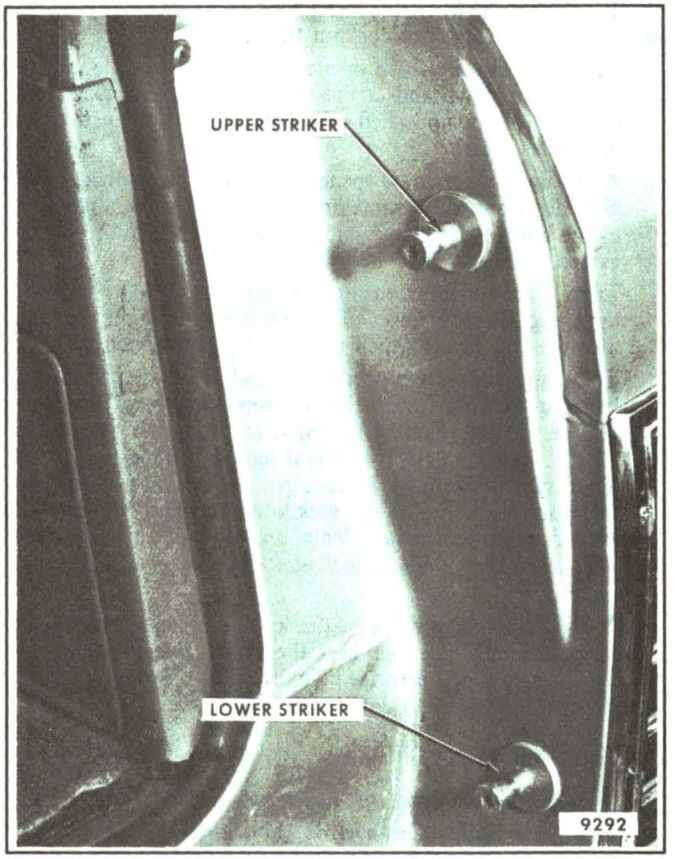


Fig. 7-101 - Tailgate Upper and Lower Striker Assemblies

TAILGATE TORQUE ROD AND ASSIST LINK

Removal and Installation (Figs. 7-82 and 7-99)

1. Open tailgate enough 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 7-81.

   CAUTION: 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 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 7-82, 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 enough 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. 7-99). 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. 7-97).
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. 7-99) and disconnect electrical harness connector. Remove screws retaining electrical conduit at body attachments.

   CAUTION: 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 7-81. 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

Prior to performing any adjustments, the position of the hinge, lock or striker to be adjusted should be marked to ease realignment from original position.

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.

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.

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 is 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, and replace all previously removed parts.

   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.

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 find 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.

   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. 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, and make required adjustment from marked position and tighten striker.

   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

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 7-90 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.

NOTICE: Whenever any of the locking system components inside the tailgate are serviced, the locking system MUST BE synchronized as described under Lock Synchronization Procedure to prevent damage to tailgate.

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 about 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.
2. Synchronization check for upper right and left locks.
   a. Open tailgate as a door with the glass down.

NOTICE: Place a protective support under right side of gate in the event gate becomes disengaged from upper left lock to prevent damage to tailgate.

   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 synchronized.

If tailgate becomes disengaged at the upper left lock, reinstall gate on upper left lock and proceed with Synchronization Procedure.

Lock Synchronization Procedure

1. Open gate as a gate, then close gate securely. Open tailgate to door 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. 7-94).
4. Disconnect lower right locking rod from lower right lock, Figure 7-93, view A, by removing retaining clip. Reinstall clip on lock lever.
5. Manually latch upper and lower right locks on gate using a wide blade screwdriver, Figure 7-96. Locks 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 right upper and lower locks by actuating tailgate outside handle.
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.	This condition can be determined by trying to unlatch the upper locks. Only the upper right lock will unlatch. 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. 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 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 IP 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 for trouble shooting procedures. a. Replace switch.

SECTION 8

ROOF

CONTENTS

Formed Headlining 8-1
Dome Lamps 8-9
Vanity Mirror and Lamp Assembly 8-11
Interior Garnish Moldings 8-13
Exterior Roof Moldings
- Roof Drip Scalp Moldings 8-17
- Roof Panel Emblems 8-17
- Roof Upper Moldings - Landau Styles 8-18
- Quarter Belt Moldings 8-18
- Lock Pillar Applique 8-18
- Body Back Opening Molding 8-18

Fabric Roof Cover 8-19
- All Except C04 and CB5 Option
  - Removal 8-19
  - Installation 8-23
- C04 and CB5 Option
  - Removal 8-25
  - Foam Pad Installation 8-25
  - Installation 8-25
- Styles with Sun Roof Option 8-27
- Removing Wrinkles 8-27

Fabric Roof Cover Repair 8-29
- Using Plastic Graining Die 8-29
- Fusing Repair Procedure 8-31
- Fabric Roof Cover with Foam Pad 8-32

Stainless Steel Roof Panel
- Preparation for Delivery 8-33
- Cleaning and Waxing 8-33
- Repair of Minor Surface Scratches 8-33
- Repair of Major Surface Scratches 8-34
- Complete Refinishing 8-35
- Panel Removal 8-36
- Panel Installation 8-36

Sun Roof 8-39
- Diagnosis Chart 8-39
- Adjustments 8-40
- Headlining Retainer 8-41
- Actuator 8-41
- Glass Panel Sunshade 8-41
- Control Switch 8-41
- Map Lamp Support 8-43
- Metal Panel Headlining 8-43
- Housing Assembly 8-43
- Sliding Metal Panel 8-44
- Sliding Glass Panel 8-45
- Sliding Panel Cable 8-45
- Drain Hose Replacement 8-45
- Glass Finishing Cover 8-46
- Panel Cable Center Guide 8-47
- Weatherstrip (Housing) 8-47
- Weatherstrip (Panel) 8-47
- Cable Conduit 8-48
- Lubrication 8-49

Twin Lift-Off Panel 8-50

FORMED HEADLINING

The one-piece formed headlining used on all styles consists of a molded substrate covered with a foam and cloth or vinyl facing. The B and G station wagon headlining is a two-piece assembly which uses a molding to close out the joint of the front and rear section. The molding fits into a retainer which attaches to slots in the roof panel. The station wagon headlining differs in that either front or rear section can be serviced without disturbing the opposite assembly (Figs. 8-1 and 8-2).

FORMED HEADLINING REPLACEMENT

The replacement headlining will be offered as two separate part assemblies. The headlining material (cover) will be available in all colors, but supplied separate from the trim panel (foundation). The trim panel will be prepierced to accommodate attachment of components such as sunshade supports, dome lamps, coat hooks, sun roofs and twin lift-off panels.

1. With replacement headlining cover and foundation panel laid out in a clean work area, place cover over the foundation, allowing it to overlap equally at all edges.
2. Place a protective cover over half the material and fold the other half back over the covering (Fig. 8-8, view A).
3. Using 3M Vinyl Trim Adhesive (number 08046) or equivalent and a quart size pressure type spray gun, apply two medium coats of adhesive to both the surface of the panel and cover, Figure 8-8, view B.
4. Allow the adhesive to dry for about three minutes.
5. With the aid of a helper, unfold the cover; stretch and align it with the outer edges. Then, using firm hand pressure, bond and slick the adhesive applied surfaces together to effect a good bond. Be very careful to not create any wrinkles in the cover. Make sure that the headlining cover is pressed fully into all depressions and uneven surfaces of the trim panel.
6. Repeat steps 1 through 5 on remaining half of the assembly.
7. Trim excess headlining cover leaving about 6 mm (1/4") of material extending beyond trim panel around entire perimeter of trim panel.
8. Using X-acto knife or equivalent tool, trim material away from all prepierced holes or openings in the trim panel such as sunshade supports, dome lamps, coat hooks, shoulder belt anchor bolts, sun roof openings, etc.

   If car is closed airtight immediately after installation of headliner assembly using the above replacement procedures, solvent vapors from the trim adhesive could cause an objectionable odor inside the car. Complete emission of solvent vapors from applied adhesive will require about twenty-four hours.
9. Load the rear portion of the headlining diagonally through the right front door opening. Load through the rear gate opening for station wagons. Care must be exercised when loading assembly. Over-flexing may result in damage.
10. Align headlining to roof inner panel with recessed slots positioned over retainers at side roof rail (Fig. 8-9, view A).
11. Install side roof rail attaching clips.
12. Align headlining with cutouts for sunshades and dome lamp and install sunshade brackets and dome lamp base. Do not tighten sunshade brackets and dome lamp attaching screws completely until headlining is properly aligned at all other hardware attaching locations.

13. Install previously removed hardware and interior moldings.

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)
   j. Sun roof trim finishing lace (if present), Figure 8-7
   k. Twin lift-off panel roof garnish moldings (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. 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 and G-35 styles, remove headlining through body back opening.

Installation

If the replacement headlining does not have an insulator cemented to the upper surface, carefully remove insulator from original headlining, if present, and spot cement insulator to replacement headlining enough to hold insulator in position during installation. Care must be exercised when loading assembly. Overflexing may result in damage.

1. On all styles (less B-35 and G-35), load the rear portion of headlining diagonally through the right front door opening.
2. On B-35 and G-35 styles, load the headlining through tailgate opening.
3. Engage headlining at tab locations to accomplish temporary retention to roof inner panel.
4. Install side roof rail attaching clips as shown in Figures 8-1, 8-2 and 8-5.
5. Align headlining with cutouts for sunshades and dome lamp and install sunshade brackets and dome lamp base. Do not tighten sunshade bracket and dome lamp attaching screws completely until headlining is properly aligned at all other hardware attaching locations.
6. On B and G station wagon styles, align finishing molding at centerline of roof and engage to retainer. Install complete molding to both right and left sides.
7. Install all other previously removed hardware and interior moldings.

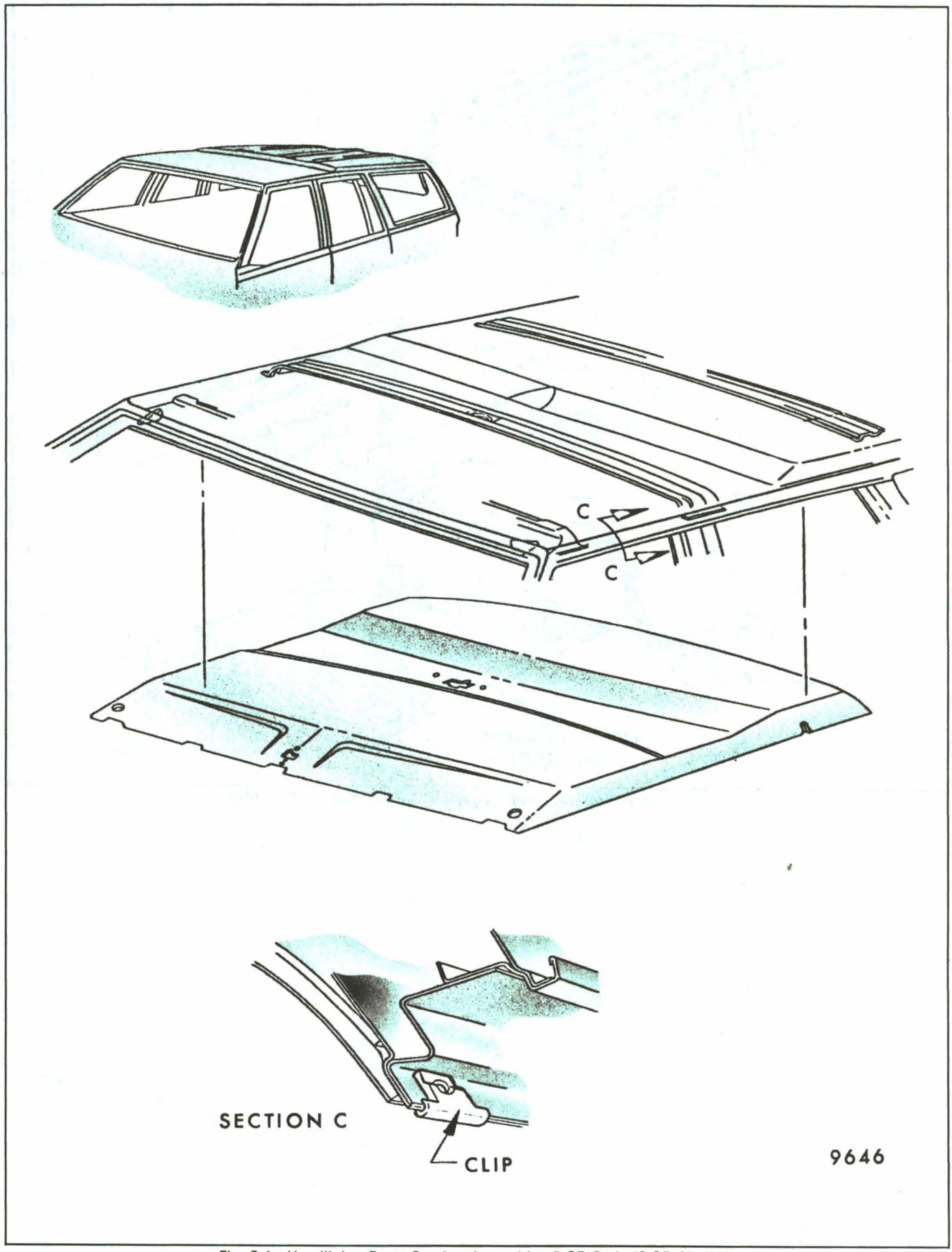


Fig. 8-1 - Headlining Front Section Assembly - B-35 Style (G-35 Similar)

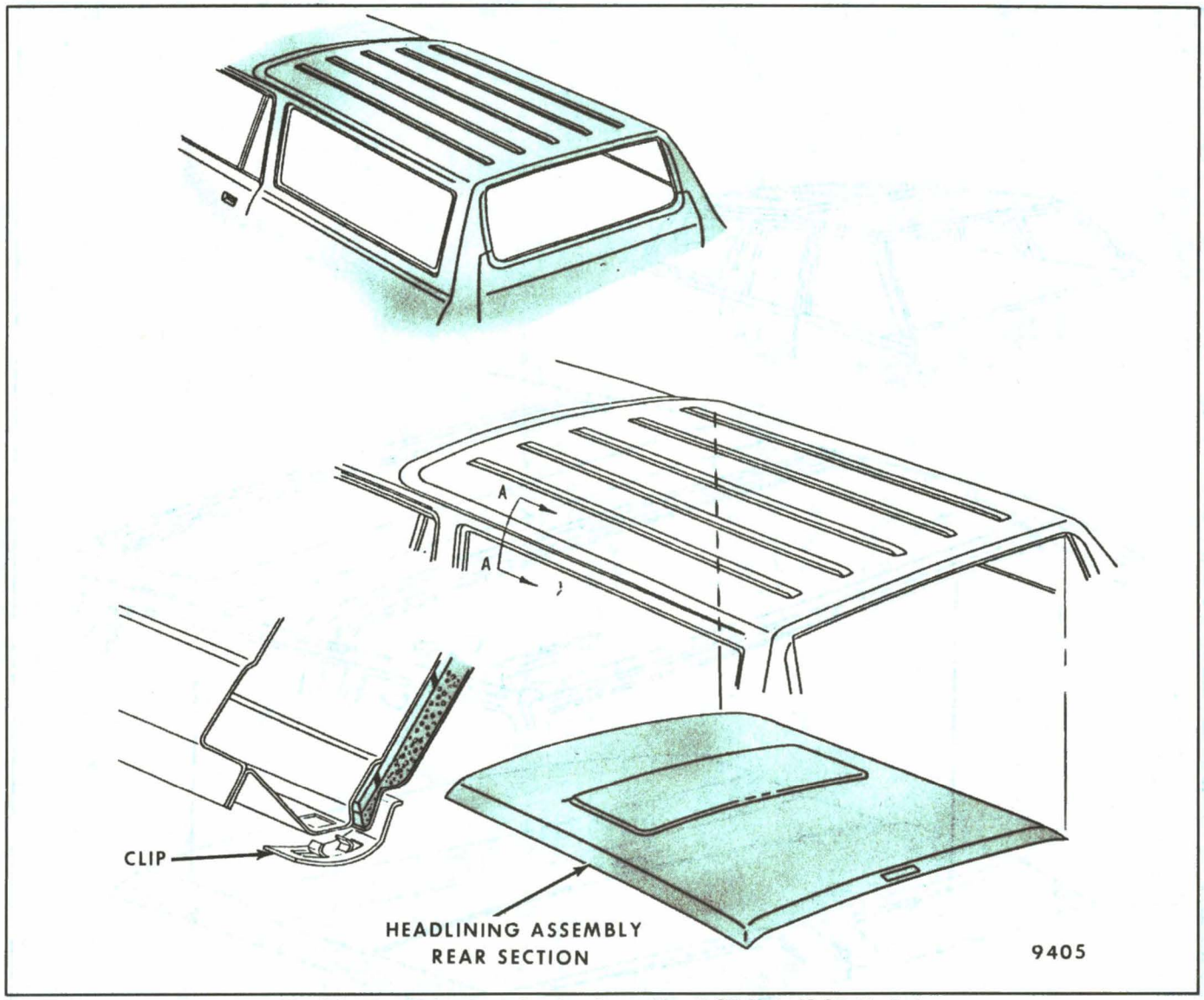
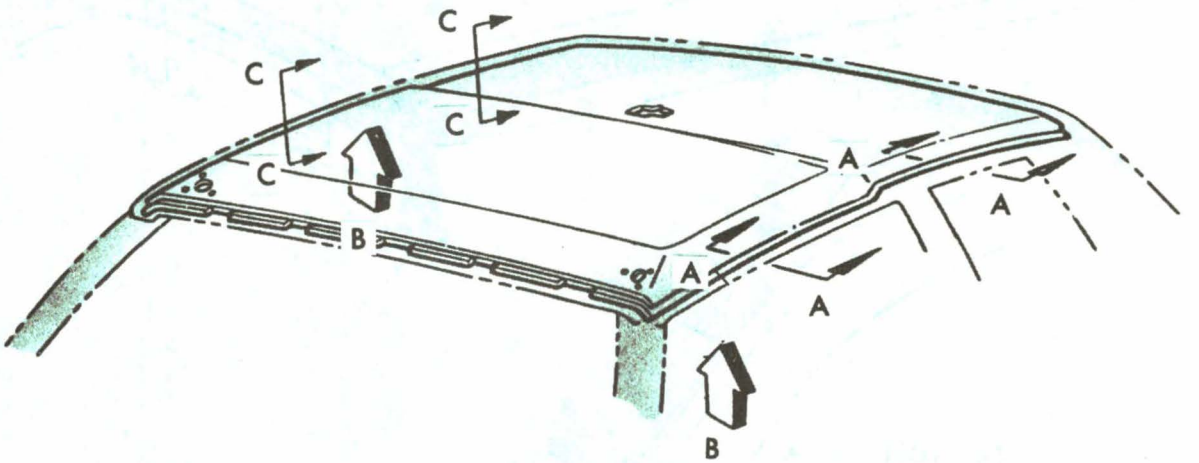
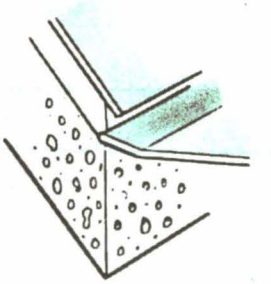
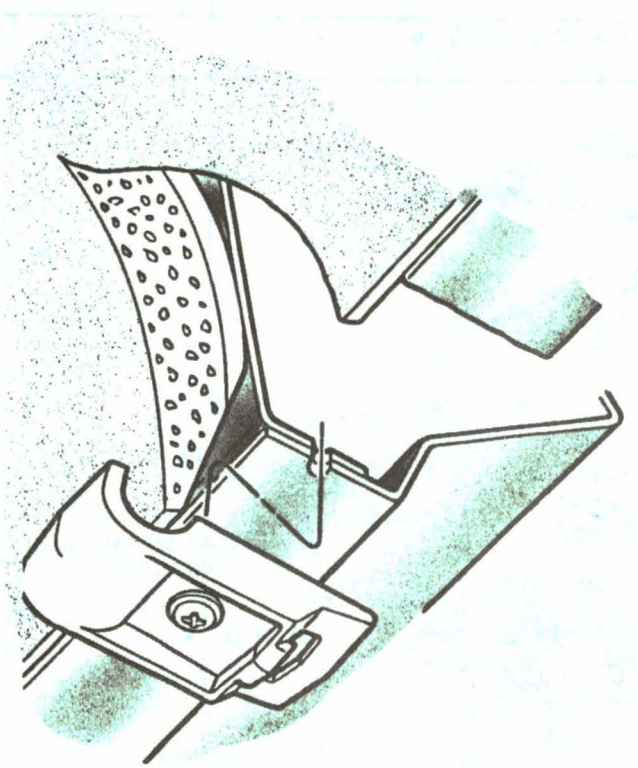


Fig. 8-2 - Headlining Rear Section Assembly - B-35 Style (G-35 Similar)

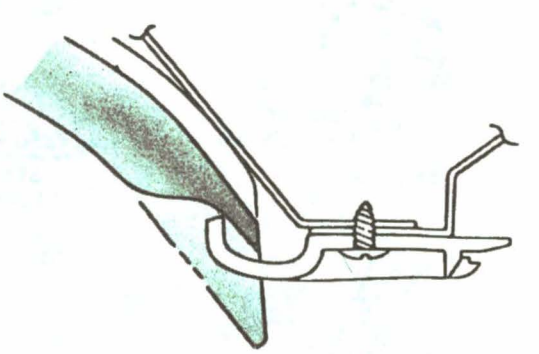




SECTION C



SECTION B
2 PLACES EACH SIDE



SECTION A
2 PLACES EACH SIDE

9647

Fig. 8-3 - Formed Headlining Assembly - G Coupe

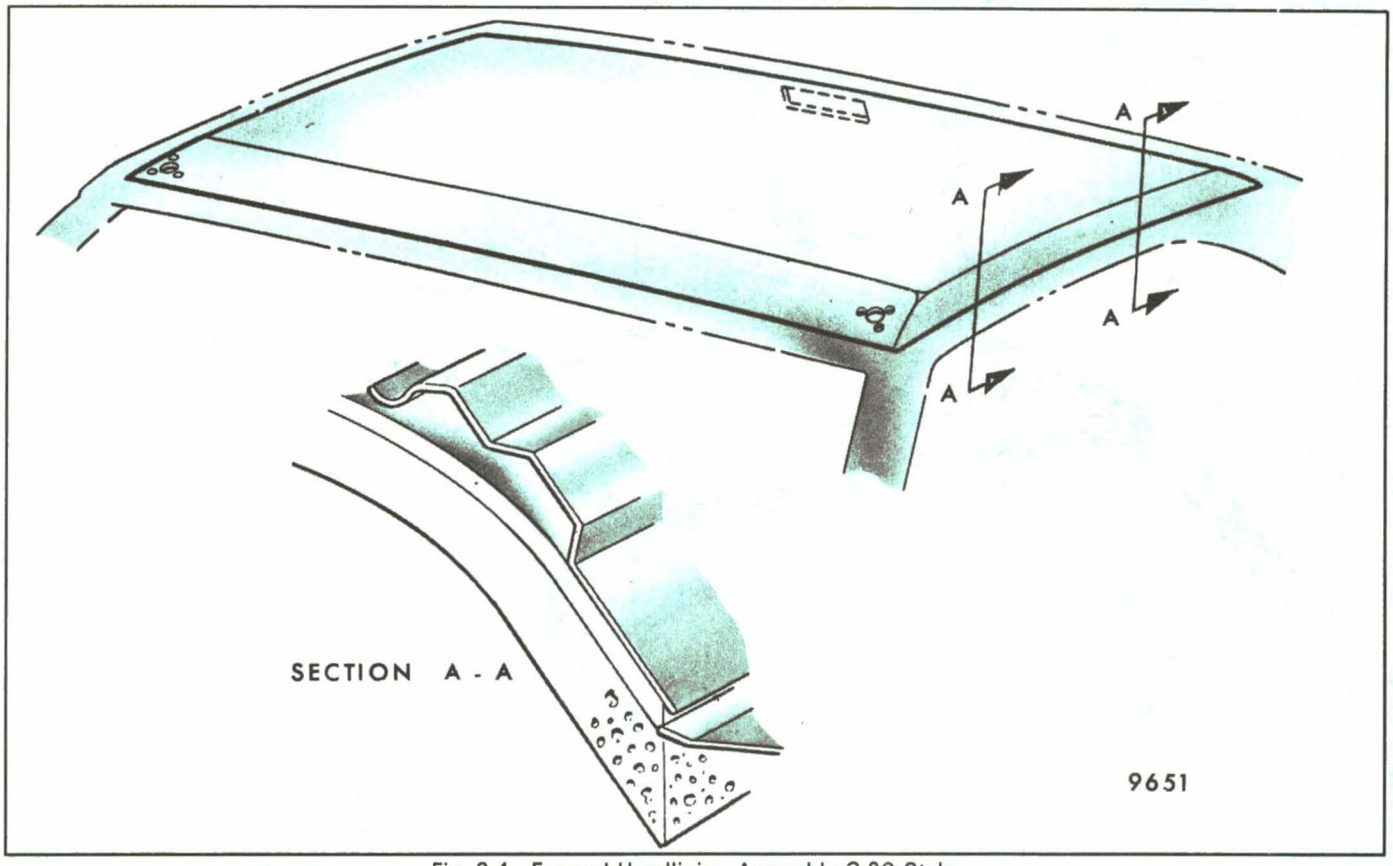


Fig. 8-4 - Formed Headlining Assembly G-80 Style

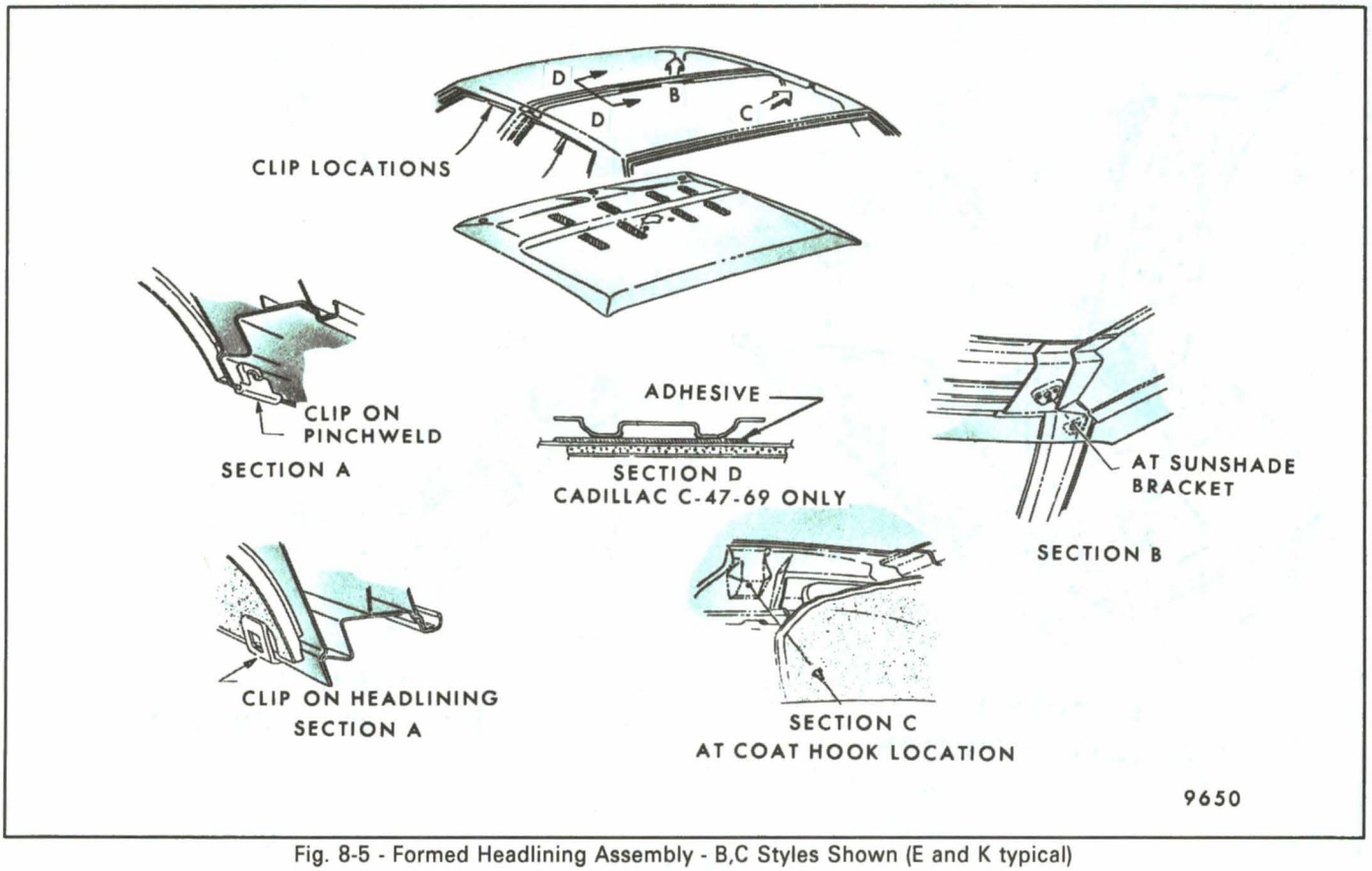


Fig. 8-5 - Formed Headlining Assembly - B,C Styles Shown (E and K typical)

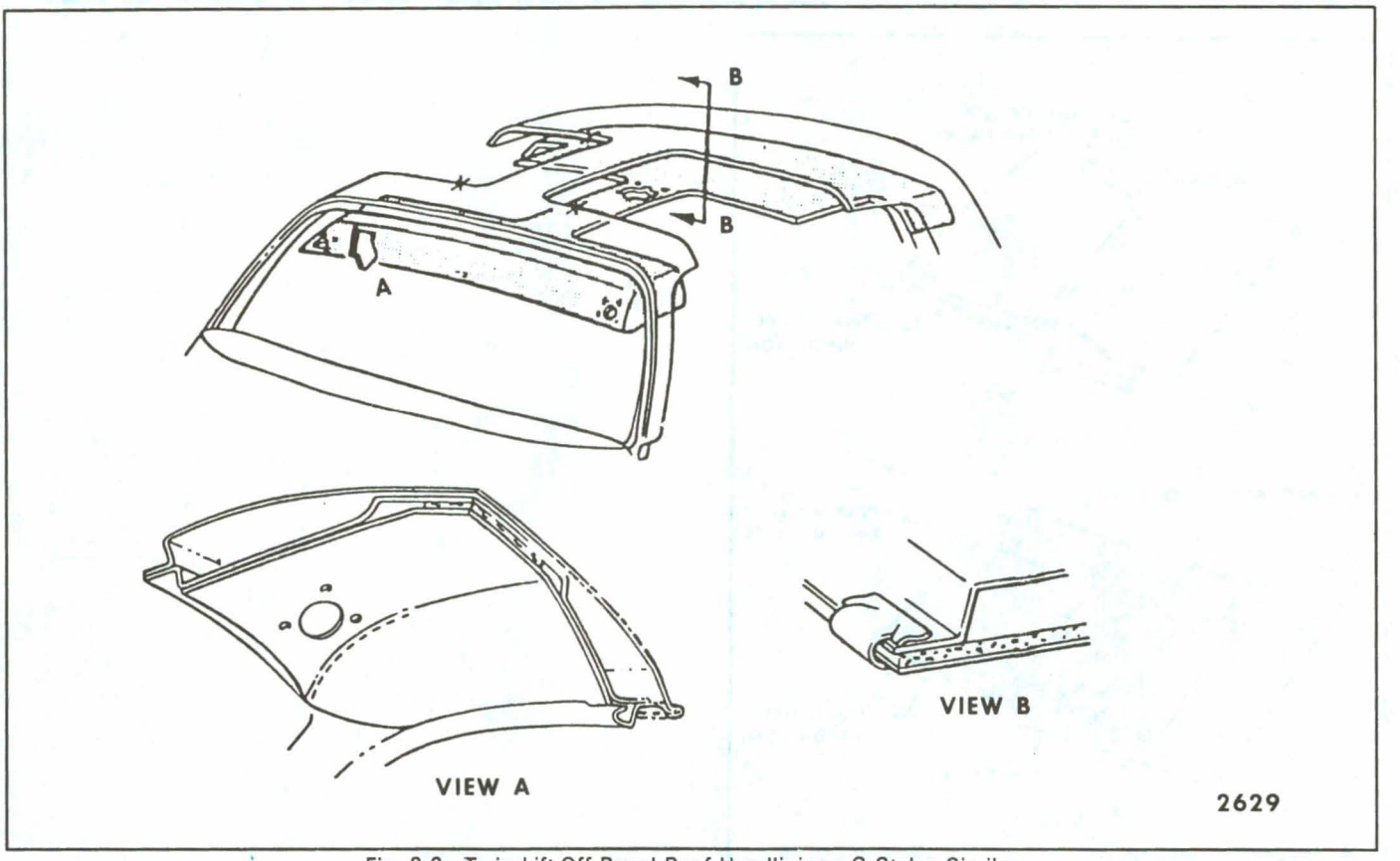


Fig. 8-6 - Twin Lift-Off Panel Roof Headlining - G Styles Similar

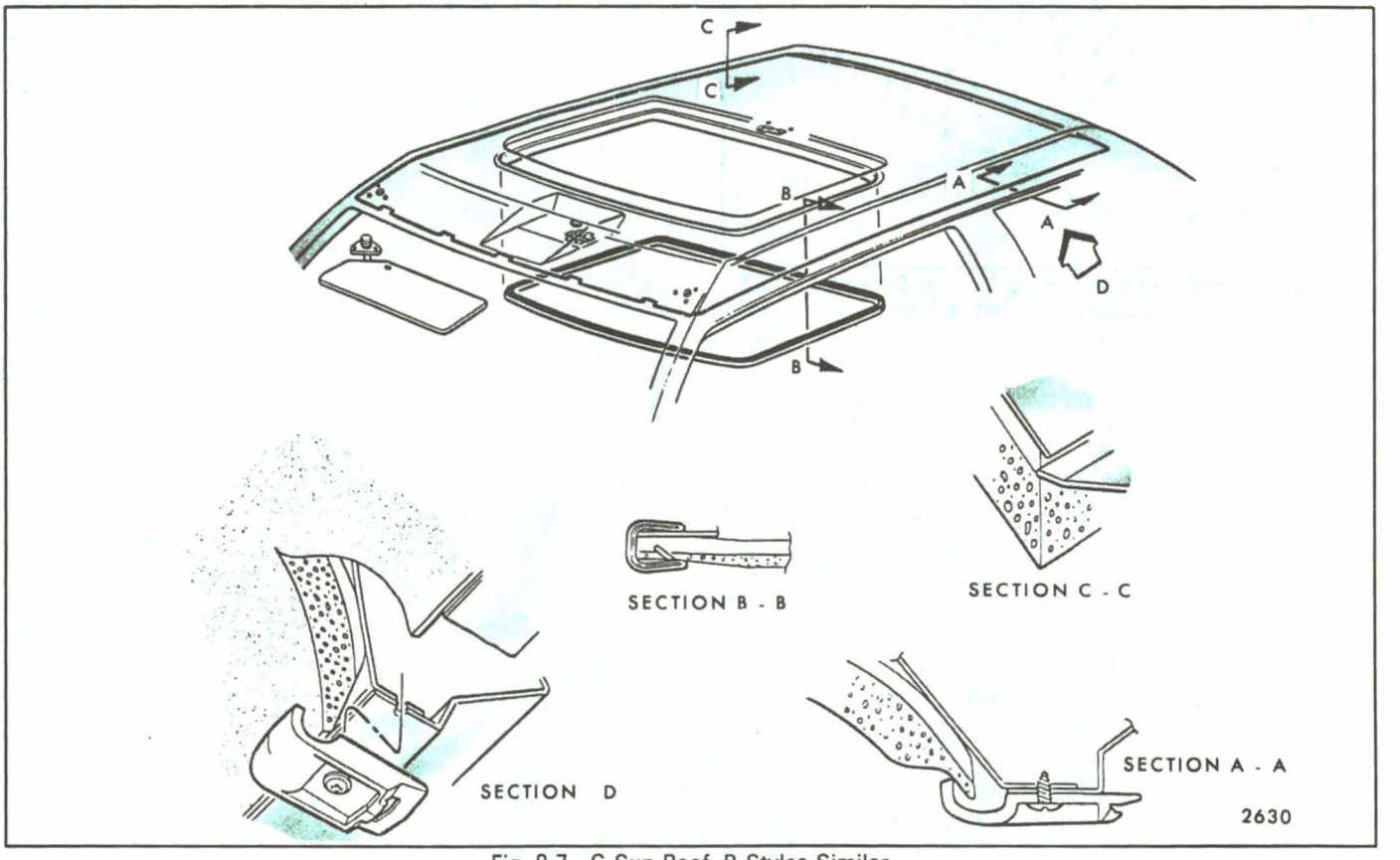


Fig. 8-7 - G Sun Roof, B Styles Similar

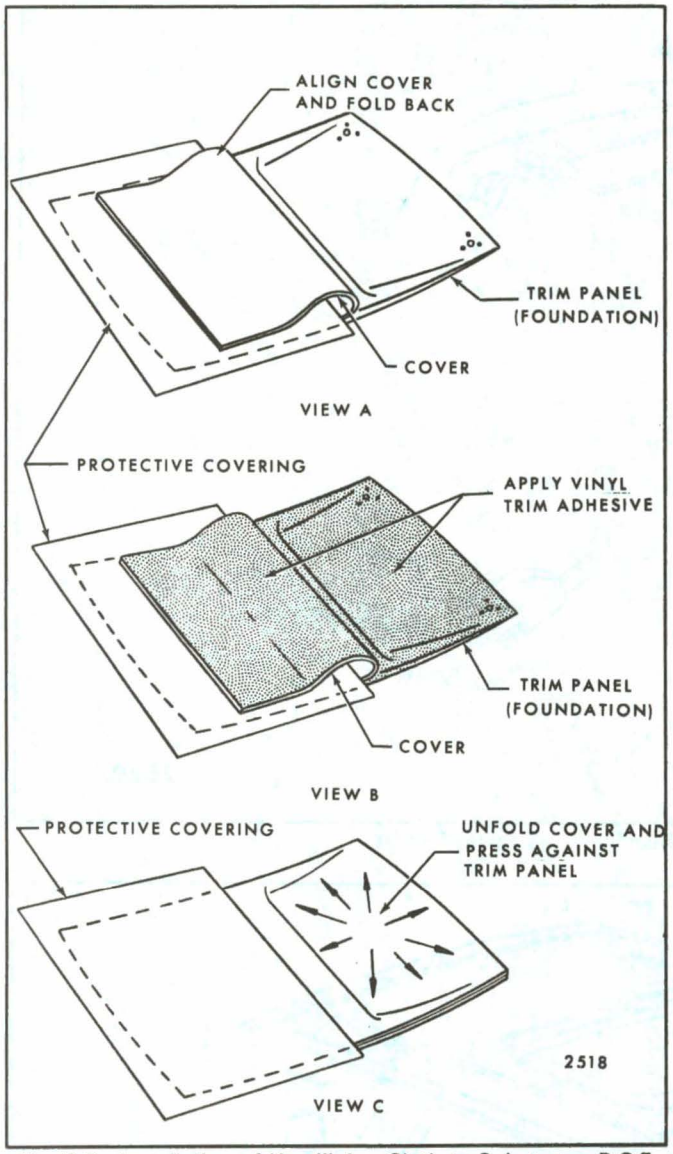


Fig. 8-8 - Installation of Headlining Cloth to Substrate - B,C,E and G Styles with Deluxe Trim

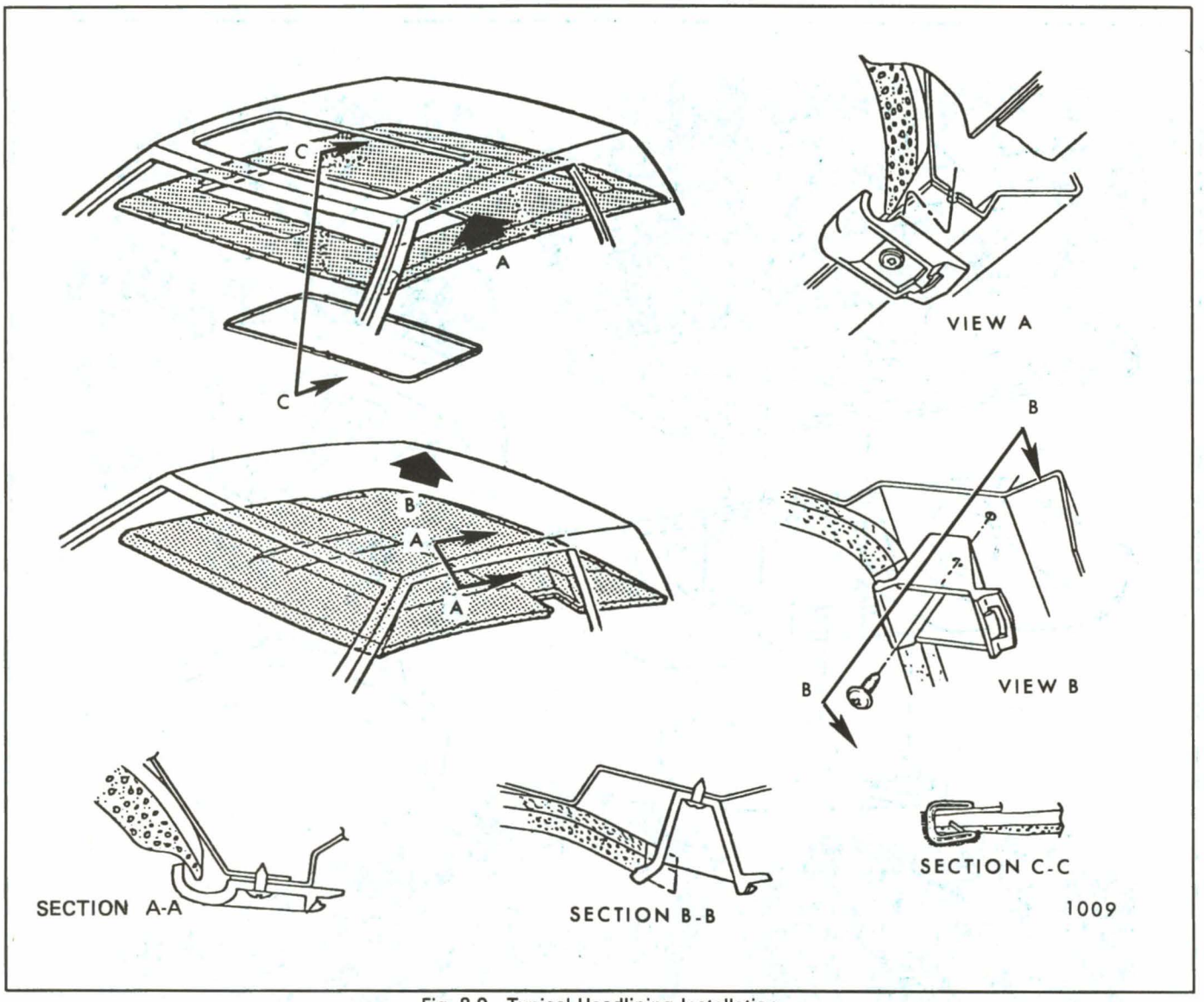


Fig. 8-9 - Typical Headlining Installation

DOME LAMPS

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 housing. Press inward and down to disengage lens retaining tabs from housing.
2. Remove bulb from terminal clips.
3. Remove two lamp housing attaching screws.
4. To disengage wire harness from lamp housing, grasp terminal clip with pliers and push clips through back of housing.
5. Insert a flat-bladed screwdriver or similar tool between the reflector and roof bow and pry upward to disengage the push-on retainers holding the assembly together.
6. To install dome lamp assembly, reverse removal procedure.

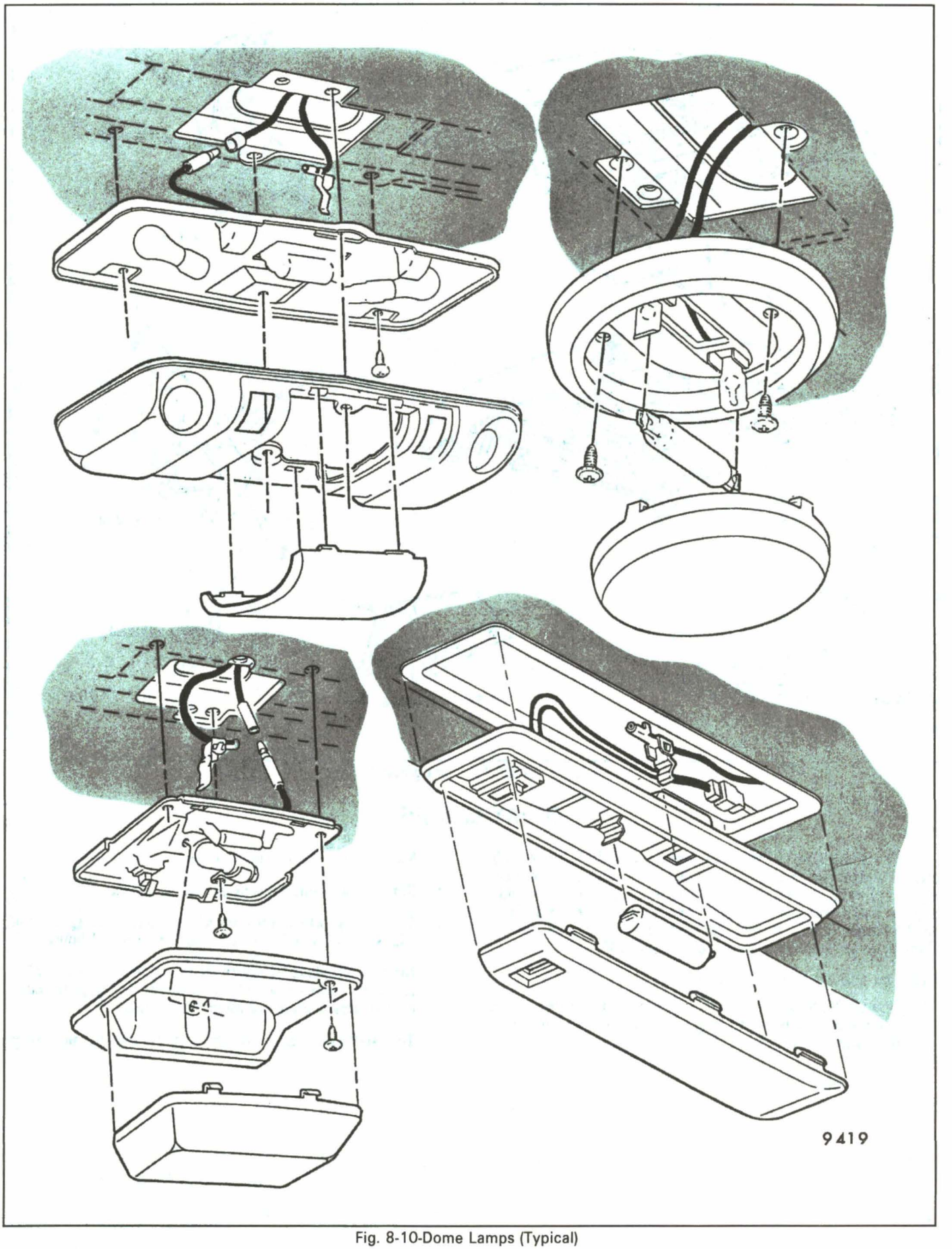


Fig. 8-10-Dome Lamps (Typical)

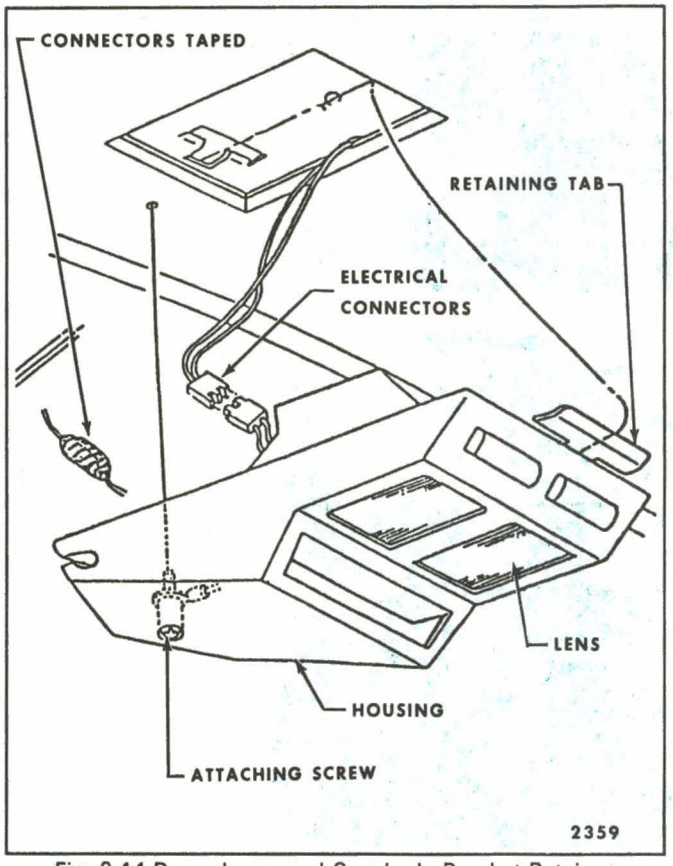


Fig. 8-11-Dome Lamp and Sunshade Bracket Retainer

SUNSHADE AND VANITY MIRROR LAMP ASSEMBLIES

VANITY MIRROR AND LAMP ASSEMBLY (DOOR OPERATED SWITCH)

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. 8-12).

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.
3. Remove four attaching screws that secure the mirror and escutcheon assembly to the shade. Fuse replacements can then be made.
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. 8-12).
6. To install, reverse removal procedure.

VANITY MIRROR AND LAMP ASSEMBLY (CHEVROLET B, G AND PONTIAC G STYLES)

The vanity mirror is retained to the sunshade assembly with two button type fasteners which are part of the mirror housing (Fig. 8-13).

The lamps are actuated 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 pry fasteners from sunshade.
3. Service bulbs from the back side of the loose assembly.
4. To install, reverse removal procedure.

VANITY MIRROR AND LAMP ASSEMBLY (MANUAL OPERATED SWITCH)

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 is retained 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. 8-13).

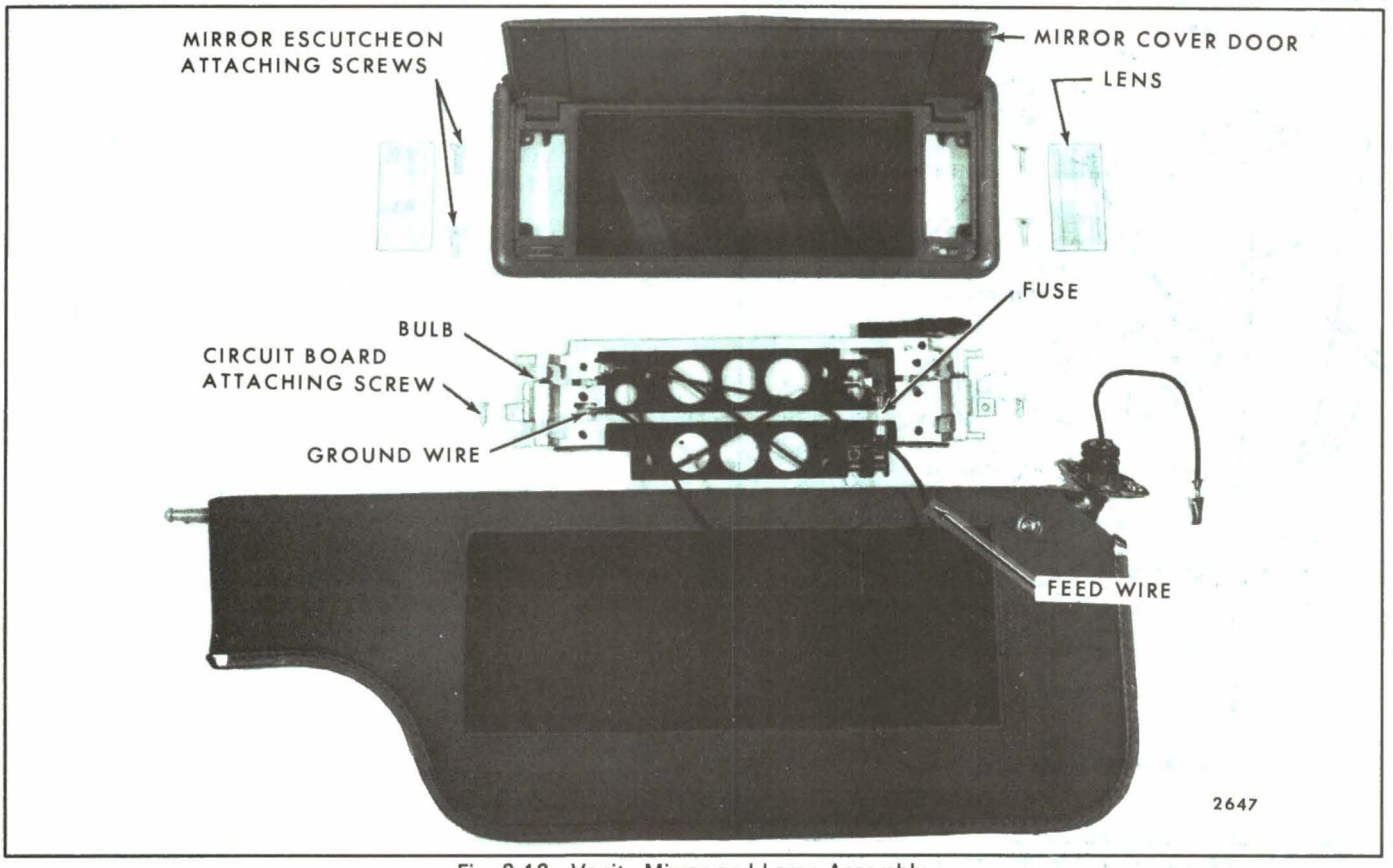


Fig. 8-12 - Vanity Mirror and Lamp Assembly

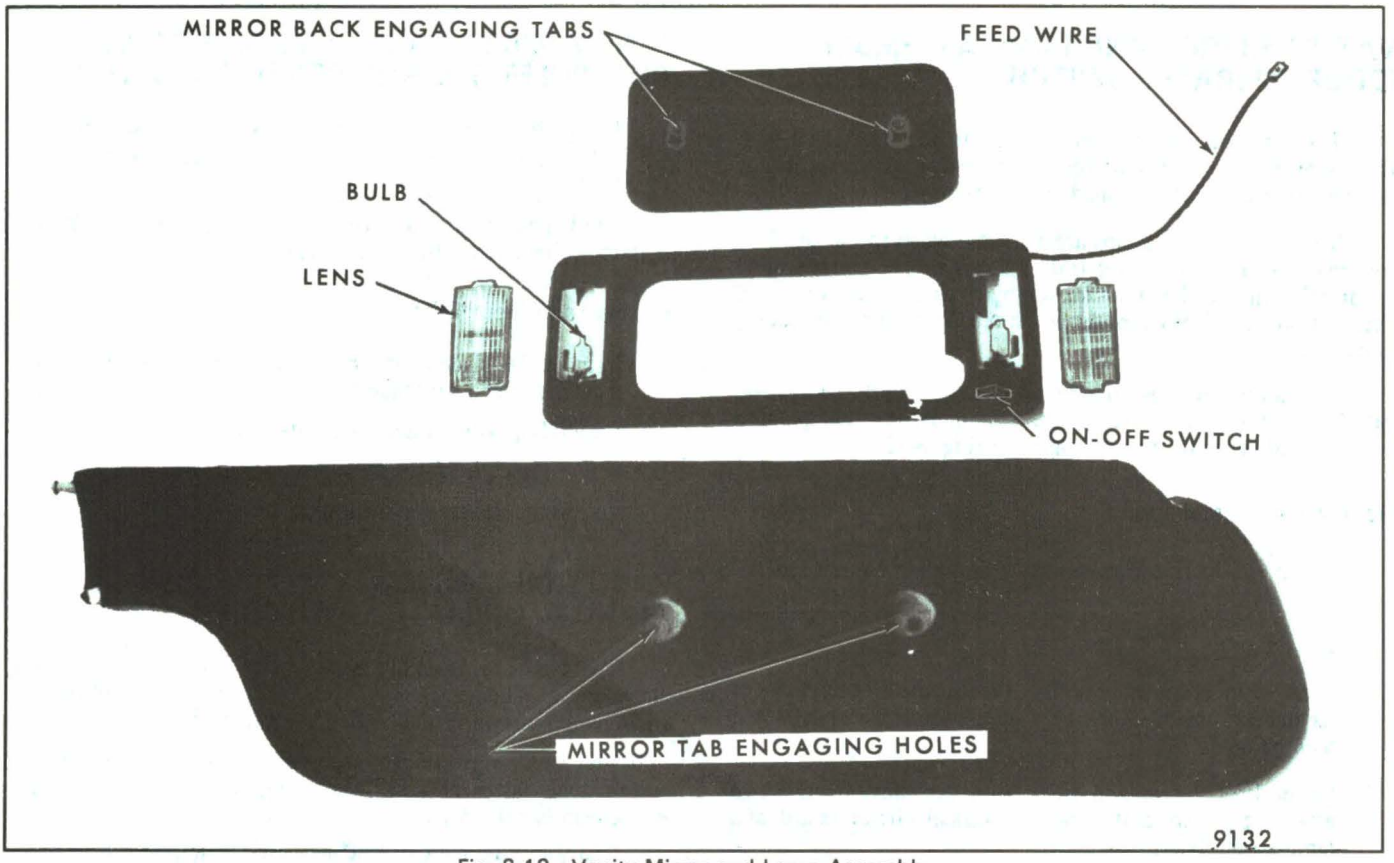


Fig. 8-13 - Vanity Mirror and Lamp Assembly

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. Bulb replacement or electrical connector service operation can then be performed.
3. To install, reverse removal procedure.

INTERIOR GARNISH MOLDINGS

Interior garnish moldings are constructed of plastic or metal and match the interior of the vehicle. Retention is accomplished with screws, metal and plastic clips or a combination of these.

WINDSHIELD UPPER GARNISH

The windshield upper garnish molding is retained by plastic clips that fit over an integral rib on the molding. The clip is then pressed into piercings in the roof inner panel to complete attachment of the molding.

Removal and Installation

1. Remove attaching screws at front ends of side roof rail garnish moldings and disengage ends of windshield upper garnish moldings.
2. Pull down on molding to locate clips.
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. 8-14).
4. To install, align clips to piercings in roof inner panel and press molding firmly in place.

SIDE ROOF RAIL GARNISH MOLDINGS

Removal and Installation

1. Remove attaching screws where necessary at windshield side pillar garnish molding, center pillar garnish molding and back window side garnish molding.
2. Grasp molding and pull down while rotating molding inboard to disengage from headlining retaining clips.
3. To install, place molding over headlining retainer clip and snap in place.
4. Align clips to piercings in roof inner panel and press molding firmly in place.

BACK WINDOW UPPER GARNISH MOLDINGS

Removal and Installation

The back window upper garnish molding on B,C and G 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 a flat-bladed tool between headlining and molding at clip location and carefully pry clip loose from retaining slot (Fig. 8-17).
3. On G 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 E, Fig. 8-17).
4. To install, align clips to holes and press molding in place. Then install attaching screws.

BACK WINDOW SIDE AND UPPER GARNISH MOLDINGS AND FIBER OPTIC ASSEMBLY

The back window upper and side garnish moldings are retained by previously installed clips. The clips are attached around the back window opening with self-tapping screws (Sec. A-A, Figs. 8-18 and 8-19). The fiber optic assembly as shown in view B, Figure 8-18, is standard for Cadillac and optional on Oldsmobile and Buick.

Removal and Installation

1. Remove back window upper and side garnish molding from screw attached clips by inserting a flat-bladed tool between the molding and the inner panel and depress the clip retaining tab.
2. To install, telescope end of back window side garnish molding into end of back window upper garnish molding.
3. Position back window upper and side garnish molding assembly to back window. Insert fiber optic terminal securely into hole in housing assembly.
4. Align back window upper and side garnish molding assembly to previously installed clips and snap into place.

BACK WINDOW LOWER GARNISH MOLDING

The back window lower garnish molding is installed over the rear edge of the rear seat to back window trim panel.

Removal and Installation

1. On styles with screw attached moldings, removal of the screws will allow disengagement.
2. On other styles with clip attached moldings, the clips secure the molding by engaging in slots or holes in the compartment front panel or rear seat to back window panel (Fig. 8-17).

   Clip retained moldings can be removed by inserting a flat-bladed tool between the molding and the trim finishing panel and then depressing the clip retaining tab.
3. On moldings which are retained by a round serrated fastener, use tool J-24595 or BT-7323 or equivalent, and pry the clip loose from the attaching hole.
4. To install, align clips in molding section with attaching slots and press firmly in place. On some styles it may be necessary to remove the side garnish molding in order to disengage the lower molding.

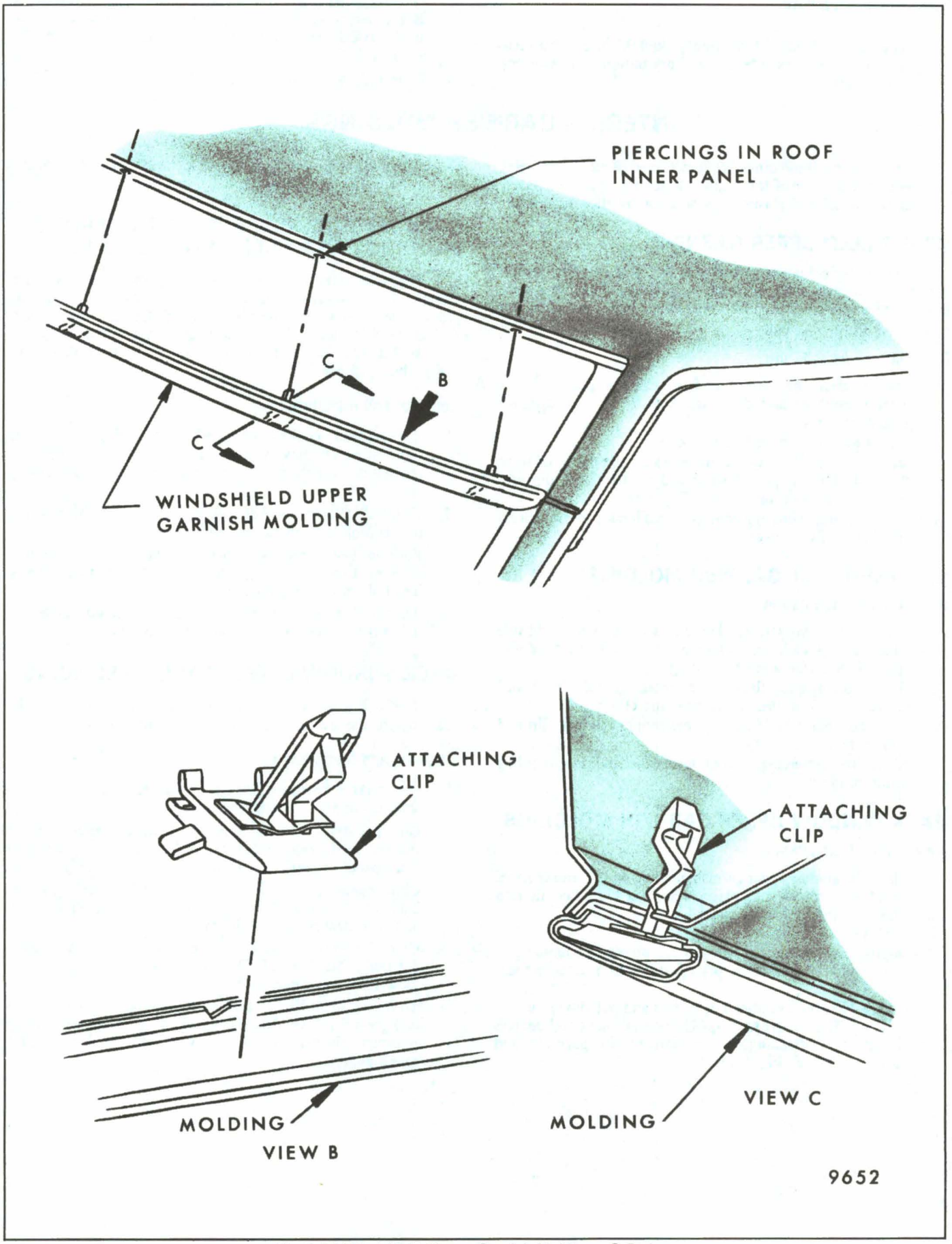


Fig. 8-14-Windshield Upper Garnish Molding - G Styles

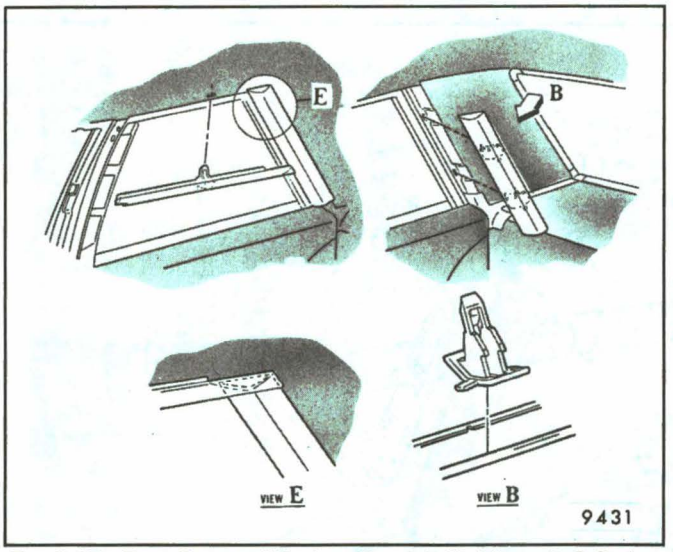


Fig. 8-15 - Rear Quarter Window Garnish Molding - B,C Styles Typical

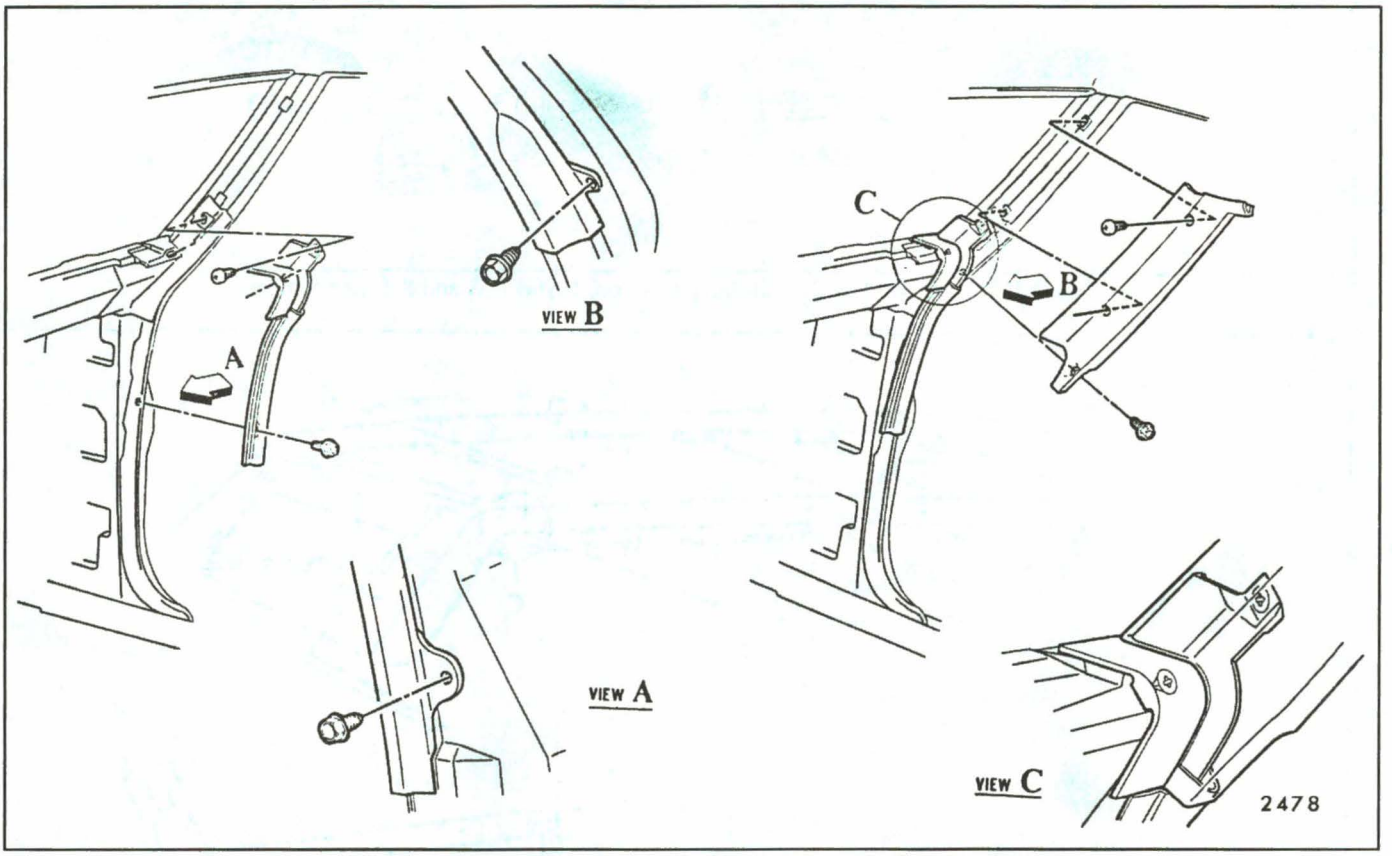


Fig. 8-16 - Windshield Pillar Side Garnish Molding - B, C Styles Typical

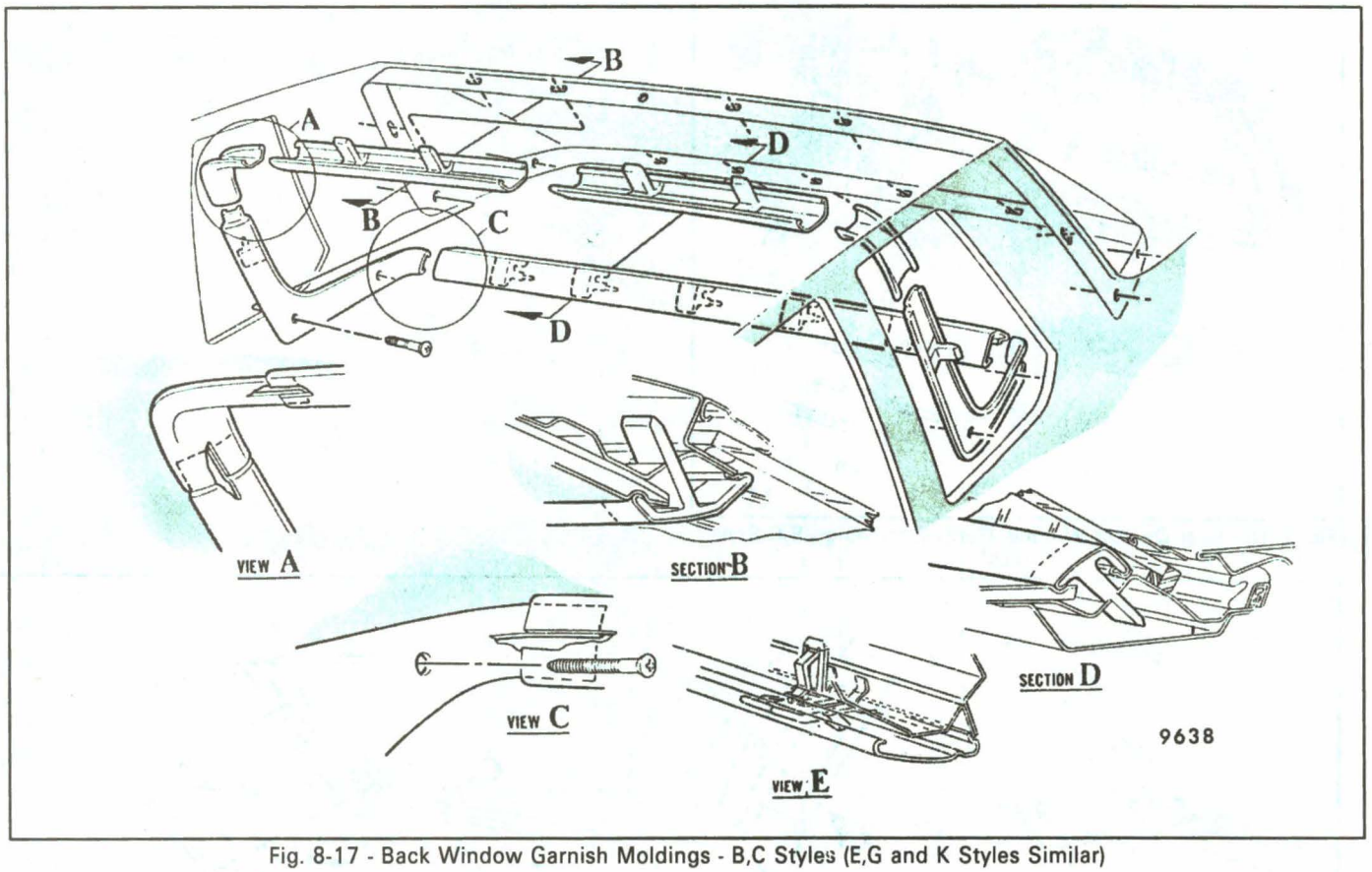


Fig. 8-17 - Back Window Garnish Moldings - B,C Styles (E,G and K Styles Similar)

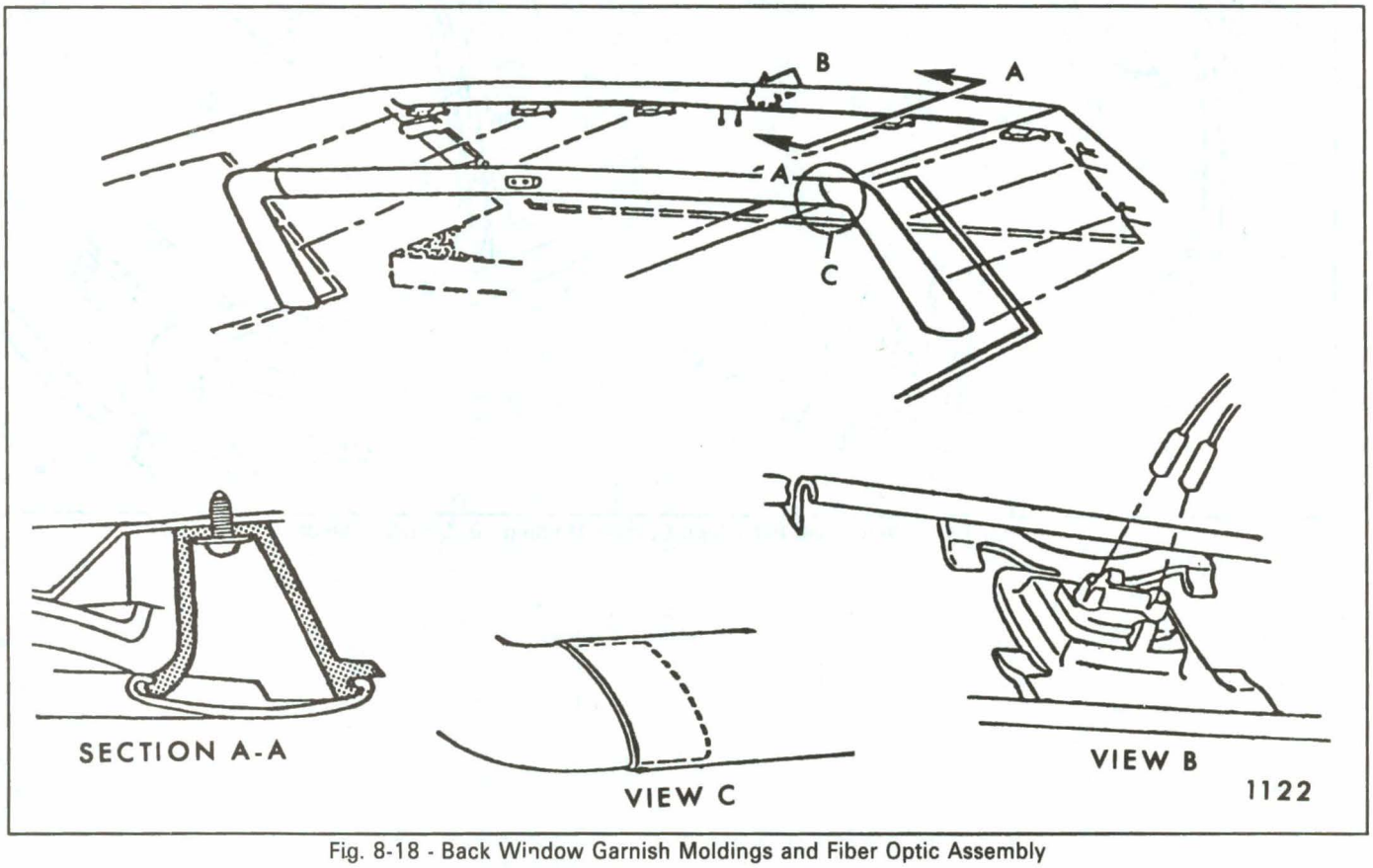


Fig. 8-18 - Back Window Garnish Moldings and Fiber Optic Assembly

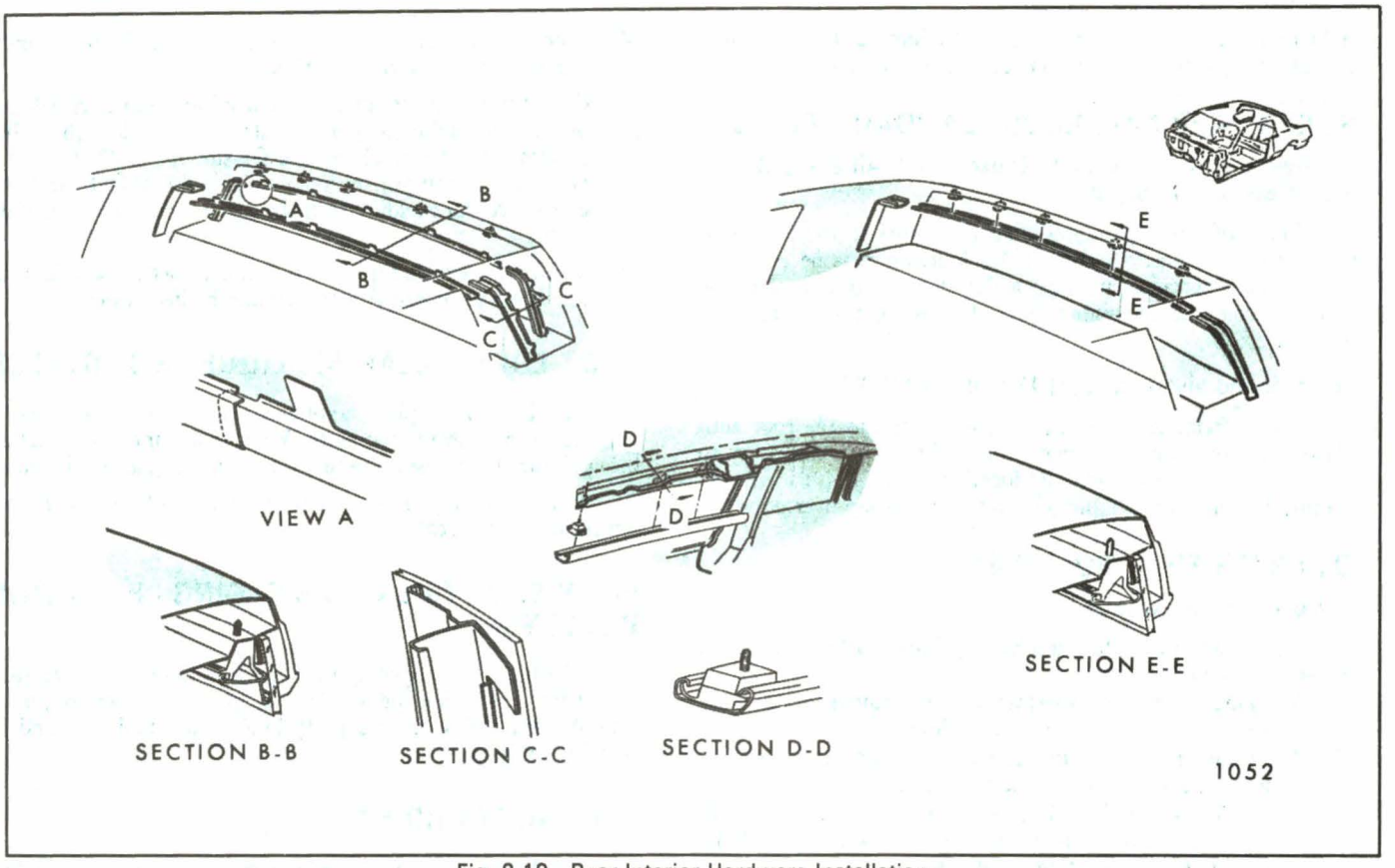


Fig. 8-19 - Rear Interior Hardware Installation

EXTERIOR ROOF MOLDINGS

ROOF DRIP SCALP MOLDINGS

Removal and Installation - B,C and G 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 and Pontiac Grand Prix, 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 - 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 - K Style

To remove roof drip scalp front, upper and rear moldings, remove attaching screws. To reinstall moldings, apply a body sealing compound such as 3M Strip-Calk No. 08578 or equivalent between drip molding and attaching surface and secure with previously removed screws.

ROOF PANEL EMBLEMS

Be certain to protect adjacent painted surfaces to avoid damage to paint.

1. Roof panel emblems that have 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. Pontiac Grand Prix with padded roof cover and Buick Regal and Limited with padded roof cover.
   b. All C except Oldsmobile LS and Buick with nonpadded roof covers.
2. Roof panel emblems that have integral studs retained by nuts inside of body require removal of upper quarter trim panel to gain access to the nuts. 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. All G except Grand Prix, Buick Regal and Buick Limited when equipped with padded fabric roof cover.
   b. All B styles.
   c. Buick C styles without padded fabric cover.
   d. Buick and Oldsmobile E styles without padded fabric cover.
   e. Oldsmobile LS emblem and Cadillac K Elegante emblem.

To remove, apply heat using a heat gun making certain heat gun is moved in a circular motion and held a minimum of 152 mm (6″) from molding.

To install, wash affected area with soap and water and wipe dry. Wipe panel and adhesive side of emblem with oil-free naphtha or alcohol. Use Loctite 414 adhesive (part no. 1051910) or equivalent and press emblem in place. Apply constant pressure to

emblem for 30 seconds. Bonding starts immediately. Emblem cannot be repositioned after contact with the vehicle.

ROOF UPPER MOLDINGS - LANDAU STYLES

Removal and Installation - All G except 47, All B and C except Buick C-37 Styles

The roof upper panel molding is secured to the roof with plastic slide-on clips. To remove this molding, it is necessary to unsnap the outermost clip with a flat-bladed tool and slide the molding from the remaining clips. To install, reverse removal procedure.

Removal and Installation - G-47 and Buick C-37

The roof upper panel molding is secured to the roof with plastic snap-on clips. To remove this molding, it is necessary to unsnap the molding at each clip location with a flat-bladed tool. To install, place the molding in position and snap over clips.

QUARTER BELT MOLDINGS

Removal and Installation

Be certain to protect adjacent painted surfaces to avoid damage to paint.

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.
3. On B-37, G-37 and C-47 styles, remove the molding in the rear compartment front panel first. This will expose hold-down screws on adjoining moldings.
   On some styles a rear end belt reveal molding is used on rear compartment front panel which telescopes into the rear quarter belt reveal molding.
4. Using a flat-bladed tool such as a putty knife, insert under molding and lift molding off clips.
   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. On Oldsmobile G-47 styles, it is necessary to remove the rear scalp molding and the lower quarter reveal molding to remove the escutcheon attaching screw.
5. To install, reverse removal procedure, making certain studs and screws are sealed with medium-bodied sealer.

BODY LOCK PILLAR APPLIQUE - B-37 STYLES

The body lock pillar applique has 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.

When installing, make certain studs and nuts are sealed with a medium-bodied sealer.

BODY BACK OPENING MOLDING - B STATION WAGONS

The body back 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.

LUGGAGE CARRIER

The luggage carrier is available as a dealer installed option. Skid strips and support mounting nuts are installed at the factory (Fig. 8-20). During predelivery operations, the dealer will complete assembly installation.

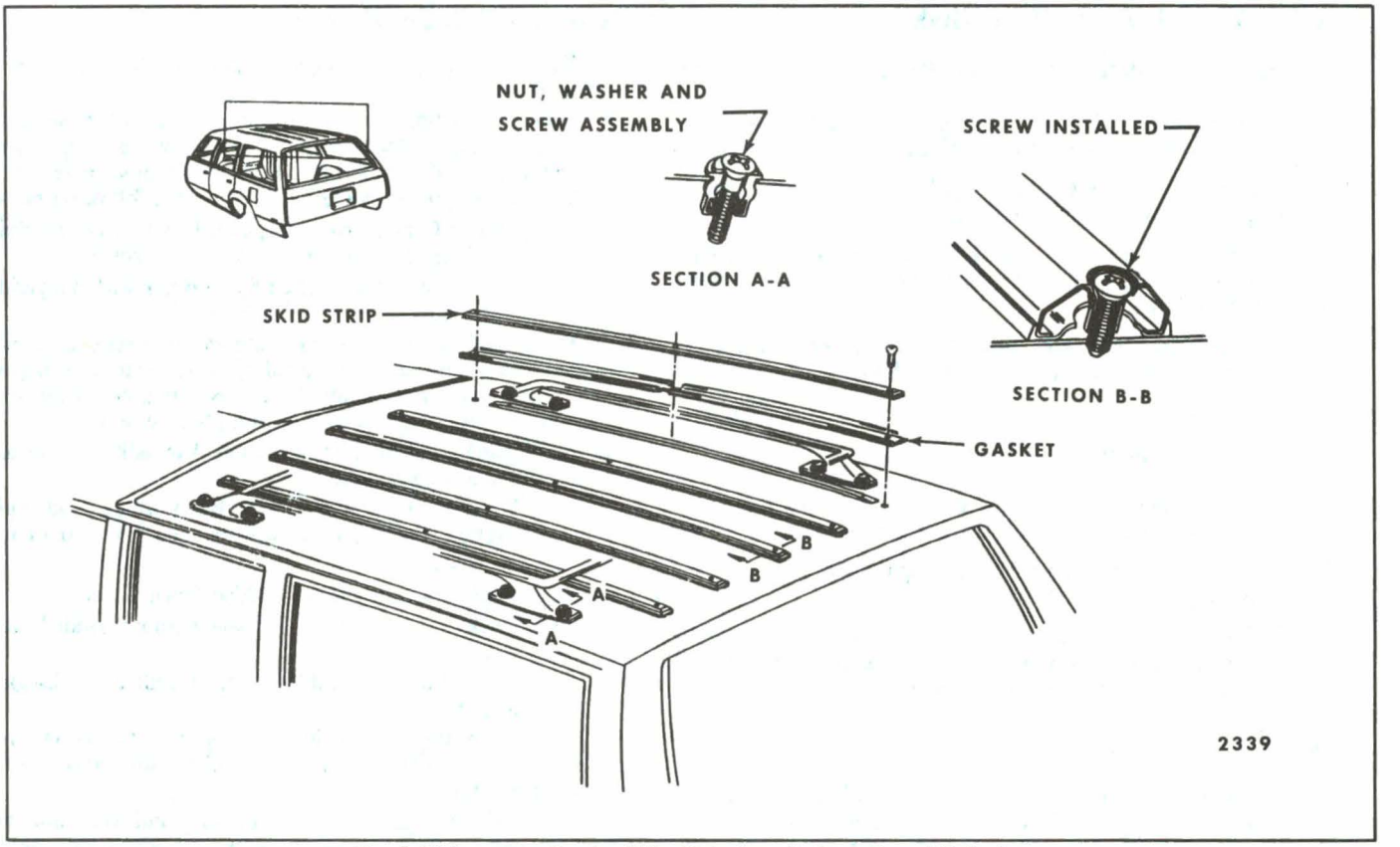


Fig. 8-20-Luggage Carrier Skip Strip Installation - B and G Styles

FABRIC ROOF COVER

The fabric roof cover consists of a vinyl exterior material bonded to a woven substrate. The fabric roof covers are either cemented directly to the roof panel, or an additional foam pad between cover and roof panel. When the foam pad is used, the pad is cemented to roof panel, then the roof cover is cemented to the 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. CA9 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 used, 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:
   - Air line pressure - 344.8 kPa (50 psi).
   - Cup pressure - 13.8 to 27.6 kPa (2 to 4 psi).

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 Component 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. Sliding sun roof panel and roof cover retainer.
2. Remove reveal molding clips across top and sides of windshield, quarter or back glass openings where present. 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.

   In the event a repair type clip has been installed and retaining screw is not accessible, carefully trim roof cover around clip.

FABRIC ROOF COVER - ALL OPTIONS EXCEPT C04 AND CB5

Removal

NOTICE: When removing drive nails, the edge of glass must be protected. Two to three layers of cloth body tape should provide the necessary protection.

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.

   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.).

NOTICE: The use of excessive heat (over 93°C or 200°F) may cause the roof cover to lose its grain, blister or become shiny.

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. 8-40) held about 25 mm (1″) from the cover and rotated in a circular motion. Heat lamps can also be used if held a minimum of 457 mm (18″) from the cover.
4. Loosen all cemented edges of roof cover, then carefully remove cover from remaining cemented area of roof panel.
5. Check all cemented surfaces of roof panel 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. If any metal finishing is performed on roof panel, repaired area must be painted.

   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. Be certain to follow manufacturer's directions when using cleaner.

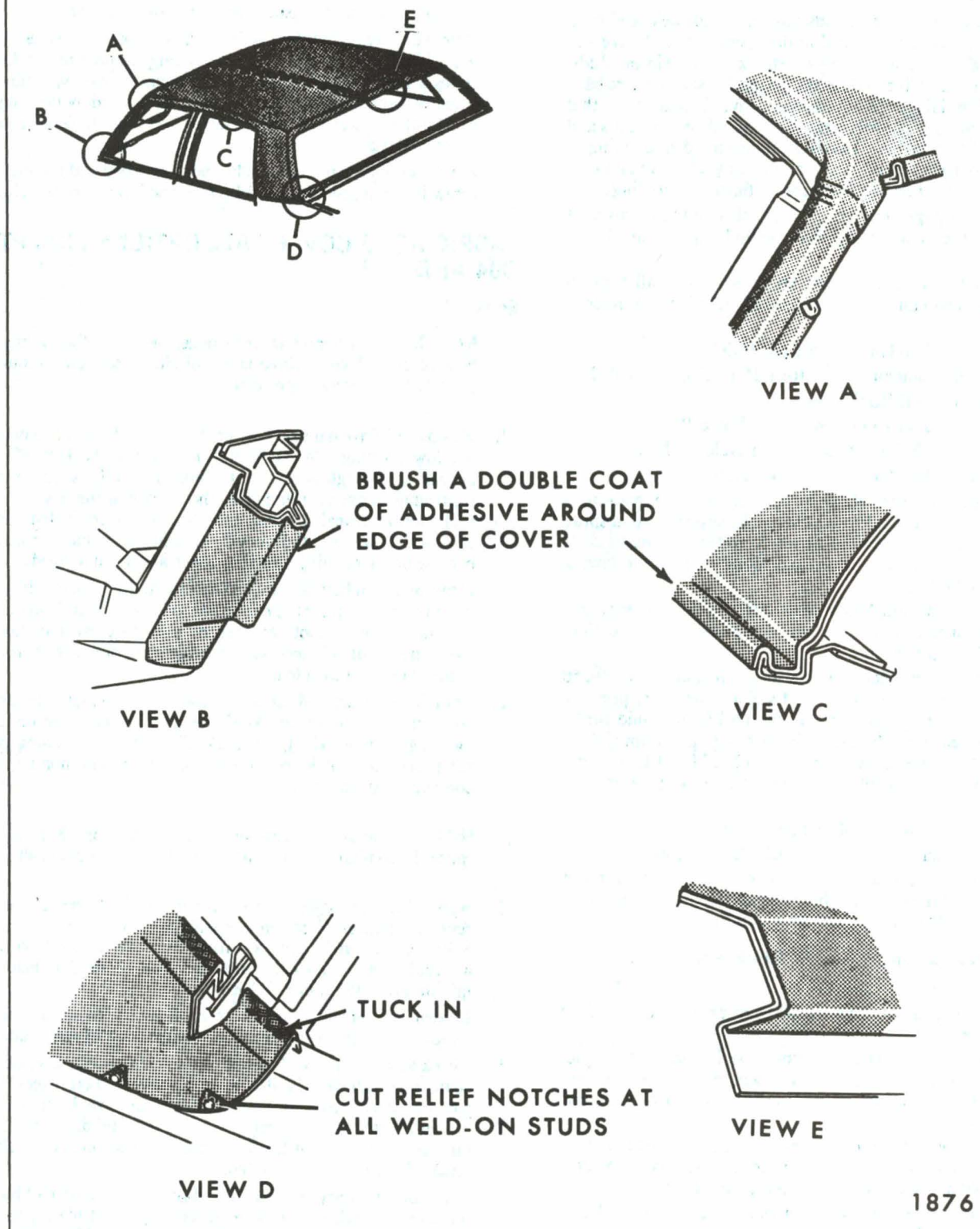


Fig. 8-21-Typical Fabric Roof Cover Installation - G Styles

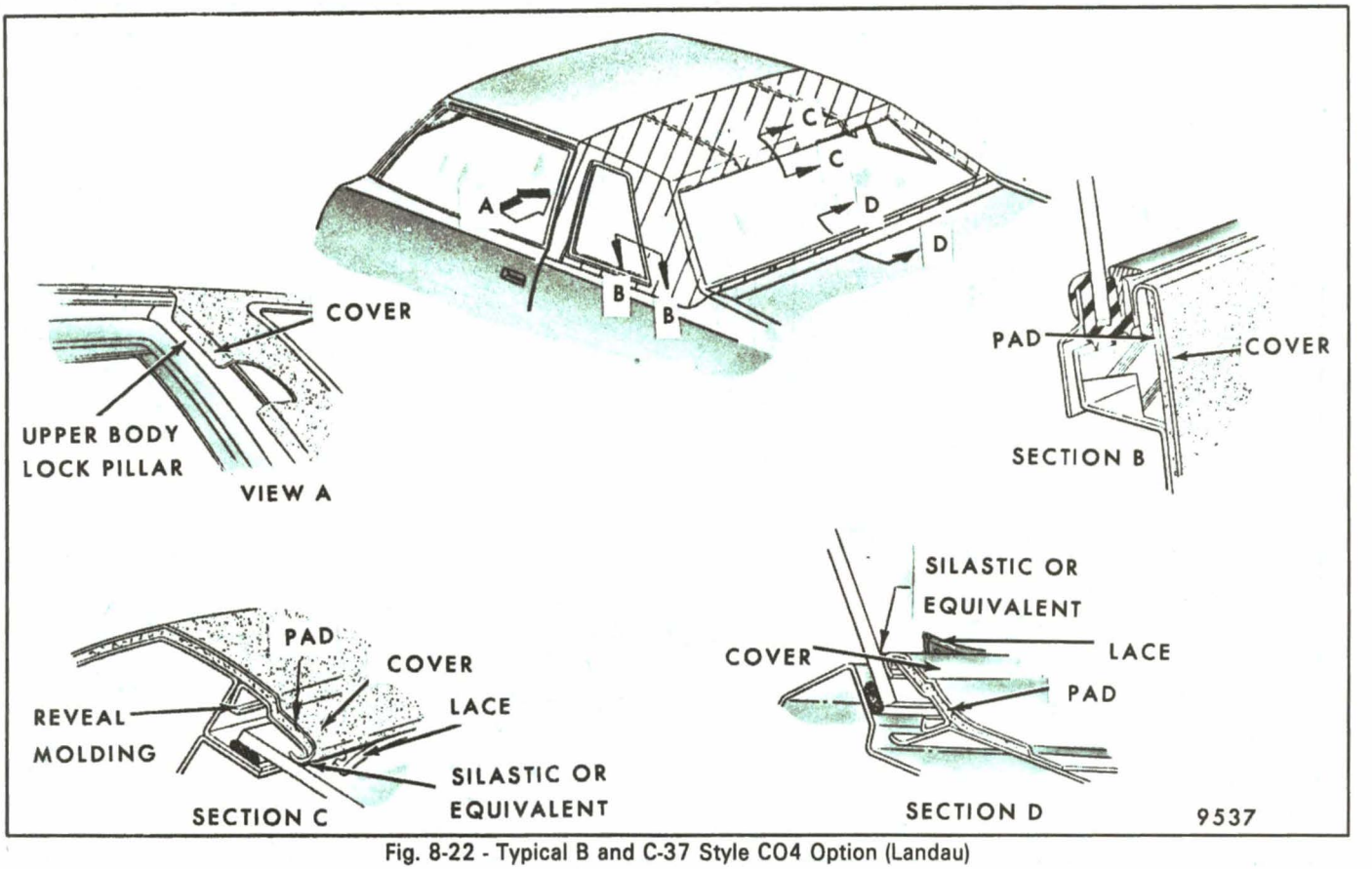


Fig. 8-22 - Typical B and C-37 Style CO4 Option (Landau)

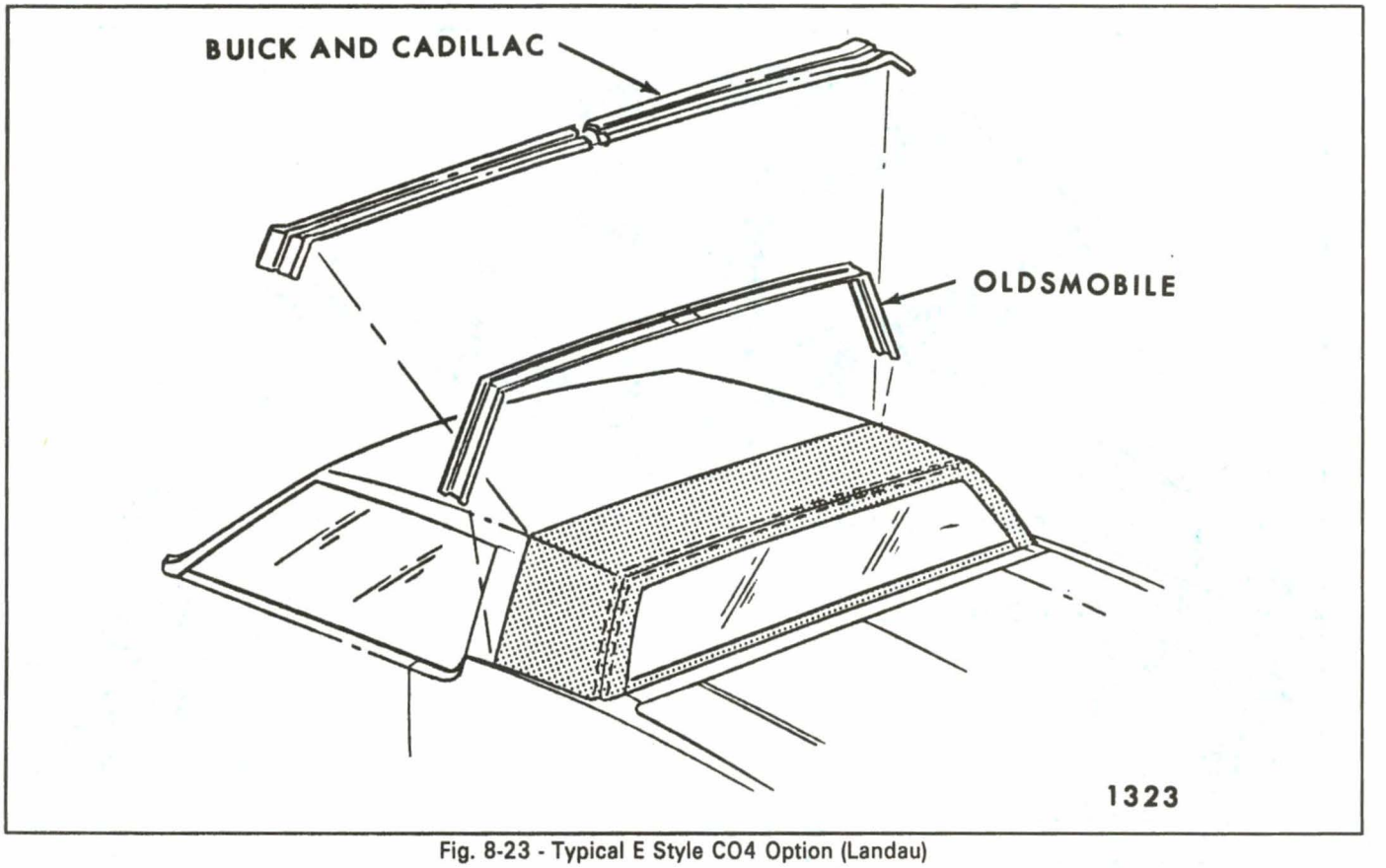


Fig. 8-23 - Typical E Style CO4 Option (Landau)

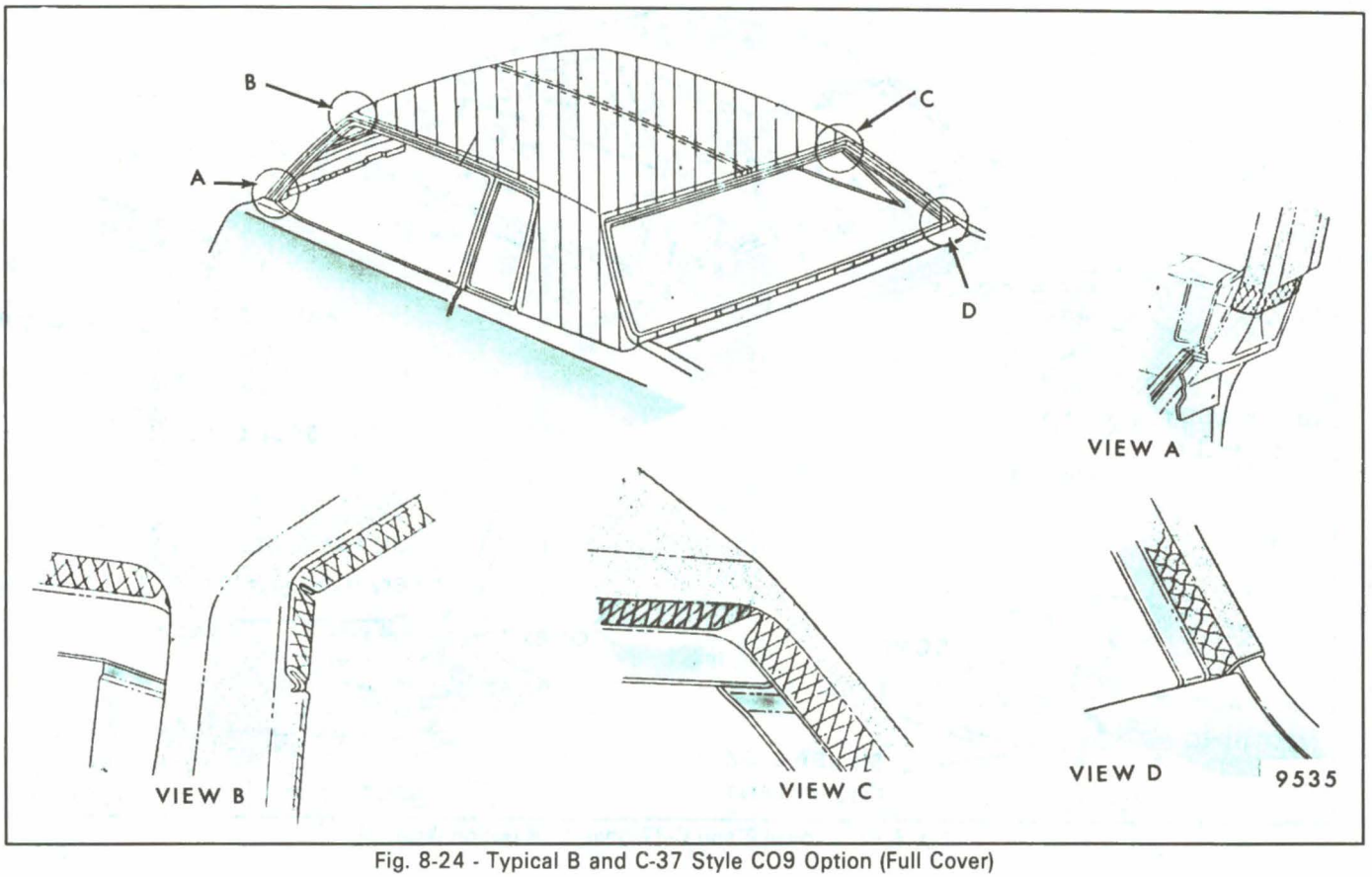


Fig. 8-24 - Typical B and C-37 Style CO9 Option (Full Cover)

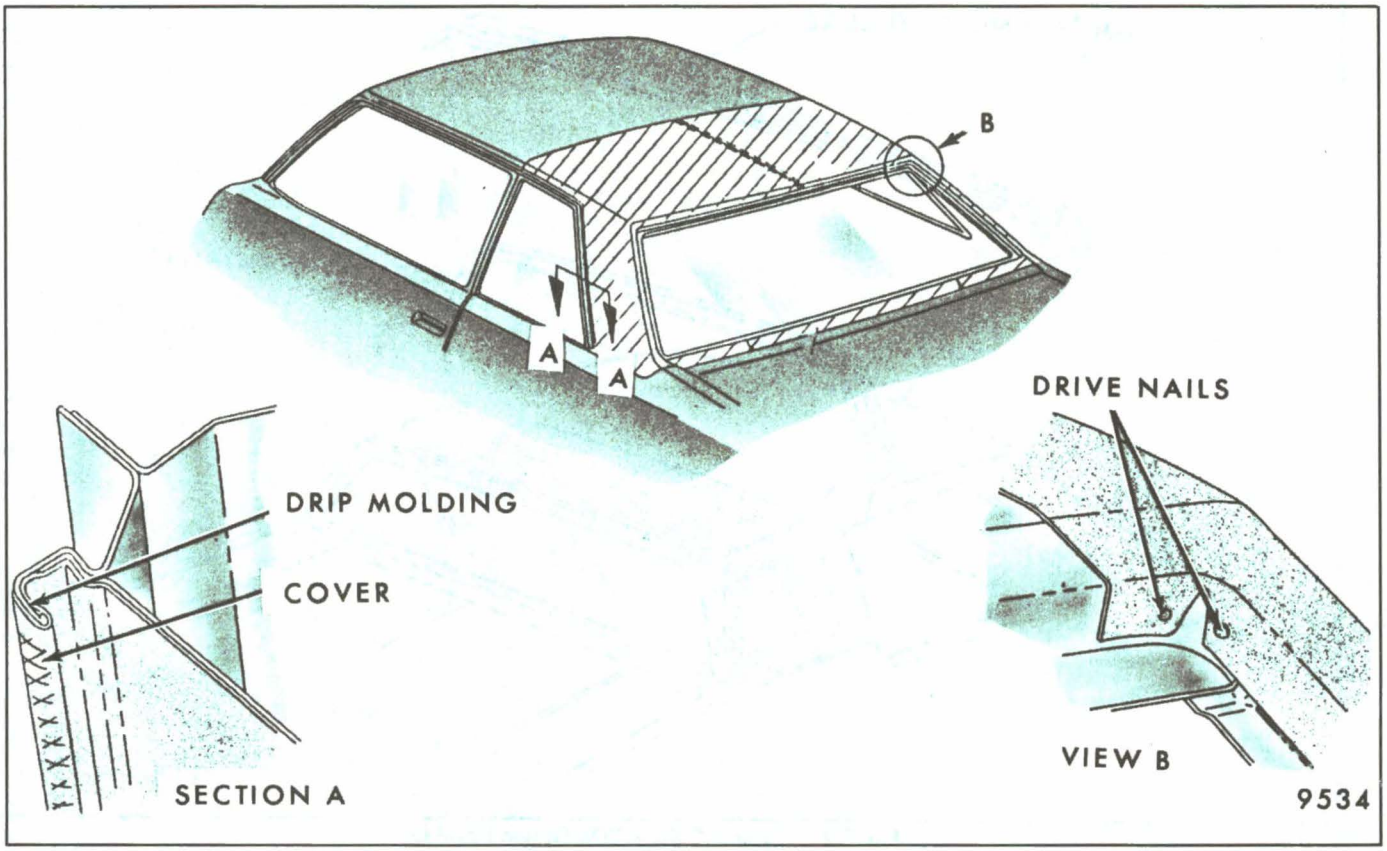


Fig. 8-25 - Typical B Style CB4 Option (Landau)

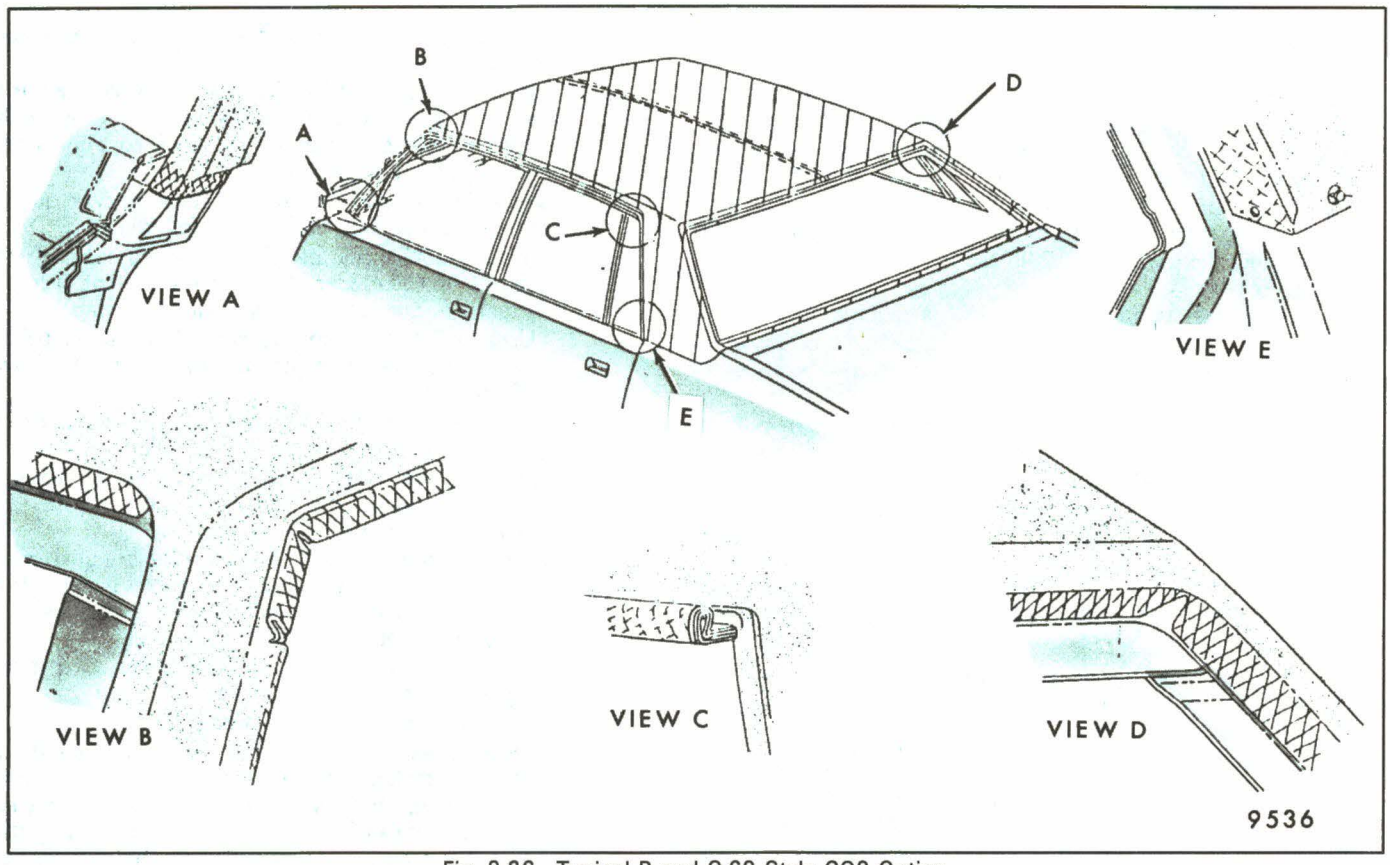


Fig. 8-26 - Typical B and C-69 Style C09 Option

Installation

When spraying, rolling or brushing on cement during installation of vinyl roof cover, a nitrile nonstaining adhesive is to be used such as Hughes HC 4183, 3M 8046 or equivalent. Some replacement fabric roof covers are already coated with a preapplied adhesive. If additional adhesive is required, the previously specified adhesives are compatible.

1. Where possible, install new cover at room temperature (about 22°C or 72°F) to permit easier fitting and removing of wrinkles from new cover assembly. Fabric roof cover pliers (Fig. 8-27) will aid in removing wrinkles.

   Certain types of fabric roof cover materials cannot be pulled to a great extent to compensate for a misaligned condition. Therefore, it is very important that before installation (cementing or removing release paper) the cover be positioned properly on the roof, then reference marked for centering and fore and aft positioning.
2. If the old roof cover was aligned properly and when removed its seam imprint can be clearly defined on the roof panel, the imprint may be used as a reference when installing the new roof cover.
3. Find 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.
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. On styles equipped with preapplied adhesive, cover may be installed immediately after removal of half of the paper backing. Using scissors, trim off loose paper.

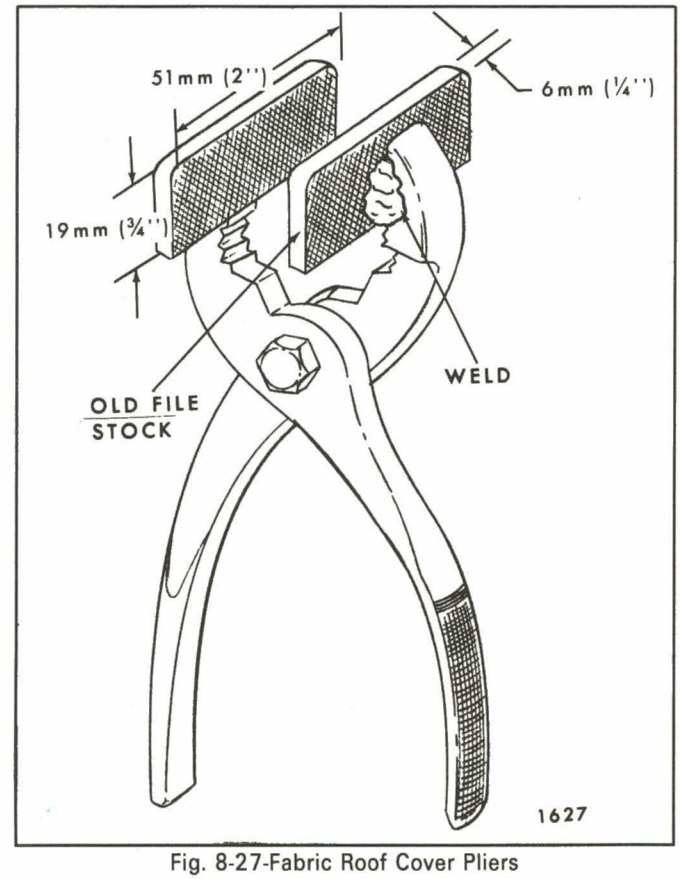


Fig. 8-27-Fabric Roof Cover Pliers

NOTICE: Make certain cover is free of wrinkles and aligned properly; 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 to help remove 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 of a helper pulling and holding the cover away from the roof panel. Make certain cover is free of wrinkles.
8. Repeat operation to remaining half of roof.
9. Apply adhesive to quarter upper areas and below back window opening on styles where cover extends below back window.
10. On all styles, cement cover to quarter upper area by pulling cover down and rearward. When completed, cover should be free of all wrinkles and draws in this area (Fig. 8-28).
11. On styles where cover extends below back window opening, cement cover as required.
12. On styles with exposed quarter window reveal or finishing moldings, cement cover around quarter window pinchweld flange.
13. On styles with exposed windshield and back window 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.

       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). Use an awl or similar tool to initiate a hole where drive nail is to be installed.
14. 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.
15. On styles where roof panel cover extends down windshield pillar, cement roof cover to windshield pillar.
16. 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.
17. Trim cover slightly outboard of weld-on studs at quarter and at rear end belt area. If it is necessary to trim material from outer edge of cover around windshield or back window opening, raise cemented edge and cut as required.
18. On sun roof (Fig. 8-29) option, trim and cement cover in roof opening. Install fabric cover retainer.
19. Along side rail, perform the following:
    a. On B, C and G 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).
    b. Install drip scalp moldings or weatherstrip retainer and finishing moldings. These moldings aid in retaining the roof cover.
20. Remove protective covering from windshield, back glass and body.

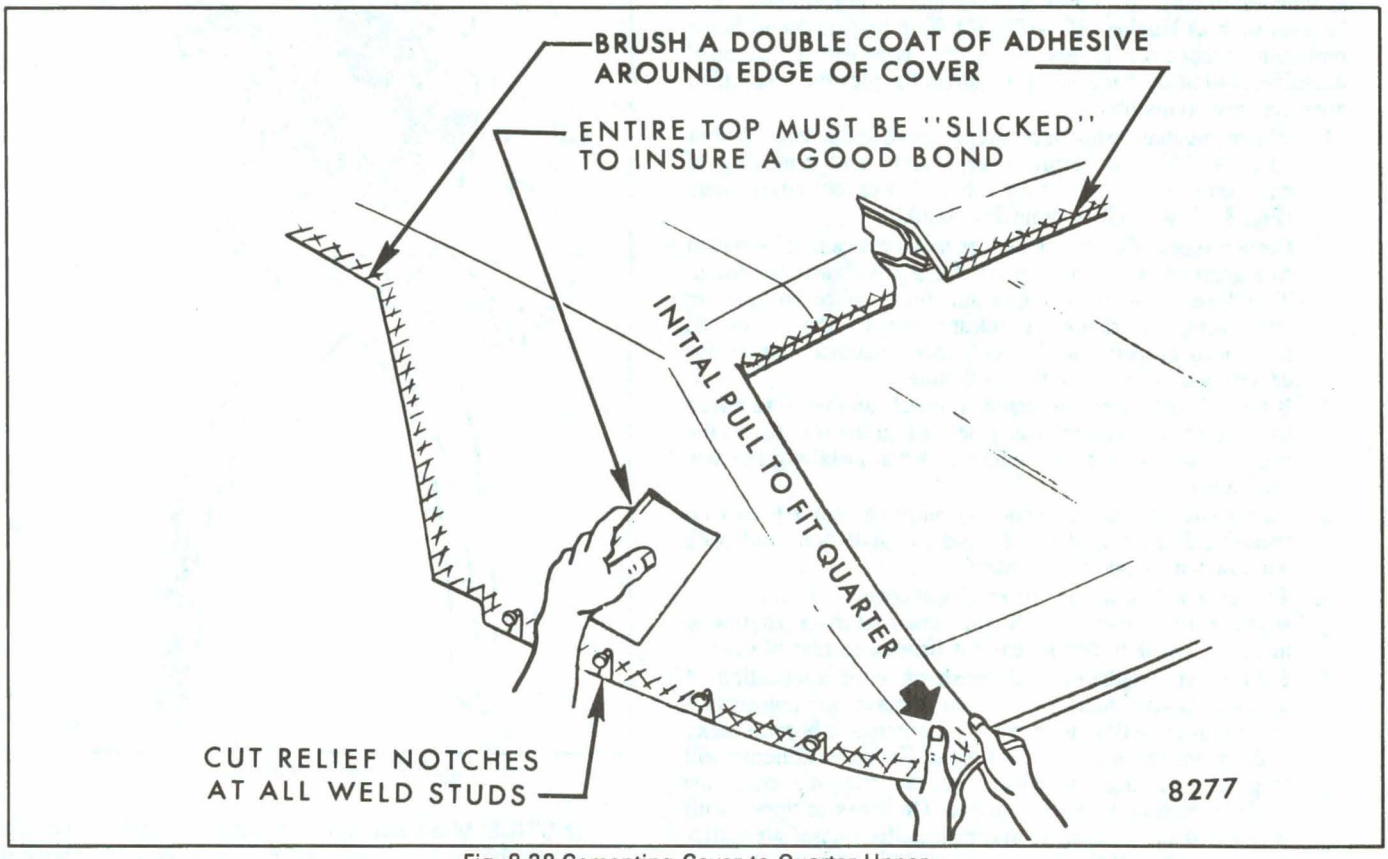


Fig. 8-28-Cementing Cover to Quarter Upper

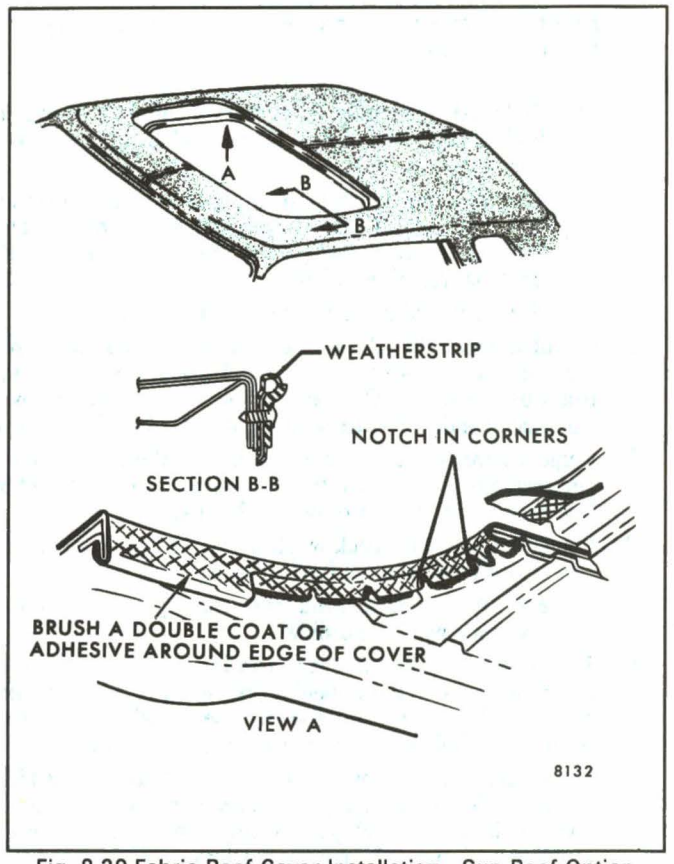


Fig. 8-29-Fabric Roof Cover Installation - Sun Roof Option

21. 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. On styles where cover extends into windshield opening, remove all drive nails present being certain glass is protected.
3. 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.).
4. 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. 8-40) held about 25 mm (1″) from the roof cover and rotated in a circular motion. Heat lamps can also be used if held a minimum of 457 mm (18″) from the cover.
5. Loosen all cemented edges of roof cover, then carefully loosen and remove the roof cover from the foam pad.
6. 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. If large sections of padding have to be removed, a wire brush attached to a drill motor may be used. 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 according to manufacturer's directions.

Installation - Foam Pad(s)

1. Check roof panel for excessive pad material and adhesive. If any metal finishing is performed on roof panel, repaired area must be painted.
2. Find 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, find 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.
4. Brush a 51 mm (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 aligned properly, then cement pad to roof while adhesive is tacky. On styles equipped with preapplied adhesive, remove release paper from half of the pad and cement pad to roof. As pad is being cemented, it should be slicked down to avoid wrinkles and air bubbles.

   NOTICE: Attempts to correct a misaligned or wrinkled condition may result in damage to pad and take considerable time to cut out old foam and patch in new.

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. On all styles, 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.
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.

       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)

Certain types of fabric roof cover material cannot be pulled to a great extent to compensate for a misaligned condition. Therefore, it is very 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 the 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 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 adhesive 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. On styles equipped with preapplied adhesive, peel back release paper covering horizontal portion of feature seam and trim paper off. With the aid of a helper, align and slick cover in place, eliminating all wrinkles.
   e. Peel back release paper from vertical portion of feature seam and trim paper off.
   f. Expose vertical portion of feature seam, brush adhesive along cover seam and to reference on pad.
   g. Align cover seam to reference and slick cover in place, eliminating all wrinkles. Repeat operation on opposite side.
   h. Apply adhesive to lower valance on cover and corresponding surface on pad, align and slick in place. On styles equipped with preapplied adhesive, peel back release paper from lower valance on cover, align and slick in place.
   i. Fold cover rearward, brush an application of adhesive about 152 mm (6″) wide adjacent to cemented horizontal feature seam. On E styles, remove about a 152 mm (6″) wide strip of release paper adjacent to horizontal feature seam.
   j. 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. On styles equipped with preapplied adhesive, remove remaining release paper and slick cover to forward portion of pad.

NOTICE: 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 about a 102 mm (4″) wide area along center of roof.
   b. Brush an even application of adhesive along center of cover and to corresponding surface on pad. 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.

NOTICE: Make certain cover is free of wrinkles and aligned properly; 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 to help remove 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 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 done in step 4h).
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). 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. If 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.

    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.

NOTICE: Do not damage paint finish during trimming operation.

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.
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. Remove protective covering from windshield, back glass and body.
23. Install all previously removed moldings and assemblies.

FABRIC COVER - SUN ROOF SLIDING PANEL - CA1 OPTION

Removal

1. Remove the following prior to removing fabric cover from sliding sun roof panel (Fig. 8-30).
   a. Sliding sun roof panel
   b. Weatherstrip
   c. Retainer
   d. Water deflector
2. Prior to removing fabric cover, apply heat to edges of cover to aid loosening. 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. If any metal finishing is performed on the sliding sun roof panel, repaired area must be painted.
2. Hand-wire brush sliding panel to remove excessive adhesive and/or padding material. 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 (about 22°C or 72°F, when possible). This will permit easier fitting and removal of wrinkles from new cover assembly.

   Certain types of fabric cover materials cannot be pulled to a great extent to compensate for a misaligned condition. Therefore, it is very 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 slicked down to avoid wrinkles and bubbles.
6. Repeat step 5 on opposite side of panel. Fabric roof cover pliers or an equivalent tool may be used to help remove 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. 8-30).
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 on their own after exposure to sunlight (several days) can be corrected as follows.

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.

   NOTICE: Keep iron in motion. Do not allow cloth to become dry as excessive heat will damage the vinyl material.

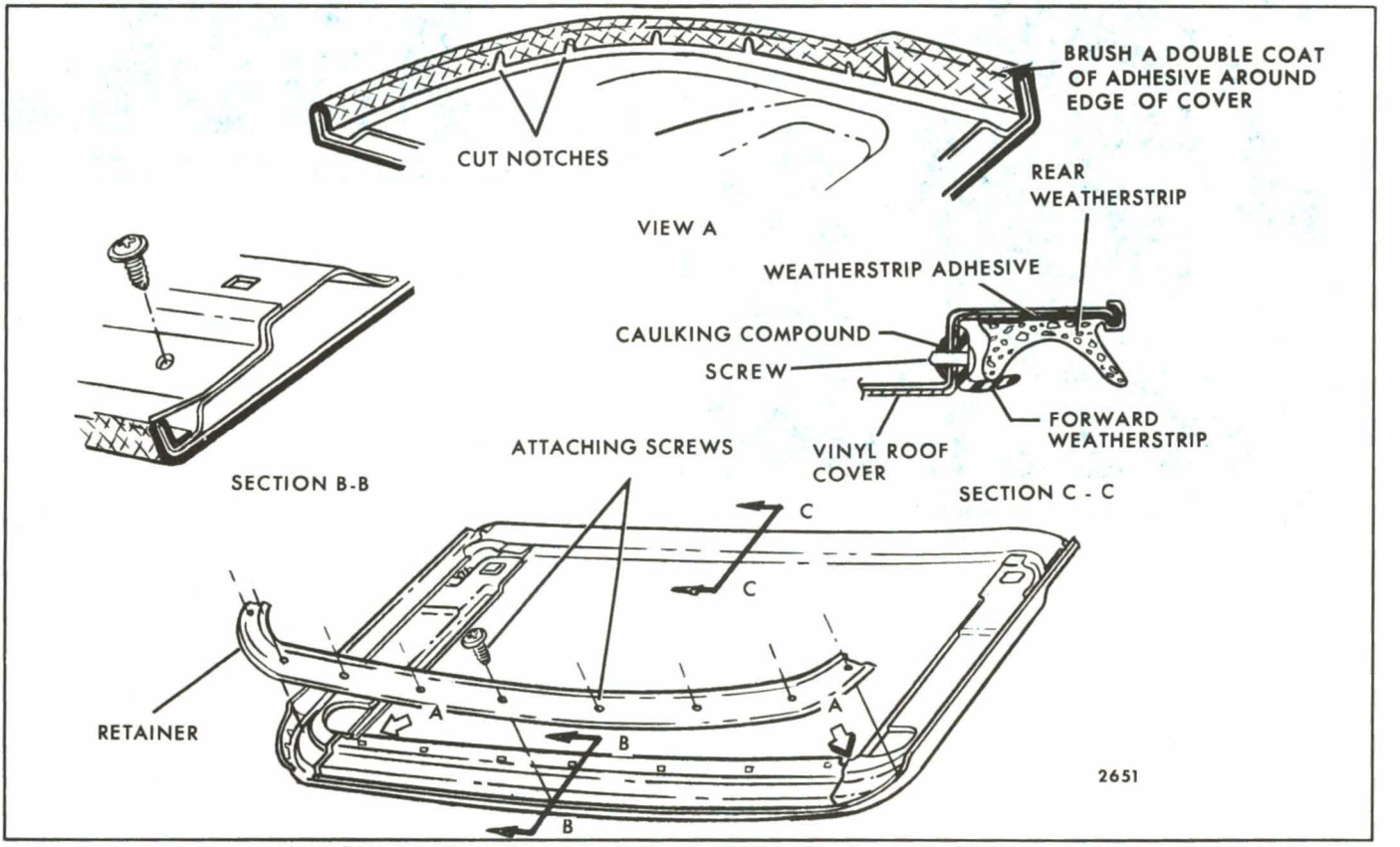


Fig. 8-30-Fabric Roof Cover Installation on Sliding Sun Roof Panel (CA1 Option)

2. Using a household type flat iron with heat control set for medium heat (cotton or lower), iron wrinkled area (Fig. 8-31).
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.

NOTICE: Excessive heat over 93°C (200°F) may cause the roof cover to lose its grain, blister or become shiny.

5. Apply heat to edges of cover to aid loosening. Heat can be applied with a hot air gun held about 25 mm (1") from the cover and moved in a circular motion (Fig. 8-32). Heat lamps can also be used if held a minimum of 457 mm (18") from the cover.
6. Using a pair of fabric roof cover pliers, carefully loosen edges of roof cover as shown in Figure 8-32.
7. Separate the wrinkled area from the roof panel by either applying heat with a hot air gun while pulling on the roof cover at the same time (Fig. 8-33), or by carefully separating the cover from the roof panel with a flat-bladed tool such as a putty knife (Fig. 8-34).
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 8046 or equivalent to padded side of cover and to contacting metal surfaces (Fig. 8-35).
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 to help remove wrinkles as shown in Figure 8-36.
11. Replace moldings and clean soiled areas.

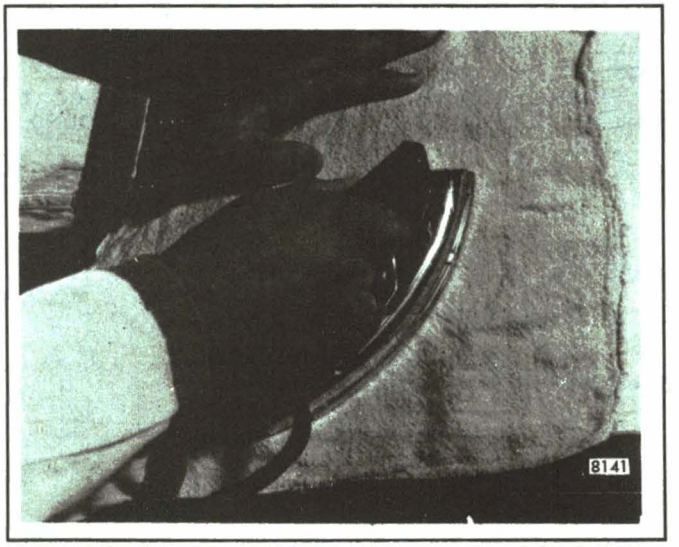


Fig. 8-31-Removing Wrinkles with a Dampened Cloth and Home Type Iron

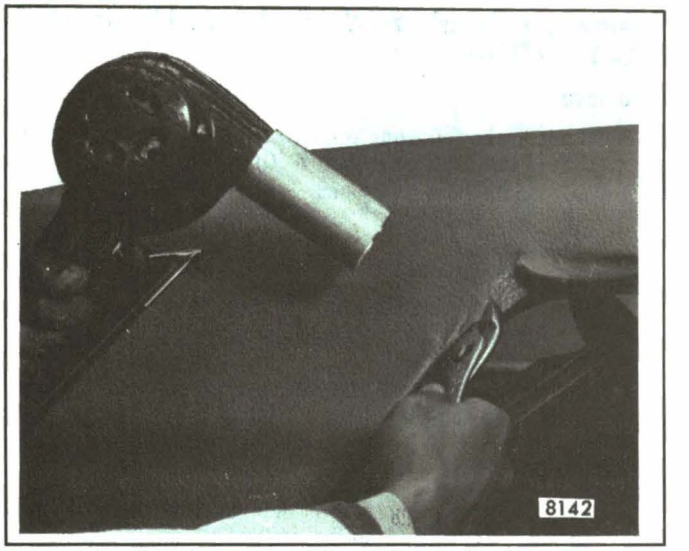


Fig. 8-32-Loosening Edge of Fabric Roof Cover

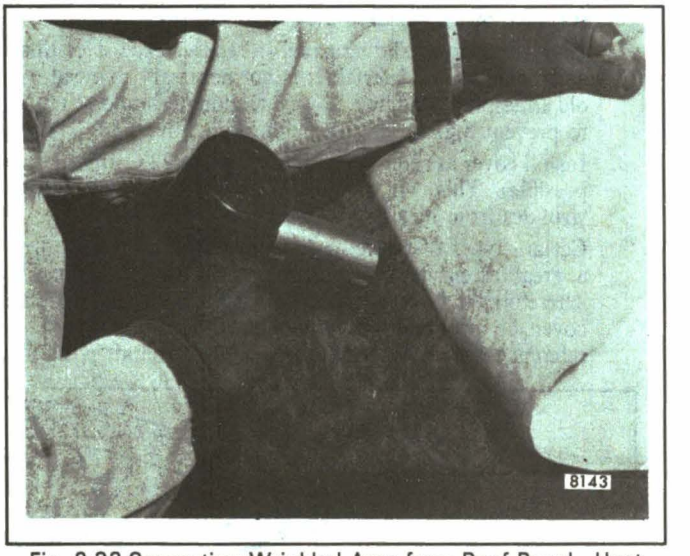


Fig. 8-33-Separating Wrinkled Area from Roof Panel - Heat Application

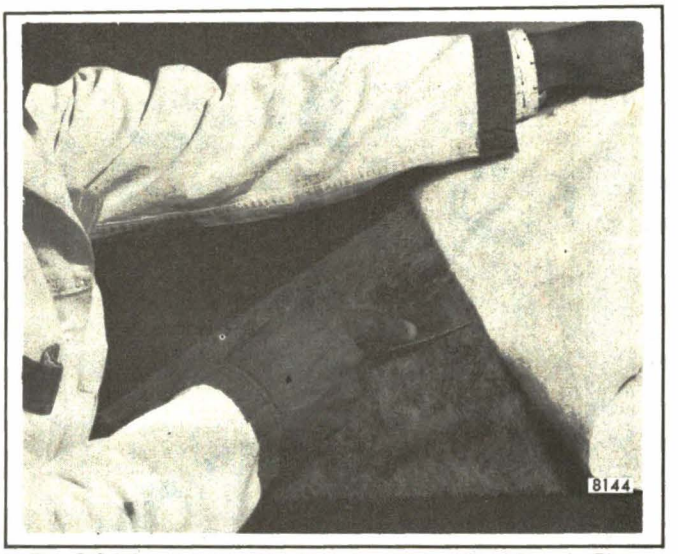


Fig. 8-34-Separating Wrinkled Area from Roof Panel - Flat-Bladed Tool Application

Fig. 8-35-Applying Adhesive to Roof Panel

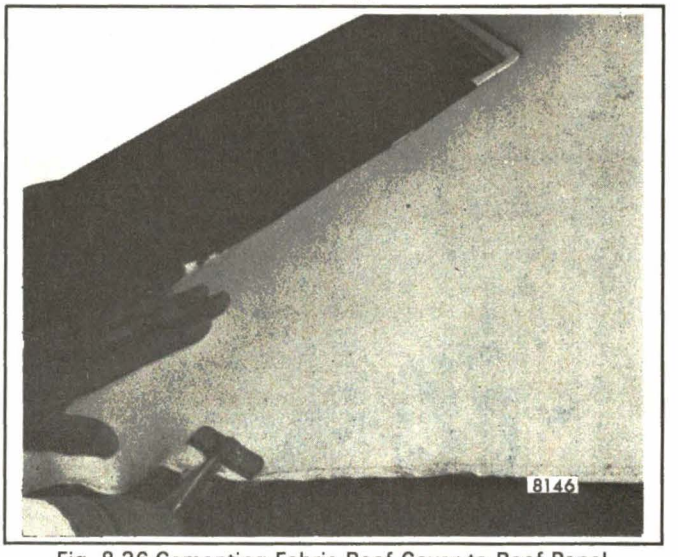


Fig. 8-36-Cementing Fabric Roof Cover to Roof Panel

FABRIC ROOF COVER REPAIR

The roof cover material is a vinyl skin bonded to a woven substrate which exhibits a grain pattern in the exterior vinyl surface. Should the vinyl surface become damaged (cut, scuffed, gouged or torn), it is possible in most cases to make repairs without removing the cover assembly from the roof panel (Figs. 8-37 and 8-38). It is recommended that repairs be limited to cuts or tears no longer than 13 mm (1/2") and other types of damage no larger than 6 mm (1/4") in diameter. In addition, damage area should be confined to edge of cover such as adjacent to roof drip and reveal moldings.

The repair procedures which follow describe two methods of repairing integral padded fabric roof cover and one method of repairing integral padded roof cover installed over foam pad.

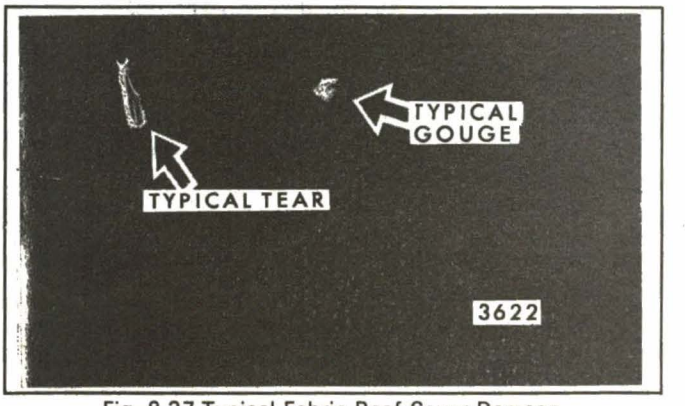


Fig. 8-37-Typical Fabric Roof Cover Damage

REPAIR USING FABRICATED PLASTIC GRAINING DIE - INTEGRAL PADDED

Equipment and Material Requirements

The following materials and equipment are 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 making a graining die with an impression of the grain present in the vinyl surface of the fabric roof cover (Fig. 8-40).

2. Liquid detergent cleaner - all purpose cleaner for removal of surface dirt, grease, dust, etc.

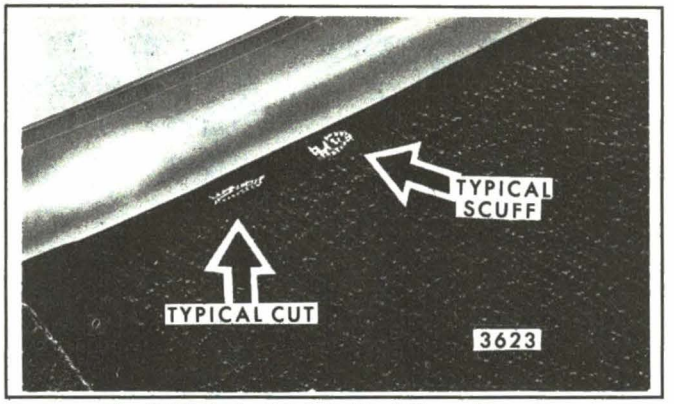


Fig. 8-38-Typical Fabric Roof Cover Damage

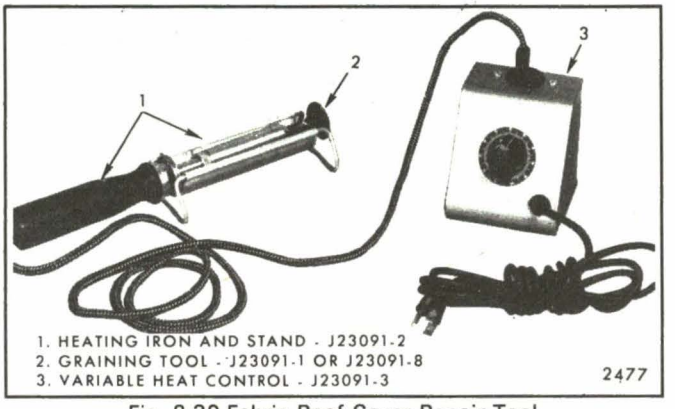


Fig. 8-39-Fabric Roof Cover Repair Tool

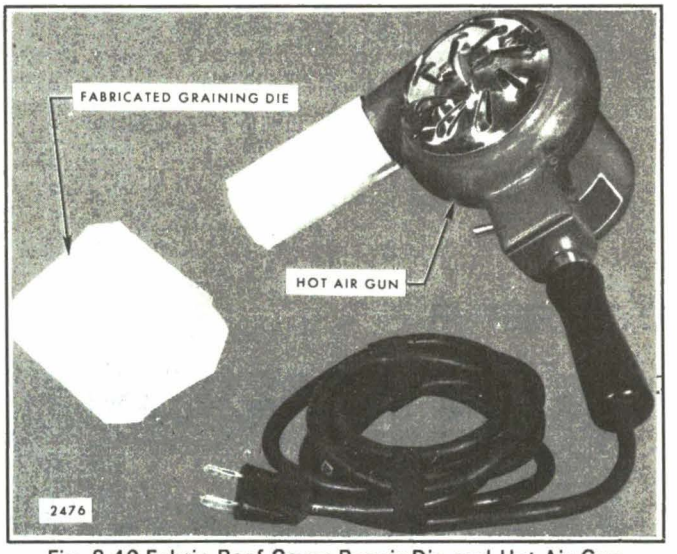


Fig. 8-40-Fabric Roof Cover Repair Die and Hot Air Gun

3. Vinyl cleaner (solvent type) - for removal of wax, silicone, oil, etc., from repair area (Fig. 8-41).
4. Vinyl repair patching compound - a heat curing, milky colored, heavy-bodied plastisol for repairing damaged area (Fig. 8-41).
5. Vinyl repair paint - an approved, durable, waterproof, weather-resistant, pliable vinyl paint for final color refinishing (Fig. 8-41).
6. Razor or sharp knife - to be used for removing frayed edges from damaged area prior to application of vinyl patching compound (Fig. 8-41).
7. Pallet knife - a small trowel for applying patching compound to repair area (Fig. 8-41).

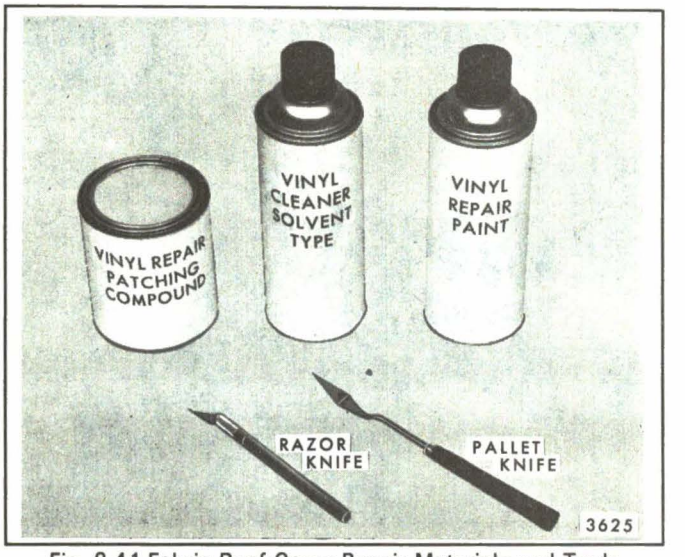


Fig. 8-41-Fabric Roof Cover Repair Materials and Tools

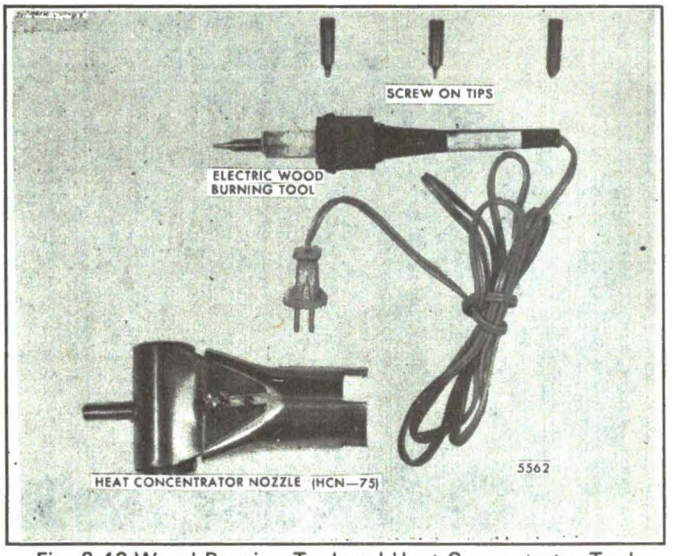


Fig. 8-42-Wood Burning Tool and Heat Concentrator Tool

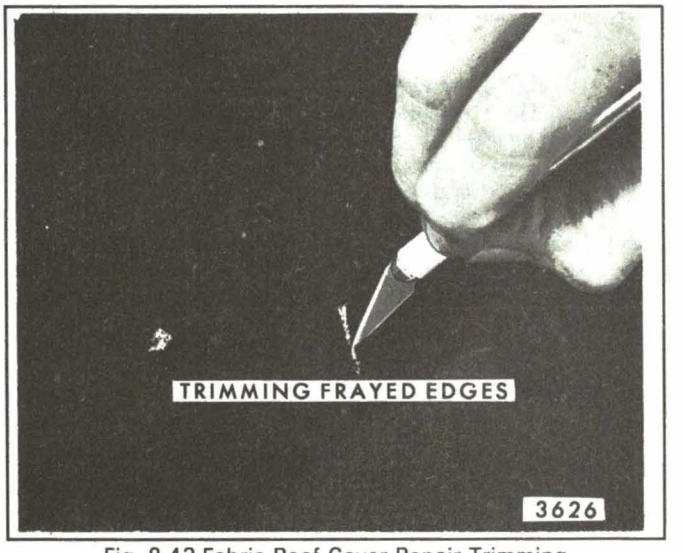


Fig. 8-43-Fabric Roof Cover Repair Trimming

8. Hot air gun and heat control nozzle - used to cure vinyl patching compound, preferably 260 to 371°C (500 to 700°F) heat range (Figs. 8-40 and 8-42).

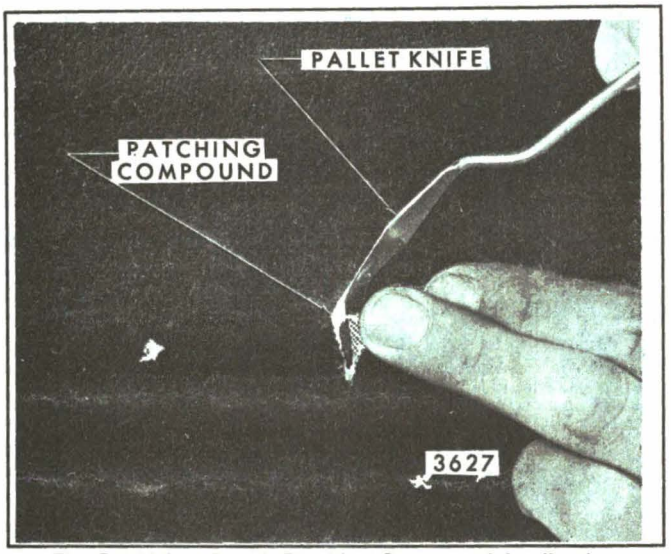


Fig. 8-44-Vinyl Repair Patching Compound Application

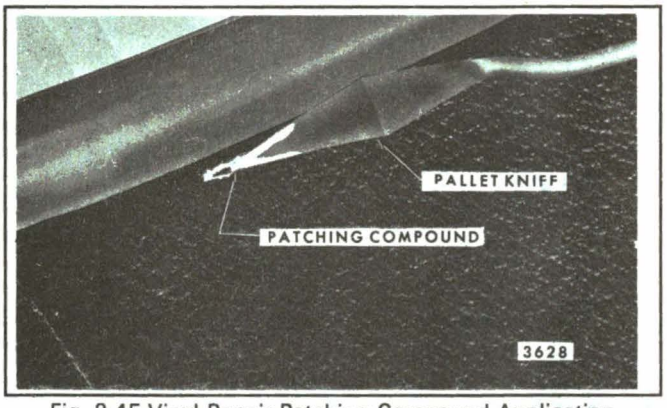


Fig. 8-45-Vinyl Repair Patching Compound Application

9. Electric wood burning tool with screw-on tips (or equivalent) - used for smooth cuts, scuffs or gouges (Fig. 8-42).

Repair Procedure

1. To make 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 while molding compound is being mixed.
2. Using a nonporous mixing surface, mix the plastic body filler as instructed on container label as follows:

   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 3 mm (1/8") thick application, about 51 mm (2") wide and 152 mm (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 speed up 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. Protect adjacent painted panels and prepare surface to be repaired as follows:

   a. Using a soft, lint-free cloth, wipe the repair area with solvent type vinyl cleaner. Allow area to dry completely.

   b. Using 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 3 mm (1/8") in width. This will permit easier filling of the damaged area. A slight tapering angle of the repair surface walls will provide 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 with heat control nozzle attached (Fig. 8-42). Continue to apply additional layers of the 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 hot air heat gun. Hold hot air gun about 25 mm (1") from the damaged area rotating gun in circular pattern. Curing takes place in about 20 seconds or when the patching compound turns from milky appearance to transparent.

   NOTICE: 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 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. 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. Avoid applying heavy coats of paint.

FUSING REPAIR PROCEDURE - FOR CUTS, SCUFFS, GOUGES

1. Protect adjacent painted surfaces; then clean area to be repaired.
2. Trim and/or work back under the vinyl (with a pallet knife) any protruding fibers in the damaged area.
3. Fuse damaged area using an electric wood burning tool. If necessary, scrape some vinyl material from a scrap piece of vinyl roof cover material 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.

   NOTICE: 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.

b. Using a hot air gun with heat control nozzle attached, apply heat to the damaged area. Hold hot air gun about 25 mm (1″) from the damaged area, rotating gun in a circular direction.
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.

5. When graining has been completed, the repair area is ready for painting (see step 7 of Repair Procedure).

REPAIR - FABRIC ROOF COVER WITH FOAM PAD - C04 OR CB5 OPTION

It is recommended that repairs be limited to cuts or tears no longer than 13 mm (1/2″) and other types of damaged areas no larger than 6 mm (1/4″) in diameter. In addition, damaged area should be confined to edge of cover such as adjacent to roof drip and reveal moldings.

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.

Fig. 8-46-Loosening Edge of Roof Cover

1. Remove moldings.
2. Mask off area adjacent to damage.

NOTICE: Steps 3 and 4 should be performed with extreme care to prevent additional 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.

3. Using pliers or similar tool, carefully loosen edge of roof cover up to roof break line (Fig. 8-46).
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. 8-47).

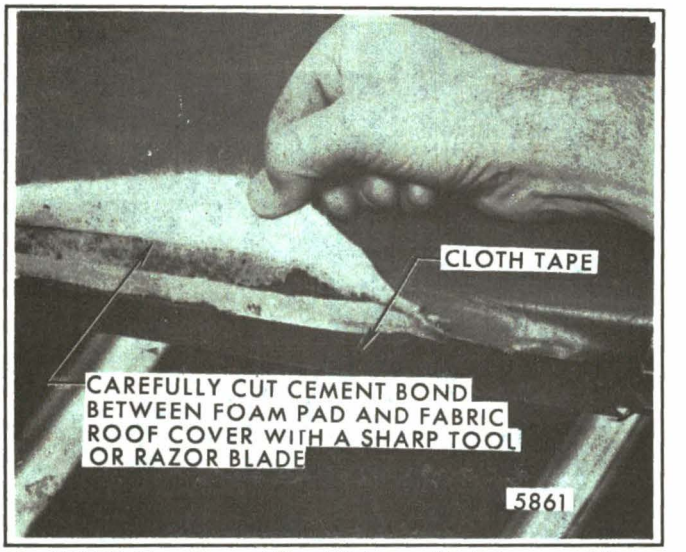


Fig. 8-47-Cutting Cement Bond Between Roof Cover and Foam Pad

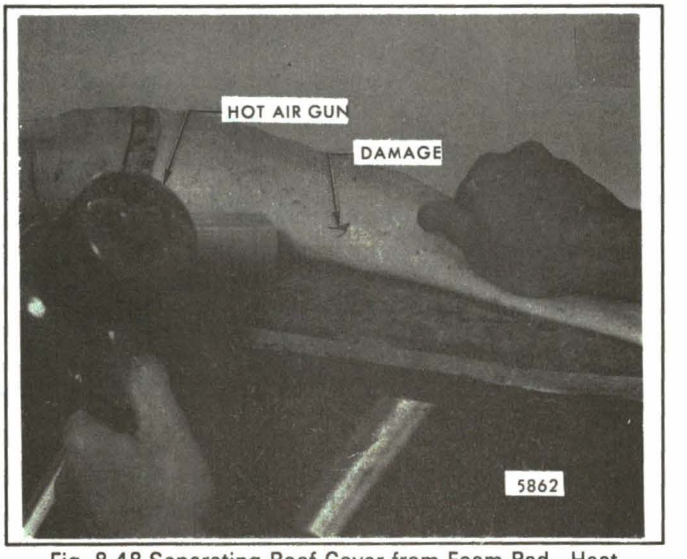


Fig. 8-48-Separating Roof Cover from Foam Pad - Heat Application

5. Apply heat sparingly between roof cover and pad to permit easier separation of cement bond (Fig. 8-48).
6. Tape back of damaged area using black waterproof tape.
7. Back up damaged area(s) with a hard surface such as a metal plate, then make repair as described in Integral Padded Roof Cover - Repair Procedure.
8. Brush an even application of a nonstaining adhesive, such as Hughes HC-4183, 3M 8046 or equivalent to roof cover and foam pad. Allow adhesive to become tacky, then pull cover taut and cement cover in place. Too much adhesive will trap solvents under the roof cover and may cause blistering due to delamination of vinyl from felt backing.

   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.

STAINLESS STEEL ROOF PANEL

A stainless steel panel is retained to the front section of the roof panel by adhesive. A landau type fabric roof cover is added to the rear to complete the assembly.

The brush finish on the panel surface provides a uniform soft-gloss appearance. Any damage to the panel or line finish distorts the brushed pattern and highlights the imperfection.

The procedures necessary to maintain the original appearance and correct surface damage which may occur to the stainless panel finish are included. Panels which are dented or deeply gouged are not repairable and will require replacement.

This entire procedure should be reviewed before any work is begun. The stainless steel roof is a custom option, and requires a high degree of skill. Care must be exercised during the performance of all service operations to assure satisfactory results.

PREPARATION FOR DELIVERY

To protect the brush finish of the stainless steel top during transit, a wax coating has been applied at the production plant. It is recommended that the shipping wax be removed and a new coating of wax be applied prior to delivery to the customer.

1. Flush panel with water to remove any water soluble material that may be present on surface.
2. Using one of the wax and grease removing solvents specified on material list and a clean (nonsynthetic) soft cloth, wash entire surface of panel to remove all traces of shipping wax.

   NOTICE: Do not allow solvents to contact fabric roof cover as damage may result.

3. Remove applied cleaning solvent from surface while still wet, using a dry (nonsynthetic) clean cloth. Wipe in direction of finish.
4. Apply a new wax coating with a clean (nonsynthetic) soft cloth. Wipe in the direction of brush finish.

CLEANING AND WAXING OF STAINLESS STEEL FINISHING PANEL

1. Flush panel with water to remove excess dirt. Use a mild nonabrasive household detergent (Joy, Vel or equivalent) and wash panel surface to remove any water soluble contaminants. Always wipe panel in the direction of the brush finish. Stubborn stains can be removed using a household scouring cleanser (Bon Ami or equivalent).
2. To protect the stainless steel finishing panel outer surface from contaminants, apply a wax coating (Finish Guard, Clean-On Glaze #1050223, Simoniz Paste Wax, J-Wax Kit or equivalent) to the complete surface. Follow brushed finish when applying wax compounds.

   NOTICE: When waxing the brushed finish of the stainless steel finishing panel, use of a polishing wheel is not recommended. A power wheel will cause distortion to the brush-finish pattern (swirl marks).

REPAIR OF MINOR SURFACE SCRATCHES

It may be necessary to remove or to protect with masking tape any roof moldings in the area(s) to be reworked. Before any repair operations are performed, it is necessary to remove all foreign material from the panel.

1. Flush panel with water to remove any water soluble material that may be present on surface. Using one of the wax and grease removing solvents specified on material list and a clean (nonsynthetic) soft cloth, wash entire surface of panel to remove all traces of wax. Remove applied cleaning solvent from surface while still wet, using a dry (nonsynthetic) clean cloth. Wipe in direction of finish.
2. Mask-off and/or cover adjacent moldings, vinyl top and painted surfaces to prevent damage during repair operations. Minor scratch repair does not require removal of the original brush finish. The repair is effected by redefining existing pattern in the damaged area.
3. Attach straightedge guide (Fig. 8-49) adjacent to damaged area (parallel to brush lines in the panel). Sight straightedge from both directions to be sure of alignment before beginning sanding operation.

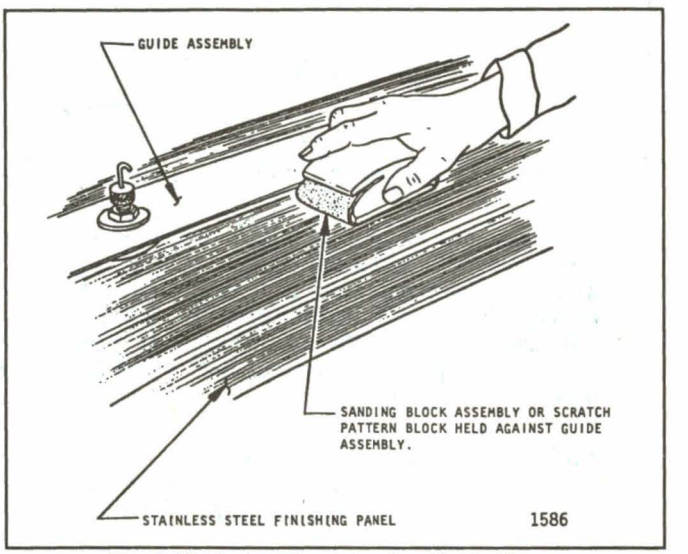


Fig. 8-49 Typical Straightedge Guide Usage

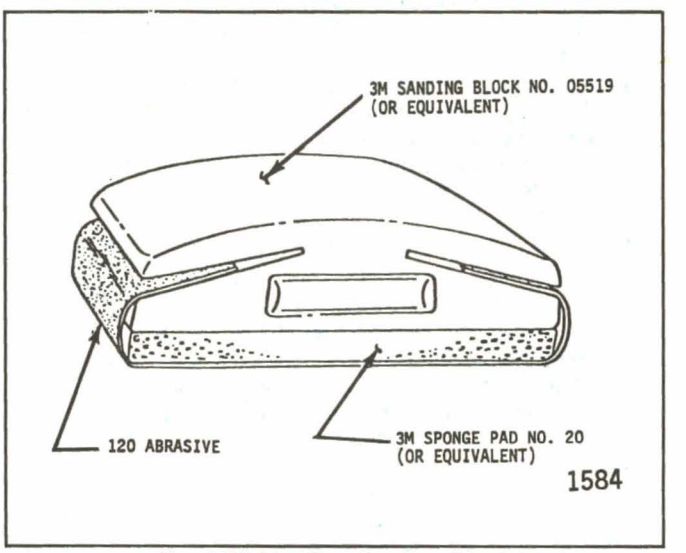


Fig. 8-50 Modified Sanding Block

4. Using a 120 grit abrasive on a sanding block with a sponge pad between abrasive and block (Fig. 8-50), make several passes over the damaged area. It is not necessary to sand the entire length of the panel. Avoid excessive sanding in one area as an edge line may result that is difficult to blend.

   Do not use sanding block in contoured areas. Hand hold 120 grit abrasive and sand as shown in Figure 8-51.

   Visually inspect repair area to be sure that original discrepancy has been completely removed.

   Using medium cut Scotch-Brite pad or equivalent with scratch pattern block held against guide (Figs. 8-49 and 8-52)

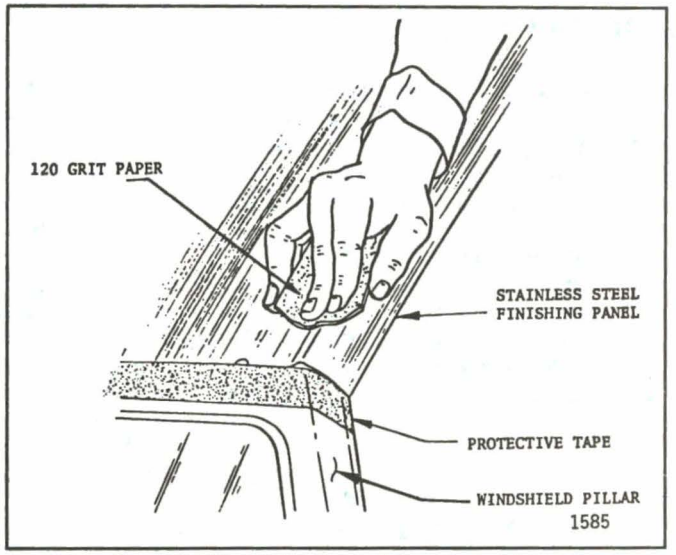


Fig. 8-51 Hand Sanding of Contoured Area

blend repair area into original finish by making several passes over sanded area. Limit this operation to as few passes as necessary to blend repair into the surrounding area. Excessive rubbing with Scotch-Brite pad or equivalent will develop a shiny surface which results in a gloss highlighting condition. Continue this operation varying location of guide as required to cover damaged area.

NOTICE: Abrasive sanding materials previously used for other metal repair operations must not be reused on the stainless steel panel or galvanic discoloration will result on the panel surface.

5. Clean the surface of the panel by brushing or wiping abrasive dust from work area. Do this often while sanding is in process. Always wipe in direction of grain pattern.
6. Upon completion of blending operation, entire stainless steel finishing panel should be cleaned using a wax and grease removing solvent on a clean (nonsynthetic) soft cloth. Wash surface of panel, wiping in direction of the grain pattern. Do not allow solvents to contact fabric roof cover as damage may result.
7. Remove applied solvent from surface of panel while still wet, using a dry (nonsynthetic) clean soft cloth. Wipe in direction of the grain pattern of the panel.
8. To protect the stainless steel finishing panel outer surface from contaminants, apply a wax coating (Finish Guard, Clean-On Glaze #1050223, Simoniz Paste Wax, J-Wax Kit or equivalent) on complete surface. Apply wax in the direction of grain pattern.

   NOTICE: When waxing the brushed finish of the panel, use of a polishing wheel is not recommended. A power wheel will cause distortion to the brush-finish pattern (swirl marks).

9. Remove all masking and/or covers and install all previously removed components.

REPAIR OF MAJOR SURFACE SCRATCHES

Do not use this procedure unless the scratch(es) cannot be successfully removed using the Repair of Minor Surface Scratches procedure.

It may be necessary to remove or to protect with masking tape any roof moldings in the area(s) to be reworked. Before any repair operations are performed, it is necessary to remove all foreign material from the panel.

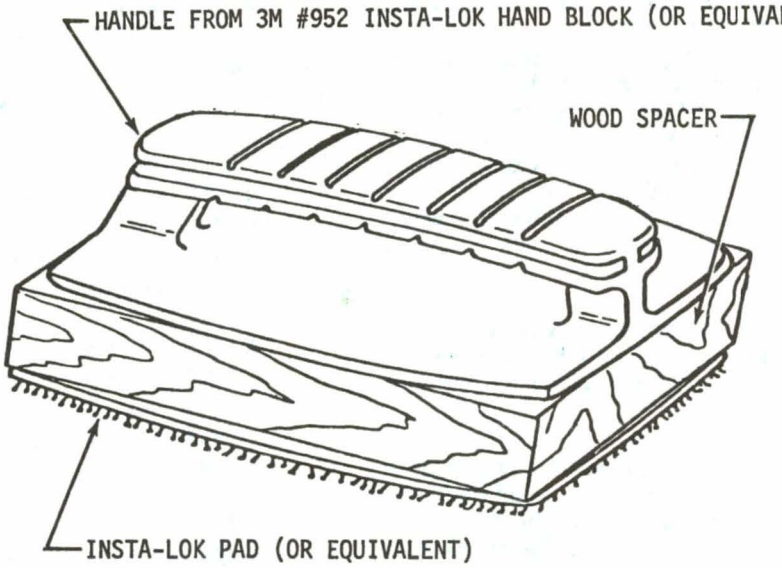
1. Flush panel with water to remove any water soluble material that may be present on surface. Using one of the wax and grease removing solvents specified on material list and a clean (nonsynthetic) soft cloth, wash entire surface of panel to remove all traces of wax from the panel. Remove applied cleaning solvent from surface while still wet, using a dry (nonsynthetic) clean cloth. Wipe in direction of grain pattern.
2. Mask-off and/or cover all adjacent moldings, vinyl top and paint surfaces to prevent damage during repair operations.

   NOTICE: Abrasive sanding materials previously used for other metal repair operations must not be reused on the stainless steel panel or galvanic discoloration will result on the panel surface.

3. With a random orbital sander and #360 or #400 grit abrasive on a soft backing pad, lightly sand the damage area using the toe of sander to minimize surface contact.
4. Continue sanding area until scratch(es) are removed, then blend edges of repair by feathering into adjacent area.

   NOTICE: Too much pressure during sanding will cause an uneven removal of material and generate unnecessary heat. Sanding heat will build-up rapidly as the thermal conductivity of stainless is one third that of standard body steel. Continued pressure could discolor panel by overheating local area, necessitating panel replacement.

5. Clean the surface of the finishing panel by brushing or wiping grindings and abrasive dust from work area. This should be done often while sanding is in process. Always wipe in direction of grain pattern.
6. The finished surface should now be visually inspected. A clear, distortion-free surface with minor background lines is acceptable. At this time the pattern and brilliance will differ from the original finish.
7. Attach straightedge guide (Fig. 8-49) adjacent to damaged area (parallel to the brushed finish lines in the panel). Sight straightedge from both directions to be sure of alignment before beginning hand sanding operation.
8. Using a 120 grit abrasive on a sanding block with a sponge pad between abrasive and block (Fig. 8-50), make several passes over the damaged area with block held against guide (Fig. 8-49). It is not necessary to sand the entire length of the panel. Avoid excessive sanding in any one area as an edge line may result that is difficult to blend. On contoured surfaces, hand sand using 120 grit abrasive as shown in Figure 8-51.
9. Visually inspect repair area to be sure that original discrepancy has been completely removed.
10. Using medium cut Scotch-Brite pad or equivalent with scratch pattern block held against guide (Figs. 8-49 and 8-52), blend repair area into original finish by making several passes over sanded area. Limit this operation to as few passes as necessary to blend repair into the surrounding area. Excessive rubbing with Scotch-Brite pad or equivalent will develop a shiny surface which results in a gloss highlighting condition. Continue this operation varying location of guide as required to cover damaged area.
11. Upon completion of blending operation, entire stainless steel finishing panel should be cleaned using a wax and grease removing solvent and a clean (nonsynthetic) soft cloth. Wash surface of panel, wiping in direction of the grain pattern. Do not allow solvents to contact fabric roof cover as damage may result.
12. Remove applied solvent from surface of panel while still wet using a dry (nonsynthetic) clean soft cloth. Wipe in direction of the grain pattern of the panel.



In order to use the medium cut Scoth-Brite material (or equivalent) called out in the procedures, it is necessary to fabricate a special sanding block as follows:

1. Obtain a 3M Insta-Lok Hand Block No. 952 (or equivalent).
2. Separate the Insta-Lok (or equivalent) pad from the plastic handle.
3. Obtain a 1" x 4" (nominal dimensions) piece of lumber and cut off a 6" length.
4. Using contact cement, cement the wood to the handle and the Insta-Lok (or equivalent) pad to the wood as shown in the above illustration.

This provides a block with sufficient thickness to follow the straight edge guide. Scotch-Brite pad (or equivalent) is fastened to the block using hand pressure. Adhesive is not required.

1582

Fig. 8-52 Fabrication Instructions for Scratch Pattern Block

13. Apply a wax coating (Finish Guard, Clean-On Glaze #1050223, Simoniz Paste Wax, J-Wax Kit or equivalent) on complete surface. Apply wax in the direction of grain pattern.
14. Remove all masking and/or covers and install all previously removed components.

COMPLETE REFINISH OF STAINLESS STEEL FINISHING PANEL

This procedure is to be used when damage to the finish is sufficiently widespread so as to make local repairs impractical, or previous repair efforts to blend a local repair have not been satisfactory and a complete refinish of the panel surface is required.

1. Remove all moldings around perimeter of stainless steel finishing panel. Refer to applicable section(s) of this manual.
2. Mask-off and/or cover all adjacent surfaces to prevent damage during refinish operation.
3. Remove applied wax using a wax and grease removing solvent on a clean (nonsynthetic) soft cloth. Wash entire surface of top finishing panel, wiping in the direction of the grain pattern. Do not allow solvents to contact fabric cover as damage may result.
4. Remove applied solvent from surface of panel while still wet using a (nonsynthetic) clean soft cloth. Wipe in the direction of the grain pattern.
5. With 120 grit abrasive held in hand as shown in the illustration (Fig. 8-51), sand the depressed area(s) of the panel from end to end using a continuous straight-line movement to establish new grain pattern.
6. Clean the sanded area(s) of finishing panel by brushing or wiping abrasive dust from surface. Clean often during sanding operations. Wipe in the direction of grain pattern.
7. Visually inspect the sanded area(s) for completeness of grain pattern.
8. Using a medium cut and polish Scotch-Brite pad or equivalent held in hand, make several passes (full length of panel) to re-establish the original uniform soft-gloss finish.
9. Clean the sanded area(s) of finishing panel, by brushing or wiping abrasive dust from surface. Clean often during sanding operations. Wipe in the direction of grain pattern.
10. Position straightedge guide so that sanding block with sponge pad and 120 grit abrasive will overlap previously grained area of finishing pattern.
11. Make several passes with sanding block held against guide (Fig. 8-49). Sand panel from end to end using a continuous straight line movement to establish new grain pattern. Wipe abrasive dust from work area as required. Always wipe in direction of grain pattern. Avoid excessive sanding in any one area as an edge line may result that is difficult to blend.

Visually inspect repair area to be sure that original discrepancy has been completely removed.

12. Using medium cut Scotch-Brite pad or equivalent on scratch pattern block held against guide (Figs. 8-49 and 8-52), blend repair area into original finish by making several passes over sanded area. Limit this operation to as few passes as necessary to blend repair into the surrounding area. Excessive rubbing with Scotch-Brite pad or equivalent will develop a shiny surface which results in a gloss highlighting condition. Continue this operation varying location of guide as required to cover damaged area.

NOTICE: Abrasive sanding materials previously used for other metal repair operations must not be reused on the stainless steel panel or galvanic discoloration will result on the panel surface.

13. Clean the surface of the panel by brushing or wiping abrasive dust from work area. Do this often while sanding is in process. Always wipe in direction of grain pattern.
14. Upon completion of blending operation, entire stainless steel finishing panel should be cleaned using a wax and grease removing solvent on a clean (nonsynthetic) soft cloth. Wash surface of panel, wiping in direction of the grain pattern. Do not allow solvents to contact fabric roof cover as damage may result.
15. Remove applied solvent from surface of panel while still wet using a dry (nonsynthetic) clean soft cloth. Wipe in direction of the grain pattern of the panel.
16. Apply a wax coating (Finish Guard, Clean-On Glaze #1050223, Simoniz Paste Wax, J-Wax Kit or equivalent) on complete surface. Apply wax in the direction of grain pattern.
17. Remove all masking and/or covers and install all previously removed components.

Material and Equipment List

The following materials and equipment are needed to perform the repair operations.

1. Wax and grease removing solvent (DuPont's Prep-Sol, RM's Pre-Kleano, Sherwin-Williams' Sher-Will Clean, Ditzler's D-X 330, VM and P Naphtha or equivalent).
2. Clean soft (nonsynthetic) cloth.
3. Wax (Finish Guard, Clean-On Glaze #1050223, Simoniz Paste Wax, J-Wax Kit or equivalent).
4. 120 grit abrasive (3M, Norton or equivalent).
5. 360 and/or 400 grit paper (3M, Norton or equivalent).
6. Medium cut and polish pad (3M #7440 Scotch-Brite pad or equivalent).
7. Masking tape.
8. Protective covering (to protect adjacent painted and vinyl top surfaces).
9. Soft disc pad backing (3M or equivalent).
10. Insta-Lock Hand Block (3M #952 or equivalent).
11. Sanding block (3M #05519 or equivalent).
12. Scratch pattern block (fabricate as outlined in Fig. 8-52).
13. Guide assembly (fabricate as outlined in Fig. 8-53). In some minor repair situations, a wooden batten or yardstick can be taped to the panel and used as a sanding guide.
14. Random orbital sander.
15. Wide soft-bristle paint brush.
16. Household scouring cleanser (Bon Ami or equivalent).
17. 3M sponge pad no. 20 or equivalent.

Panel Removal

1. Remove the following items:
   a. Front roof finishing molding and clips.
   b. Rear roof finishing molding and clips.
   c. Quarter windows as described in Section 6 of this manual.
   d. Roof rail weatherstrips and retainers as described in section 5 of this manual.
   e. Roof drip moldings.
   f. Finishing molding around sun roof opening if so equipped.
2. Protect painted edge of roof panel and fabric roof cover with cloth-backed tape.
3. Using a sharpened putty knife, drive blade between stainless panel and roof to cut adhesive. See Figures 8-54 and 8-55 for adhesive pattern.
4. Using locking-type pliers, fold the outer edges of stainless panel over the roof as far as possible.
5. After cutting adhesive strip, continue to fold panel back to gain access to next adhesive strip. Continue cutting and folding procedure until panel is removed.
6. Using a razor blade or similar tool, cut away any excessive adhesive that might still be on the roof of the vehicle. It is not necessary to remove all traces of old adhesive.

Panel Installation

Replacement panels will include the insulating tape around the edges of the panel. Do not remove this tape. Missing or damaged tape may be replaced using two layers of vinyl electrical tape. To avoid a future corrosion problem, any damage to the roof panel must be repaired and repainted prior to installation of the new stainless panel.

1. Clean underside of stainless panel with soap and water and wipe dry.
2. Using Dow Corning 1200 Prime Coat or equivalent, prime both the underside of the stainless steel panel and the painted surface of the roof panel. Both surfaces **MUST** be primed to insure adequate adhesion.
3. Using the old adhesive residue as a guide, apply a 6 mm (1/4") bead of Dow Corning Silicone Rubber Sealant No. 732 White or equivalent to the roof panel of the vehicle. Do not apply new adhesive directly over old residue. Care must be taken not to block the two 25 mm (1") gaps in the adhesive at the rear edge of the panel as shown in Figures 8-54 and 8-55.
4. Place stainless panel in position on the vehicle, panel should not be in direct contact with the weld studs. Using hand pressure, press panel firmly in place.
5. Replace all previously removed components.
6. Apply a wax coating to the new panel. Follow waxing procedures as outlined in this section.

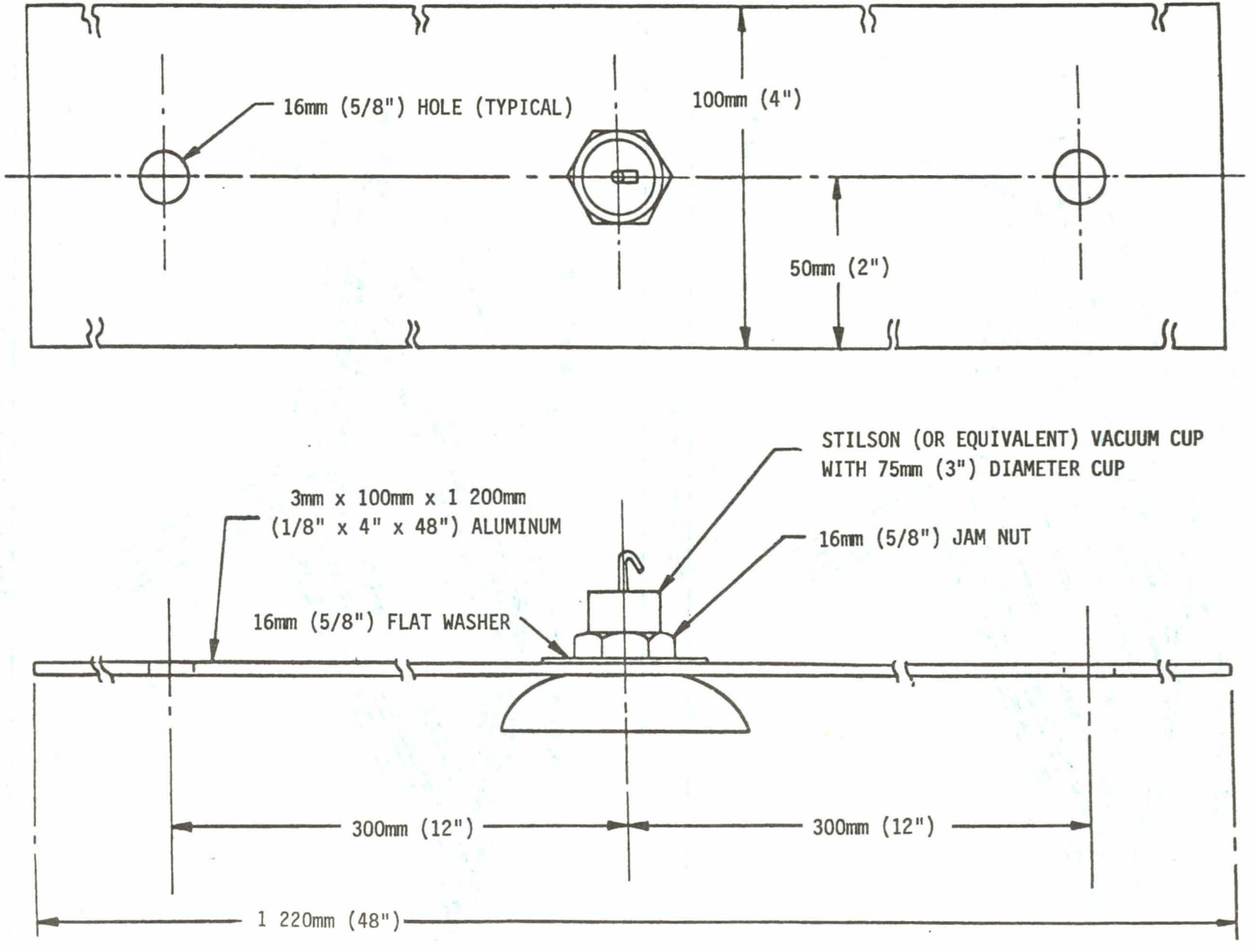


Fig. 8-53 Instructions for Fabricating a Straightedge Sanding Guide

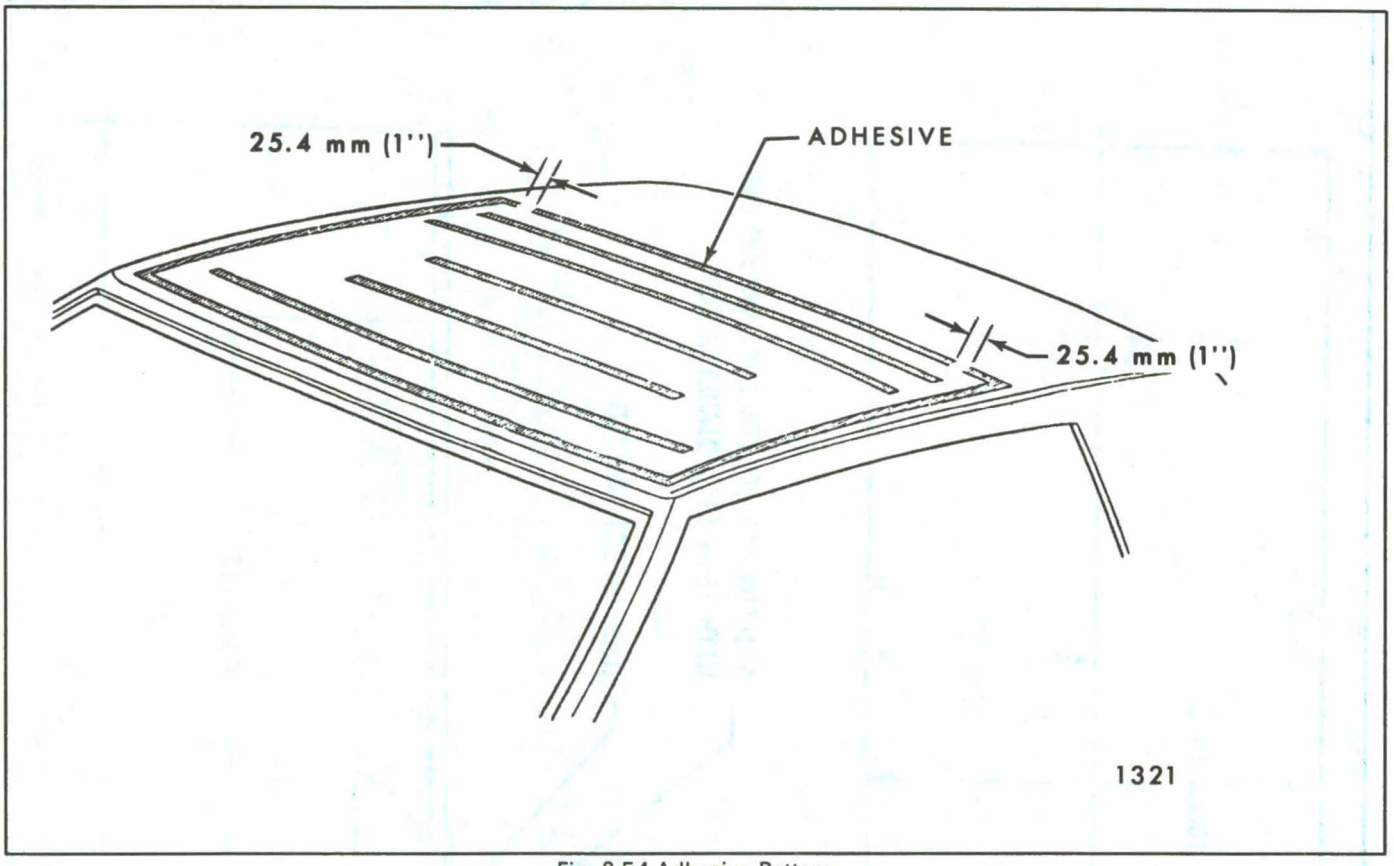


Fig. 8-54-Adhesive Pattern

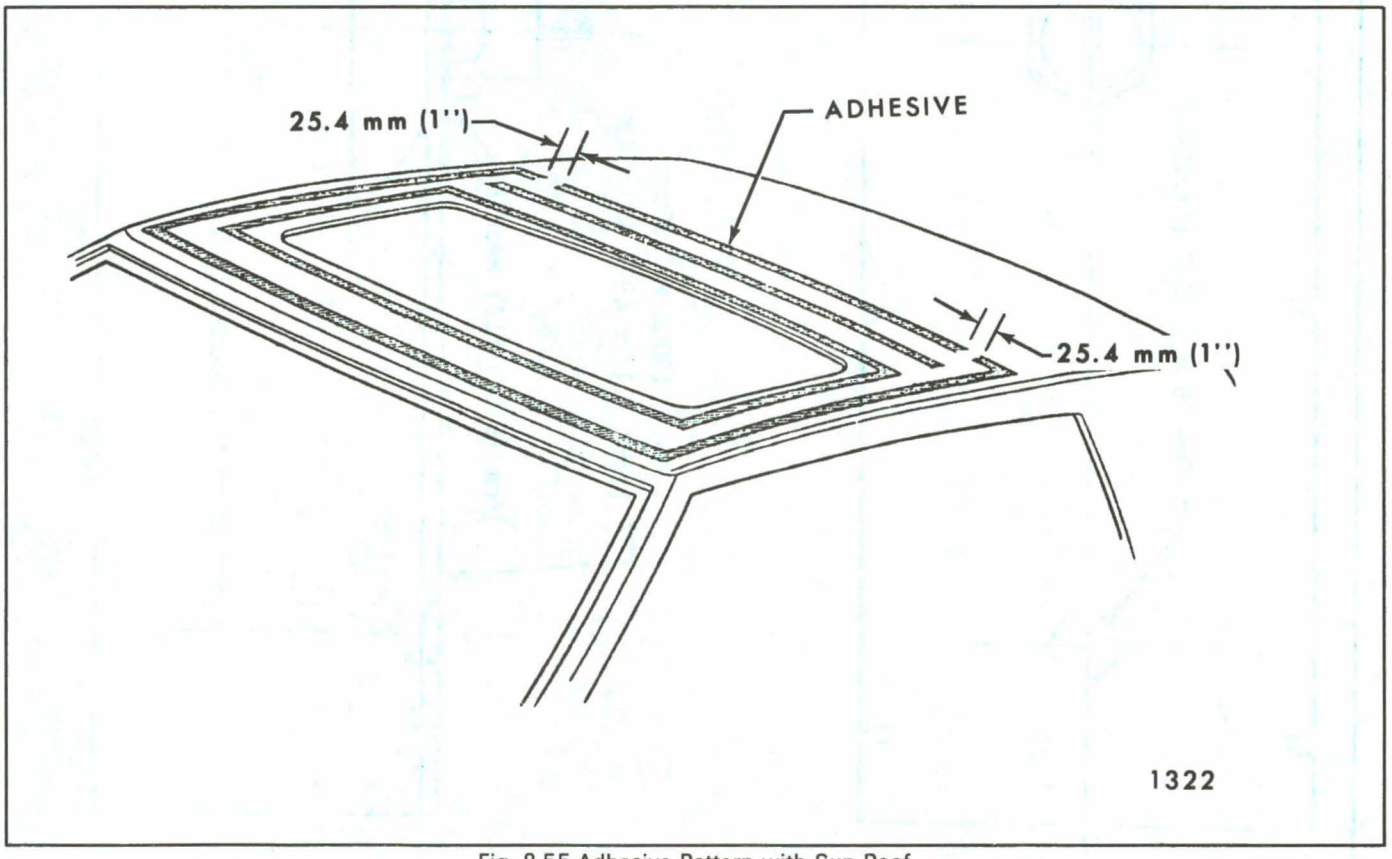


Fig. 8-55-Adhesive Pattern with Sun Roof

SUN ROOF - B, C, E, G AND K STYLES

Two electric operated metal sliding sun roofs are available (painted or vinyl covered) as an option (CA1) on some G coupe styles. The sun roof feature permits opening of a sliding section of roof panel to admit sunshine and outside air into the passenger compartment (Fig. 8-56).

An electric operated glass sliding sun roof is available as an option (CF5) on all E and G coupes and B, C and K coupes and sedans except Chevrolet. The glass sun roof permits sunshine to enter the passenger compartment, when the sliding sunshade is moved rearward, without opening the sliding glass panel.

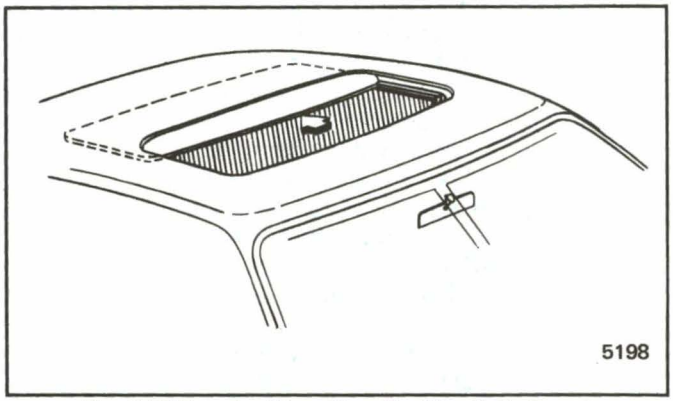


Fig. 8-56-Exterior View (Sun Roof Partially Open)

The sun roof is controlled by a two-position switch mounted in the windshield header area of the headlining (Fig. 8-57) on all styles except Cadillac. On Cadillac styles, the switch is located in the sunshade lamp retainer assembly (Fig. 8-61).

During the opening cycle, the sun roof sliding panel retracts down and rearward on guide channels into the stowage space of the sun roof housing between the headlining trim finishing panel and the roof. During the closing cycle as the sun roof panel moves forward and nears the end of its forward travel, the rear portion initially moves upward on ramps located on the inboard side of the guide channels. The panel continues to move forward until the front support rollers contact the front stops. The motor driven cables continue forward until the front support rollers are located on top of the front cable ramps and the rear lifter links of the cable assemblies are vertical. This places the panel flush with the roof surface and compresses the sliding panel seal to the under surface of the roof opening. The sun roof may be left partially open in either direction of travel.

The sun roof can be opened or closed manually on all styles except Cadillac in the event of electrical failure. To do this, remove small round plug located at the center of the headlining near the front edge of the roof opening to gain access to the drive gear. Remove the plug by grasping with fingers and pulling downward (Fig. 8-57). 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.

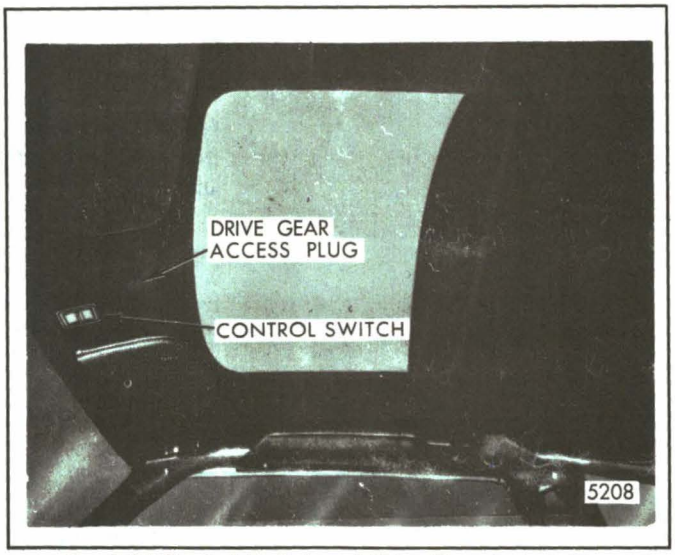


Fig. 8-57-Control Switch and Drive Gear Access Plug

The sun roof is driven by a 12V reversible permanent magnet actuator with an integral gear drive mechanism. The actuator assembly is mounted to the housing near the center of the windshield header forward of the sun roof opening. The actuator assembly drive gear drives two flexible cables that are routed through conduits on each side of the center guide, through the center guide and into guide assemblies controlling the movement of the sliding panel.

For information on electrical wiring, refer to Power Sun Roof in Section 10.

DRAIN HOSES

Four rubber drain hoses, one at each corner of the sun roof housing, are used to drain water that may bypass the weatherstrip seal around the roof opening. The two forward hoses (Fig. 8-68) are routed downward through the right and left windshield pillars, and exit through holes in the middle of the front body hinge pillars. The rear drain hoses (Fig. 8-69) are routed down into the area between the inner and outer quarter panels forward of the rear wheelhousings, allowing water to drain through the rocker and quarter outer panel drain holes.

During regular maintenance, check the front drain holes at the 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 a flexible wire.

To clean rear drain hoses, use air pressure or a flexible wire from the bottom of the tubes. Remove the quarter upper trim panel for access to the lower end of the hose.

SUN ROOF DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Sun roof fails to rise or close completely.	1. Weak battery.	a. Start car motor to get proper battery voltage and activate system.
	2. Panel mispositioned in opening.	a. Loosen 8 nuts (with panel in closed position) and position panel. b. Loosen front guide stop

	3. Panel not flush to roof surface (Fig. 8-58).	and adjust fore or aft. a. Loosen guide assembly and adjust guide up or down. (Cable lifter links must be vertical for proper sealing).
	4. Cable front guides and front guide stop(s) misaligned.	a. Loosen cable guide adjusting screws and raise or lower guide. b. Loosen front guide stop and adjust fore or aft.
	5. Cable assembly lifter link not positioned identically (right to left), out of synchronization.	a. Loosen sliding panel front support(s) and pivot support(s) forward or rearward and retighten. b. Remove actuator and adjust cable cams by sliding cables forward or rearward. (Cams must be in same position on each side.)
	6. Actuator slippage. Motor buzzing with no cable movement.	a. Tighten bolt in bottom of actuator. b. Replace actuator.
	7. Cable slippage, clicking or ratcheting sound.	a. Remove actuator and center guide and replace guide or actuator gear if damaged. b. Check cable at center guide area for wear or stripping; replace cable if damaged.
	8. Wrong sliding panel weatherstrip (Fig. 8-73)	a. Replace weatherstrip
2. Sun roof panel jammed in roof opening.	1. Broken or stripped cable.	a. Replace cable.
	2. Foreign material in guide.	a. Remove foreign material from guide.
	3. Cable jammed in conduit.	a. Replace cable and conduit.
	4. Side guide(s) out of adjustment.	a. Adjust guide(s).
3. Sun roof actuator inoperative (ignition switch on).	1. Short or open within sun roof wiring.	a. Refer to checking procedure in Section 10.
	2. Faulty switch.	a. Replace switch.
	3. Defective actuator.	a. Replace actuator
4. Sun roof panel snaps or clicks when closing.	1. Rear cable support(s) mispositioned to panel.	a. Loosen support(s) and adjust.

SUN ROOF ADJUSTMENTS

Vertical Adjustments at Front of Panel (Fig. 8-58)

For access to adjustment provisions, slide sun roof panel rearward into the sun roof housing.

1. To obtain a flush fit with the roof, insert tool J-28652, BT-7919 or equivalent under guide 75 mm (3″) rearward of screws and loosen two screws on the front guide (located at front corner(s) of the guide assembly) with a T-25 star-shaped recess driver enough to disengage serrations provided on guide rail and guide plate.
2. To raise panel upward, insert tool J-28652, BT-7919 or equivalent between housing and guide, loosen two screws and rotate tool sideways to cam guide rail upward. Hold guide assembly in position with tool until screws are tightened, thus engaging serrations.
3. After proper alignment is obtained, tighten screws to torque specifications.

   For proper adjustment, lifter links located at the rear cable supports must be vertical or top of link slightly rearward of vertical and sliding panel front support rollers must be positioned on top of cable guide ramp.
4. Adjust opposite front guide in same manner if required.

   If additional adjustment is required, a stack of washers not to exceed 1.5 mm (1/16″) thick can be added over panel attaching studs before supports are installed.

Vertical Adjustment at Rear of the Panel

1. To obtain a flush fit with the roof, insert adjustment tool J-28652, BT-7919 or equivalent under guide 75 mm (3") forward of rear adjustment screws. Loosen the two adjustment screws at the rear corner(s) of the guide assembly. Follow steps 2, 3 and 4 used to align front corner of panel.
2. Adjust opposite rear guide in same manner, if required.

Alignment of a Panel That Does Not Run "True"

1. Close roof panel to find which side of panel jams.
2. With roof panel closed, remove actuator.
3. Align panel within opening to desired position assuring constant margins.
4. Reinstall actuator.

Horizontal Adjustment of Sliding Panel (Fig. 8-58)

1. To obtain a proper fit in center of roof opening, place the sliding panel in the open position. Loosen the front guide stop(s), slide stop(s) forward or rearward, tighten guide screws and close sliding panel.
2. Additional adjustment can be achieved by loosening all eight support-to-sliding panel nuts (with sliding panel in closed position). Move the sliding panel either fore or aft and tighten the nuts.
3. For additional corrections and conditions, refer to sun roof diagnosis chart.

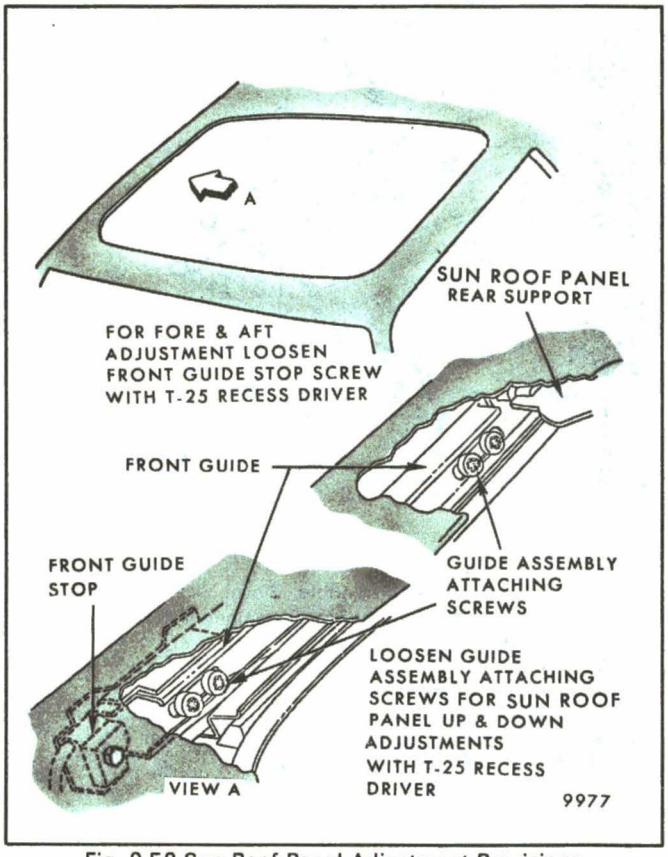


Fig. 8-58-Sun Roof Panel Adjustment Provisions

SUN ROOF OPENING HEADLINING RETAINER

Removal and Installation (Fig. 8-60)

1. Remove headlining close-out lace.
2. Remove headlining material from headlining retainer.
3. Remove headlining retainer from housing flange by pulling inward starting at the ends located at the rear of the sun roof opening.
4. To install headlining retainer, place ends of retainer at center of the rear line of the sun roof housing opening.
5. Tap retainer onto housing around entire perimeter of opening, corners must be fully installed.

SLIDING SUN ROOF ACTUATOR

The actuator is protected against any stall force imposed upon it by a slip clutch contained within the gearbox.

Removal and Installation

1. Place sun roof sliding panel in the full rearward position.
2. Remove sun roof headlining close-out lace.
3. Remove headlining material from headlining retainer.
4. Pull downward carefully on front edge of hard headlining and remove the two actuator attaching screws.
5. Disengage wire harness from actuator.
6. Remove actuator assembly.
7. Insert edge of headlining into opening in headlining retainer, using headlining installer tool J-2772 or equivalent.
8. Insert headlining close-out lace starting at left side center of housing opening.

SUN ROOF SLIDING GLASS PANEL SUNSHADE

Removal and Installation

1. Remove sliding glass finishing cover with downward and forward motion.
2. Move sliding glass panel to the full rearward position.
3. Remove the guide retaining clips from studs located on the right-hand side only of the housing.
4. Remove right side headlining guide.
5. Remove handle from sunshade by removing screws.
6. Disengage sunshade from housing, lifting upward and outward on right side front corner of sunshade. Remove sunshade through sun roof sliding panel opening.
7. To install, reverse the removal procedure. When installing right-hand side sunshade retainer, make certain that tab on forward end of rear sunshade retainer is over the rear end of the front sunshade retainer.

CONTROL SWITCH - ALL EXCEPT CADILLAC STYLES

Removal (Fig. 8-59)

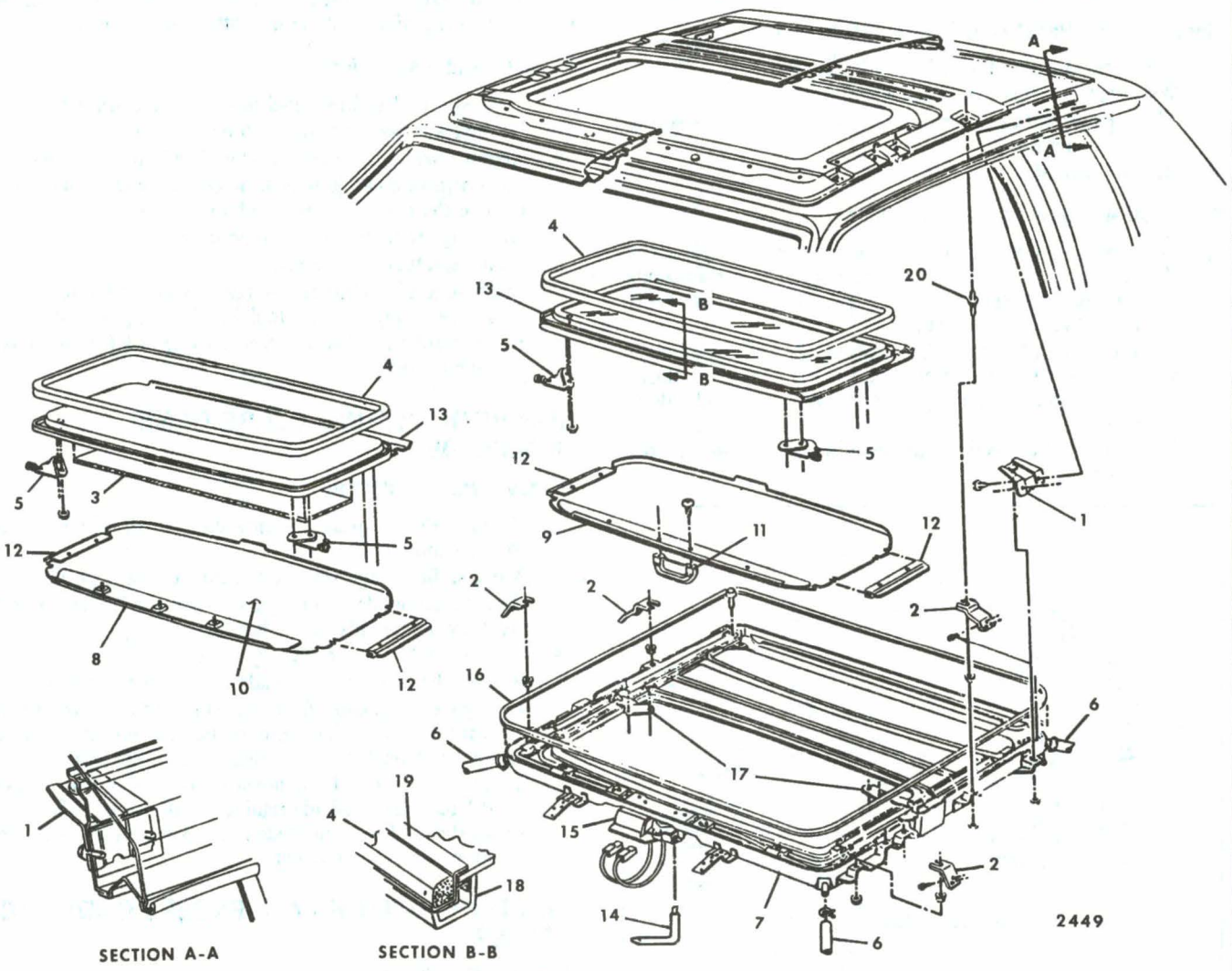
1. Place sun roof sliding panel in the full rearward position.
2. Remove sun roof opening headlining close-out lace.
3. Remove headlining material from headlining retainer along the front of the sun roof opening.
4. Pull hard headlining down enough to insert hand between headlining and actuator at switch. Compress spring retainers at switch. Carefully grip switch toggle bezel with fingers and pull downward to remove switch from retainer in headlining. Care must be taken when switch is removed not to lose switch retainer in front roof cavity.
5. Pull electrical connector through opening and disconnect.

Installation

1. Install connector on color coded switch.

   NOTICE: Care must be taken to back up switch with hand when installing switch or headlining may be damaged.

2. Install switch through front opening in headlining by pressing switch in while holding switch retainer in place until retaining clip engages.



1. Roof Rail To Housing Support
2. Side Roof Rail Front and Center Support
3. Sliding Panel Insulator
4. Sliding Panel Weatherstrip
5. Sliding Panel Front Support
6. Sun Roof Housing Drain Tube
7. Sun Roof Housing
8. Sliding Panel Headlining (Metal)
9. Sliding Panel Sunshade (Glass)
10. Sliding Panel Sunshade Retainer (Metal)
11. Sliding Panel Sunshade Handle (Glass)
12. Sunshade and Headlining Panel Retainer
13. Sliding Panel
14. Manual Crank
15. Sliding Panel Actuator
16. Housing Weatherstrip
17. Sliding Panel Rear Support (Component Of Cable)
18. Sliding Glass Panel Finishing Cover
19. Sliding Glass Panel Frame
20. Roof To Housing Screw

Fig. 8-59-Sun Roof Assembly Complete (Exploded)

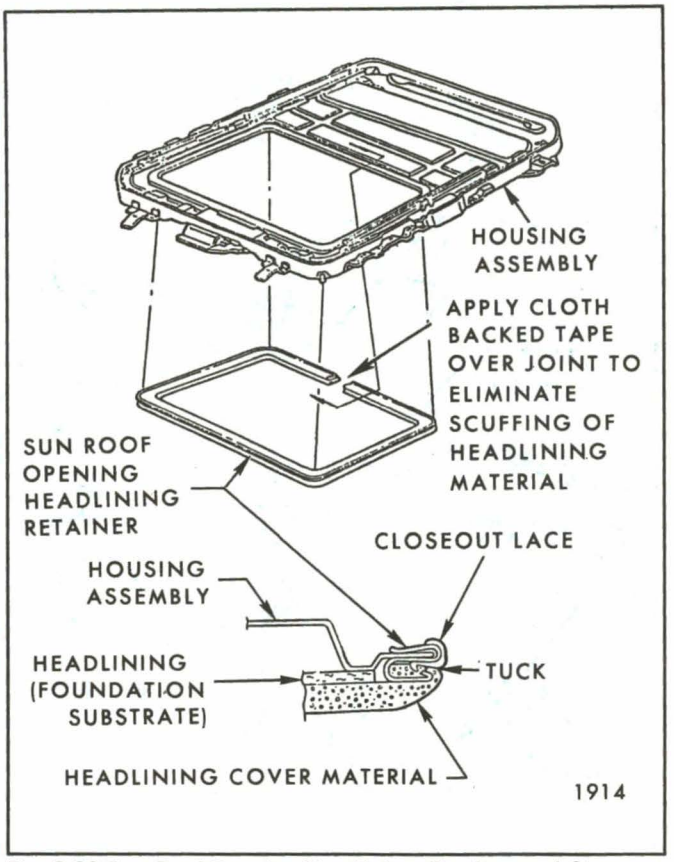


Fig. 8-60-Sun Roof Opening Headlining, Retainer and Close-out Lace Installation

3. Test switch for proper function.
4. Insert edge of headlining into opening in headlining retainer using headlining installer tool J-2772 or equivalent.
5. Insert headlining close-out lace, starting at left side center of housing opening.

CONTROL SWITCH - CADILLAC STYLES

Removal and Installation (Fig. 8-61)

1. Remove both retainer lenses by inserting a thin-bladed tool between lens and retainer and snap lens from retainer.
2. Remove screws from retainer and lower for access to switch.
3. Disconnect switch wire harness and remove switch from retainer.
4. To install, reverse the removal procedure.

MAP LAMP SUPPORT - CADILLAC C, E AND K STYLES

Removal and Installation (Fig. 8-62)

1. Remove sunshade rod and map lamp retainer.
2. Remove map lamp support attaching screws and remove support.
3. To install, reverse removal procedure.

SUN ROOF SLIDING METAL PANEL HEADLINING

Removal and Installation (Fig. 8-64 and 8-65)

1. Move sliding panel to half-open position.
2. Disengage sliding panel headlining fasteners by pulling downward and then slightly forward on front edge of sliding panel headlining.
3. Move metal sliding panel to full rearward position.

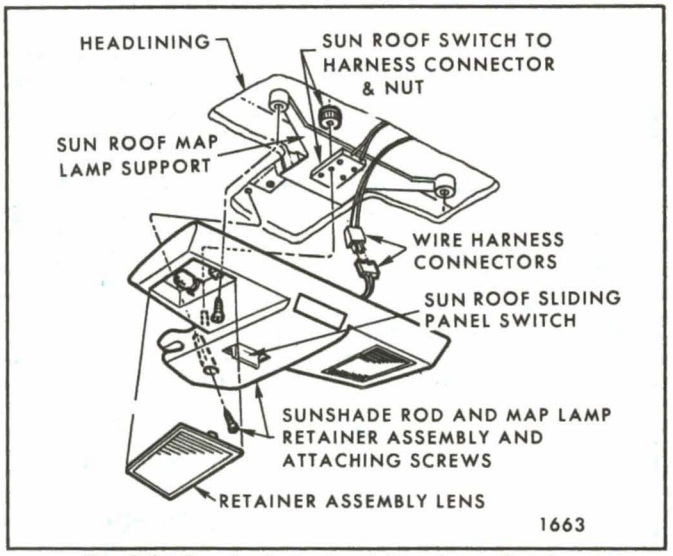


Fig. 8-61-Sunshade Rod and Map Lamp Retainer

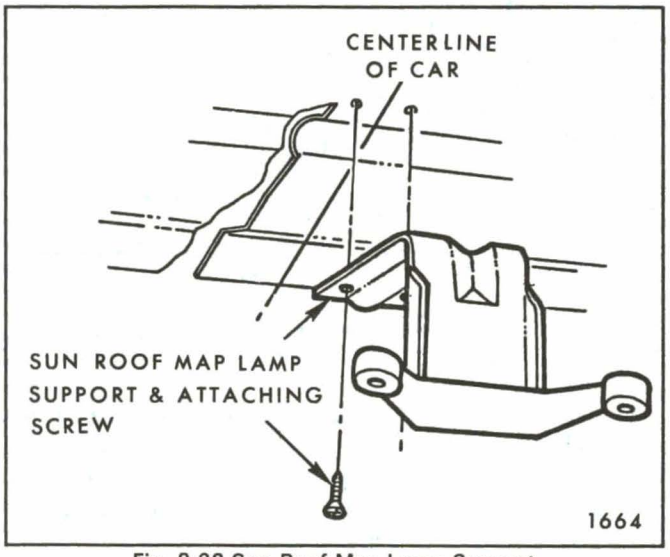


Fig. 8-62-Sun Roof Map Lamp Support

4. Remove front guide retaining clips from studs located on right-hand side of housing and remove front headlining guide.
5. Lift sliding panel headlining from housing. Remove headlining through sun roof sliding panel opening by lifting upward and outward on right front corner of headlining.
6. To install, reverse the removal procedure.
   When installing right-hand side front headlining guide, make certain that tab on forward end of rear headlining guide is over the rear end of the front headlining guide.

SUN ROOF SLIDING PANEL SUNSHADE OR HEADLINING SIDE RETAINER

Removal and Installation (Fig. 8-63)

1. Remove sun roof sliding panel sunshade or headlining panel.
2. Remove retainer by first depressing retaining tabs through small access holes near the ends of the retainer.
3. Pull outboard and disengage retainer from panel.
4. To install, reverse removal procedure.

SUN ROOF HOUSING

Removal and Installation (Fig. 8-65)

1. Place sunshade in the stowed position.

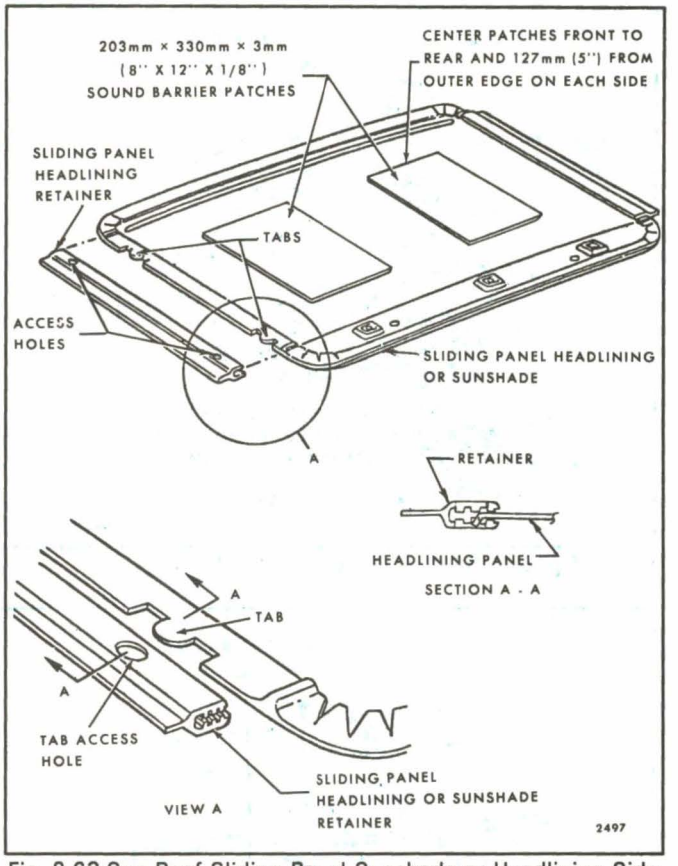


Fig. 8-63-Sun Roof Sliding Panel Sunshade or Headlining Side Retainer

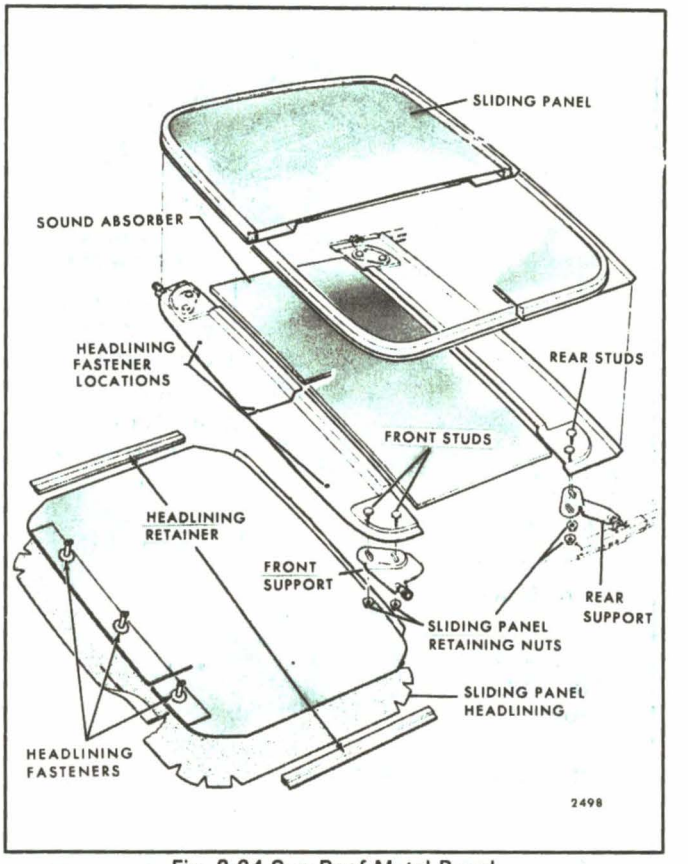


Fig. 8-64-Sun Roof Metal Panel

2. Move sliding panel rearward until front rollers on the sliding panel contact the bottom of the cable guide ramp (forward down position).
3. Remove garnish moldings, coat hooks, map lamp retainer and dome lamp.
4. Remove sun roof opening headlining close-out lace.
5. Remove headlining material from headlining retainer.
6. Disengage and lower headlining.
7. Disconnect wire harness from switch and dome lamp, remove headlining.
8. Remove dome lamp retaining studs.
9. Remove hoses from housing.
10. Remove screws from each of the rearmost side supports.
11. Remove screws holding the housing to the front header.
12. Support sun roof housing and remove nuts from the side front screws that retain the housing to the roof supports. Lower and remove sun roof housing.
13. To install, reverse the removal procedure. Torque nuts at the side front locations to a specified torque of 10 to 14 N·m (7 to 10 ft-lb).

SUN ROOF HOUSING TO ROOF FILLER

Removal and Installation

1. Place sun roof sliding panel in stowed position.
2. Pull top of filler rearward and remove plastic filler retaining clips from studs along front of housing and remove filler.
3. To install, reverse removal procedure.

SUN ROOF SLIDING METAL PANEL

Removal (Fig. 8-64)

1. Remove right or left side garnish moldings.
2. Remove sunshade, windshield side garnish molding and disengage headlining from side garnish area for access to housing attaching nuts and screws.
3. Move sliding panel rearward about 150 mm (6") and disengage front edge of headlining by pulling downward. Move metal panel rearward about 150 mm (6") and move headlining attaching fasteners away from headlining. Then slide headlining into the stowed (fully rearward) position.
4. Move sliding panel forward until front rollers on the sliding panel contact the bottom of the cable guide ramp (forward down position).
5. Remove attaching nuts from front and rear sliding panel supports.
6. Activate cables fully rearward to remove interference of cable supports with sliding panel.
7. Pull downward on one side of headlining to remove double end screw attaching nuts and rear support rail retaining screws to allow edge of housing to lower.
8. Tape front edge of roof opening to eliminate damage to roof vinyl top or painted surface.
9. Rotate and remove sliding panel upward through roof opening.

Installation (Figs. 8-66 and 8-67)

1. With headlining sliding panel in the stowed position, install sliding panel through sun roof opening and rotate into the housing.
2. Slowly move cable supports forward, aligning rear studs on sliding panel to slotted holes in sliding panel rear cable supports, then install nuts loosely.
3. Loosely engage front supports to sliding panel studs with nuts.
4. Position sliding panel in roof opening. Push upward on sliding panel to achieve a flush condition between the sliding panel and the roof opening.

5. With sliding panel in the flush (fully closed) position, torque all sliding panel support attaching nuts to a specified torque of 5 to 7 N·m (40 to 60 in-lb).
   If additional adjustments are required to flush sliding panel with roof opening, refer to adjustments in this section.
6. Move sliding panel rearward about 200 mm (8") and install headlining fasteners into front area of sliding panel headlining.

   NOTICE: Sliding panel headlining must be overcrowned to stop direct contact with front edge of sun roof opening and damage to headlining.

7. Pull downward on front edge of sliding panel headlining and slide sliding panel headlining rearward. Engage headlining fasteners to front area of sliding panel.

SUN ROOF SLIDING GLASS PANEL

Removal (Fig. 8-59)

1. Remove right or left side garnish moldings.
2. Remove sunshade, windshield side garnish molding and disengage headlining from side garnish area for access to housing attaching nuts and screws.
3. Remove sliding glass finishing cover.
4. Activate sun roof sliding panel slightly to lower sliding panel until front rollers on sliding panel make contact with bottom surface of cable guide ramp.
5. Position sliding glass panel sunshade in stowed position.
6. Remove attaching nuts from front and rear sliding panel supports.
7. Move cables fully rearward to remove contact of cable supports with sliding panel.
8. Pull downward on one side of headlining to remove double end screw attaching nuts and rear support rail retaining screws and lower housing.
9. Tape front edge of roof opening to eliminate damage to roof vinyl top or painted surface.
10. Rotate and remove sliding panel upward through roof opening.

Installation (Fig. 8-66)

1. With sunshade sliding panel in full rearward position, install sliding panel through sun roof opening into housing.
2. Slowly move cable supports forward, aligning rear studs on sliding panel to slotted holes in sliding panel rear cable supports on housing and install nuts loosely.
3. Loosely engage sliding panel front supports to sliding panel studs with nuts.
4. Position sliding panel in roof opening. Push upward on sliding panel to achieve a flush condition between sliding panel and roof opening.
5. With sliding panel flush with roof, torque all sliding panel support attaching nuts to a specified torque of 5 to 7 N·m (40 to 60 in-lb).
6. Install sliding glass finishing cover.

SUN ROOF SLIDING PANEL CABLE

Removal (Fig. 8-65)

1. Remove sun roof housing.
2. Remove actuator from housing.
3. Remove sun roof sliding panel rear cable support from sliding panel.
4. Remove rear guide stop screw from rear top of guide.
5. Remove rear guide support attaching screw.
6. Lift upward on rear of guide to clear rear of housing. Grasp rear sliding panel support and pull rearward to remove cable from guide.

Installation (Fig. 8-67)

1. Raise rear of guide and slide cable into guide.
2. Insert rear guide and rear guide stop screws.
3. Place sliding panel rear supports in same locations in each guide and attach rear support to sliding panel.
4. Push sliding panel forward until sliding panel front support rollers are placed on top of the cable guide ramps and against front stops.
   Before placing actuator in housing, both lifter links must be straight up and down for proper synchronization.
5. Install actuator into housing.

SUN ROOF SLIDING PANEL SIDE GUIDE ASSEMBLY

Removal (Fig. 8-65)

1. Remove housing assembly.
2. Remove sun roof sliding panel.
3. Remove actuator.
4. Remove rear guide retaining screw.
5. Remove front and center guide screws, front guide stop attaching screw and front guide stop.
6. Lift upward on rear of guide and remove guide from housing.
7. Remove cable from guide.

Installation

1. Route cable into guide and slide guide into housing.
2. Move guide forward until front attaching holes in guide and conduit line up. Install front guide stop with attaching screw.
3. To complete installation, reverse balance of removal procedure.

SUN ROOF HOUSING DRAIN HOSE REPLACEMENT

The following procedures for removing and installing a front or rear sun roof module drain hose pertains to one side of the vehicle but is applicable for either right or left side.

Removal and Installation - Front Drain Hose (Fig. 8-68)

1. Remove the sun roof finishing lace and pull the headlining from the tuck type retainer halfway around the sun roof opening on the side of the vehicle being serviced.
2. Remove the sunshade.
3. Remove the headlining side rail garnish, windshield pillar and loosen half of the windshield upper garnish moldings.
4. On B and C four-door styles, remove the shoulder belt upper guide trim cover and attaching bolt; then remove center pillar trim. On K styles, remove the upper center pillar trim cap.
5. To provide for headlining clearance, remove the forward two side rail garnish molding clips.
6. Working through the sun roof opening, between the headlining and the roof, use pointed nose pliers to relieve the hose clamp and remove the hose from module drain tube.
7. Open the front door and tape a flexible wire to the lower end of the drain hose located at the upper portion of the front body hinge pillar.
8. With flexible wire securely attached to the drain hose, pull hose up and out of the windshield pillar through the sun roof opening to allow the flexible wire to be positioned through the windshield pillar.
9. Tape new hose to flexible wire at the top of the windshield pillar between the headlining and roof.

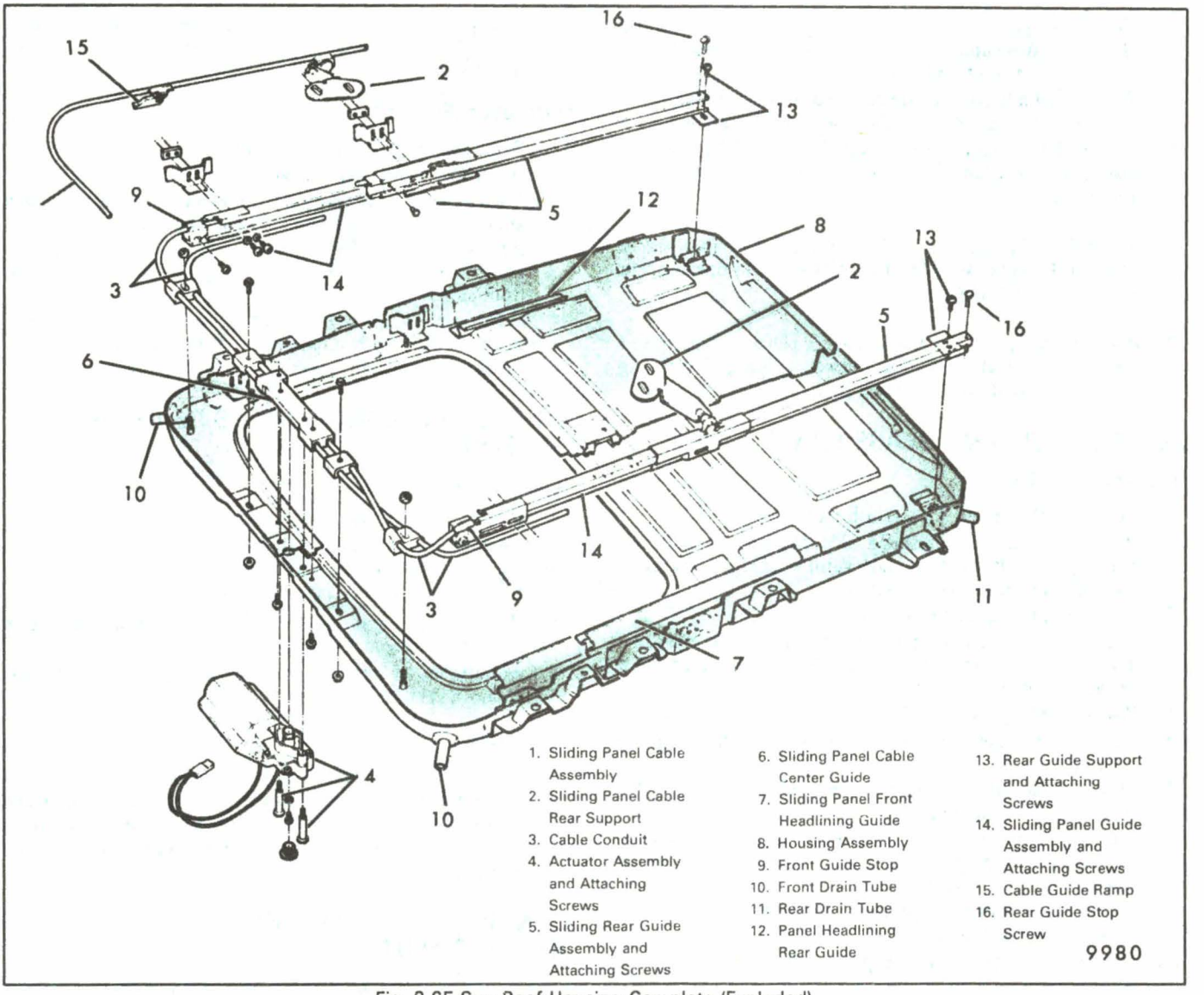


Fig. 8-65-Sun Roof Housing Complete (Exploded)

10. Pull the flexible wire downward at the front body hinge pillar to position the drain hose in the windshield pillar.
11. Secure the new hose to the drain tube outlet with the hose clamp and rotate ends of the hose clamp to face outboard.
12. Check the hose for kinks which could restrict removal of water from sun roof module.
13. Install all previously removed parts by reversing removal procedure.

Removal and Installation - Rear Drain Hose (Fig. 8-69)

1. Remove the sun roof finishing lace and pull the headlining from the tuck type retainer halfway around the sun roof opening on the side of the vehicle being worked on.
2. Remove the side rail and rear window garnish moldings.
3. On B and C four-door styles, remove the shoulder belt upper guide trim cover and attaching bolt, then remove center pillar trim. On K styles, remove the upper center pillar trim cap.
4. Remove upper sail and upper quarter trim. For trim removal instructions, see Section 6 of this manual.
5. On E styles, remove the upper quarter inner access panel.
6. Carefully lower headlining at side and rear and release drain hose clamp using pointed nose pliers.
7. Remove drain hose from sun roof module drain tube.
8. Pull drain hose upward enough to allow access to the lower end of hose at the front of the wheelhouse and securely tape a flexible wire to drain hose (Fig. 8-69).
9. To remove hose and position wire, pull top end of hose up through the quarter sail panel and roof side rail. Disconnect hose from wire.
10. Tape new hose to wire and pull down on wire to install drain hose through hole in upper roof side rail and sail panel.
11. Secure new hose to drain tube outlet with hose clamp. Rotate ends of hose clamp to face outboard.
12. Using a flashlight, check hose for kinks and proper routing as shown in Figure 8-69 by removing the lock pillar relief valve and visually inspecting the hose routing.
13. Install all previously removed parts by reversing removal procedure.

SLIDING GLASS FINISHING COVER

Removal and Installation (Fig. 8-70)

1. Place sliding sun roof sunshade in stowed position.
2. Remove finishing cover rear attaching screw.
3. Position sliding panel rearward about 200 mm (8″) and remove finishing cover front attaching screws.

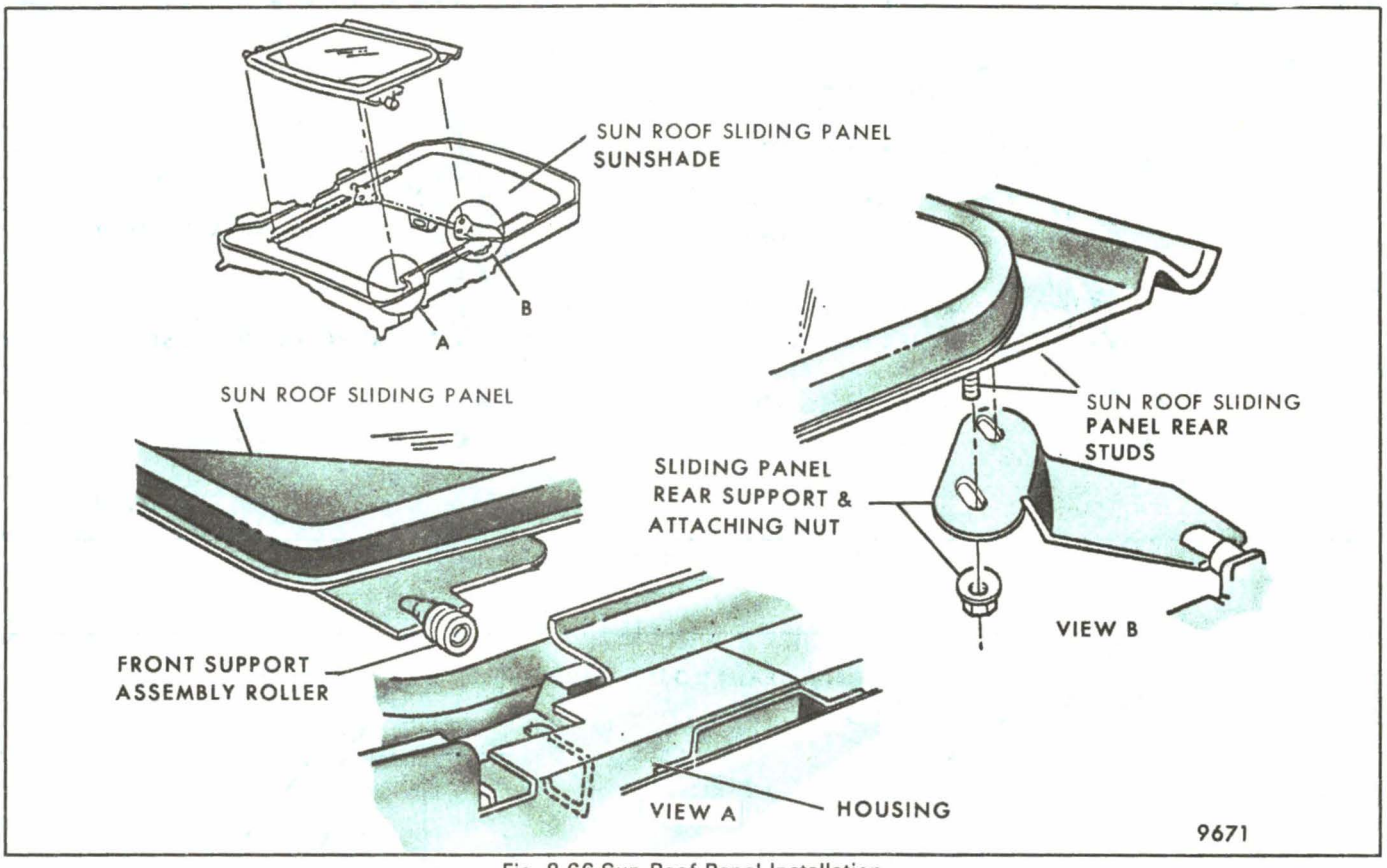


Fig. 8-66-Sun Roof Panel Installation

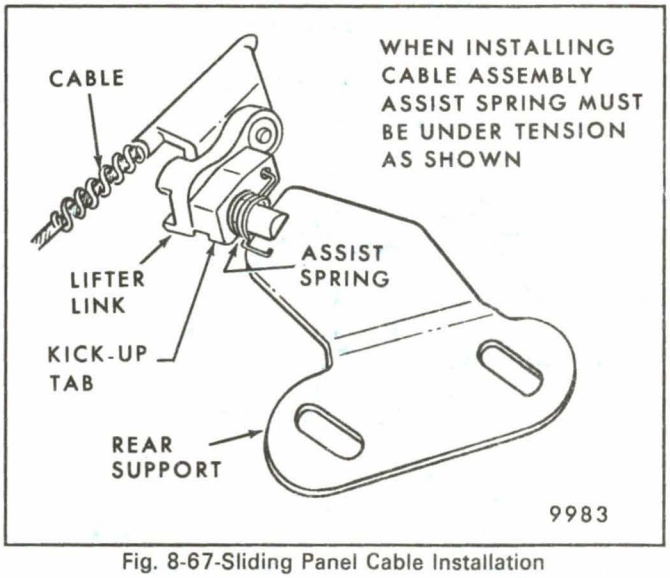


Fig. 8-67-Sliding Panel Cable Installation

4. Disengage finishing cover tabs from glass assembly, pulling downward and forward at center front edge of cover. Remove finishing cover from body.
5. To install, reverse removal procedure.

SUN ROOF SLIDING PANEL CABLE CENTER GUIDE

Removal and Installation (Fig. 8-65)

1. Slide sun roof sliding panel rearward to stowed position.
2. Remove sun roof opening headlining close-out lace.
3. Remove headlining material from headlining retainer on Cadillac styles.
4. Remove sunshade rod and map lamp retainer.
5. Carefully pull downward on front of headlining and remove actuator attaching screws and slide actuator forward.
6. Remove center guide attaching screws and lift center guide from housing.
7. To install, reverse removal procedure.

SUN ROOF HOUSING WEATHERSTRIP

Removal and Installation (Fig. 8-71)

1. Remove headlining assembly.
2. Remove sun roof housing assembly.
3. Remove weatherstrip from housing flange by pulling upward.
4. To install weatherstrip, position small V notch located on weatherstrip at front centerline of housing. This allows for proper positioning of cable guide plate notch cutouts located on each side of housing.
5. To complete installation, install all removed parts.

SUN ROOF SLIDING PANEL WEATHERSTRIP

Removal and Installation (Fig. 8-72)

1. Activate sun roof sliding panel, lowering sliding panel until front rollers on sliding panel make contact with bottom surface of cable guide ramps (Fig. 8-75).
2. Remove eight nuts holding front and rear sun roof sliding panel supports to sliding panel (Fig. 8-74).
3. Remove front supports from guide assemblies (Fig. 8-74).
4. Move sliding panel in sun roof opening (side to side or front to rear). Apply heat from heat gun to weatherstrip and remove weatherstrip by pulling upward.
5. Remove excessive weatherstrip adhesive from sliding panel channel (Fig. 8-72).
6. Apply weatherstrip adhesive to sliding panel gutter and install new weatherstrip into sliding panel gutter.

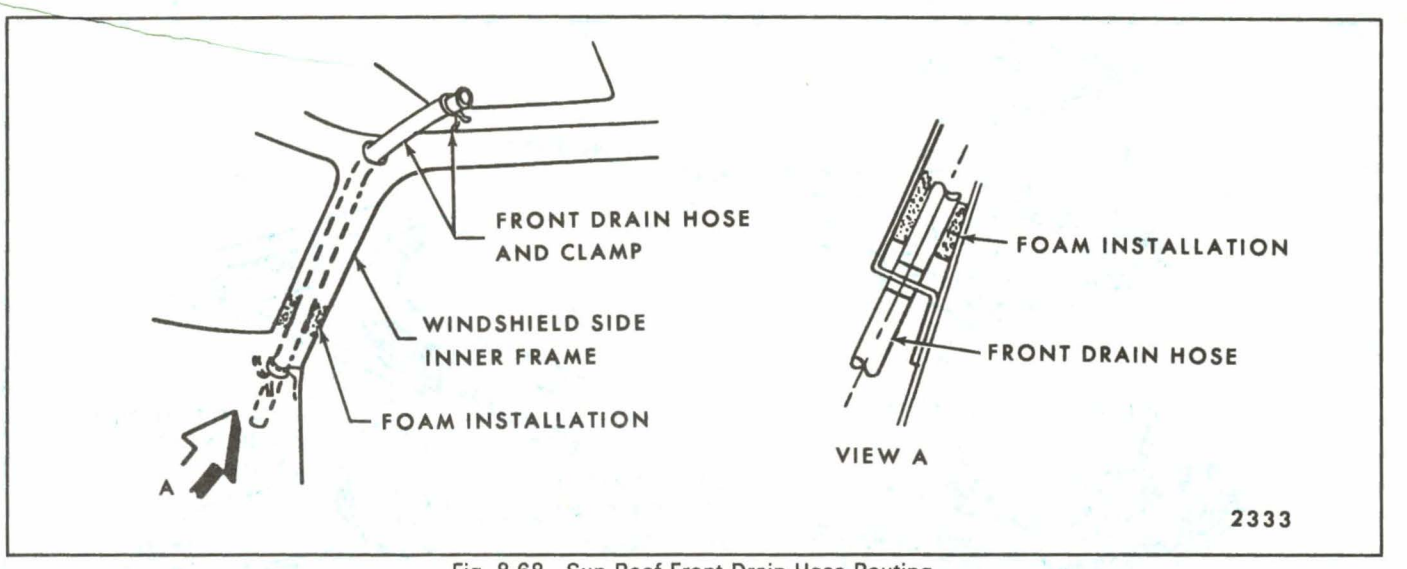


Fig. 8-68 - Sun Roof Front Drain Hose Routing

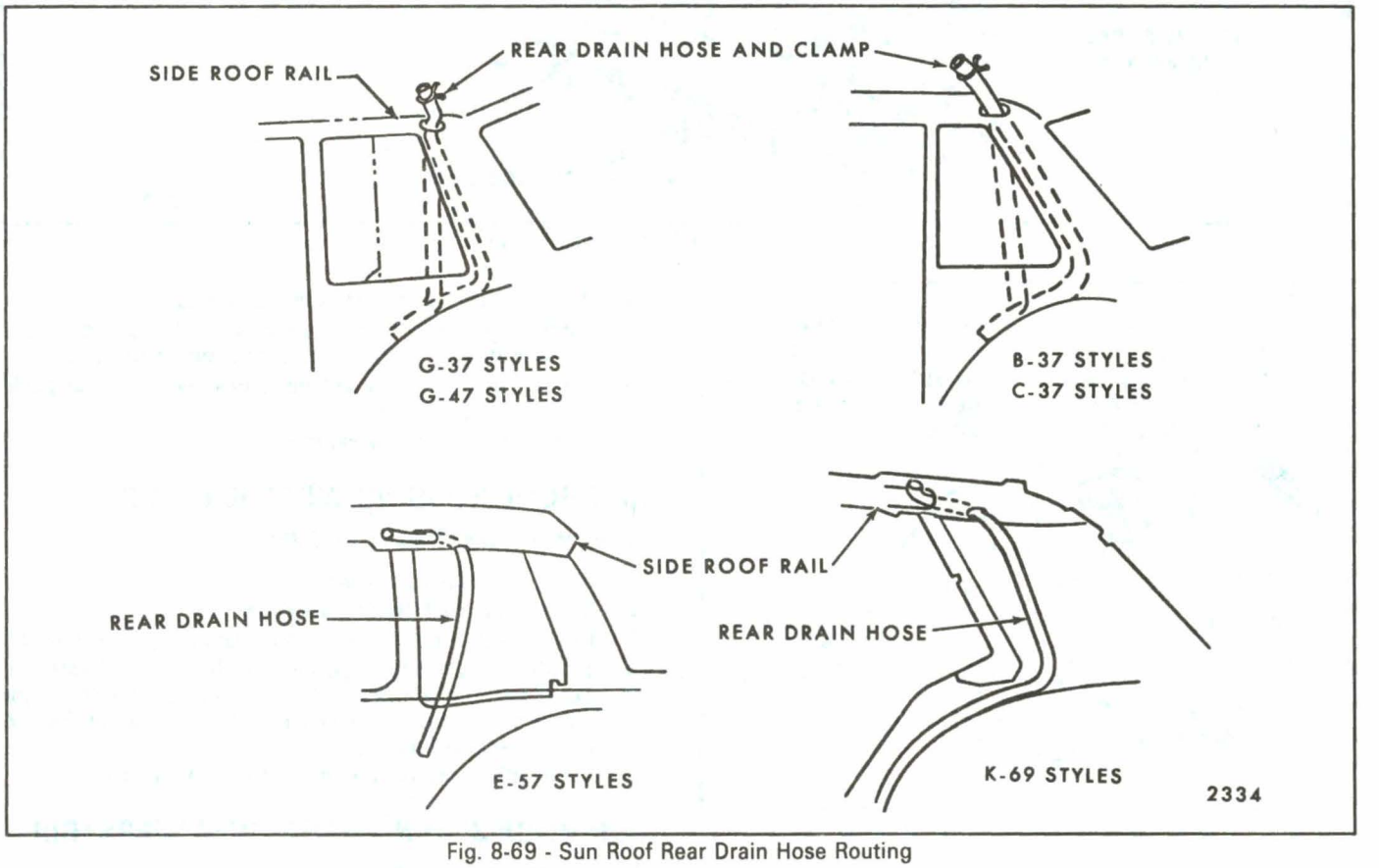


Fig. 8-69 - Sun Roof Rear Drain Hose Routing

Slide fingers along weatherstrip to find hidden vulcanized joints and make certain that the two joints are located at the center of each side (not in the corners), before stretching the weatherstrip around the panel (Fig. 8-72).

7. Apply a small bead of weatherstrip cement between the weatherstrip and the vertical wall of the sliding panel.
8. Install panel assembly by reversing removal procedure.

If adjustments are required once the new weatherstrip is installed, follow instructions outlined in this section on sun roof adjustments.

SUN ROOF SLIDING PANEL CABLE CONDUIT

Removal and Installation (Fig. 8-65)

1. Remove housing assembly.
2. Remove outboard corner stop, conduit retaining screw and front guide stop.
3. Remove inboard conduit retaining nut from under surface of housing.
4. Remove outboard conduit retaining nut from top surface of housing.
5. Remove actuator assembly.

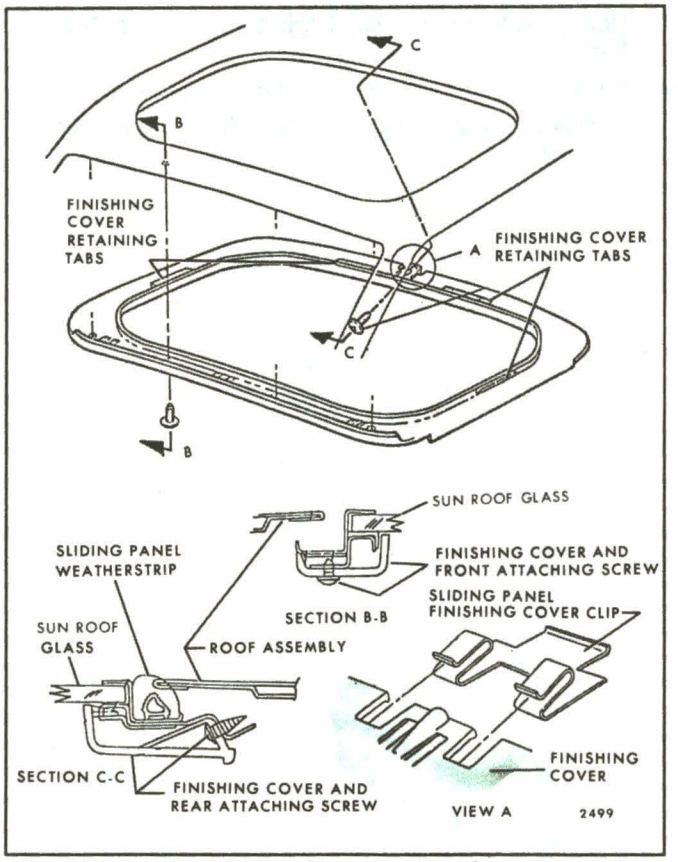


Fig. 8-70-Sun Roof Sliding Glass Finishing Cover Installation

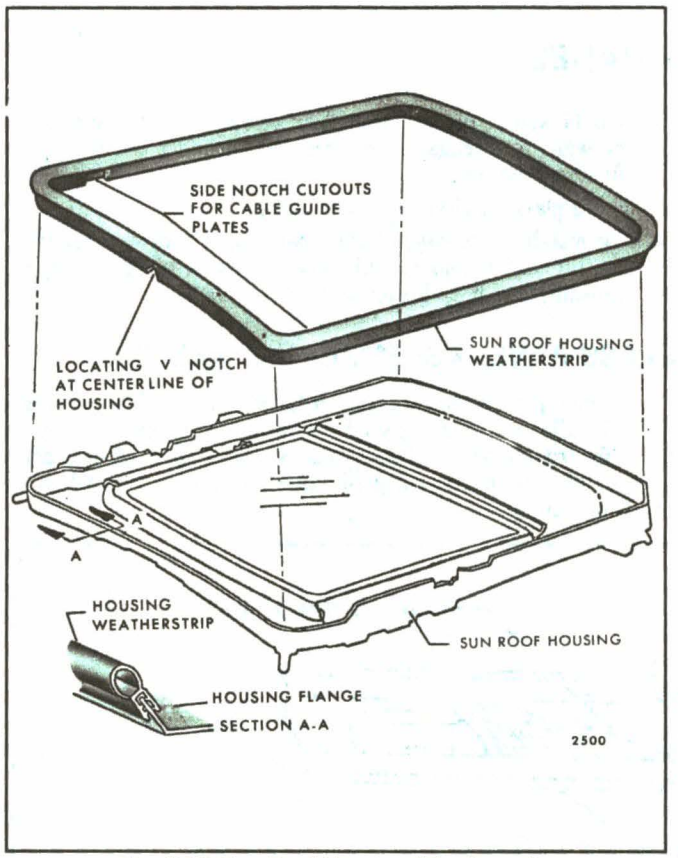


Fig. 8-71-Sun Roof Housing Weatherstrip

6. Remove screws holding center guide to housing and remove guide to disengage ends of cable conduit.

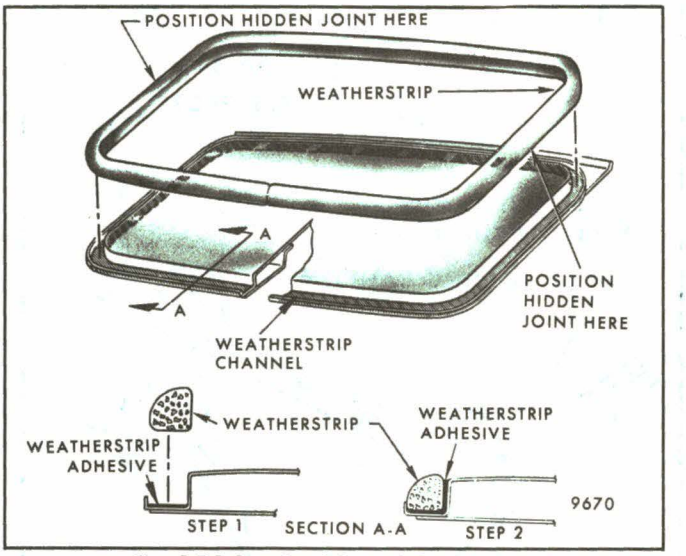


Fig. 8-72-Sun Roof Panel Weatherstrip

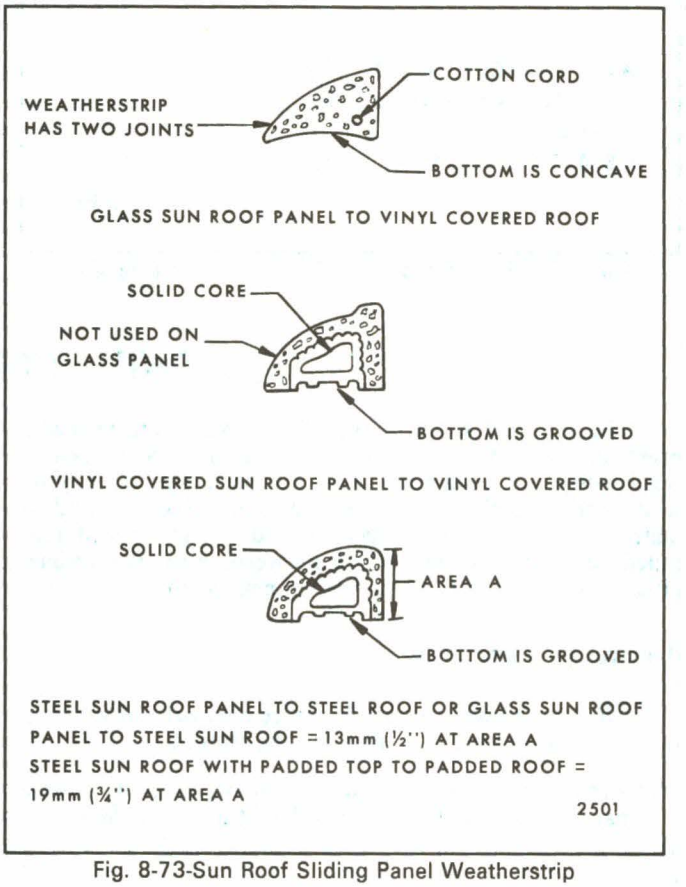


Fig. 8-73-Sun Roof Sliding Panel Weatherstrip

7. Lift conduit upward and remove from housing.
8. Pull conduit forward until sliding panel cable is removed from conduit.
9. To install, reverse removal procedures.

SUN ROOF LUBRICATION

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 should be used.

Due to nearness of sun roof hardware parts to soft trim components, observe the following recommendations during regular service.

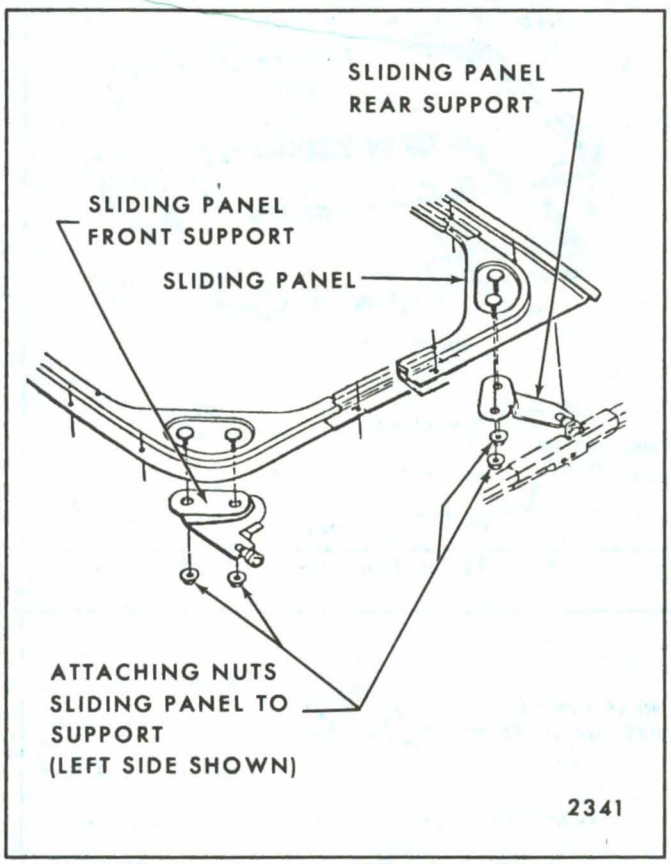


Fig. 8-74 - Front Support to Sliding Panel Attachment

1. During cable replacement, lubricate cables with No. 70 Lubriplate or equivalent.
2. It is not necessary to lubricate guide rail channels.
3. Periodically clean off any dirt that may have accumulated on guide rails.

TWIN LIFT-OFF PANEL

The side roof mounted twin lift-off panels are manually operated. Each panel assembly consists of a roof opening weatherstrip and retainers, glass assembly, side roof glass weatherstrip and side latch plates. The panel glass is curved to match flush with roof panel when installed and is fabricated from tinted tempered glass. The roof opening weatherstrips are of a one-piece construction that fits the roof opening contour.

Removal and Installation

The twin lift-off glass panels can be removed and stored in two storage bags located in the rear compartment.

1. Remove glass panel by pulling downward on the release handle located at the center of the lift-off panel cover.
2. On G styles, pivot entire glass upward slightly and pull outward to disengage glass panel from under center upper finishing molding.
3. Store glass panel(s) in storage bag(s).
4. To install, place edge of glass panel on top of weatherstrip lip, lift slightly and carefully insert glass under center upper finishing molding. Lower and lock in place.

GLASS PANEL ASSEMBLY INSTALLATION

If new glass panel is being installed, transfer lift-off panel cover, handle and attaching screw, glass panel weatherstrip, latch assembly, front and rear adjusting plates, weatherstrip retainer and drip molding from original glass panel to new glass panel as a bench operation.

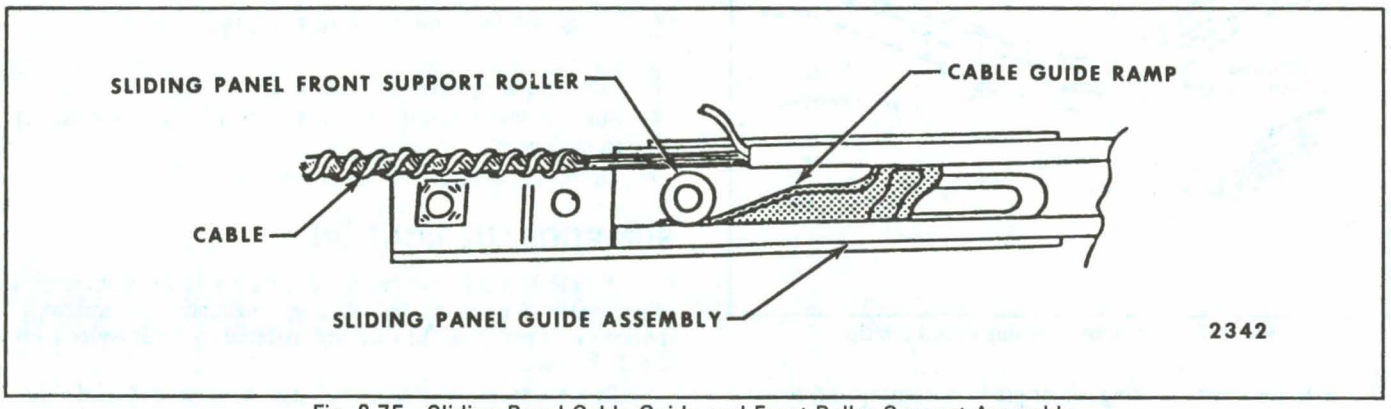
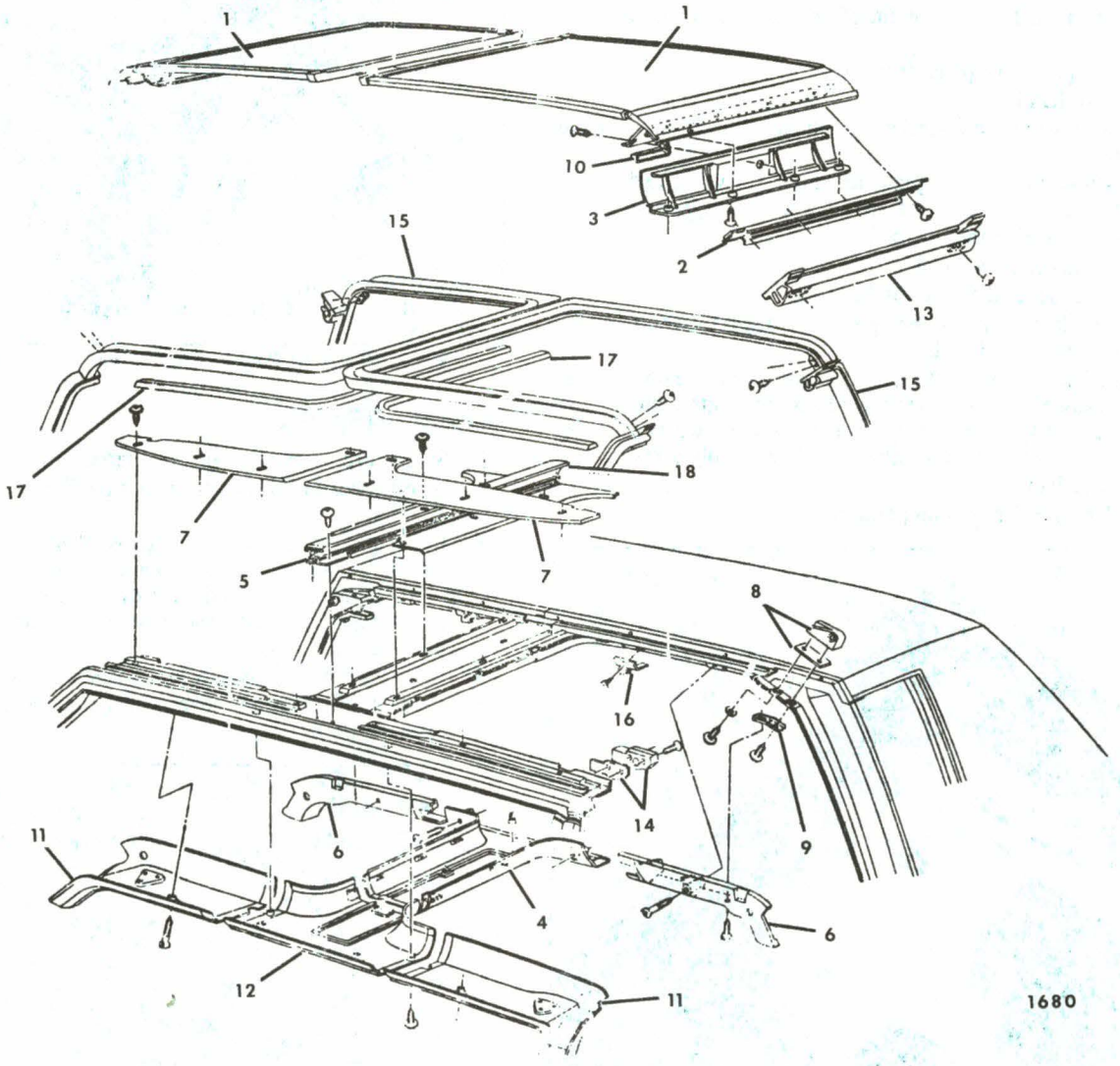


Fig. 8-75 - Sliding Panel Cable Guide and Front Roller Support Assembly



1. Twin Lift-Off Glass Panel
2. Lift-Off Panel Weatherstrip Retainer
3. Lift-Off Panel Support Cover
4. Roof Panel Opening Center Garnish Molding
5. Lift-Off Panel Opening Center Upper Finishing Molding
6. Roof Panel Opening Rear Garnish Molding
7. Windshield Upper Frame Rear Finishing Molding
8. Lift-Off Roof Latch Rear Guide And Shim
9. Roof Panel Opening Garnish Molding Support
10. Lift-Off Roof Glass Locking Handle
11. Windshield Upper Garnish Molding
12. Roof Panel Opening Front Garnish Molding Escutcheon
13. Side Roof Rail Lift-Off Glass Weatherstrip
14. Lift-Off Roof Latch Rod Front Guide and Shim
15. Lift-Off Glass Weatherstrip
16. Roof Bow Lift-Off Headlining Support
17. Windshield Foam Tape Sealing Strip
18. Longitudinal Roof Bow Reveal Molding

Fig. 8-76 - Lift-off Panel Assembly (Exploded) - G Style

LIFT-OFF GLASS PANEL ADJUSTMENTS (FIG. 8-77)

The glass panel is adjustable within the roof opening. This adjustment can be made by loosening the latch adjusting screws, plates or guides that control the up and down travel of the glass panel assembly.

To obtain a flush fit of lift-off panel to roof, proceed as follows:

1. Disengage lift-off panel from roof.
2. Remove handle.
3. Remove twin lift-off panel cover attaching screws and remove cover.
4. Loosen latch adjusting plate attaching screws located within elongated slots in each of the latch adjusting plates.
5. Engage lift-off panel to roof.
6. Place handle on spindle.
7. Grasp panel and locate for flush fit.
8. Tighten latch plate adjusting screws to specified torque of 1 to 4 N·m (1 to 3 ft-lb).
9. Cycle latch assembly if locking rod does not line up with the guide assembly hole. Loosen guide assembly attaching screws and slide guide assembly inboard or outboard to accept lift-off panel locking rod, and tighten guide assembly screws.
10. Remove handle.
11. Replace garnish molding and handle.

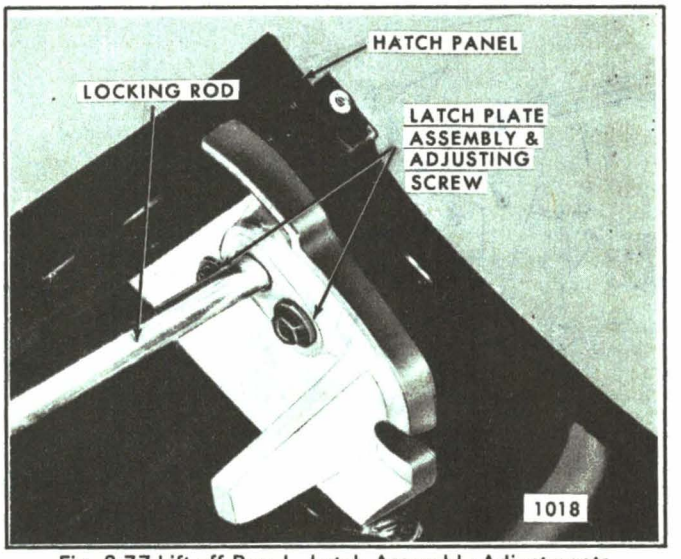


Fig. 8-77-Lift-off Panel - Latch Assembly Adjustments

LIFT-OFF PANEL WEATHERSTRIP

Removal (Fig. 8-76)

To remove the lift-off panel weatherstrip, proceed as follows:

1. Disengage and remove lift-off panel.
2. Remove handle and lift-off panel cover.
3. Remove screws holding tabs at each end of lift-off panel weatherstrip.

NOTICE: The following operation must be performed carefully to prevent damaging the lift-off panel weatherstrip.

4. Begin to remove weatherstrip from weatherstrip retainer by carefully pulling on weatherstrip while breaking sealer bond between weatherstrip and retainer with a flat-bladed tool (such as tool J-21104 or equivalent). A suitable release agent (Kent Special Release Agent or equivalent) or heat gun will aid in breaking the weatherstrip adhesive bond.

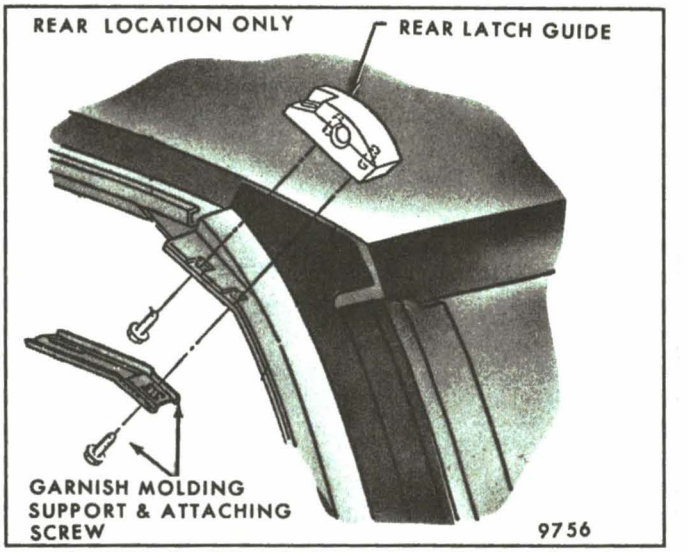


Fig. 8-78-Lift-off Panel - Rear Latch Guide Installation

Installation (Fig. 8-79)

1. Scrape excess sealer from weatherstrip retainer.
2. Apply a bead of black weatherstrip adhesive to weatherstrip retainer.
3. Using a flat-bladed tool, engage weatherstrip to weatherstrip retainer. If additional adjustment is required to form proper butt joints at each end of weatherstrip, the weatherstrip attaching holes can be relocated as necessary. Unused screw holes should be sealed.
4. Install screws tightly through holes in weatherstrip tabs.
5. Replace lift-off panel cover and handle and engage lift-off panel to roof.

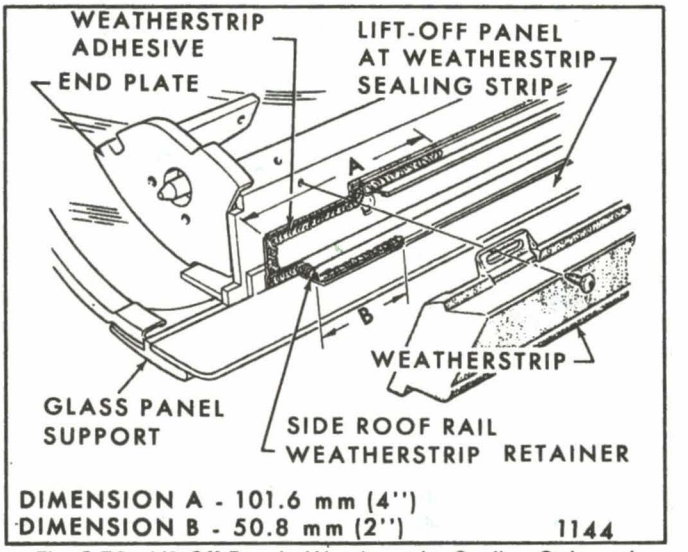


Fig. 8-79 - Lift-Off Panel - Weatherstrip, Sealing Strip and Weatherstrip Retainer Installation

LIFT-OFF PANEL OPENING WEATHERSTRIP RETAINER

Removal and Installation

1. Disengage and remove lift-off panel.
2. Place lift-off panel upside down on a clean protected surface.
3. Remove handle and lift-off panel cover.
4. Remove lift-off panel weatherstrip.
5. Remove screws located along retainer and carefully lift up retainer.
6. To install, reverse removal procedure.

LIFT-OFF PANEL LATCH ASSEMBLY

Removal and Installation

1. Remove lift-off panel from body.
2. Remove weatherstrip and weatherstrip retainer.
3. Remove handle.
4. Remove lift-off panel cover.
5. Remove 2 attaching screws and remove latch assembly from lift-off panel.
6. To install, reverse removal procedure.

LIFT-OFF PANEL OPENING WEATHERSTRIP

Removal (Fig. 8-80)

The lift-off panel opening weatherstrip can be removed as follows:

1. Remove lift-off panel.
2. Remove plastic fasteners located at each end of lift-off panel opening weatherstrip using tool J-21104 or equivalent.
3. Remove screws located at top vertical edge of glass opening weatherstrip on lock pillar and windshield pillar.

NOTICE: The following operation must be performed carefully to prevent damage to the weatherstrip.

4. Grasp weatherstrip and pull upward gently while inserting a flat-bladed tool between weatherstrip retainer and weatherstrip to break cement bond. Using a suitable release agent (Kent Special Release Agent or equivalent) or heat gun will aid in breaking the weatherstrip adhesive bond.

Installation - G Styles

1. Scrape excess sealer from weatherstrip retainer.
2. Apply continuous beads of black weatherstrip adhesive to both sides of retainer channel.
3. Using a flat-bladed tool, engage weatherstrip to weatherstrip retainer and install fasteners.
4. Apply sealer between weatherstrip and outer vertical wall of roof panel around entire hatch opening.
5. Replace lift-off panel.

CENTER UPPER FINISHING MOLDING - G STYLES

Removal and Installation (Fig. 8-81)

The center upper finishing molding can be removed as follows.

1. Remove lift-off glass panel.
2. Remove windshield upper frame rear finishing molding.
3. Remove both lift-off panel weatherstrips along center upper finishing molding (T-bar) area utilizing a weatherstrip release agent (Kent Special Release Agent or equivalent) to expose attaching screws.
4. Remove center upper finishing molding assembly attaching screws and remove finishing molding.
5. To install, reverse removal.

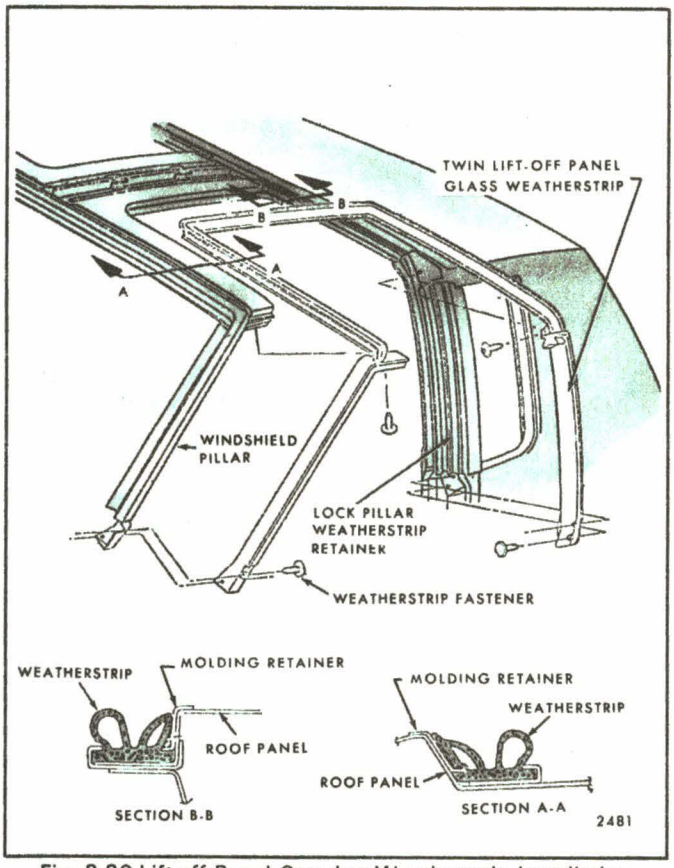


Fig. 8-80-Lift-off Panel Opening Weatherstrip Installation

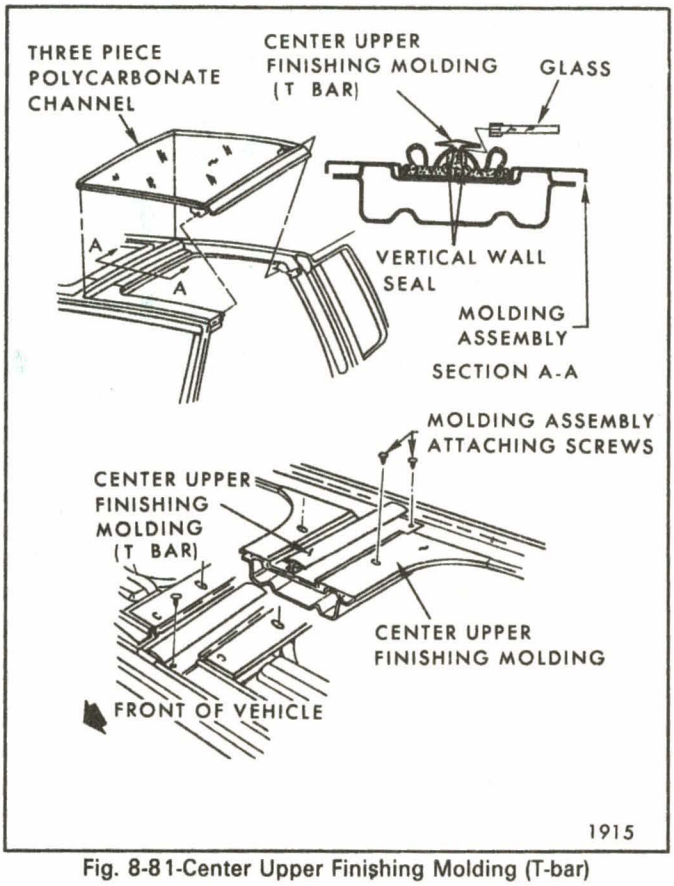


Fig. 8-81-Center Upper Finishing Molding (T-bar)

SECTION 9

SEATS

NOTICE: 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 parts 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.

CONTENTS

Lap and Shoulder Belts
- Servicing Lap and Shoulder Belts 9-1
- Lap Belts and Shoulder Belts 9-2
- Lap and Single Loop Belts 9-2

Automatic Lap and Shoulder Belts 9-3
Front Seat Belt Warning System 9-18
Front Seats
- Full Width and Split Front Seats 9-20
- Bucket Seats 9-21
- Reclining Back Bucket Seats 9-21
- Seat Torque 9-21
- Manual Seat - Diagnosis Chart 9-22
- Power Six-Way Seat - Diagnosis Chart 9-22
- Manual Reclining Seat Back - Diagnosis Chart 9-23
- Power Reclining Seat Back - Diagnosis Chart 9-24
- Front Seat Adjustment 9-24
- Manual Control Arm Knob 9-25
- Front Seat Assembly 9-25
- Shoulder Belt Guide Loop 9-25
- Seat Assembly Servicing 9-26
- Seat Adjuster - Manual and Power 9-26
- Power Two-position Memory Seat 9-28
- Two-Way Seat Adjuster Components 9-28
- Six-Way Seat Adjuster Components
  - Motor, Transmission Type 9-29
  - 3 Motor Direct Drive 9-37
- Head Restraint 9-38
- Guide Tube 9-39
- Seat Back Assist Straps 9-39
- Seat Back Inertia Lock 9-39
- Front Seat Back Assembly 9-42
- Manual Reclining Seat Back 9-43
- Power Reclining Seat Back 9-43
- Seat Back Power Reclining Actuator
  - K Style 40-40 Seat 9-45
  - B, C, E and K Styles Bench Seat 9-46
- Bucket Seats - B, E and G Styles 9-46
  - Bottom Finishing Panel 9-48
  - Back Inertia Lock 9-48
  - Reclining Control Hinge 9-48
  - Seat Back Lock Striker and Stop 9-50

Front Seat Center Armrest 9-51
Rear Seat
- Cushion 9-54
- Back 9-54
- Back Center Armrest 9-56
- Auxiliary Seat 9-56
- Rear Speakers 9-59
- Seat to Back Window Panel Trim 9-64

Station Wagon Folding Rear Seats
- and Load Floor Panels 9-66
- Luggage Compartment Panel - G Styles 9-66
- Second Seat Back Filler Panel - G Styles 9-66
- Second Seat Cushion - G Styles 9-66
- Second Seat Back - G Styles 9-66
- Folding Second Seat Back Lock - G Styles 9-67
- Second Seat Cushion - B Styles 9-72
- Second Seat Back - B Styles 9-72
- Luggage Compartment Panel, B Styles 9-73
- Luggage Compartment Lock 9-73
- Second Seat Back Lock - B Wagon 9-73
- Folding Second Seat to Load Floor
  - Rail Cable - B Wagons 9-73
- Luggage Compartment and Folding
  - Third Seat Module - B Wagons 9-73
- Third Seat Side or Rear Rails 9-73
- Folding Third Seat Back 9-75
- Third Seat Cushion - B Wagons 9-75

LAP AND SHOULDER BELTS

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

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 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.
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. Refer to the appropriate belt anchor bolt illustrations in this section for bolt type and locations. Refer to Figure 9-1 for bolt sizes and torque specifications. Tighten ALL seat and shoulder belt anchor bolts as specified.

LAP BELTS AND SHOULDER BELTS - Cadillac C, D and K Styles, Buick C and all E Styles

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.

Shoulder belt retractors incorporate 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. On two-door styles, the comfort lock feature automatically disengages when the door is opened. The lap belt retractor remains unlocked to allow the occupants to move freely while the vehicle is being operated. When the vehicle decelerates or changes direction abruptly, the lap belt is locked into position by a pendulum or ball that causes a locking bar to engage a cog of the retractor mechanism.

Removal and Installation

Refer to illustrations on following pages and select the appropriate illustration for removing and installing lap belts and shoulder belts. Refer to Figure 9-1 for bolt sizes and torque specifications.

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.

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 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 and disconnect wire harness as required. On full width seat, carefully pull anchor end of belt through lap belt protector. On two-door styles, it is important that seat belt webbing is routed over seat back outer hinge arm and not under arm.

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.

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.

LAP AND SINGLE LOOP BELTS - All Except Cadillac C,D and K Styles, Buick C Styles and All E Styles

The single loop belt system (single retractor) 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 panel. 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 pendulum or ball that causes a locking bar to engage a cog of the retractor mechanism.

On B, C and G styles, the retractor has 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 152 mm (6″).
3. Extract the belt for 13 mm (1/2″) and release belt. The comfort lock must engage and prevent retraction.
4. Extract belt 102 mm (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 152 mm (6″) and release. The belt must fully retract without locking.

Removal and Installation

Refer to appropriate illustration for removing and installing lap belts and shoulder belts. Refer to Figure 9-1 for bolt sizes and torque specifications.

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.

To remove center passenger lap belts, remove screw-in sleeve plug (Fig. 9-7) to gain access to anchor bolts. Then remove bolts with tool J-23457 or equivalent and disconnect wire harness as required.

AUTOMATIC LAP AND SHOULDER BELT SYSTEM

The optional automatic lap-shoulder belt assembly consists of a retractor assembly and belts (Figs. 9-2 and 9-3). The retractor pulls the belt across the lap of the occupant or the seat cushion when there is no occupant. The retractor assembly incorporates two vehicle sensitive retractors, one for driver's belt and one for front seat passenger belt. This assembly mounts on the floor pan tunnel between the two front seats.

Each retractor holds a section of belt that has a buckle attached to its outer end. The lap-shoulder belt is a fixed loop which passes through an adjustable latch plate. The lower end of this fixed loop is attached to the lower rear area of the front door while the upper end is attached to the door upper frame where a clevis is located to transfer loads into the center pillar.

The warning system consists of a buzzer in the instrument panel which sounds from four to eight seconds and with a continual light also in the panel. The warning system is activated when the ignition is on and the driver's buckle is unlatched. There is no warning system for the passenger side.

On vehicles equipped with the automatic belt system, the belt interlock clevis must also be adjusted if any door adjustments were made (Fig. 9-6). Refer to door adjustments in Section 5 of this manual.

The retractor has a push-button activated comfort feature that must be manually set. This is accomplished by depressing the comfort control button on the retractor assembly prior to adjusting the shoulder belt for proper fit and comfort. When engaged, the comfort control prevents full retraction of the webbing to eliminate occupant discomfort due to webbing load on the shoulder, The comfort feature automatically disengages when the belt is extended more than 305 mm (12″) by occupant or by opening the door.

A temporary stowage device (Fig. 9-4) is provided on the door to allow the occupant to disconnect the belts and stow the fixed loop when necessary, i.e., for use of an infant carrier.

Servicing Automatic Shoulder Belts and Lap Seat Belts

Prior to servicing or replacing any belt assemblies, refer to the following.

NOTICE: See NOTICE on page 9-1 of this section.

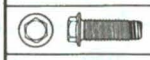
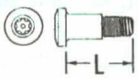
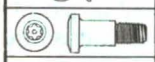
1. Lap and shoulder belts will be serviced as follows:
   a. Combination driver and passenger automatic shoulder belt retractor (as an assembly only).
   b. Driver or passenger lap-shoulder belt assembly.
   c. Child's latch assembly (right side only).
   d. Passenger emergency latch assembly (right side only).
   e. Anchor bolts, striker bolt and nut, clevis and spacers as separate parts.
2. Keep sharp and damaging objects away from belts.
3. Avoid bending or damaging any portion of belt buckle or latch plate.
4. Do not bleach or dye belt webbing (clean with mild soap solution and water).
5. When installing lap and shoulder belt anchor bolts, start bolt by hand to assure that bolt is threaded straight.
6. Do not attempt any repairs on lap or shoulder belt retractor mechanisms or lap belt retractor covers. Replace defective or damaged assemblies with new service replacement parts.
7. Do not attempt to remove seat belt retractor cover. The covers are permanently attached and are not available as service replacement parts.

Removal and Installation

Select the proper illustration for removing and installing lap and shoulder belt assemblies and components.

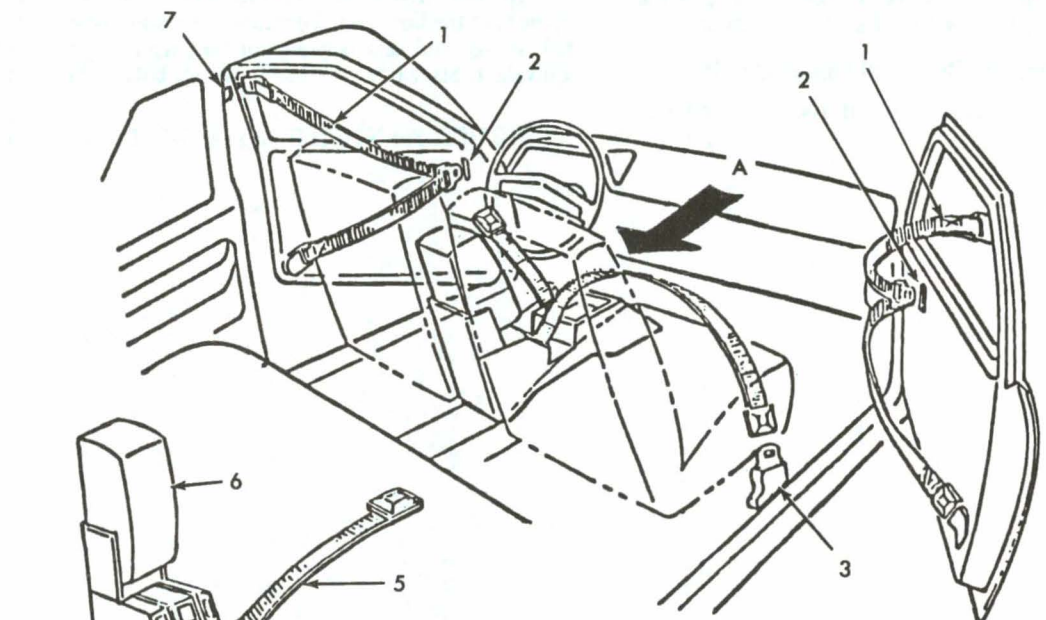
Internal drive thread forming anchor bolts are used to secure lap belts to the floor pan. To remove or install these bolts, use door lock striker and seat belt anchor bolt removing tool J-23457 or equivalent. Start bolt by hand to assure bolt is threaded straight.

NOTICE: See NOTICE on page 9-1 of this section.

	PART NAME	METRIC TYPE	THREAD	LENGTH (mm)	TORQUE N·m	TORQUE ft-lbs
	BOLT	1	M12-1.75	36	35-48	26-35
	BOLT	2	M12-1.75	25	35-48	26-35
	BOLT	3	M12-1.75	30	35-48	26-35
	BOLT	4	M8-1.25	20	20-24	15-17
	BOLT	5	M12-1.75	39	35-48	26-35
	BOLT	6	M12-1.75	35	35-48	26-35
	BOLT	7	M12-1.75	43	35-48	26-35
	BOLT	8	M12-1.75	31	35-48	26-35
	BOLT	9	M12-1.75	49	35-48	26-35
	STUD	10	M6-1.00	15	N/A	N/A
	BOLT	11	M12-1.75	53	35-48	26-35
	NUT	12	M12-1.75		35-48	26-35
	NUT	13	M10-1.50		30-40	22-29
	NUT	14	M6-1.00		10-14	7-10
	NUT	15	M8-1.25		18-25	14-19
	STUD	16	M8-1.25	13	N/A	N/A

2482

Fig. 9-1 - Seat Belt Fastener Chart



2363

1. Passenger and Driver Shoulder-Lap Belt Assembly
2. Door Stowage Device
3. Buckle to Floor Anchor For Love Seat Restraint
4. Center-Mounted Retractor Mechanism and Console Assembly
5. Wiring System Wire in Webbing (Driver's Side Only)
6. Center Armrest Assembly
7. Clevis (Center Pillar)

Fig. 9-2-Automatic Front Lap-Shoulder Belt Assembly

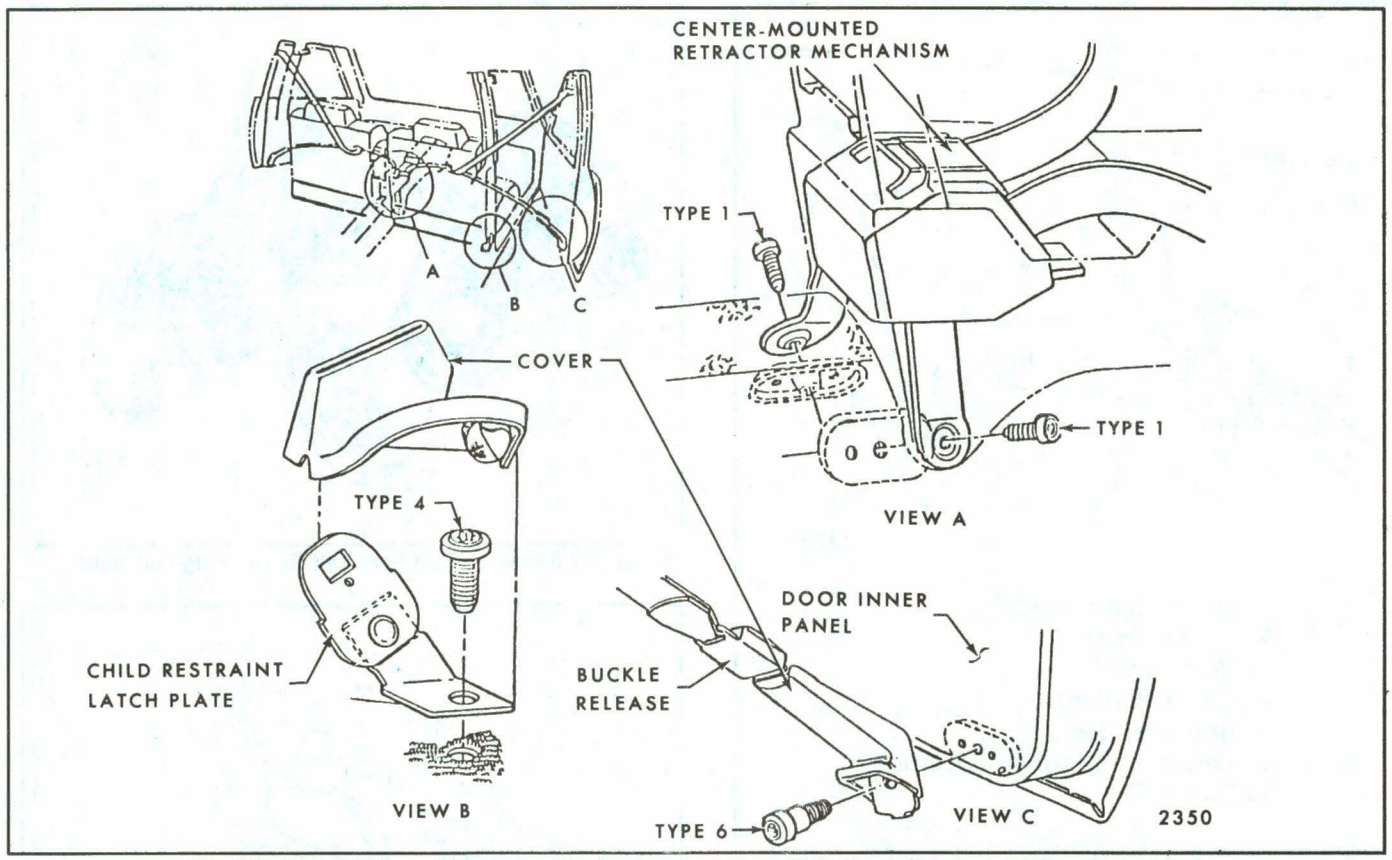
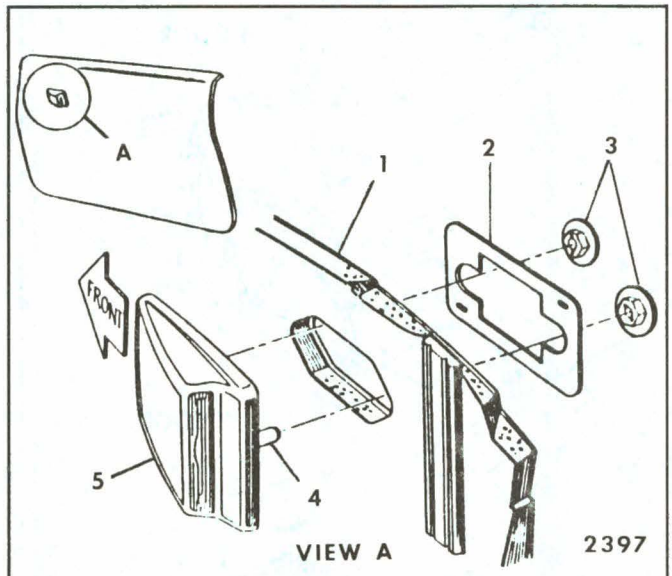
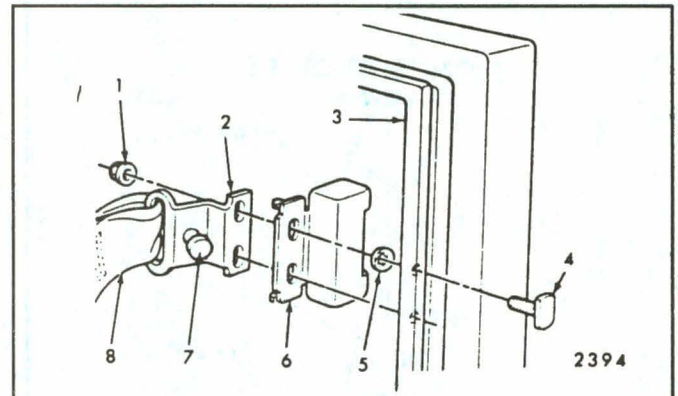


Fig. 9-3-Center Mounted Retractor Mechanism and Right Side Front Seat Latch Plate Assemblies



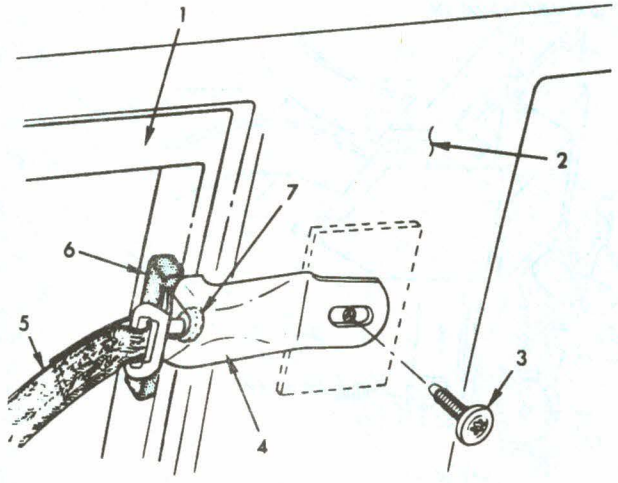
1. DOOR TRIM PANEL
2. BACKING PLATE
3. RETAINING NUTS
4. STUD
5. DOOR STOWAGE DEVICE

Fig. 9-4-Automatic Lap-Shoulder Belt Door Stowage Device Assembly



1. Nut, Type 14
2. Retainer
3. Door Upper Frame
4. Stud, Type 10
5. Push-On Nut
6. Cover
7. Striker Pin
8. Shoulder Belt

Fig. 9-5-Automatic Lap-Shoulder Belt Striker Assembly to Door Upper Frame



1. Door Upper Header
2. Center Pillar
3. Bolt, Type 2
4. Clevis (Sedan)
5. Shoulder Belt
6. Retainer and Cover Assembly
7. Striker Pin

Fig. 9-6-Automatic Lap-Shoulder Belt Assembly Clevis to Center Pillar Attachment

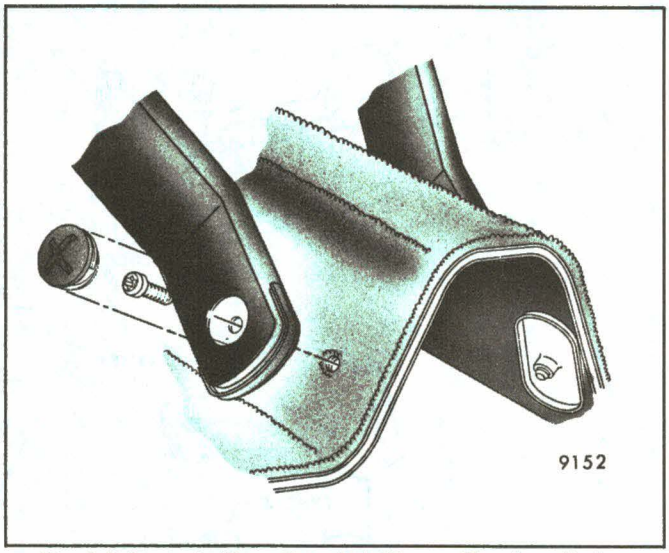


Fig. 9-7-Screw-in Type Seat Belt Sleeve Plug Installation

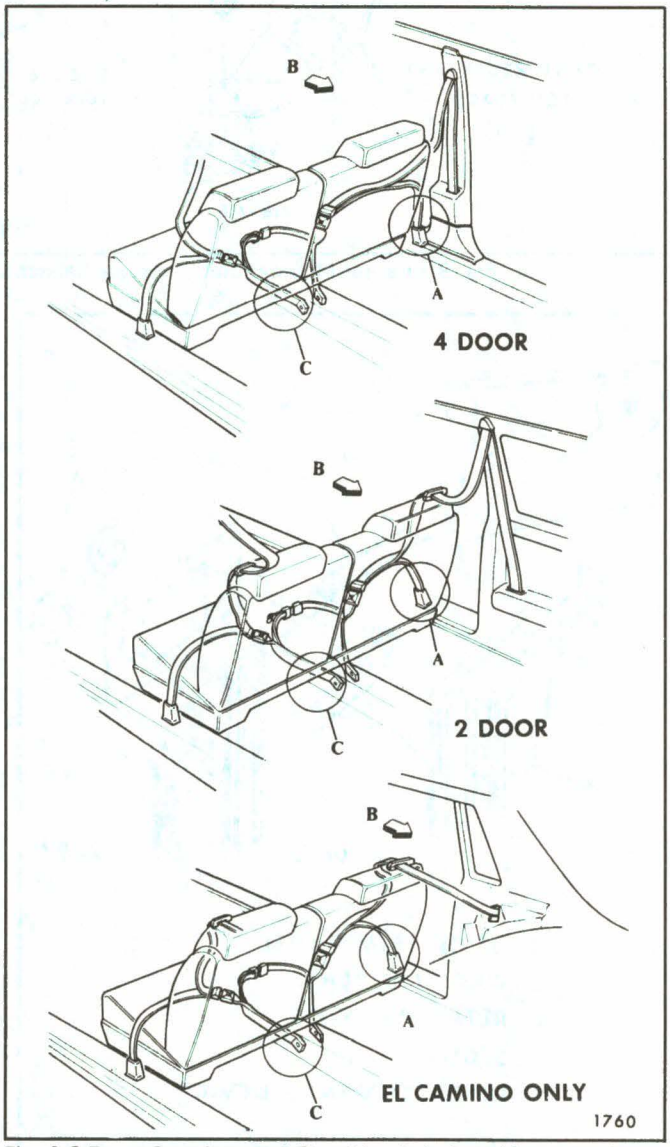


Fig. 9-8-Front Seat Lap and Shoulder Belt Attaching Locations - G Styles

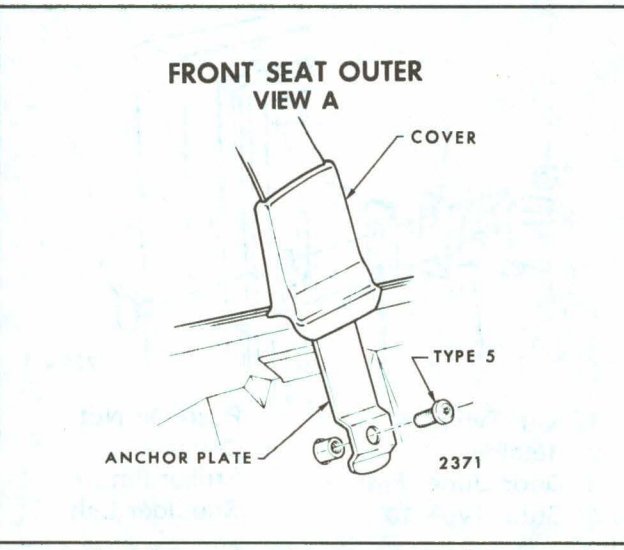


Fig. 9-9-Front Seat Outer Lap Belt - G Styles

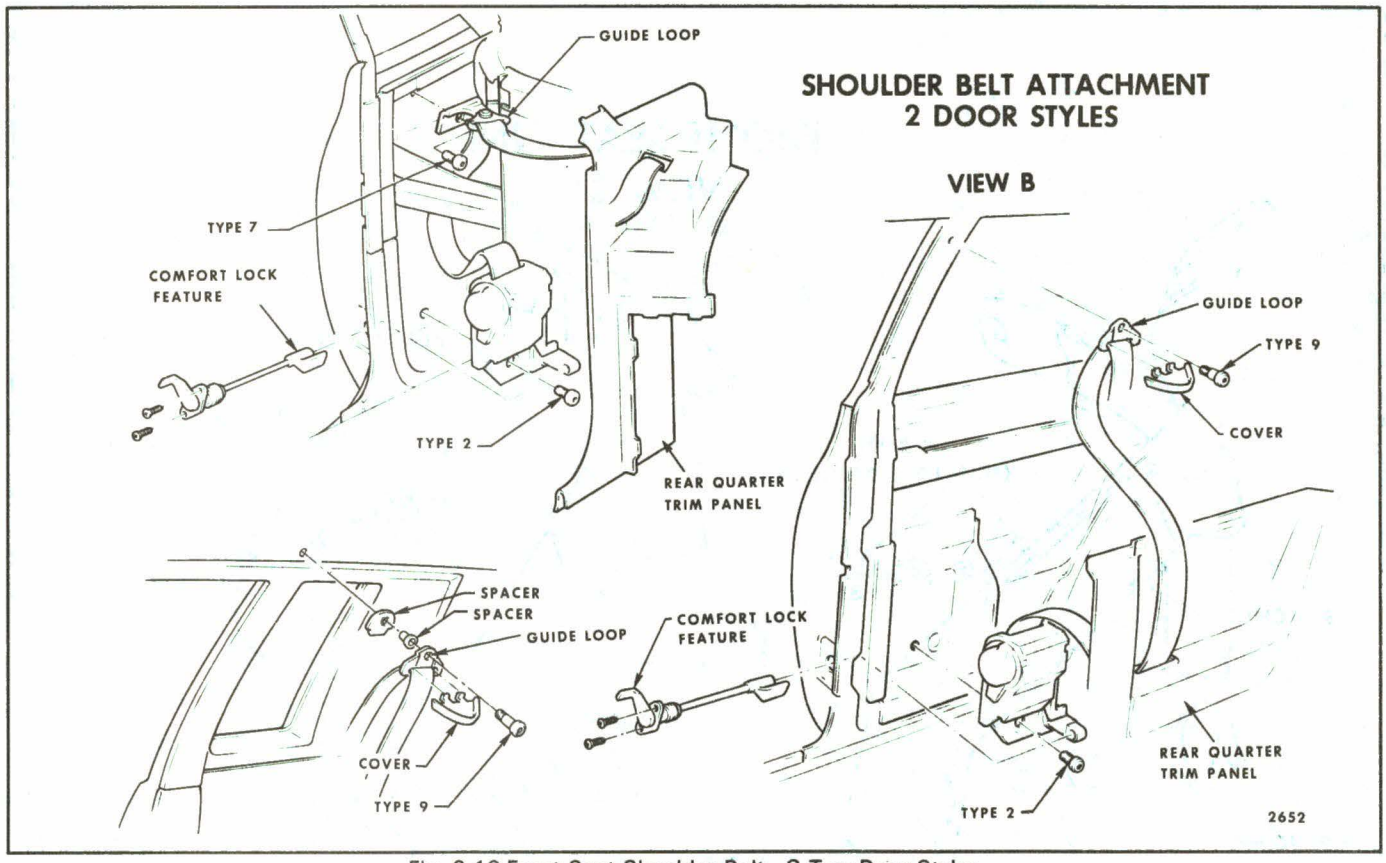


Fig. 9-10-Front Seat Shoulder Belt - G Two-Door Styles

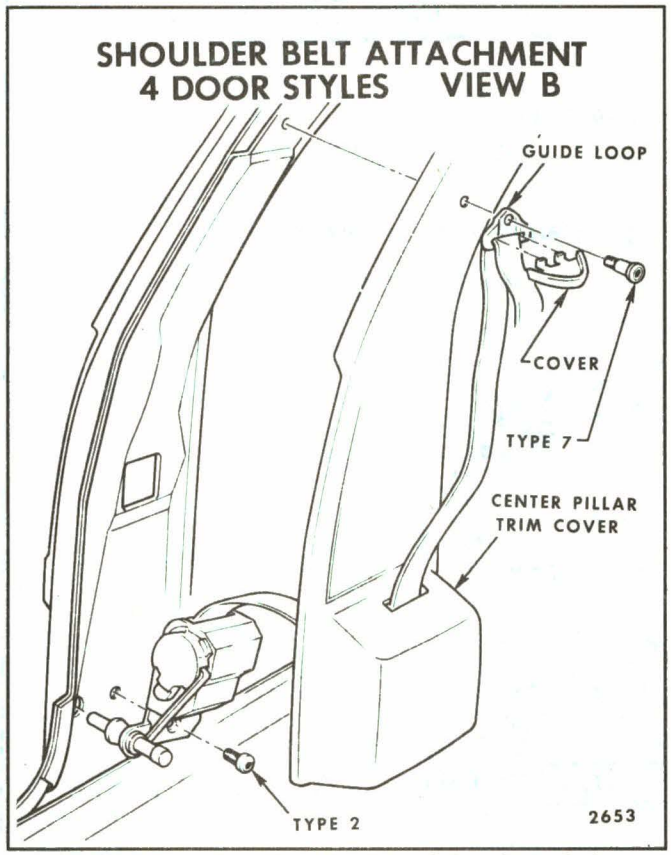


Fig. 9-11-Front Seat Shoulder Belt - G Four-Door Styles

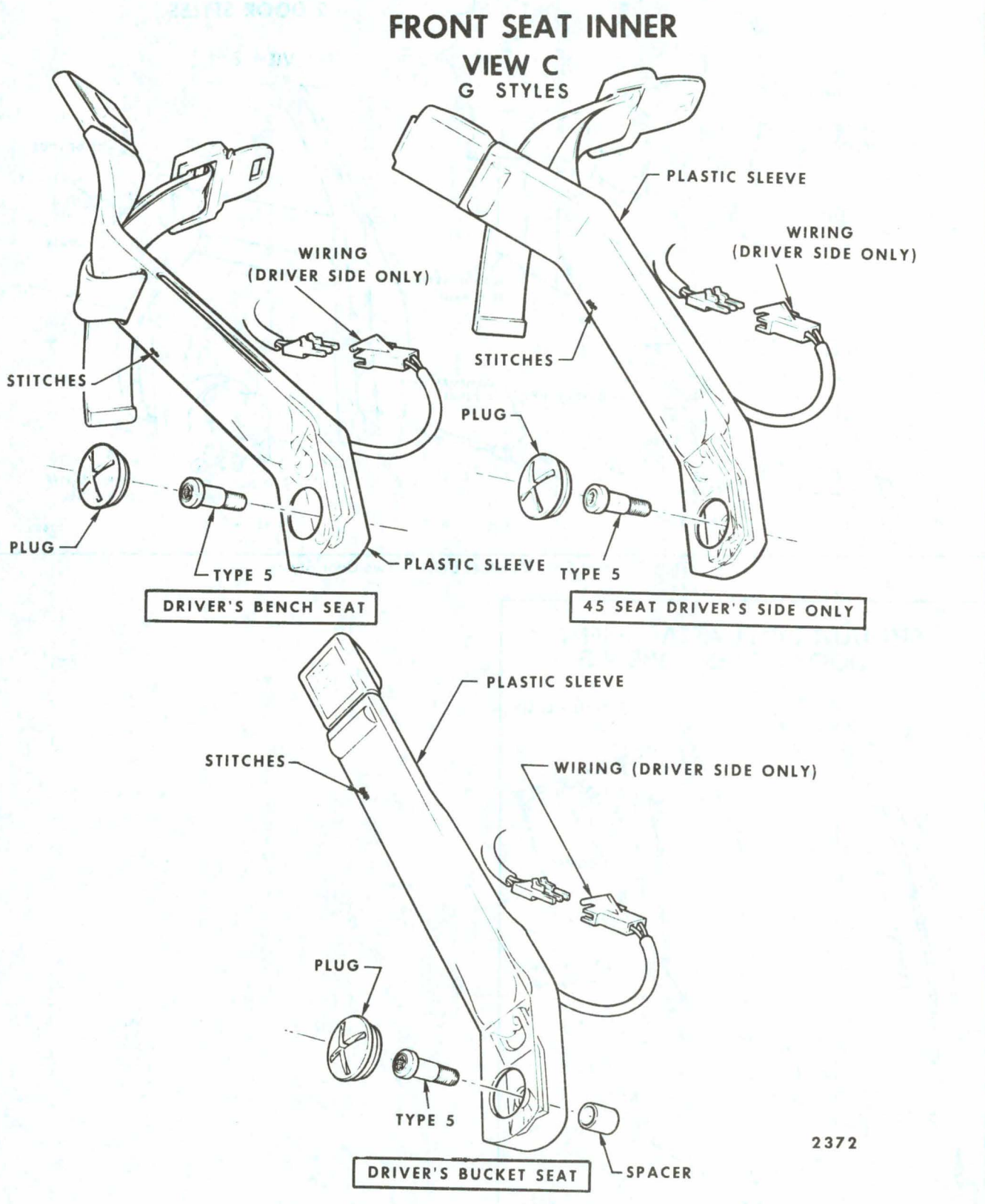


Fig. 9-12-Front Seat Inner Lap Belts - G Styles

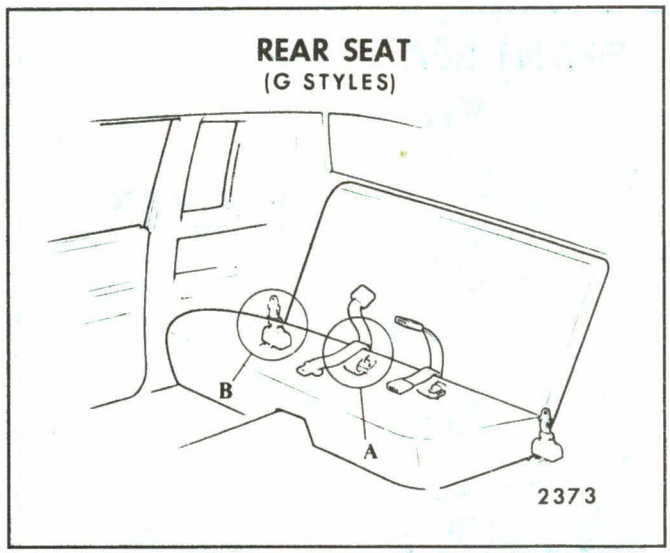


Fig. 9-13-Rear Seat Lap Belt Attaching Locations - G Styles

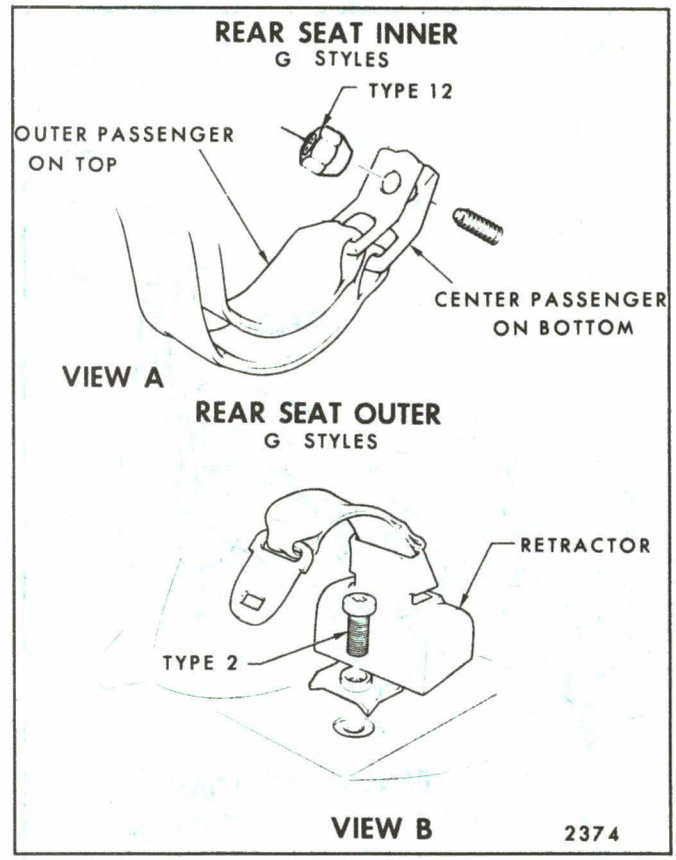


Fig. 9-14-Rear Seat Inner and Outer Lap Belt and Retractors - G Styles

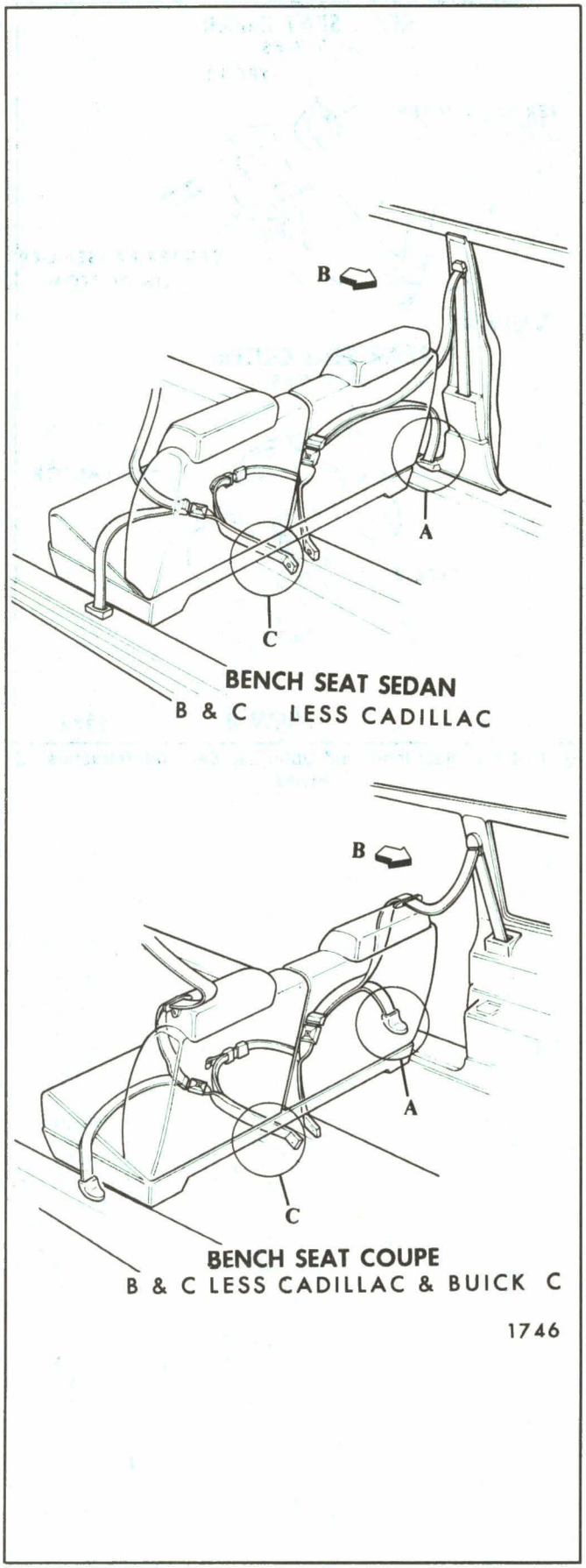


Fig. 9-15-Front Seat Lap and Shoulder Belts - B and C Styles, Less Cadillac and Buick C Styles

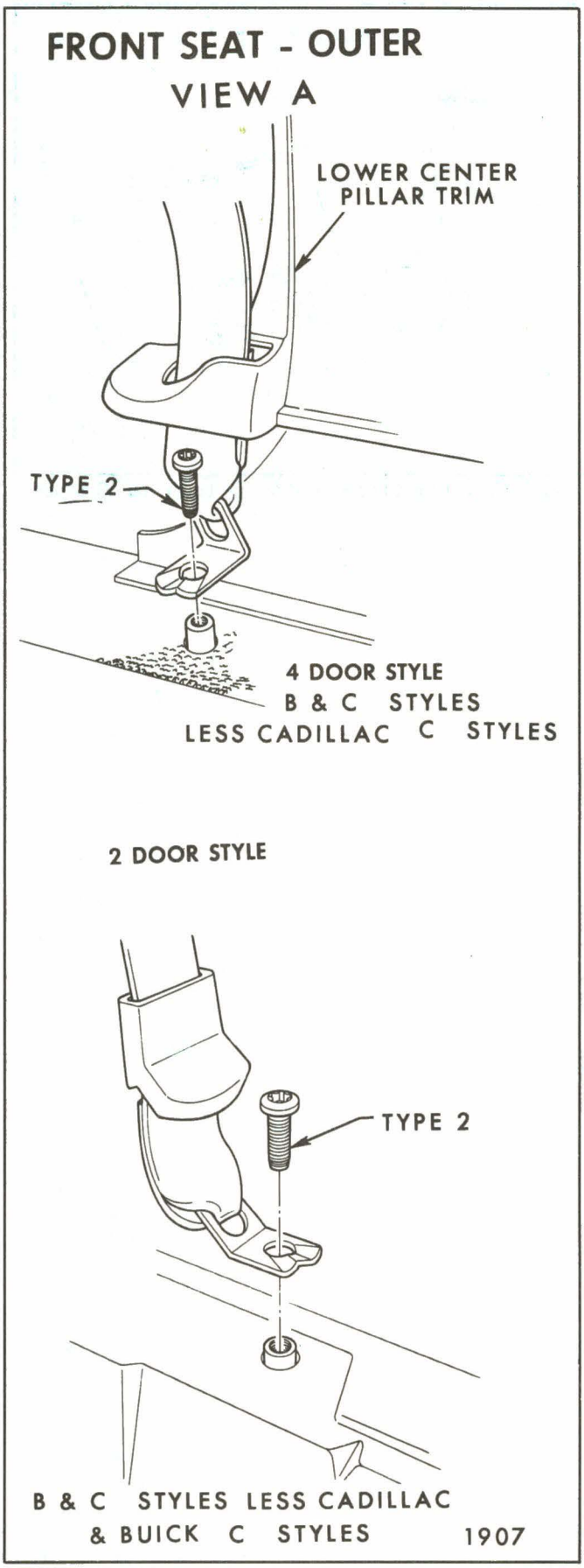


Fig. 9-16-Front Seat Outer Lap Belts and Retractors - B and C Styles Less Cadillac and Buick C Styles

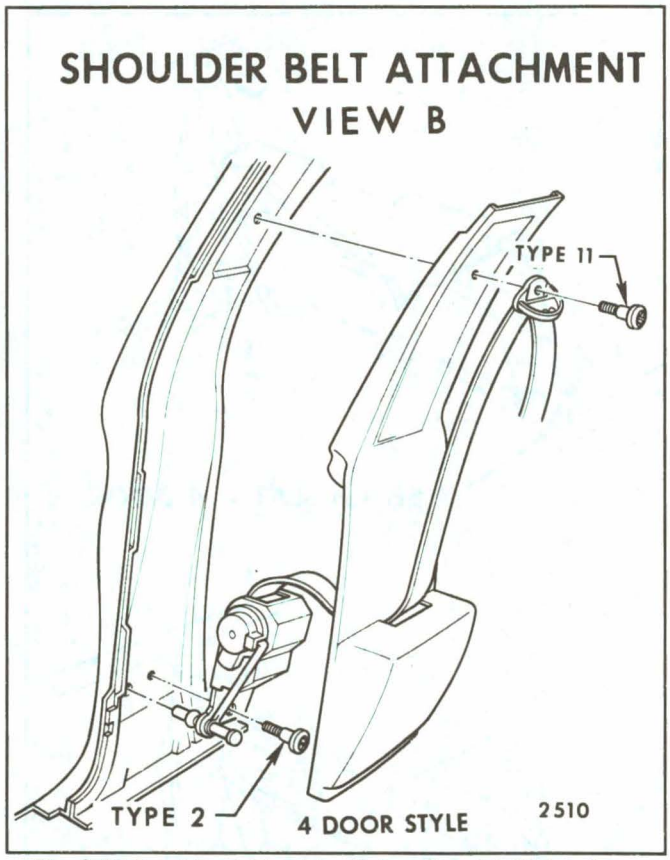


Fig. 9-17-Front Seat Shoulder Belts - B and C Styles, Less Cadillac C Styles

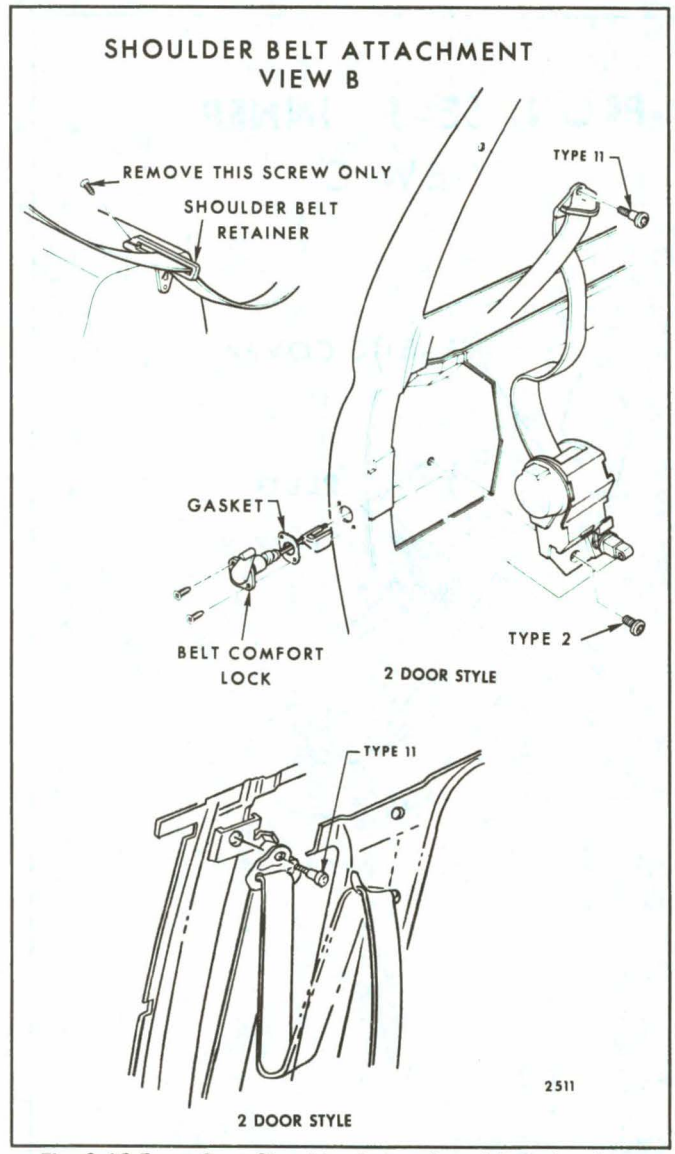


Fig. 9-18-Front Seat Shoulder Belts - B and C Styles, Less Cadillac and Buick C Styles

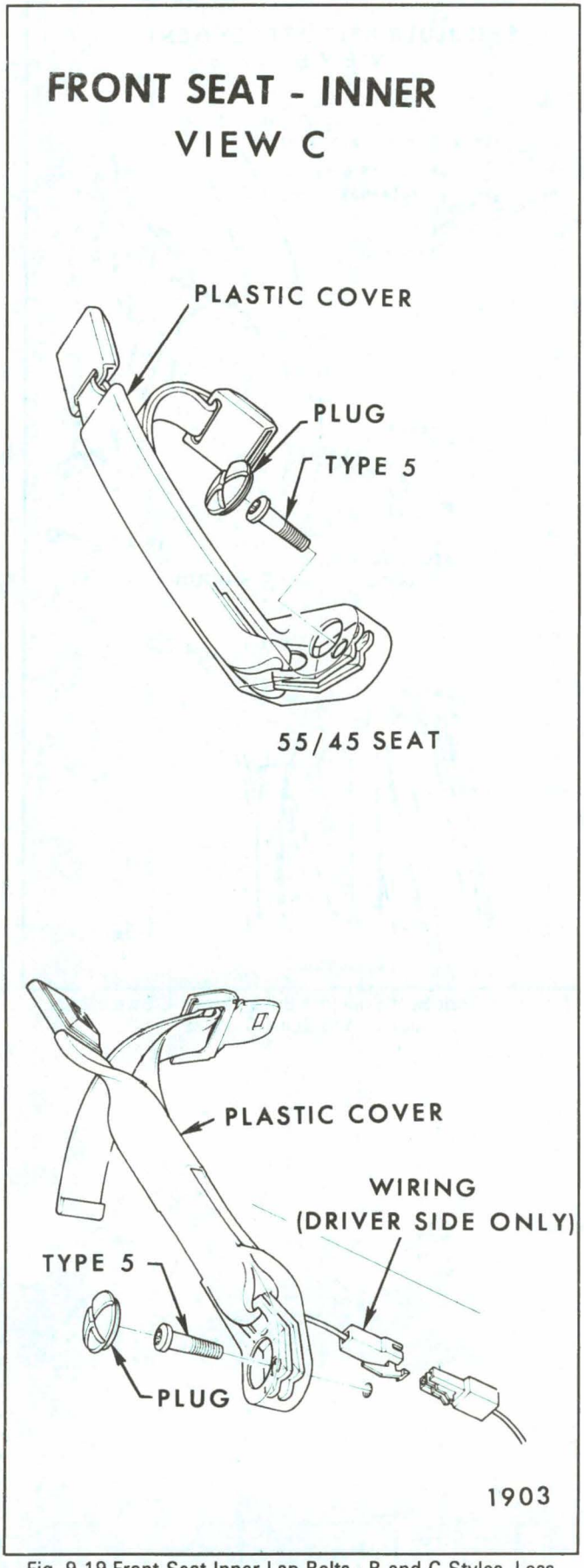


Fig. 9-19-Front Seat Inner Lap Belts - B and C Styles, Less Cadillac C Styles

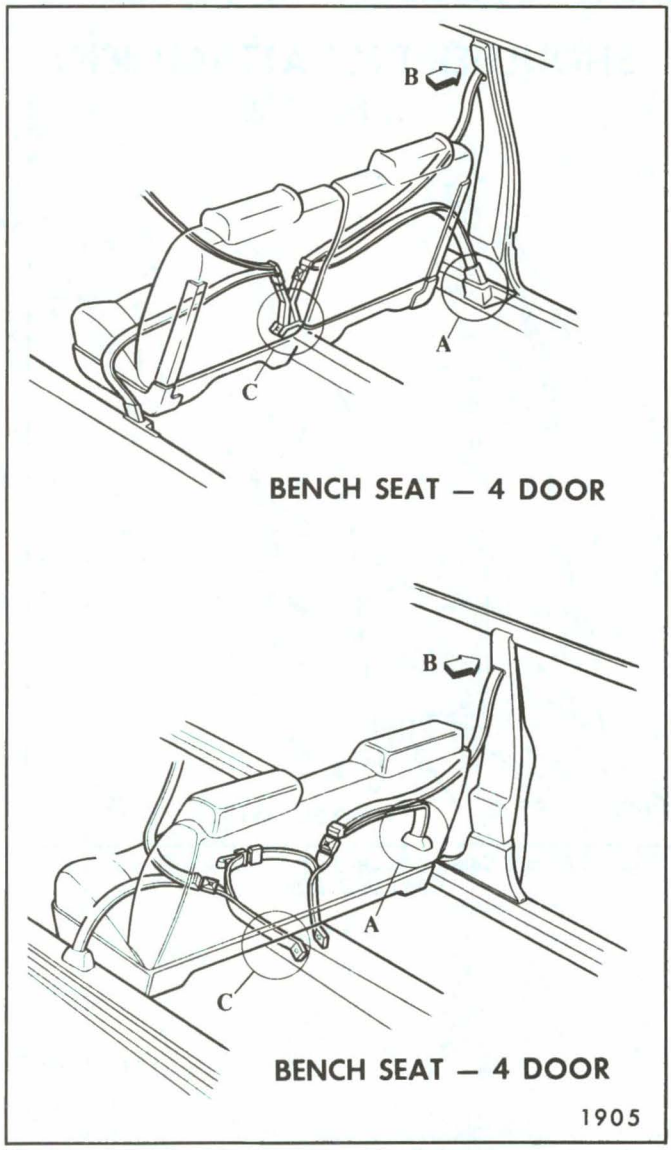


Fig. 9-20-Front Seat Lap and Shoulder Belt Attaching Locations - Cadillac C, D and K Styles

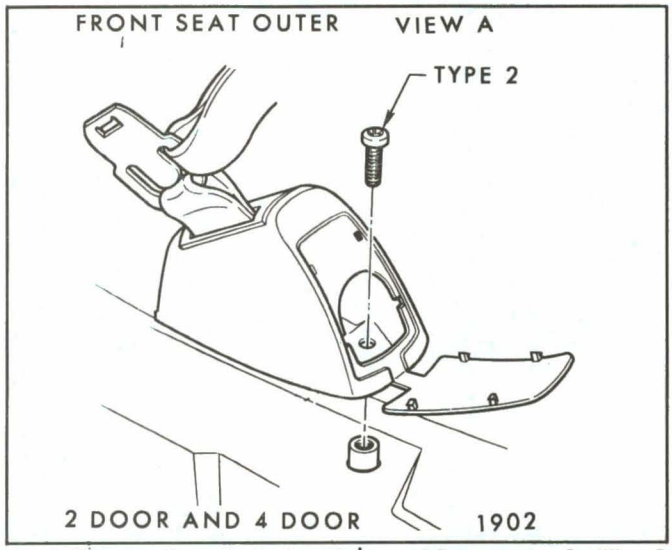


Fig. 9-21-Front Seat Outer Lap Belts and Retractors - Cadillac C and D Styles and Buick C Styles

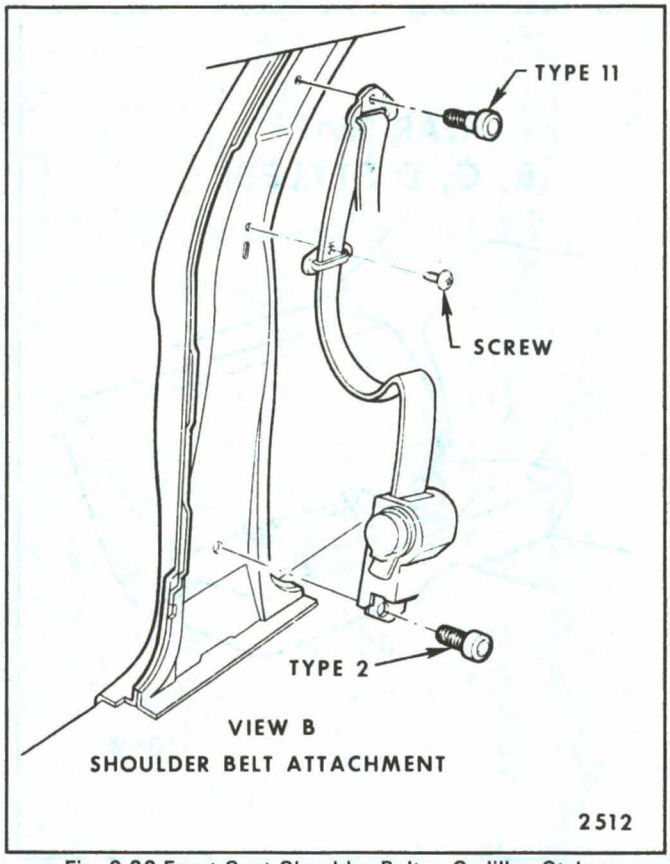


Fig. 9-22-Front Seat Shoulder Belts - Cadillac Styles

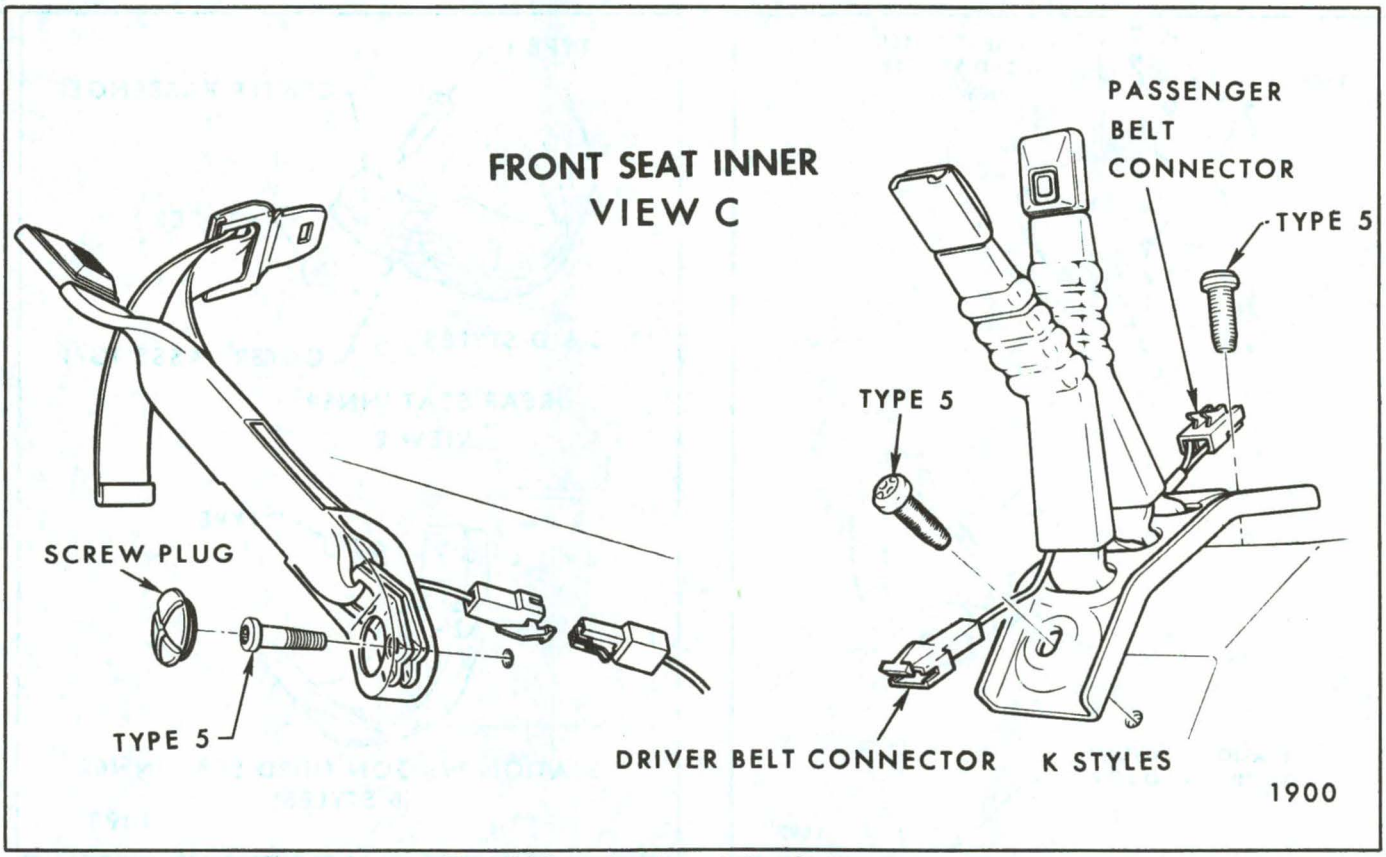


Fig. 9-23-Front Seat Inner Belts - Cadillac Styles

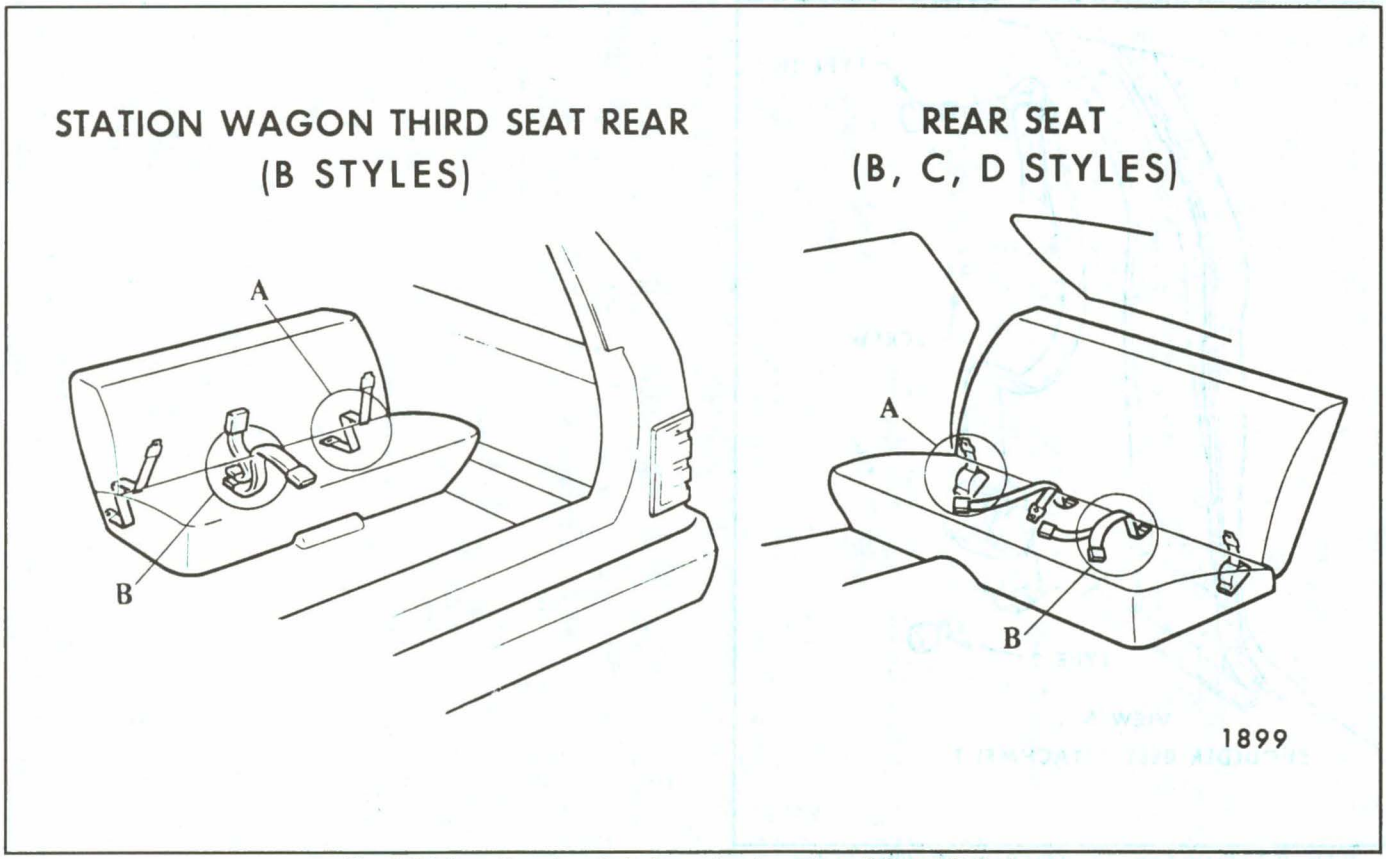


Fig. 9-24-Rear Seat Lap Belt Attaching Locations B,C and D Styles

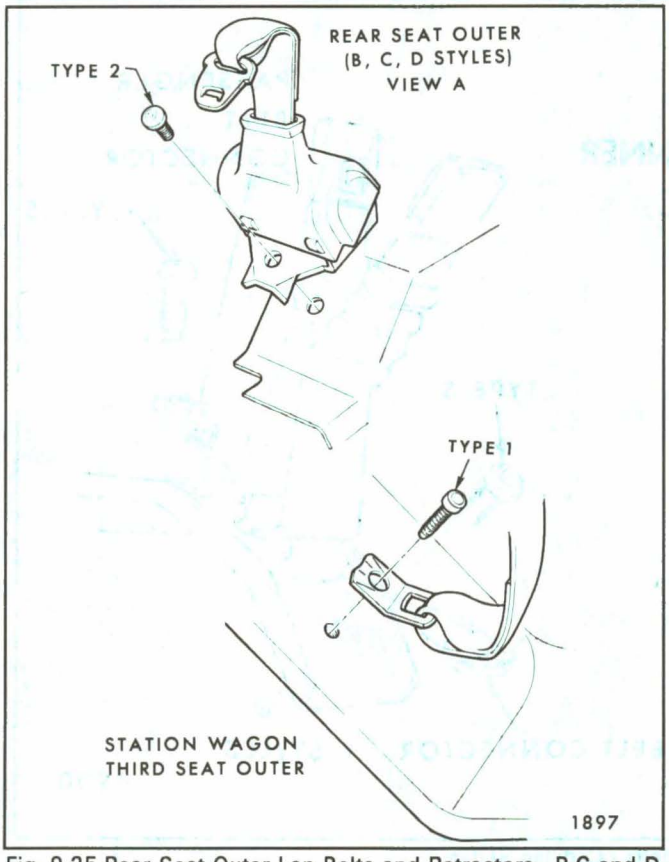


Fig. 9-25-Rear Seat Outer Lap Belts and Retractors - B,C and D Styles

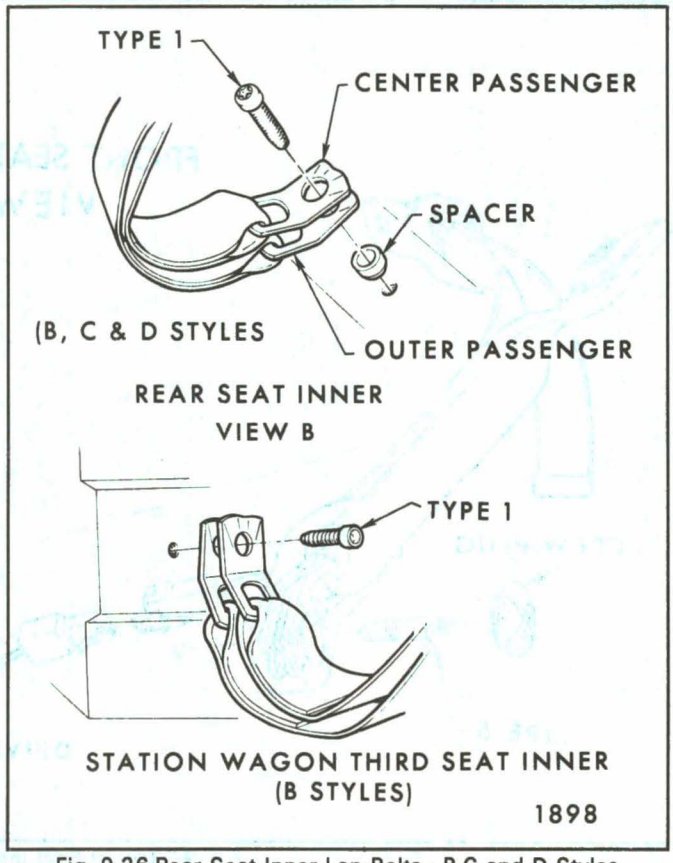


Fig. 9-26-Rear Seat Inner Lap Belts - B,C and D Styles

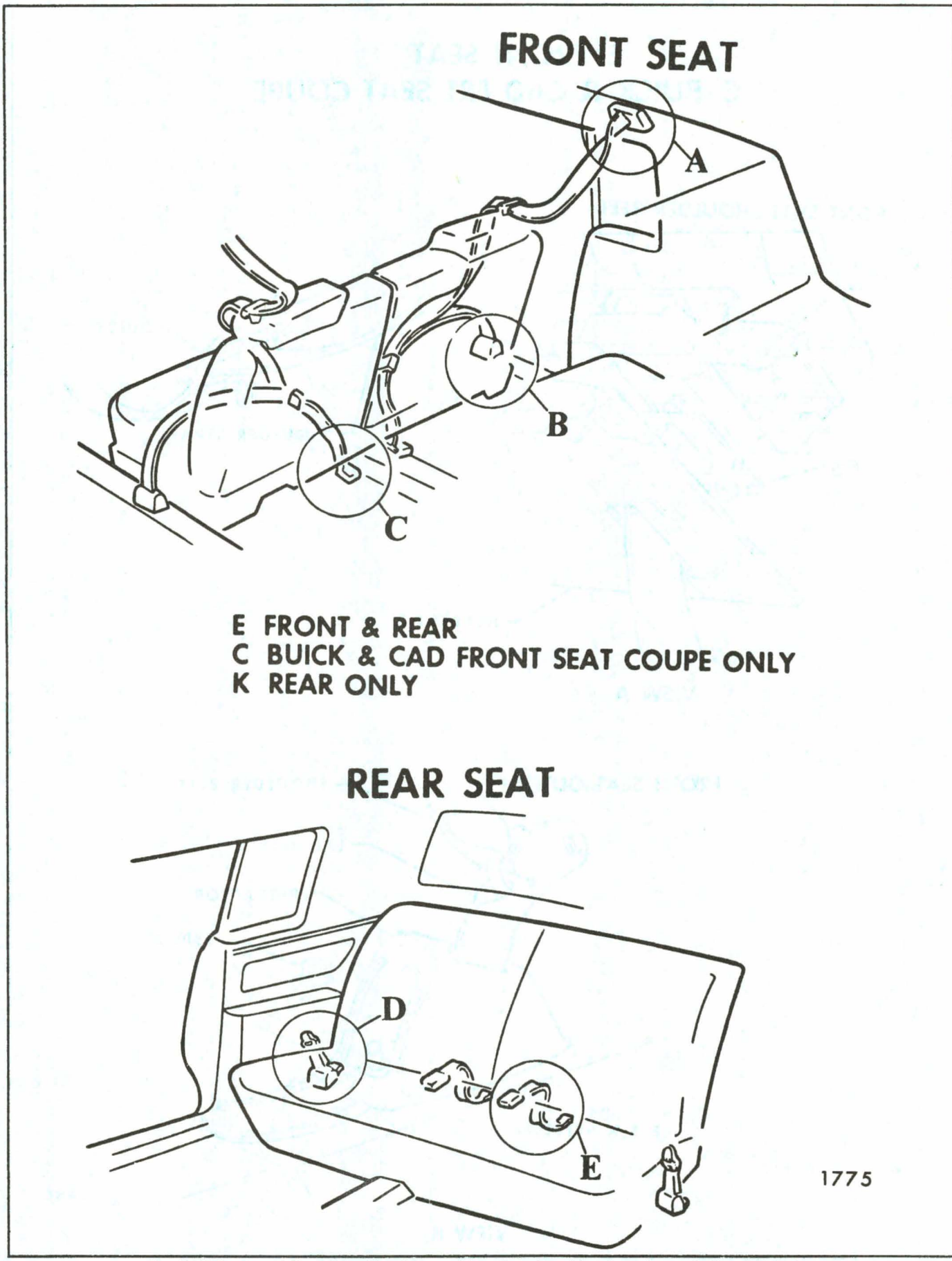
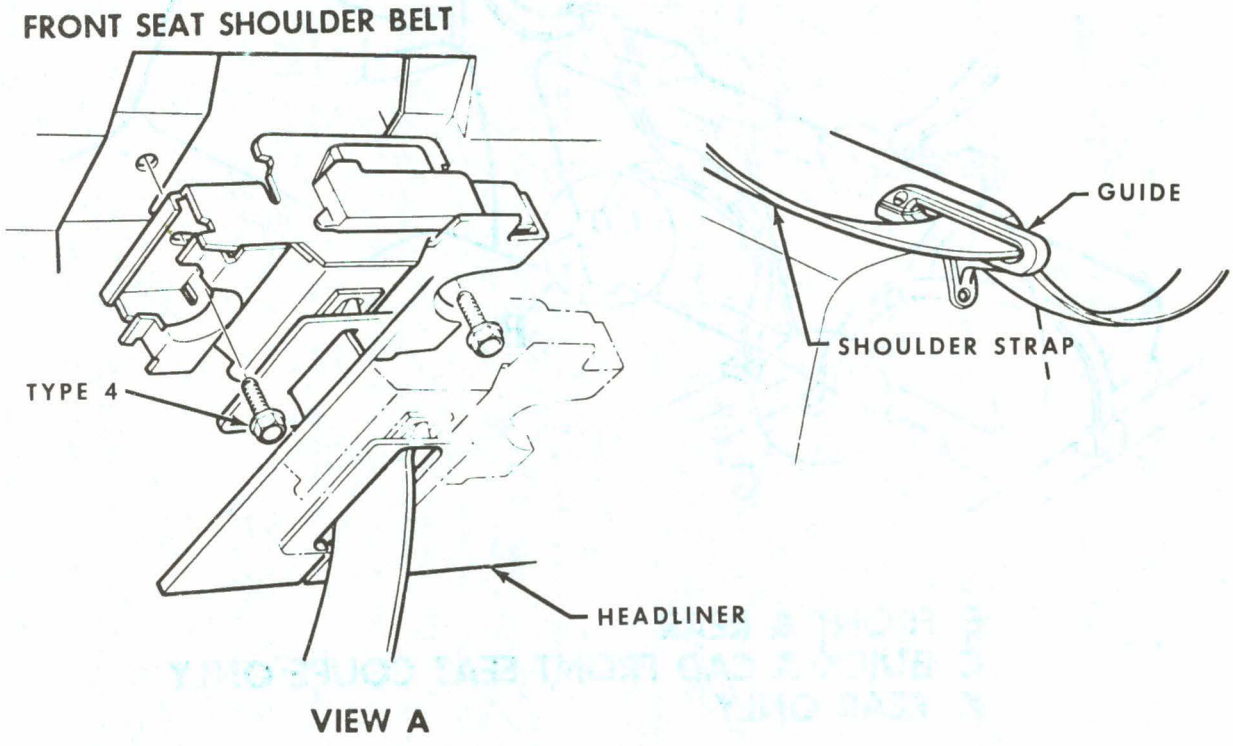
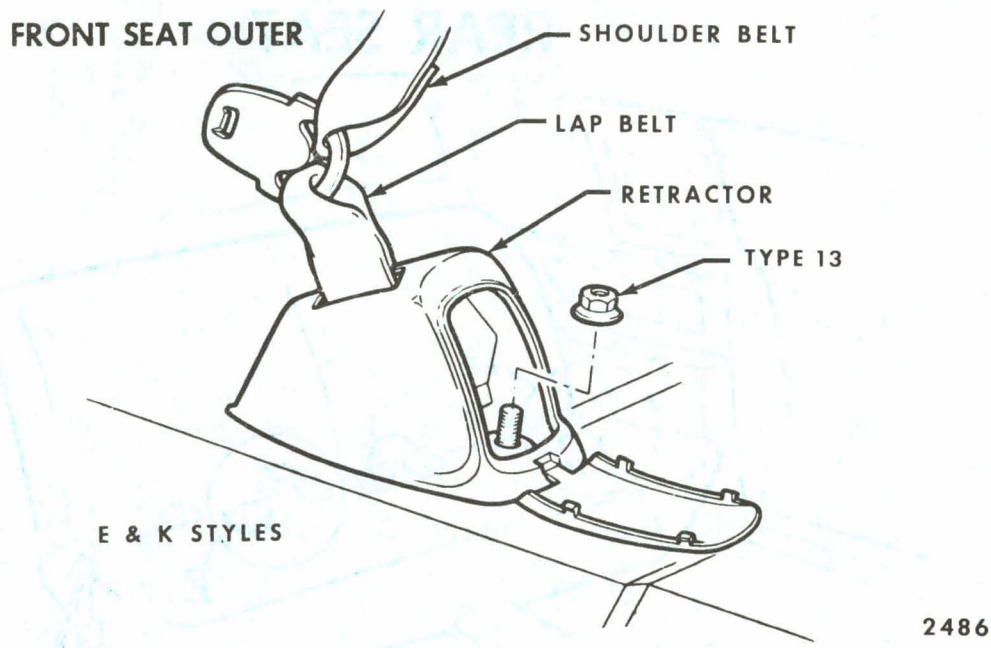


Fig. 9-27-Front and Rear Seat Shoulder and Lap Belt Attaching Locations - C, E and K Styles

E FRONT SEAT
C BUICK & CAD FRT SEAT COUPE



VIEW A



VIEW B

Fig. 9-28-Front Seat Shoulder Belt and Front Seat Outer Lap Belts - C and E Styles

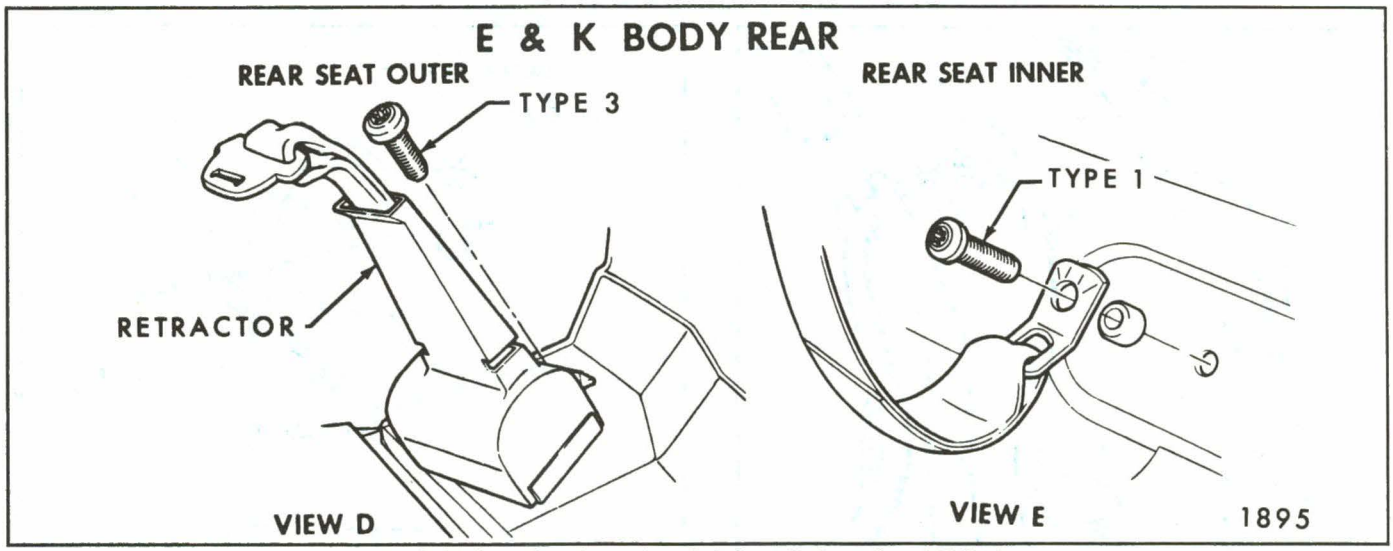


Fig. 9-29-Rear Seat Inner Lap Belt Installation - E and K Styles

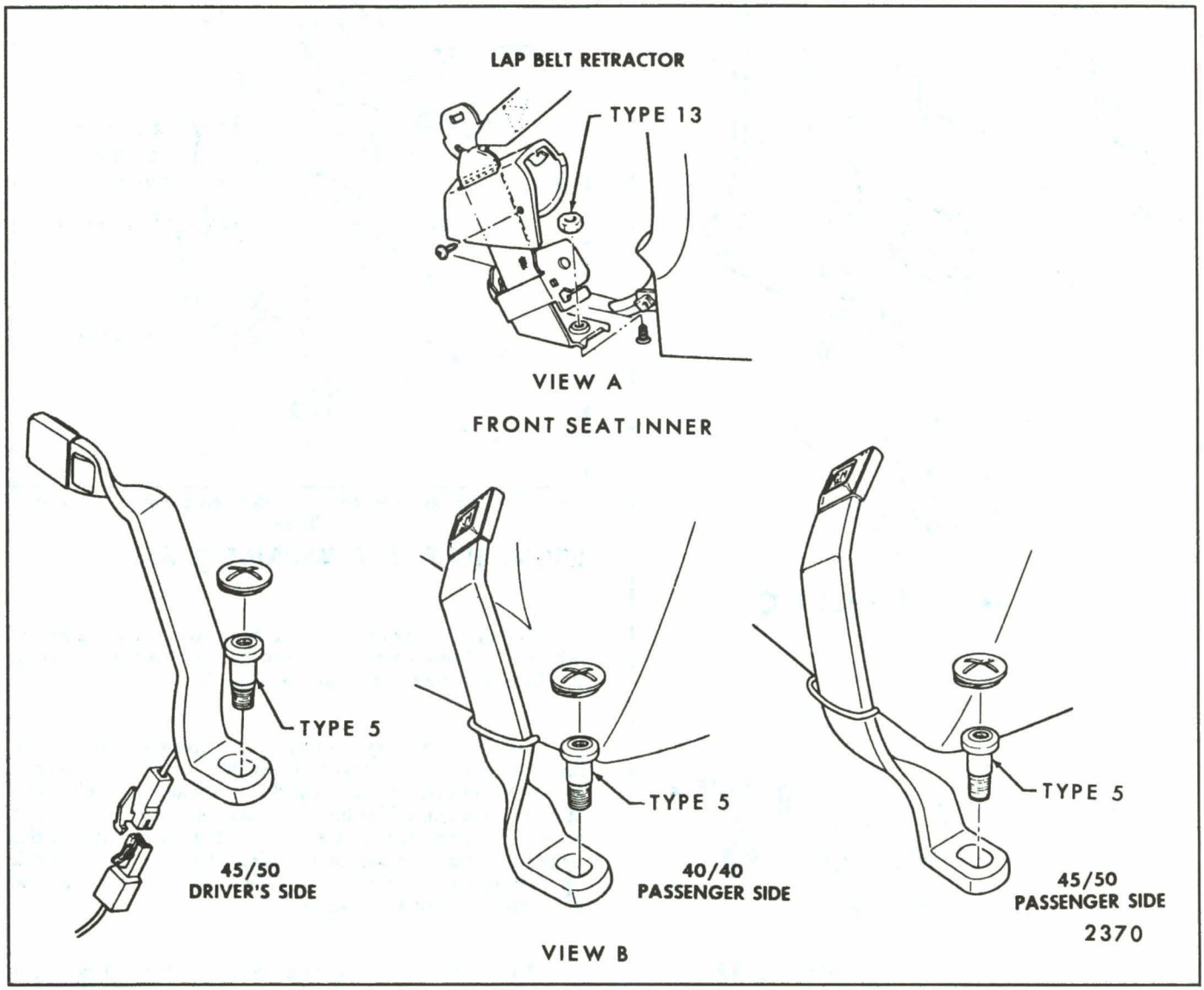


Fig. 9-30-Front Seat Inner Lap Belt Installation - E and K Style

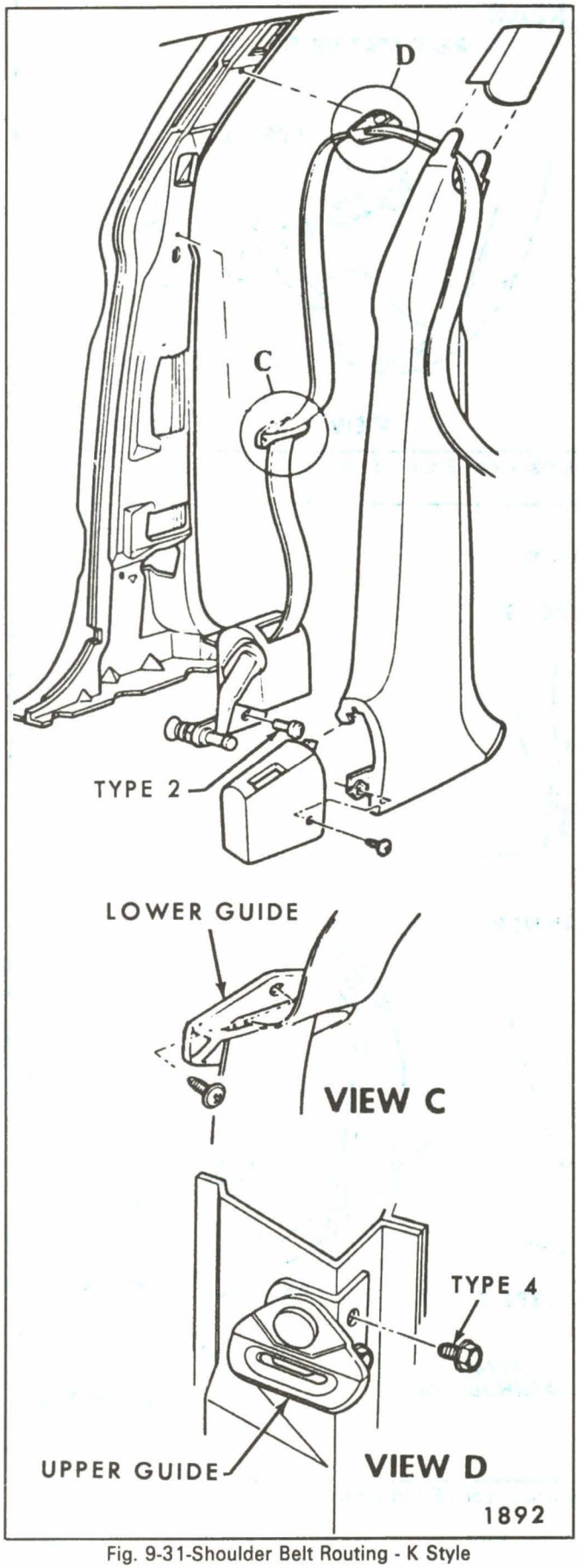


Fig. 9-31-Shoulder Belt Routing - K Style

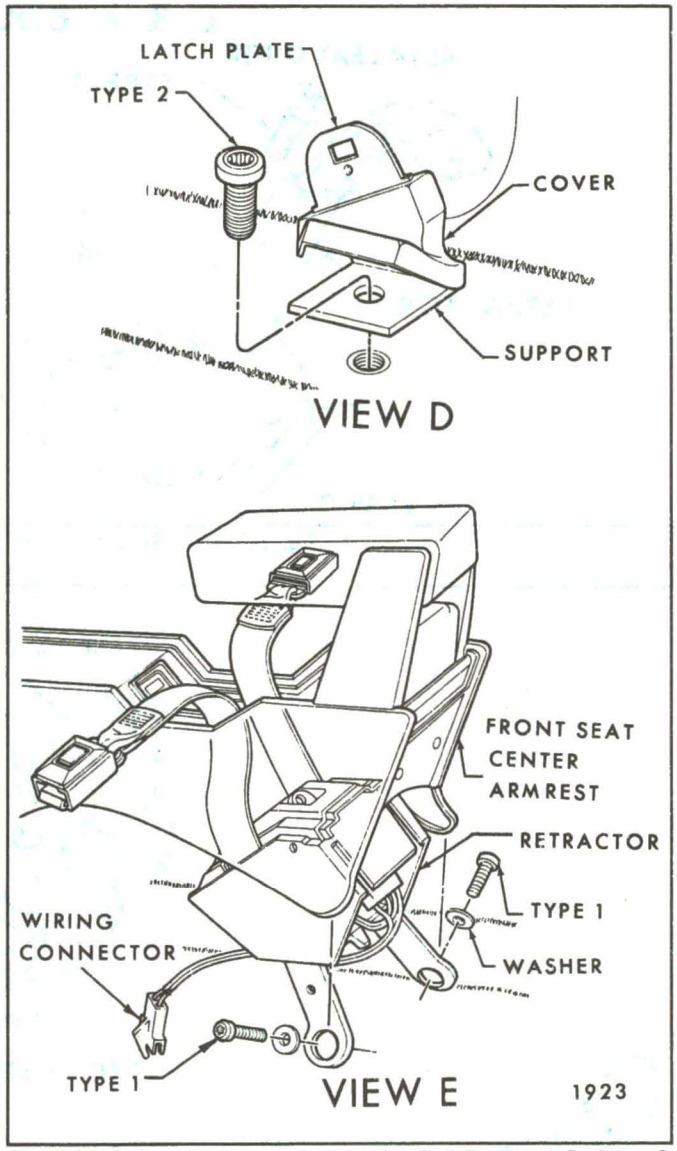


Fig. 9-32-Automatic Lap and Shoulder Belt System - Cadillac C Styles

FRONT SEAT BELT WARNING SYSTEM

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 seat belt reminder lamp/buzzer diagnosis chart (Fig. 9-33).

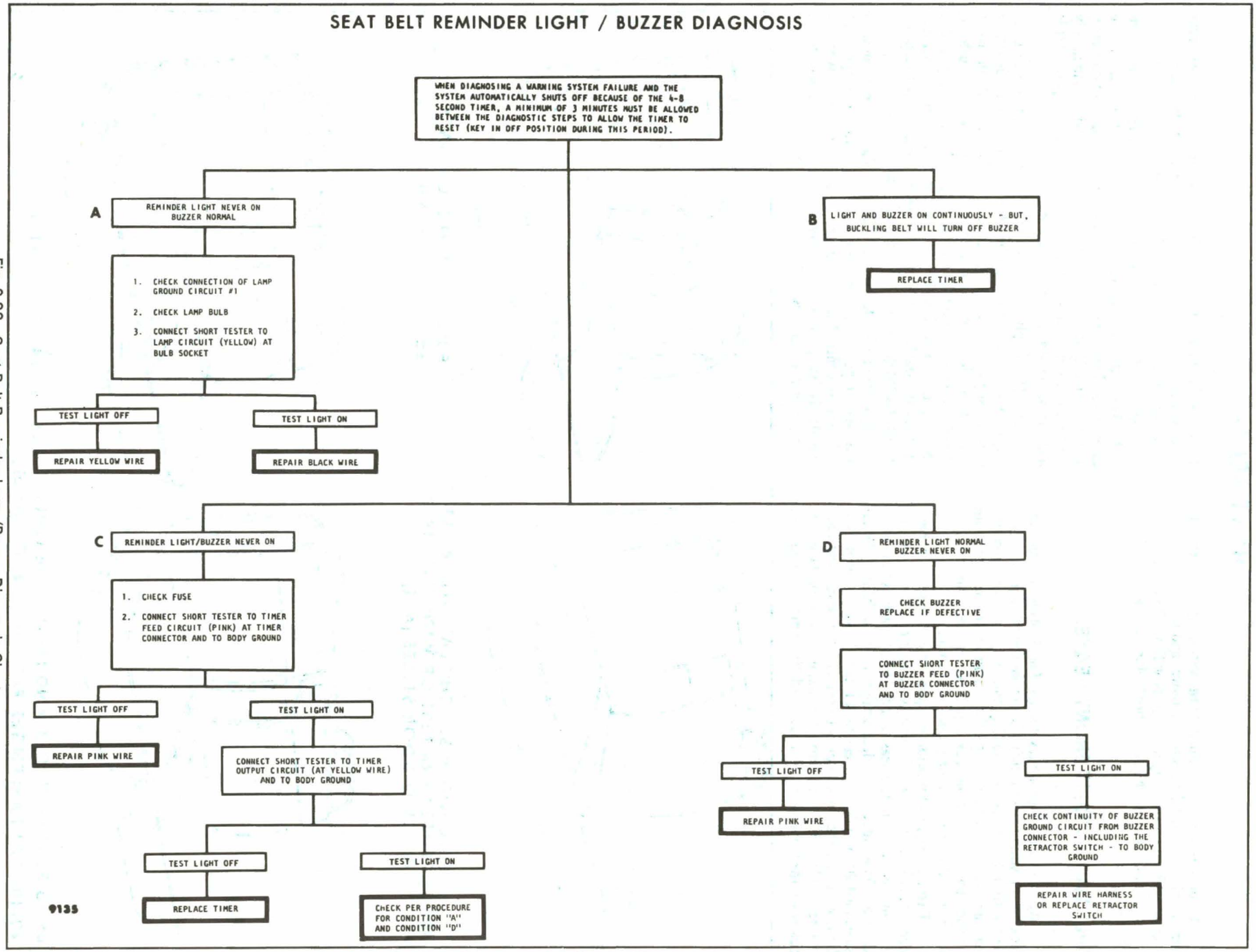


Fig. 9-33 - Seat Belt Reminder Lamp/Buzzer Diagnosis Chart

FRONT SEATS

Figures 9-34 and 9-35 illustrate the various types of seats. 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/SPLIT FRONT SEATS

All front seats except bucket seats (Fig. 9-34) have 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.

Two-door style front seats are equipped with inertia seat back locks. 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 if the front of the car is declined 20° or more, the seat back inertia locking system locks the front seat backs in an upright position. A manual seat back lock release lever is provided to allow manual release of the inertia lock when the front of the car is declined 20° or more. On all seats except bucket seats, the release lever is located at the lower rear outboard corner of the seat back; on bucket seats, the release lever is located at the rear center of the seat cushion.

Front and rear seat cushions and backs have formed foam pads, which fit the contours of the full panel seat back frame assembly and also the designed contour of the seat cushion frame. The B,C and G style 55-45 front seat is split with individually controlled seat adjusters. The passenger seat is the 55 percent side and the driver seat is the 45 percent side.

The 55-45 split seat can be equipped with a passenger reclining seat back which can be reclined rearward about 20° by exerting slight pressure against the seat back and 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.

The optional 40-40 front seats consist of a split front seat with a passenger power recliner and both driver and passenger seat individually controlled with power seat adjusters. The driver seat can also be equipped with a power reclining seat back which can be reclined rearward about 20°.

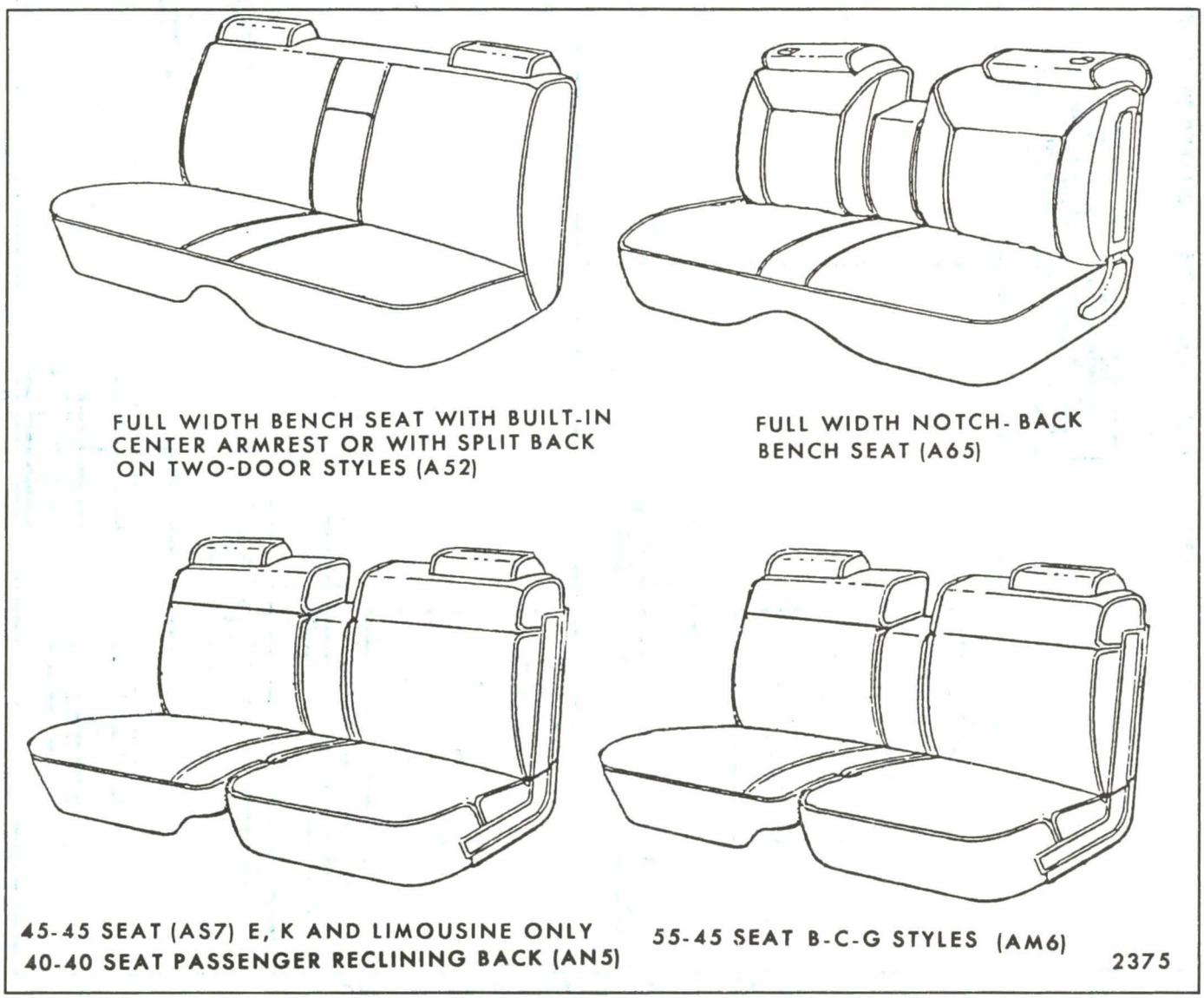


Fig. 9-34-Types of Front Seat (Except Bucket Seats)

All 45-45 front seats (Fig. 9-34) are equally split with individual controls for seat adjusters. The driver seat is equipped with a six-way power adjuster and the passenger seat can be equipped with either a power or manual adjuster. The driver and passenger seat can be equipped with a power reclining seat back which can be reclined rearward about 20°.

An optional power-operated reclining front seat back is available on some B, C, E and K style front seats. The power-operated reclining seat back is operated by a permanent magnet type motor and drive system controlled by a fore and aft toggle switch in the seat cushion outer side panel.

On Cadillac styles 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

Bucket seats shown in Figure 9-35 are the high seat back with integral head restraint type and have a formed seat cushion and back foam pads. Bucket seats have a seat back inertia lock system. The release lever is located at the rear center of the seat cushion.

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 about 20° rearward of normal position by first exerting rearward pressure on the seat back and then lifting the control lever at the outboard side of the seat cushion. Release the control lever to lock the seat back in place. To return the seat back to an upright position, back pressure should be applied to the seat back to keep the recliner assembly synchronized while raising the release handle. Back pressure could then be removed, allowing the seat back to move forward.

SEAT TORQUE SPECIFICATIONS

The following torque specifications should be used when servicing seat assemblies:

Bolt or Nut Location and Torque

Many service replacement assemblies such as front 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. Apply 67 to 89 newtons (15 to 20 pounds) of straight-in pressure to start thread forming action of bolt into an unthreaded nut.

NOTICE: See NOTICE on page 9-1 of this section.

1. Seat adjuster-to-seat bottom frame attaching bolts - 20 to 28 N·m (15 to 21 ft-lb).
2. Seat adjuster-to-floor pan mounting nuts or bolts and folding seat-to-floor pan nuts - 24 to 32 N·m (18 to 24 ft-lb).
3. Front seat back-to-cushion frame lockout bolts - 16 to 24 N·m (12 to 18 ft-lb).
4. Seat back frame-to-cushion frame bolts (G four-door styles) - 22 to 30 N·m (16 to 22 ft-lb).
5. Seat back lock or support to seat cushion and back frame attaching bolts - 20 to 28 N·m (15 to 21 ft-lb).
6. Seat back inertia lock attaching nuts - 9 to 12 N·m (7 to 9 ft-lb).
7. Seat back lock striker and inner side bar stop - 30 to 40 N·m (22 to 30 ft-lb).
8. Front seat center armrest support to seat back panel or armrest attaching bolts or nuts - 10 to 14 N·m (7 to 10 ft-lb).
9. Reclining seat back actuator assembly to cushion frame and/or back frame bolts - 30 to 40 N·m (22 to 30 ft-lb).
10. Reclining actuator to seat back lock screws - 10 to 14 N·m (7 to 10 ft-lb).
11. Front seat bottom frame to reclining actuator mounting support screws - 19 to 25 N·m (14 to 18 ft-lb).
12. Lap belt-to-floor pan anchor bolts - 35 to 48 N·m (26 to 35 ft-lb).
13. Folding second seat back assembly to wheelhouse or floor pan - 24 to 32 N·m (18 to 24 ft-lb).
14. Rear seat center armrest to seat back frame screws - 9 to 12 N·m (7 to 9 ft-lb).
15. Two-way transmission support to bottom frame and motor support seat adjuster screws - 5 to 7 N·m (4 to 5 ft-lb).
16. Center armrest to cushion support nuts (AT8 and AV7 seats) - 12 to 16 N·m (9 to 12 ft-lb).
17. Six-way split seat adjuster relay to bottom frame and transmission support to adjuster - 10 to 13 N·m (7 to 10 ft-lb).
18. Six-way full bench adjuster relay to bottom frame screw - 5 to 8 N·m (4 to 6 ft-lb).
19. Bucket seat back to cushion striker or attaching bolt - 46 N·m (34 ft-lb).

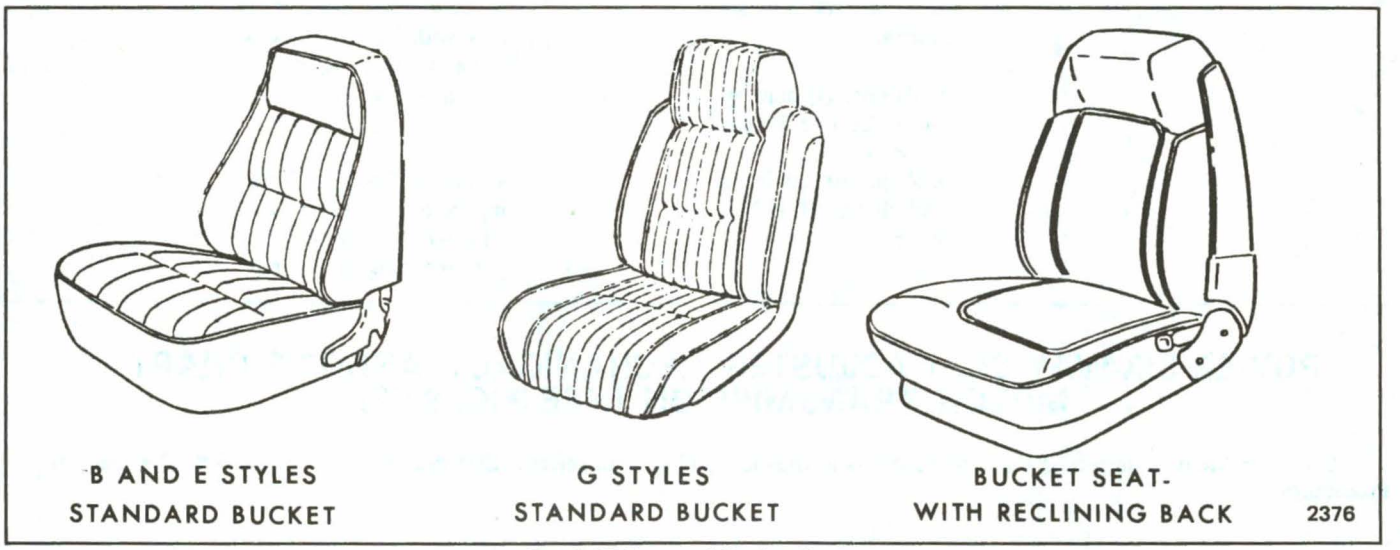


Fig. 9-35-Types of Bucket Seats

MANUAL SEAT ADJUSTER - DIAGNOSIS CHART

CONDITION	APPARENT CAUSE	CORRECTION
1. Adjuster will not lock.	1. Locking wire too tight.	1. Loosen locking wire tension enough to provide full engagement of lock bar in locking slots of adjuster lower channel. See Locking Wire Tension Adjustment (Fig. 9-41).
	2. Adjuster lock bar spring disconnected or broken.	2. Connect spring or install new spring (Figs. 9-41 through 9-44).
	3. Adjuster lock bar sticking or binding.	3. Lubricate lock bar pivot. 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 enough to allow lock bar to disengage from locking slots in adjuster lower channel when lock control lever is activated. See Locking Wire Tension Adjustment (bench seat only).
	2. Adjuster lock bar sticking or binding.	2. Lubricate lock bar. pivot. 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. Adjusters new, not broken in.	1. Operate seat to full forward and full rearward positions several times to work new tightness out of channels.
	2. Adjuster(s) improperly lubricated.	2. Lubricate adjuster channels with Lubriplate Auto-Lube A or equivalent.
	3. Adjuster(s) binding due to bent or damaged channels.	3. Replace adjuster.
	4. Adjusters not in parallel alignment with each other.	4. Loosen floor pan attaching bolts or nuts, align adjusters parallel on floor pan and retighten nuts.

POWER SIX-WAY SEAT ADJUSTER MECHANICAL DIAGNOSIS CHART - MOTOR, TRANSMISSION TYPE (FIG. 9-52)

If it is apparent or suspected that the trouble is in the electrical system, refer to Electrical Section - Power Seats - Diagnostic Procedures.

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 gearnut 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. 9-55).	1. See Electrical Section - Diagnostic Chart, Six-way Power Seats. 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 0.40 to 1.19 mm (1/64″ to 3.64″) maximum.

MANUAL DRIVER OR PASSENGER RECLINING SEAT BACK MECHANICAL DIAGNOSIS CHART - BUCKET SEAT

CONDITION	APPARENT CAUSE	CORRECTION
1. One of the reclining sides is not disengaging.	1. Bent tube 2. Reclining unit is not synchronized.	1. Replace unit 2. Loosen and reinstall inner and outer reclining controls as described under Bucket Seat Reclining Control Hinges. If condition cannot be corrected, replace unit.
2. One or both reclining units is out of engagement.	1. Release lever return spring is disengaged or broken.	1. Engage spring(s). 2. Replace unit if spring is broken.

POWER-OPERATED DRIVER OR PASSENGER RECLINING SEAT BACK MECHANICAL DIAGNOSIS CHART - B, C, E AND K STYLES

If it is apparent or suspected that the trouble is in the electrical system, refer to Electrical Section - Power-Operated Reclining Seat Back Diagnostic Procedures.

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 arm of seat back lock (2-door styles or support (4-door styles). 4. Incorrect seat back lock (2-door styles) or support (4-door styles).	1. Check drive cable and correct, replace if broken. 2. Check reclining actuator gearnut, replace if damaged. 3. Check reclining actuator. 4. Replace lock.
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 ADJUSTMENTS - AT FLOOR PAN ATTACHMENT

A small amount of fore and aft or side adjustment is available at the seat adjuster-to-floor pan attaching bolts which can be used 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 on full width seats can be adjusted to provide proper locking action of both adjusters, particularly the right (passenger side) adjuster. To tighten or loosen the locking wire, disengage locking wire tension hook from hole in seat frame and relocate hook in one of adjacent holes (Figs. 9-41 and 9-43). 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.
2. Right (passenger side) adjuster does not unlock due to locking wire being too loose. To correct, tighten tension on locking wire.

Power Six-Way Seat Adjuster Horizontal Actuator Adjustment

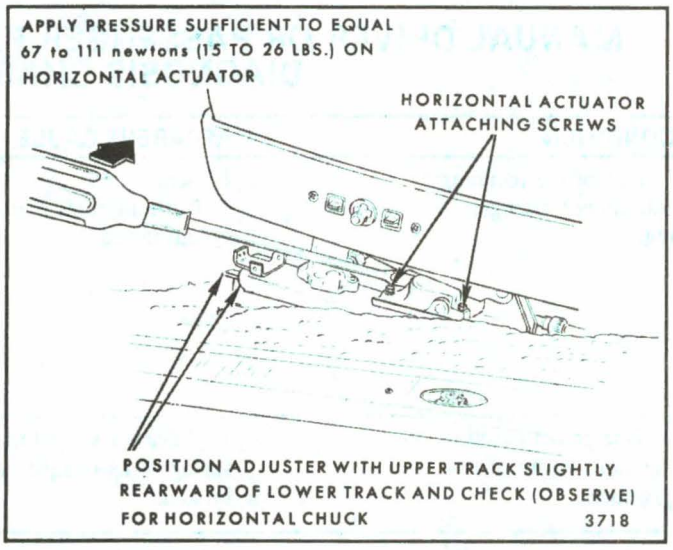


Fig. 9-36-Horizontal Actuator Adjustment - Power Six-Way Seat - Motor, Transmission Type

With seat adjuster assembly installed on seat or seat 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 about 3/4 full forward position.
2. Loosen horizontal actuator attaching screws. Using a large screwdriver, inserted as shown in Figure 9-36, apply outward pressure on horizontal actuator (enough to equal 67 to 111 newtons (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.

MANUAL SEAT ADJUSTER CONTROL ARM KNOB

Manual seat adjuster control arm knobs are a press fit on the adjuster control arm. The knobs 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 (Fig. 9-37).

Removal

To remove adjuster control knob, use body spoon and locking type pliers as shown in Figure 9-37.

Installation Procedure

1. Make pencil mark on seat adjuster control arm 25 mm (1") from end of arm as a guide for full depth fit.
2. Secure locking type pliers to control arm below pencil line.
3. Insert knob on arm and press firmly while holding restraint with locking type pliers. If necessary, use rubber mallet or C clamp.
4. Gate marks on knob should face down on bucket seats and to the rear on regular seats. Care should be taken not to bend the control arm.

FRONT SEAT ASSEMBLY - MANUAL AND POWER SEATS

The seat assembly is 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.

Electrically operated seats and seats equipped with cigar 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 have manual 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 two-way seat adjusters are actuated by a 12V reversible shunt wound motor with a built-in circuit breaker. The six-way seat adjusters are powered by a 12V reversible permanent magnet 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 six-way power seats, the seat operating mechanism has a transmission assembly which has three solenoids and six drive cables to the seat adjusters. One solenoid controls the vertical movement of the front of the seat, a second solenoid controls the horizontal movement of the seat and a third solenoid controls the vertical movement of the rear of the seat. When the control switch is actuated, it energizes the correct solenoid which engages the solenoid plunger with the driving gear dog, and energizes the motor. The driving gear rotates the drive cables and operates both adjusters. When the adjusters reach their limit of travel, the drive

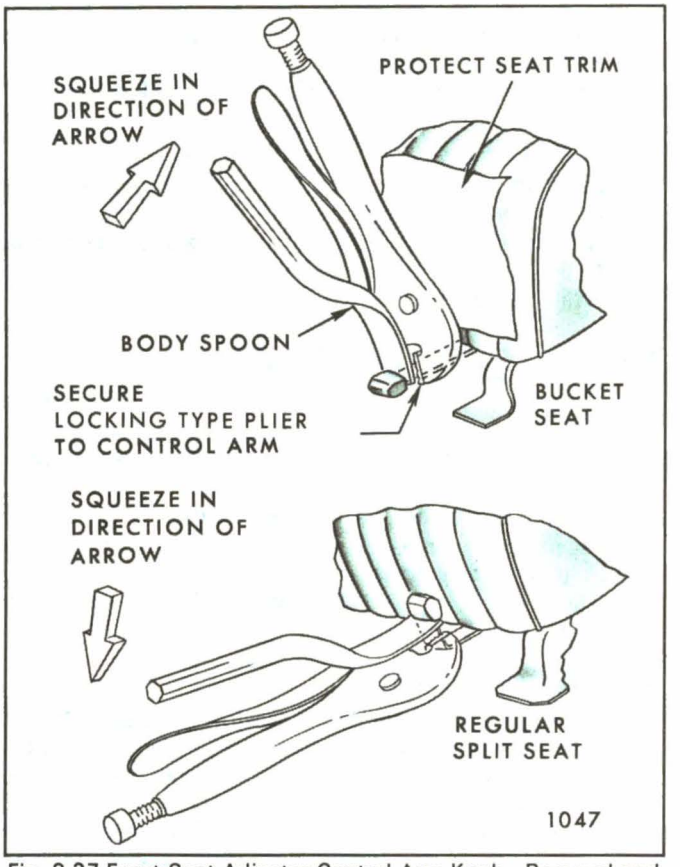


Fig. 9-37-Front Seat Adjuster Control Arm Knob - Removal and Installation

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.

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 outboard side of the seat cushion frame by means of a drive cable.

SHOULDER BELT GUIDE LOOP - TWO-DOOR STYLE FRONT SEATS

Five types of front seat shoulder belt guide loops are used (Fig. 9-38).

Removal and Installation - B and E Style Bucket Seats

1. Remove screw from center of guide loop.
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.
   b. Push hard on side of guide to disengage guide loop tabs from retainer and carefully turn screwdriver 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 and replace retaining screw. If fastener was damaged during removal, install new fastener.

Removal and Installation - G Styles

1. Remove two attaching screws from guide loop.
2. Remove guide loop.

3. To install guide, reverse removal procedure.

Removal and Installation - B,C and E Styles - Split and Split Back Seats

1. Remove inner guide loop attaching screw.
2. Lift inner portion of guide loop and slide belt webbing out from within guide loop.
3. Remove outer lower guide loop attaching screw and remove guide loop.
4. To install guide, reverse removal procedure.

SEAT ASSEMBLY SERVICING

The front seats are secured to the floor pan by bolts installed into weld nuts on floor pan anchor plates and/or by nuts installed on floor pan anchor plate studs. Refer to proper illustration below for the type of seat being serviced.

1. Figure 9-40 - B and C Style Power Seats
2. Figures 9-39 and 9-42 - G Style Manual and Power Seat Adjusters - Split Seats
3. Figure 9-44 - B, C and D Style Manual Seat Adjusters - Split Seats

Removal and Installation

1. On B, C and E two-door styles, remove shoulder belt guide loop inner attaching screw; then carefully lift upper portion of guide loop enough to slide shoulder strap webbing out of loop (Fig. 9-38).
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 (on G styles, pry retaining nail from rear covers and remove screws from front covers).
3. On full width and split 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. Remove adjuster rear foot covers and track covers where present; then remove adjuster-to-floor pan rear attaching nuts or bolts. Operate seat to full rearward position. Remove adjuster front foot covers and track covers where present; then remove adjuster-to-floor pan front attaching nuts or bolts.

   On seats having any electrical equipment such as power adjusters, power reclining seat back, cigar lighter, etc., tilt seat rearward and disconnect feed wire connector.
5. With aid of a helper, remove seat assembly from car.
6. Prior to installing seat, 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 5c under Front Seat Adjuster Assembly - Removal and Installation.
7. To install seat, reverse removal procedure.
8. Tighten seat adjuster to floor pan attaching bolts or nuts and inner lap belt bolts as specified in lap and shoulder belt illustrations. Check operation of seat assembly to full limits of travel.

FRONT SEAT ADJUSTER ASSEMBLY - MANUAL AND POWER - ALL STYLES EXCEPT 6CB69, 6KS69 AND 6EL57 (BIARRITZ)

Refer to the illustrations below for the type of seat being serviced.

1. Figure 9-41 - B and C Style Manual Seat Adjusters - Full Width Seat
2. Figure 9-43 - G Style Manual Seat Adjusters - Full Width Seat
3. Figure 9-44 - B,C and D Style Manual Seat Adjusters
4. Figure 9-45 - B,C and G Style Power Six-Way Seat Adjusters - Full Width Seat
5. Figure 9-42 - G Style Manual and Power-operated Seats - 55-45 Shown
6. Figure 9-46 - Power Six-Way Adjusters - All Split Seats - Motor, Transmission Type

Removal and Installation

1. Remove front seat assembly with adjusters attached and place upside-down on a clean, protected surface.
2. On manual seat adjusters, remove seat adjuster assist spring from adjuster being removed. If removing right adjuster, squeeze hooked end of seat adjuster locking wire together and slide retaining spring over hump in locking wire and remove locking wire from adjuster.
3. On power-operated full width seats, disconnect drive cables at adjuster being removed, squeeze oblong connector to detach. On power-operated 55-45, 45-45 or bucket seats, remove bolt securing motor and transmission support to adjuster being removed (Fig. 9-46).
4. Remove adjuster-to-seat bottom frame front and rear attaching bolts and remove seat adjuster from seat. On some seats, spacers are installed between the seat adjusters and seat frame. Note location of spacers for reinstallation in same position(s).
5. To install, reverse removal procedure.

NOTICE: See Notice on page 9-1 of this section.

The attaching weld nuts on seat frames are unthreaded. Use the original thread forming adjuster attaching bolts or new thread forming attaching bolts when installing adjusters.

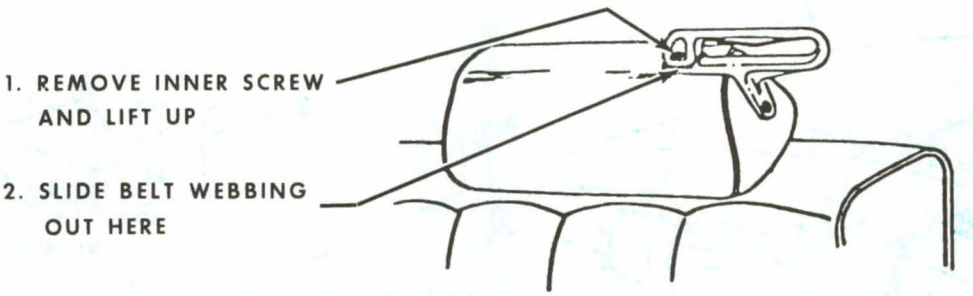
a. If a manual adjuster is being replaced, install new adjuster control knob as described under Manual Seat Adjuster Control Arm Knob.

   When installing manual 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 20 to 25 N·m (15 to 18 ft-lb).

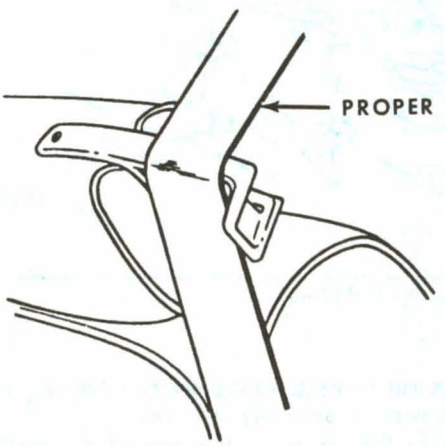
b. After installing manual adjusters to seat frame, check operation of adjusters. If on full width seats the adjusters do not lock or unlock satisfactorily when control handle is operated, adjust locking wire as described under Adjuster Locking Wire Adjustments (Figs. 9-41, 9-42 and 9-44).

c. When installing power 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:

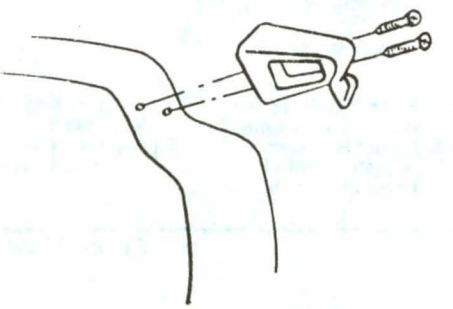
   - Horizontal travel - operate seat control switch until one adjuster reaches full forward position. Detach horizontal drive cable from adjuster which has reached full forward position. Operate seat forward until other adjuster reaches full forward position; then connect horizontal drive cable and check horizontal travel of seat.
   - 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



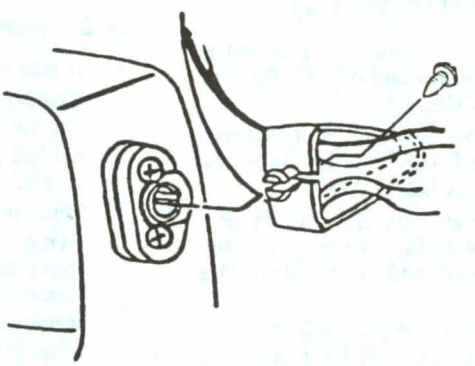
B, C & E TWO-DOOR STYLES
SPLIT SEATS



G TWO-DOOR STYLES
WITH BENCH SEATS



STANDARD BUCKET
G STYLES



STANDARD BUCKET
B AND E STYLES

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Fig. 9-38-Shoulder Belt Guide Loops

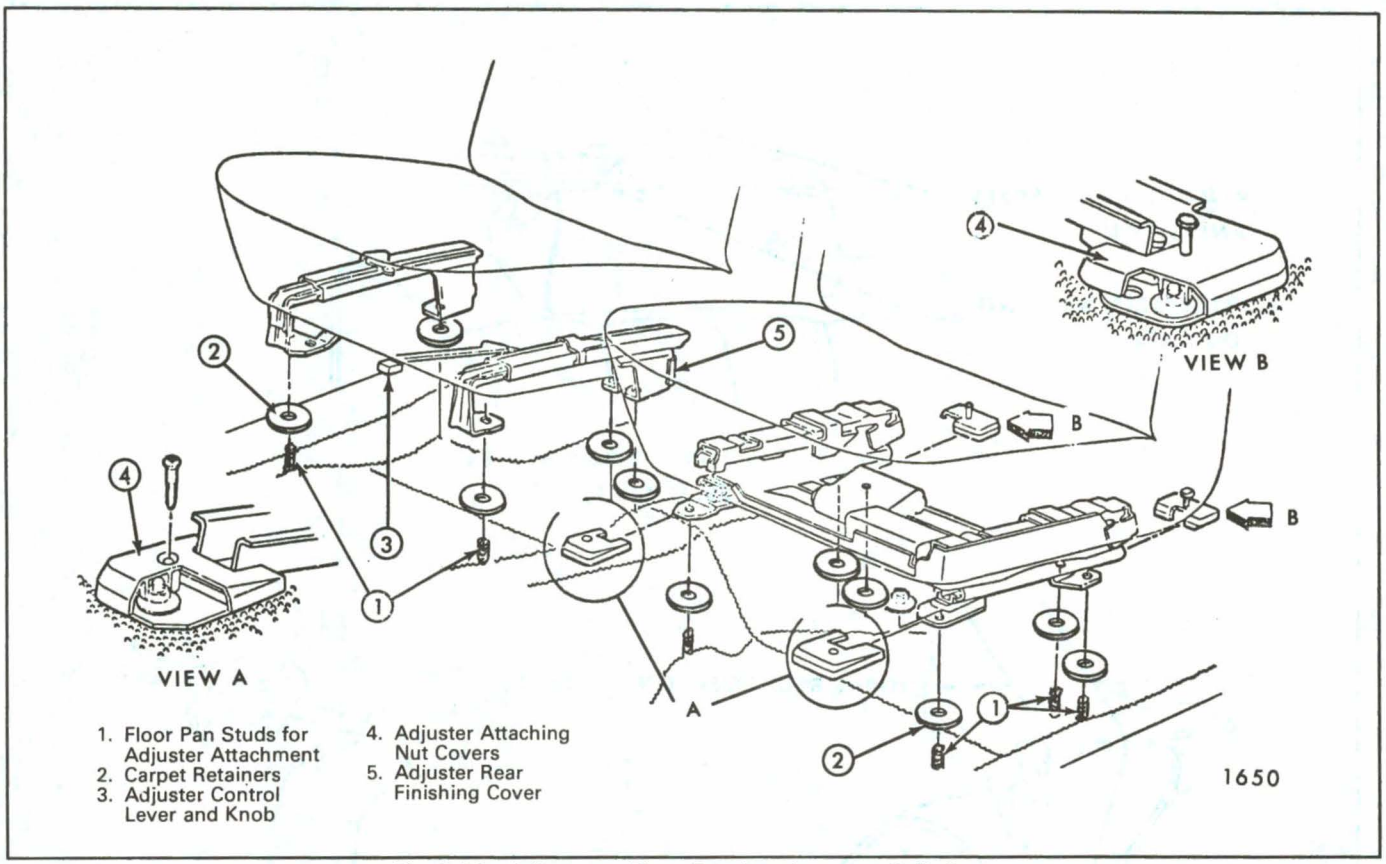


Fig. 9-39 - Adjuster to Floor Pan Attachments - Split Seat

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 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.

POWER TWO-POSITION MEMORY SEAT

The three motor design six-way power memory seat system is an available option on 6CB47-69, 6KS69 and 6EL57 (Biarritz) styles. It is also available on 3EZ57 styles.

The one motor design six-way power memory seat system is an available option on 4CX37-69 and 4EZ57 styles. It is also available on 6CD47-69 and 6EL57 (less Biarritz) styles.

The memory seat control is located on the driver's door armrest and operates in conjunction with the six-way power seat control switch. It consists of a "set" switch and two recall switches that are labeled 1 and 2 (Fig. 9-48).

This system will function only when the gear shift lever is in the neutral or park position. With the gear shift lever in neutral or park, the driver's seat occupant can adjust the seat to a desired position using the six-way adjuster control. This seat position can then be placed in the memory by first pressing the set switch and then pressing either of the numbered recall switches. This numbered switch will be the switch used to recall the seat position just set.

A second driver's seat position can be selected and stored in the same manner except that the remaining numbered recall switch is pressed to store and recall the second driver's seat position.

The seat can be manually adjusted in any shift lever position using the six-way seat adjuster controls. However, these adjustments will not be stored in memory unless programmed into the seat memory as previously explained.

Refer to Section 10 in this manual for troubleshooting diagnosis charts.

POWER TWO-WAY SEAT ADJUSTER MAJOR COMPONENTS

The following service procedures cover replacement of the major component parts of the power two-way seat adjusters.

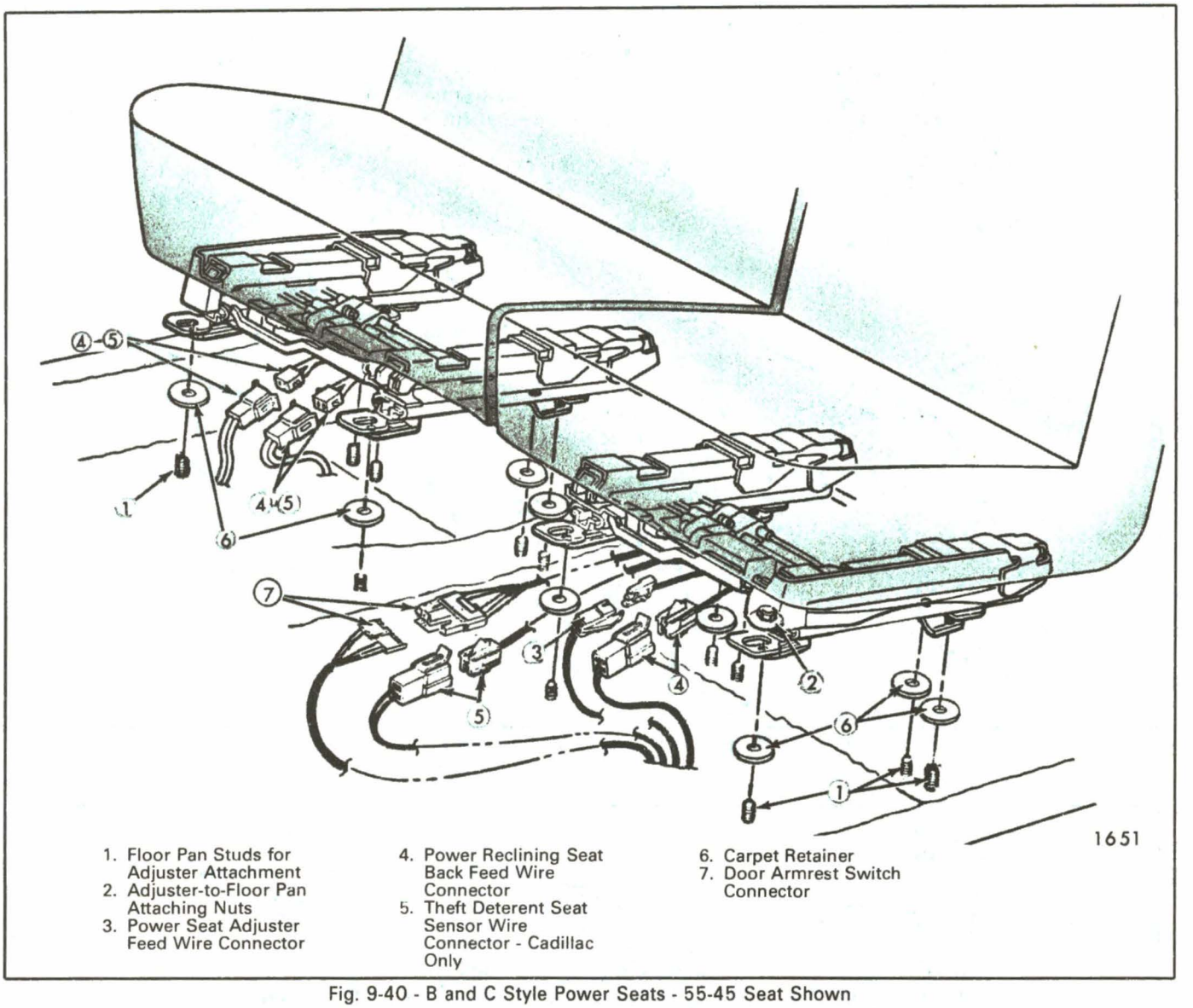
Electric Motor - Removal and Installation

1. If seat is operable, operate seat to a midway position.
2. Remove seat adjuster-to-floor pan attaching nuts and tilt seat rearward.
3. On full width seat, disconnect both power drive cables from motor.
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 - Removal and Installation (Fig. 9-50)

1. Remove front seat assembly with adjusters attached and place upside-down on a clean, protected surface.

   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.



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. Carpet Retainer
7. Door Armrest Switch Connector

Fig. 9-40 - B and C Style Power Seats - 55-45 Seat Shown

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.
7. To install, reverse removal procedure. Prior to installing seat assembly in body, be sure adjusters are in phase. See step 5c under Front Seat Adjuster Assembly - Removal and Installation.

Plastic Shoes - 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. 9-50).
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 shoes may now be disengaged from positioning slots on lower track.
4. To install, reverse removal procedure making sure that groove in plastic shoe slips onto lower track with thinner section of shoe protruding above surface of track.

SIX-WAY SEAT ADJUSTER MAJOR COMPONENTS - MOTOR, TRANSMISSION TYPE (FIG. 9-52)

The following service procedures cover replacement of the major component parts of the power six-way seat adjusters.

Power Six-way Seat Side Panel Adjuster Switch (Fig. 9-51) - Removal and Installation

1. Remove three seat side panel attaching screws.
2. Pull seat side panel switch outward from seat cushion to fully expose connector.

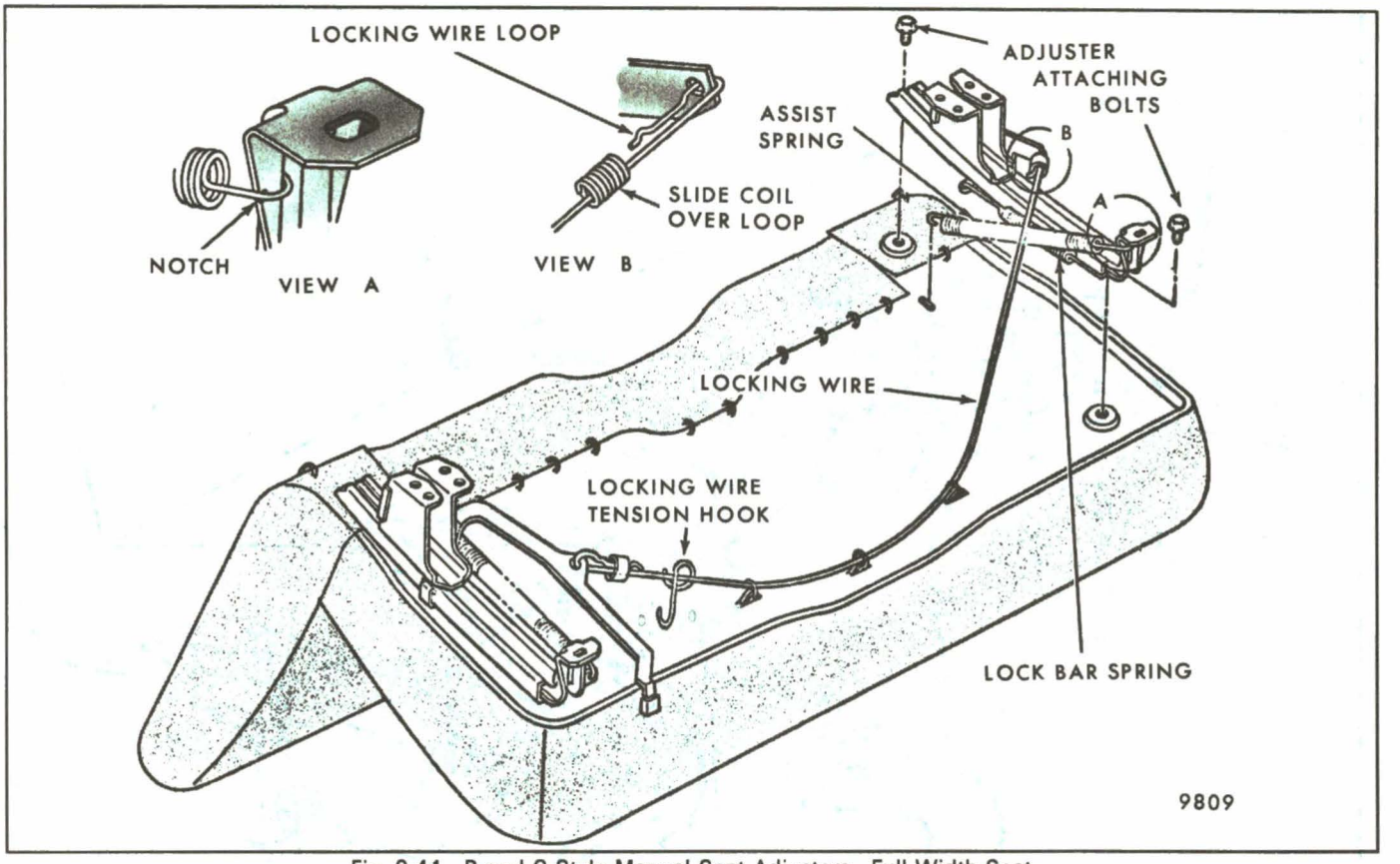


Fig. 9-41 - B and C Style Manual Seat Adjusters - Full Width Seat

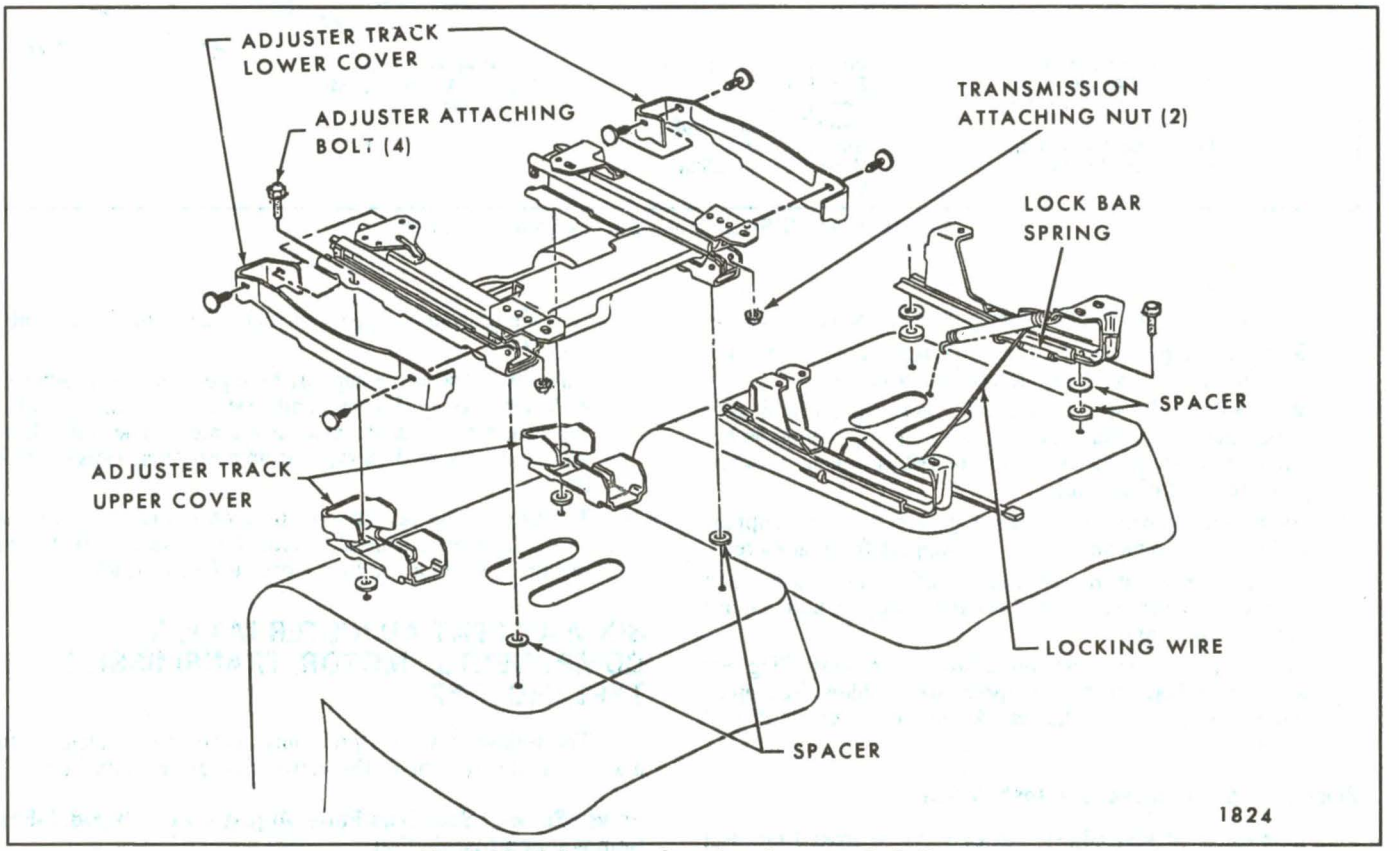


Fig. 9-42 - Adjuster to Seat Attachments - Split Seat

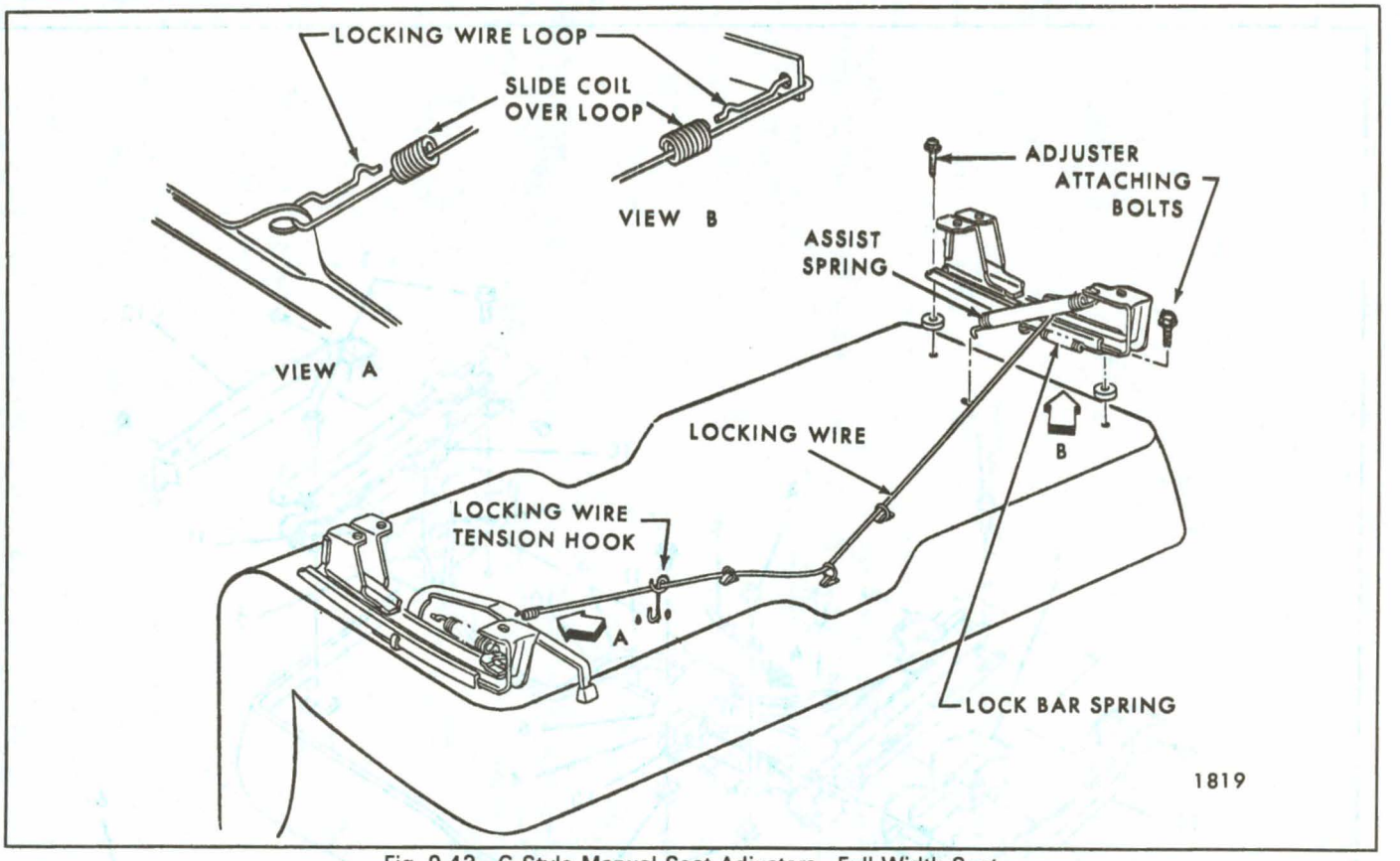


Fig. 9-43 - G Style Manual Seat Adjusters - Full Width Seat

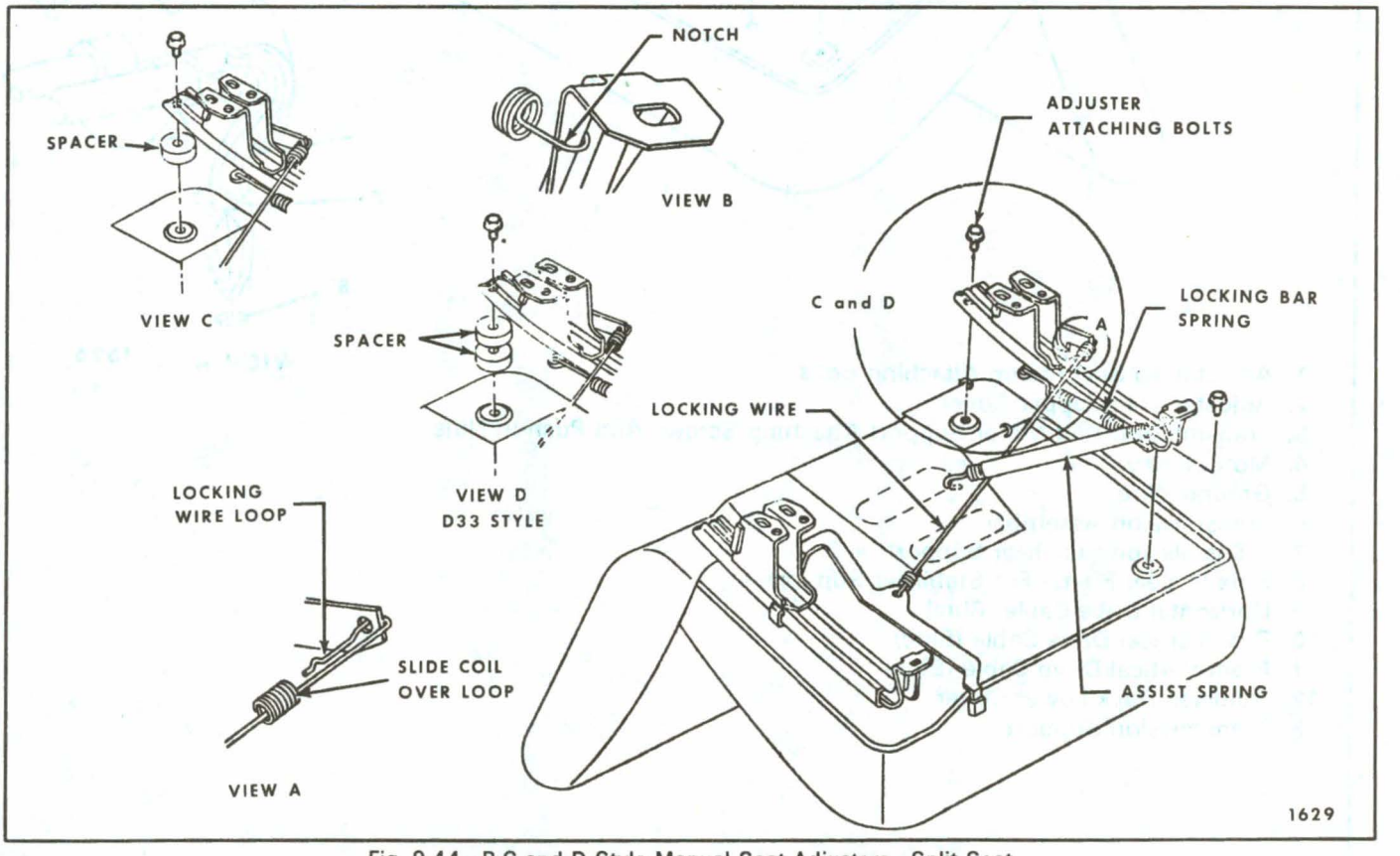
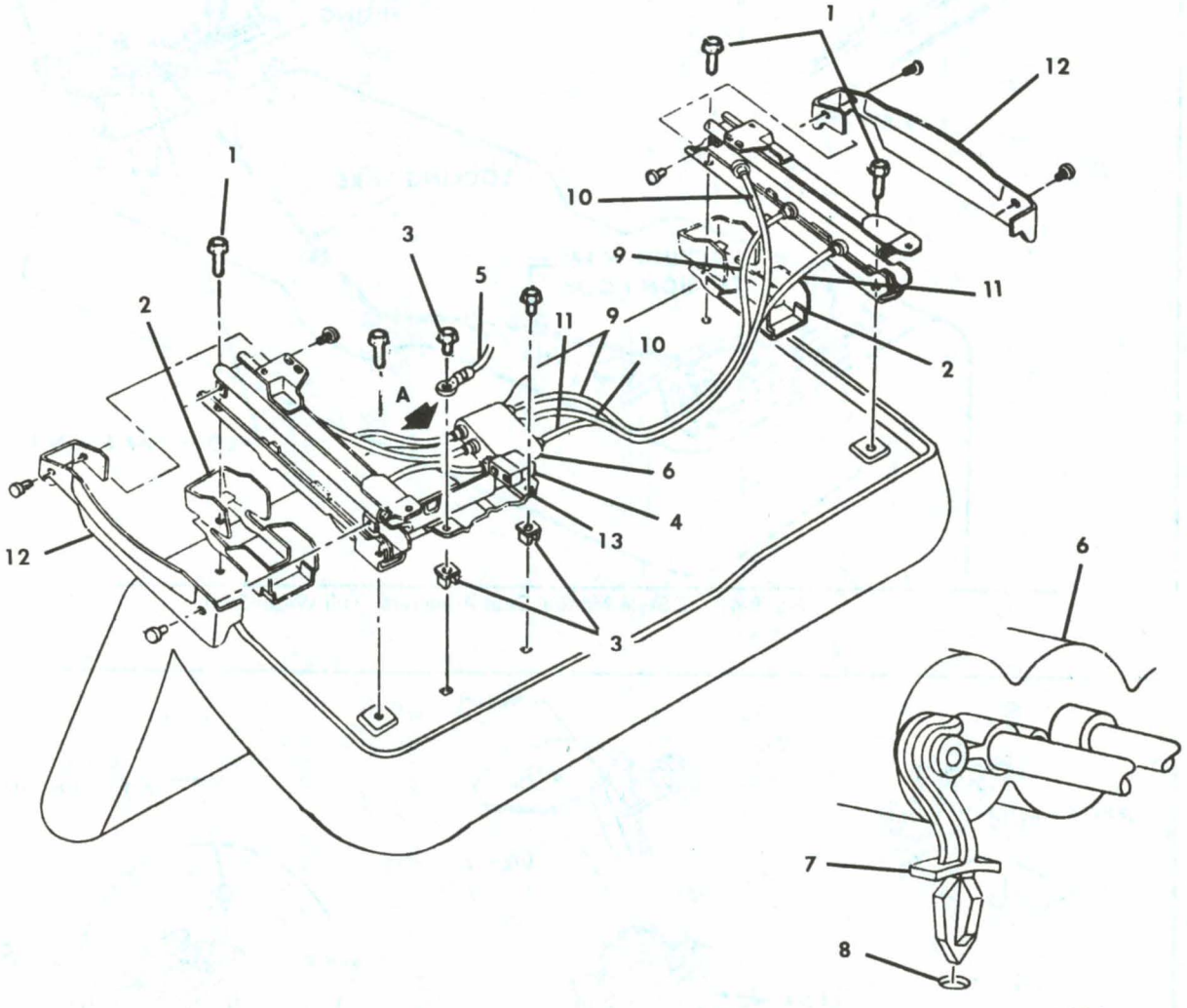
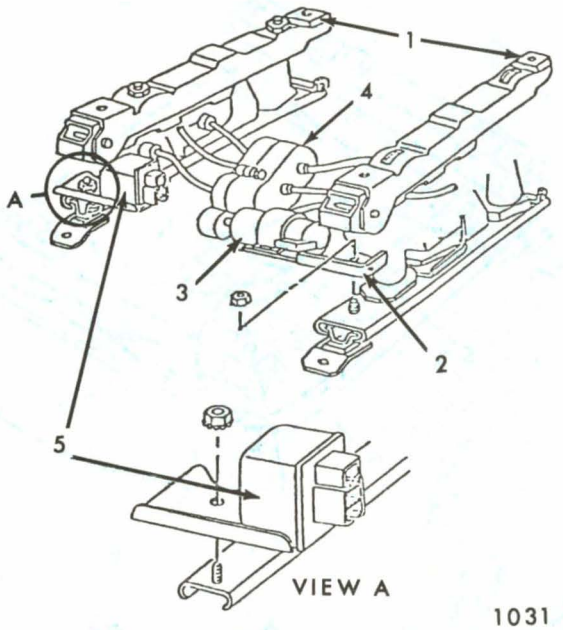


Fig. 9-44 - B,C and D Style Manual Seat Adjusters - Split Seat



1. Adjuster-To-Seat Frame Attaching Bolts
2. Adjuster Track Upper Cover
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 (Blue)
10. Rear Vertical Drive Cable (Blue)
11. Front Vertical Drive Cable (Blue)
12. Adjuster Track Lower Cover
13. Transmission Support

Fig. 9-45 - B,C and G Style Power Six-Way Seat Adjusters - Full Width Seat



1. Front Seat Power 6-Way Adjusters
2. Motor, Transmission Support and Attaching Nuts
3. Motor
4. Transmission Assembly
5. Motor Relay

Fig. 9-46 - Power Six-Way Seat Adjusters - All Split Seats (Motor, Transmission Type)

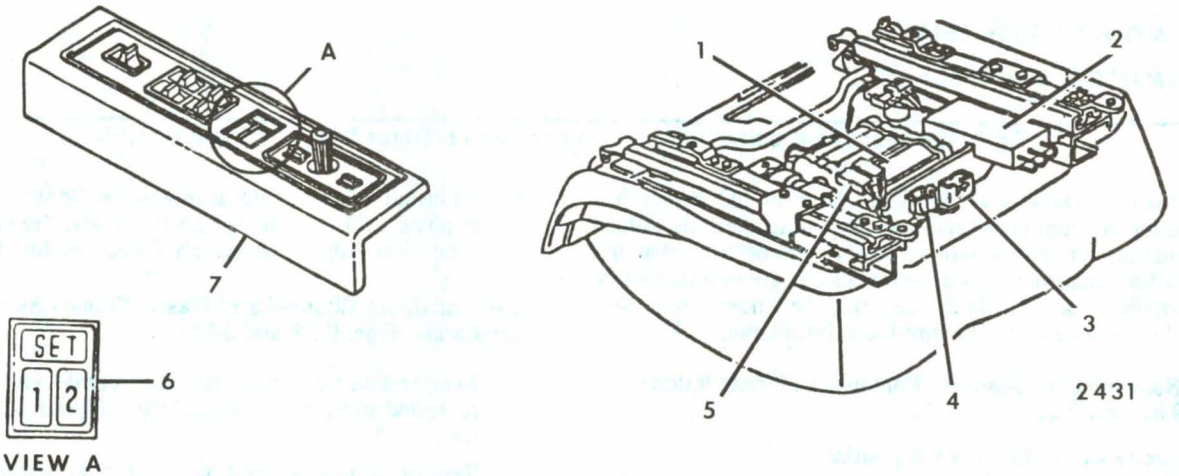
3. Remove connector retaining nut by turning counterclockwise.
4. Disconnect seat side panel switch from connector and remove switch.
5. To install, reverse removal procedure.

Permanent Magnet Electric Motor - Removal and Installation

1. Remove front seat and place upside-down on a clean, protected surface.
2. Disconnect motor feed wires from motor control relay.
3. Remove two motor support attaching screws; then remove three screws attaching transmission to motor. Move motor outboard (away from transmission) enough to disengage motor from rubber coupling.
4. 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 - Removal and Installation (Figs. 9-52 and 9-53)

1. Remove seat from body and place upside-down on a clean, protected surface. Remove affected adjuster from seat and place in bench vise to prevent accidental ejection of compressed vertical assist spring when rear gearnut attaching nut is removed.
2. At top of adjuster remove rear vertical gearnut attaching nut and tension spring. Open vise slowly to relieve assist spring compression and remove. At top of adjuster remove front vertical gearnut attaching nut.
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 and rack gear. With



1. SEAT MOTOR ASSEMBLY
2. MEMORY MODULE ASSEMBLY
3. SEAT MOTOR ASSEMBLY
4. POWER INPUT CONNECTOR
5. MODULE TO MEMORY SEAT SWITCH CONNECTOR
6. MEMORY SEAT SWITCH
7. DOOR ARMREST SWITCH ASSEMBLY

Fig. 9-47-Power Two-Position Memory Seat Components (One Motor) - C and E Styles

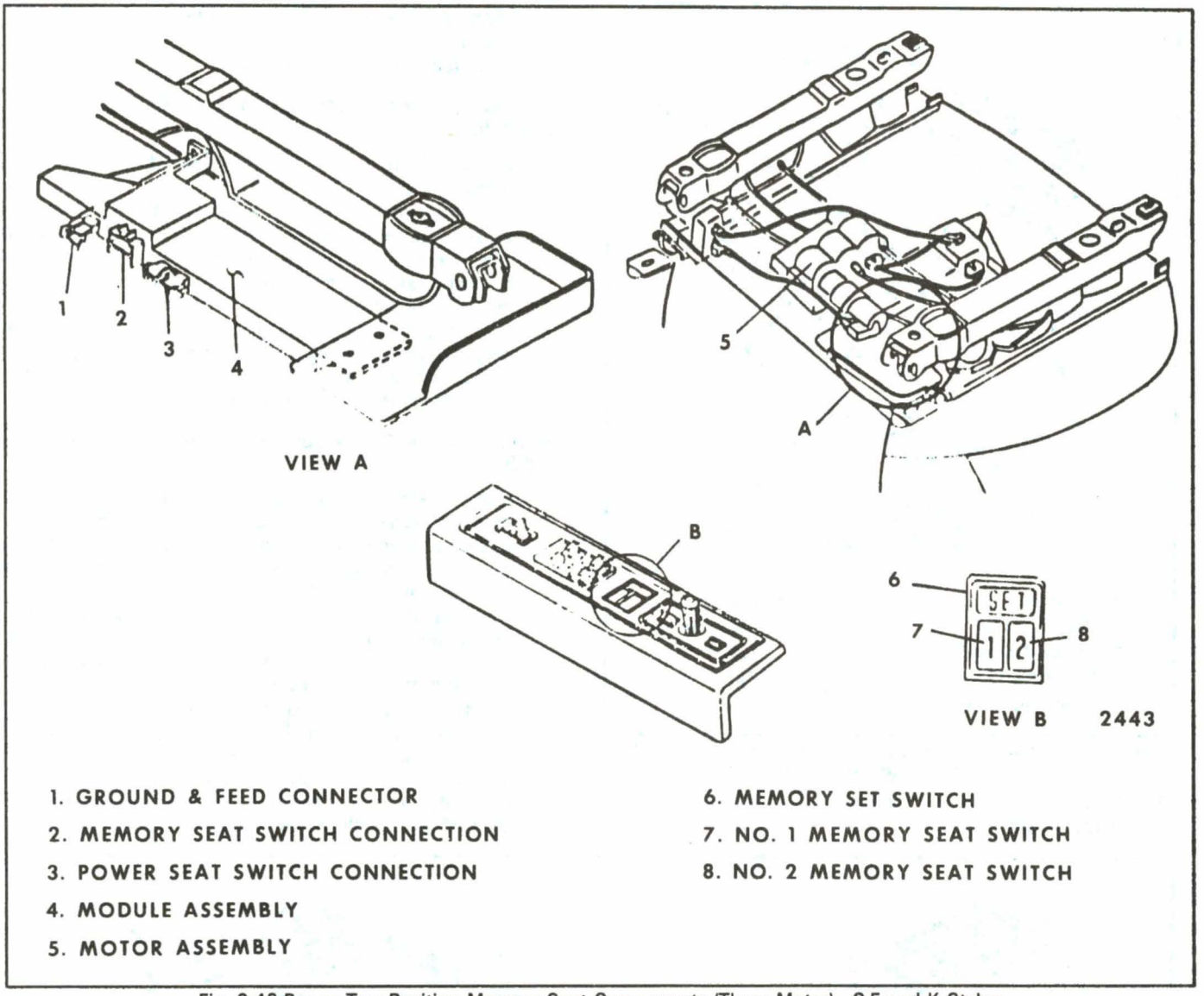


Fig. 9-48-Power Two-Position Memory Seat Components (Three Motor) - C,E and K Styles

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. Be sure seat adjusters are in phase before installing seat into body. See step 5c under Front Seat Adjuster Assembly - Removal and Installation.

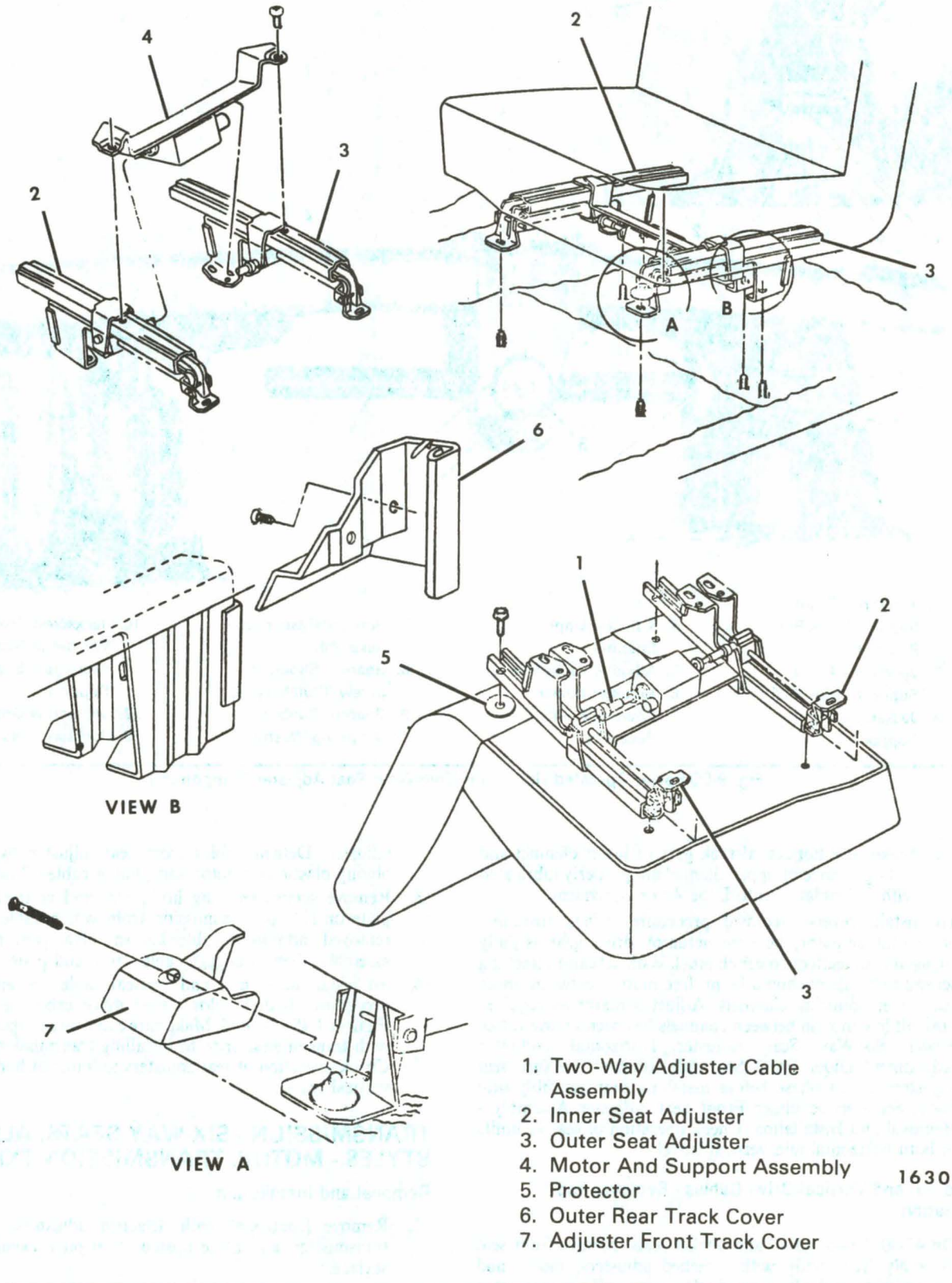
Front/Rear Vertical Gearnut - Removal and Installation (Figs. 9-52 and 9-53)

1. Operate seat to full forward position.
2. Remove front seat from body and place upside-down on a clean, protected surface. Remove affected adjuster from seat.
3. Follow previous description for top of adjuster removal of vertical gearnut attaching nut, tension spring and assist spring.
4. Lay adjuster on its side and remove vertical gearnut attaching screws; then remove gearnut from adjuster.

   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 into body. See step 5c under Front Seat Adjuster Assembly - Removal and Installation.

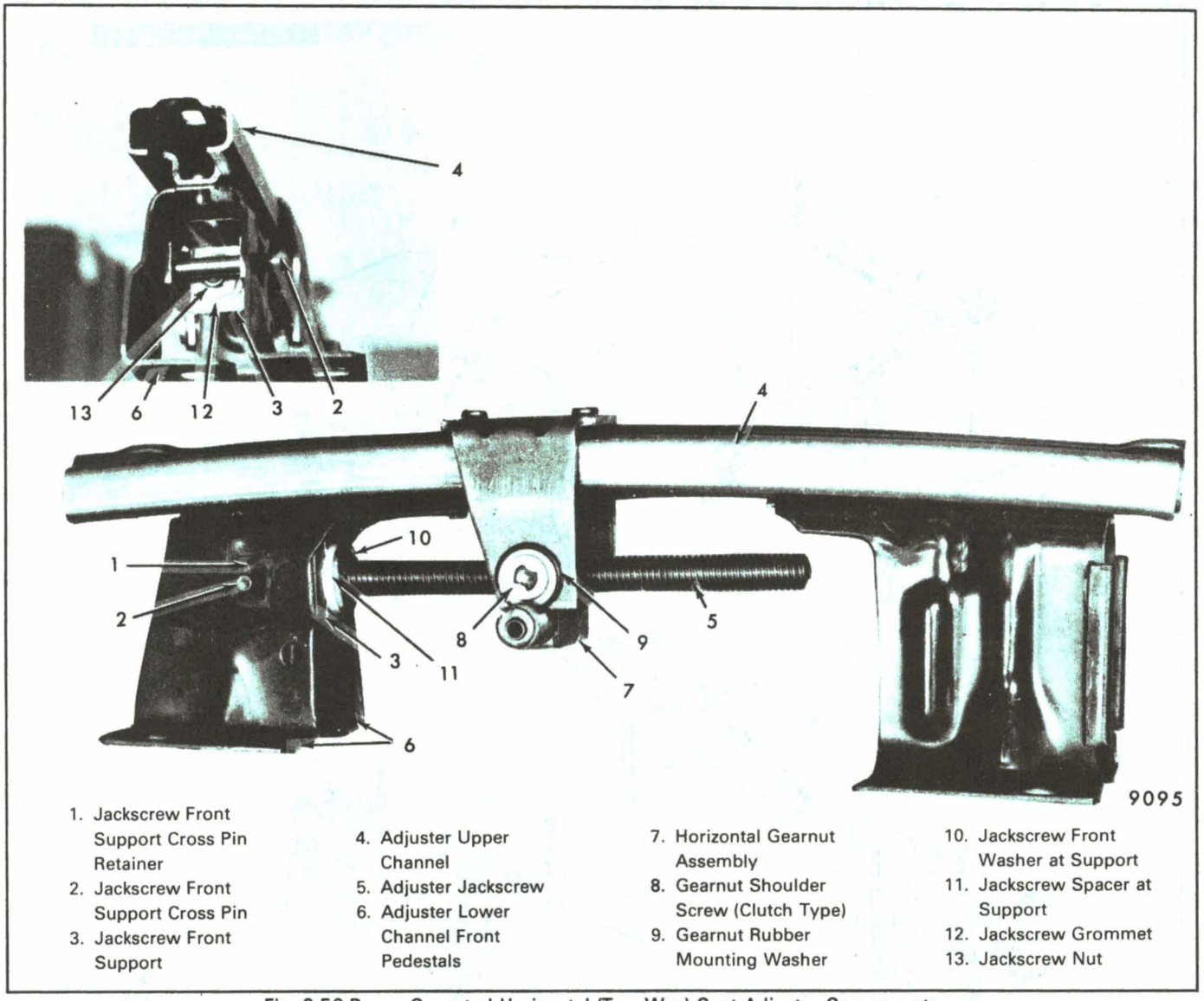
Lower or Upper Channel and Plastic Shoes - Removal and Installation (Figs. 9-52 and 9-53)

1. Remove seat from body and place upside-down on a clean, protected surface. Remove affected adjuster assembly from seat.
2. Remove vertical gearnut attaching nuts, tension and assist 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 shoes 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.



1. Two-Way Adjuster Cable Assembly
2. Inner Seat Adjuster
3. Outer Seat Adjuster
4. Motor And Support Assembly
5. Protector
6. Outer Rear Track Cover
7. Adjuster Front Track Cover

Fig. 9-49 - Two-way Seat Adjuster and Cover Installation, B, C and D Styles



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

Fig. 9-50-Power-Operated Horizontal (Two-Way) Seat Adjuster Components

c. Make sure horizontal rack gear of lower channel and sliding surface of upper channel are properly lubricated with Lubriplate (Auto-Lube A) 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 5c 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 - Removal and Installation

1. On 40-40, 55-45, 45-45 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 seat 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 9-45 and 9-46. 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, ALL STYLES - MOTOR, TRANSMISSION TYPE

Removal and Installation

1. Remove front seat with attached adjusters, motor and transmission and place upside-down on a clean, protected surface.
2. On split seat and bucket seats, remove right seat adjuster (see Seat Adjuster - Removal and Installation). On B, C and G style full width seat, detach transmission stabilizer support from transmission (Fig. 9-45).

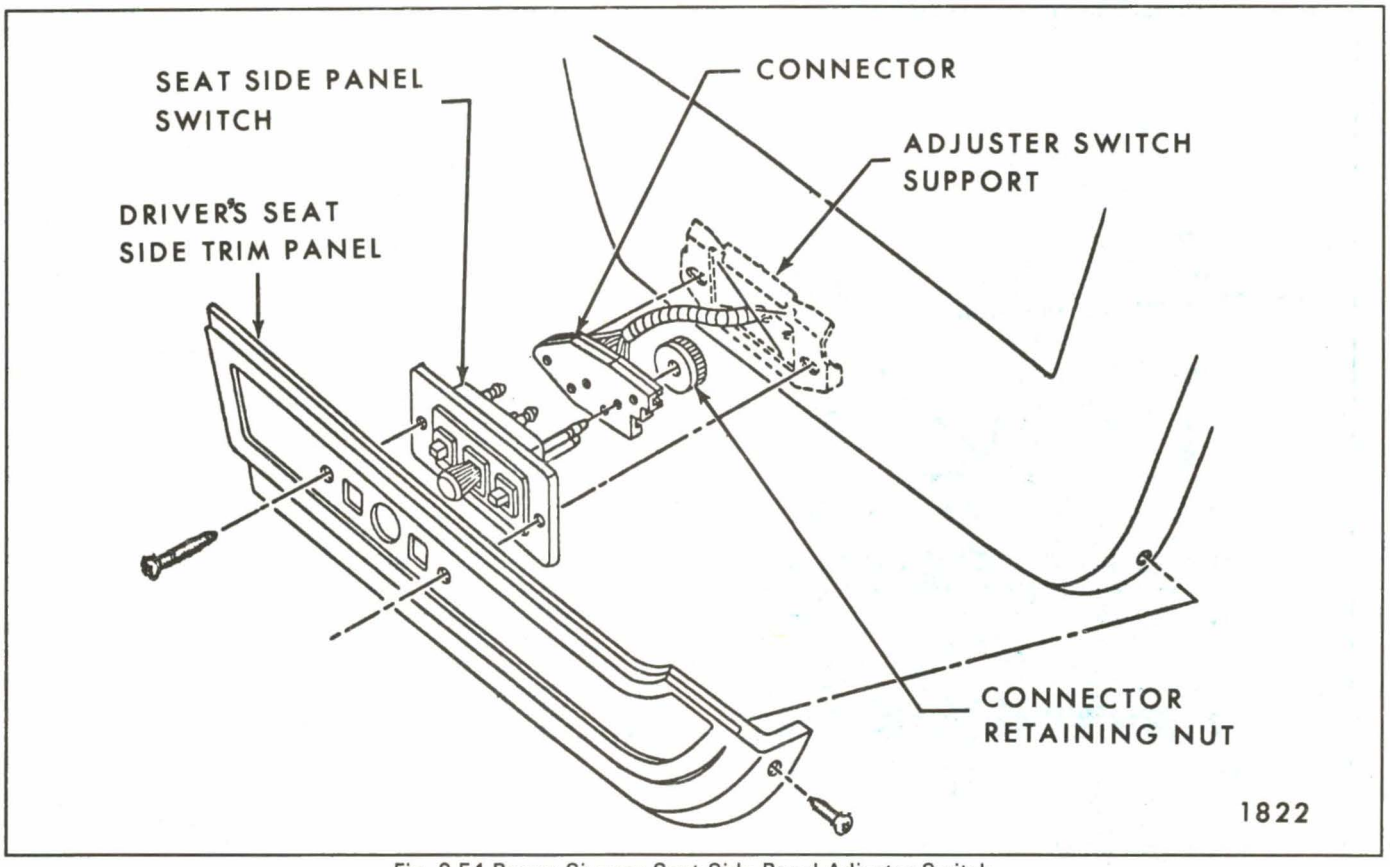


Fig. 9-51-Power Six-way Seat Side Panel Adjuster Switch

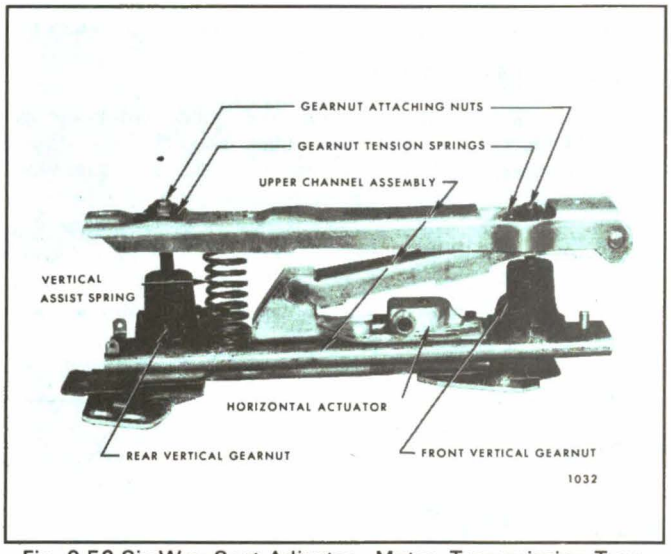


Fig. 9-52-Six-Way Seat Adjuster - Motor, Transmission Type

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 drive cables as shown in Figures 9-45, 9-46 or 9-54. 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.
2. Remove screws securing rear gear housing to the solenoid housing; then carefully separate housings and remove component parts of transmission assembly (Fig. 9-55).
3. To assemble transmission, reverse removal procedure.

   Prior to or during installation, lubricate frictional surfaces of driving gear, idler gear, large gears, dog washers, gear shafts and solenoid plungers with Lubriplate (Auto-Lube A) or equivalent.

SIX-WAY POWER SEAT ADJUSTERS - CADILLAC 3 MOTOR DIRECT DRIVE (FIG. 9-56)

Parts that are serviceable by replacement only on the 3 motor direct drive six-way power seat adjusters are as follows:

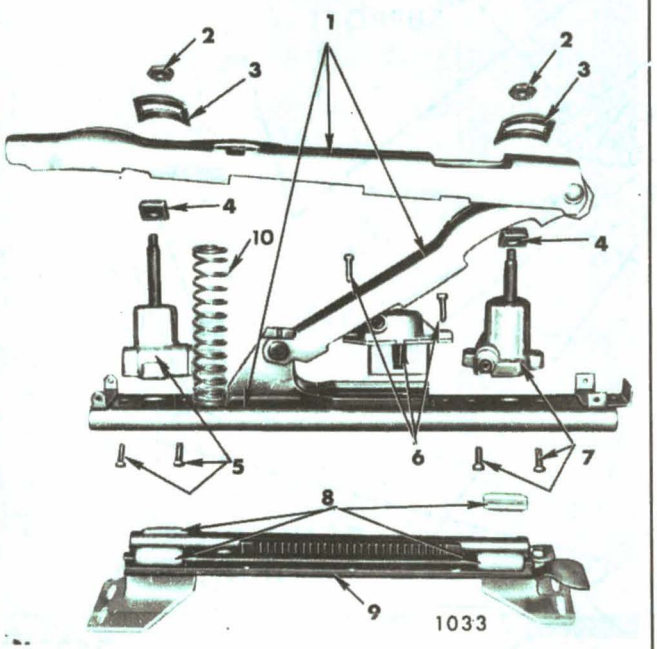
1. Drive Cables - front, rear and horizontal
2. Vertical counterbalance springs
3. Horizontal and front and rear vertical P.M. motor assembly
4. Adjusters, jackscrews, gearnuts and front and rear vertical torque tube assembly

Items 1, 2, 3 can be replaced separately less item 4. Item 4 contains items, 1 through 3.

To remove the six-way power seat adjuster assembly from the seat frame, refer to the standard Seat Adjuster Assembly - Removal and Installation.

Horizontal and Vertical Motor Assembly and Drive Cables - Removal and Installation

1. Remove seat adjuster assembly from seat frame.
2. Detach motor wire harness connector at motor.
3. Remove screw securing motor assembly support to motor mounting bracket on adjuster (Fig. 9-56).



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
10. Vertical Assist Spring

Fig. 9-53-Six-Way Seat Adjuster Components - Motor, Transmission Type

4. Carefully disengage drive cables from adjusters, remove nut from motor stabilizer rod and remove motor assembly from adjusters. Drive cables (Fig. 9-56) may then be removed from the motor.
5. To install motor assembly or drive cable, reverse removal procedure. Prior to installing motor assembly make certain adjusters are in phase (same relative positions) with each other. Where necessary, using a small scewdriver or suitable tool, remove the appropriate drive cable and adjust horizontal or vertical gearnuts so that both adjusters are in same horizontal and vertical positions.

Vertical Torque Tube Springs - Removal and Installation

1. Remove seat adjuster assembly from seat frame.
2. Using a locking type pliers and a large screwdriver, as shown in Figure 9-57, carefully turn spring until hook end of spring can be pried from spring stop.
3. To install spring, reverse removal procedure. Care must be taken when performing this operation as some springs can only be partially engaged in slot on end of torque tube to get hook end of spring to clear spring stop during engagement. After engagement with stop, spring must be tapped into full engagement in slot on end of torque tube (Fig. 9-57).

FRONT SEAT BACK HEAD RESTRAINT - FULL WIDTH AND SPLIT SEATS

Head restraints for the standard full width, 40-40, 55-45 or 45-45 seat are single post type (Fig. 9-58), which can be adjusted to various positions. To remove head restraints, follow the procedure described below:

Use head restraint lock releasing tool BT-7933 or fabricate as shown in Figure 9-59 from 0.4 mm (1/64″) flexible steel strap. The flat surface of this tool will release the spring lock tab.

Removal and Installation

1. Detach the shoulder belt loop guide from the guide escutcheon as described under Shoulder Belt Guide Removal and Installation and illustrated in Figure 9-38.
2. Raise head restraint to full up position.
3. Insert a lock release tool (Fig. 9-59) down front surface of head restraint post about 101 mm (4-1/2″). Push downward about 10 mm (3/8″) on the head restraint and tool at the same time to release detent; then lift restraint to antiremoval lock position.
4. Repeat step 3 and remove head restraint from seat back.

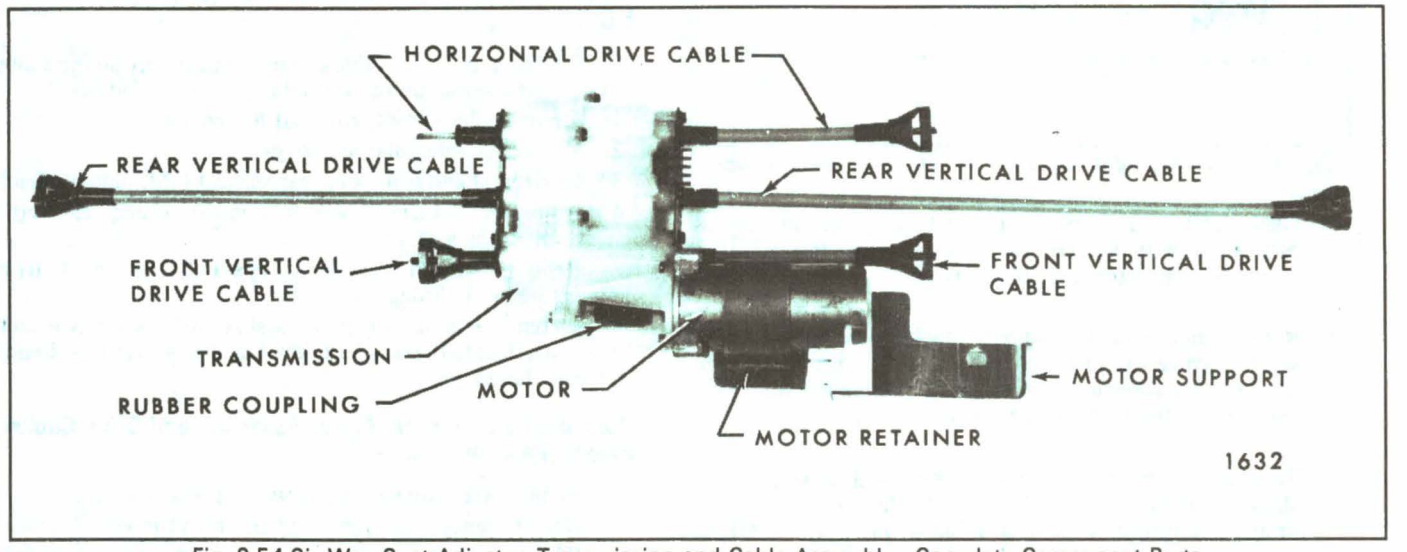


Fig. 9-54-Six-Way Seat Adjuster, Transmission and Cable Assembly - Complete Component Parts

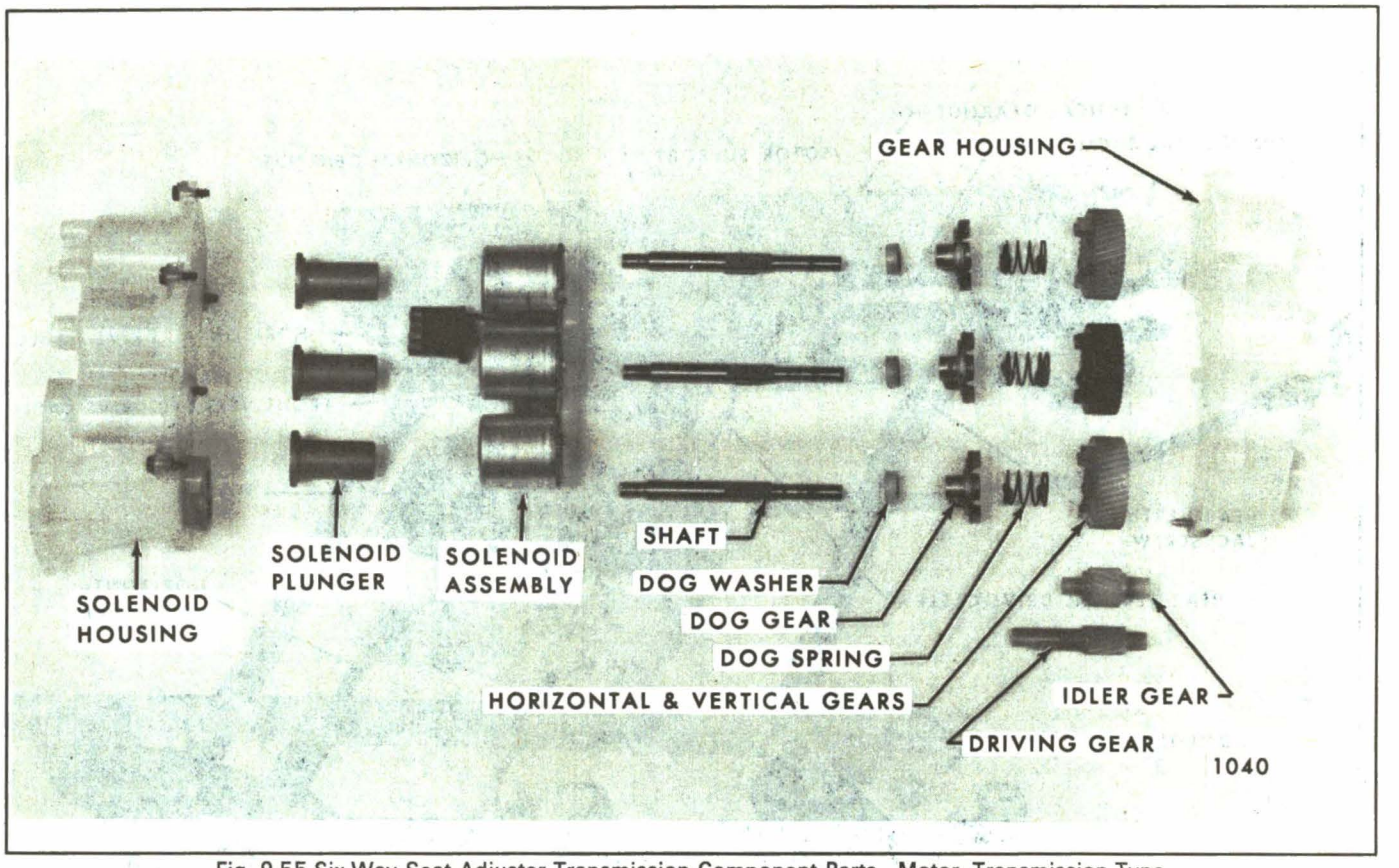


Fig. 9-55-Six-Way Seat Adjuster Transmission Component Parts - Motor, Transmission Type

5. 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 GUIDE TUBE - FULL WIDTH AND SPLIT 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 has a riveted-on tension spring, is welded to the seat back frame.

Removal and Installation

1. Remove seat back trim assembly. Detach upper portion of foam pad enough to gain access to guide tube where it enters seat back frame; then using hard thumb pressure at point A shown in Figure 9-60, disengage tabs and lift tube upward to remove from seat back.
2. To install head restraint guide tube, reverse removal procedure. Insert tube as far as locking tabs (Fig. 9-60); then strike tube downward with hand to lock in position.

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 INERTIA LOCK ASSEMBLY - TWO-DOOR STYLES

Two-door style front seats are equipped with an 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 about 30° 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 30° or more.

Emergency Release Lever Check

Operation of the front seat emergency release lever may be checked as follows in either the In Vehicle Check or Out of Vehicle Check.

Check emergency release lever by lifting lever to the full up position; then release the lever. Lever must return to full down position with no evidence of binding or interference. Where required, replace inertia lock assembly and repeat check after installation.

In Vehicle Check

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 (16 to 24 km/h); 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 51 mm (2″).

When performing this operation on driver's seat back, driver should lean slightly forward.

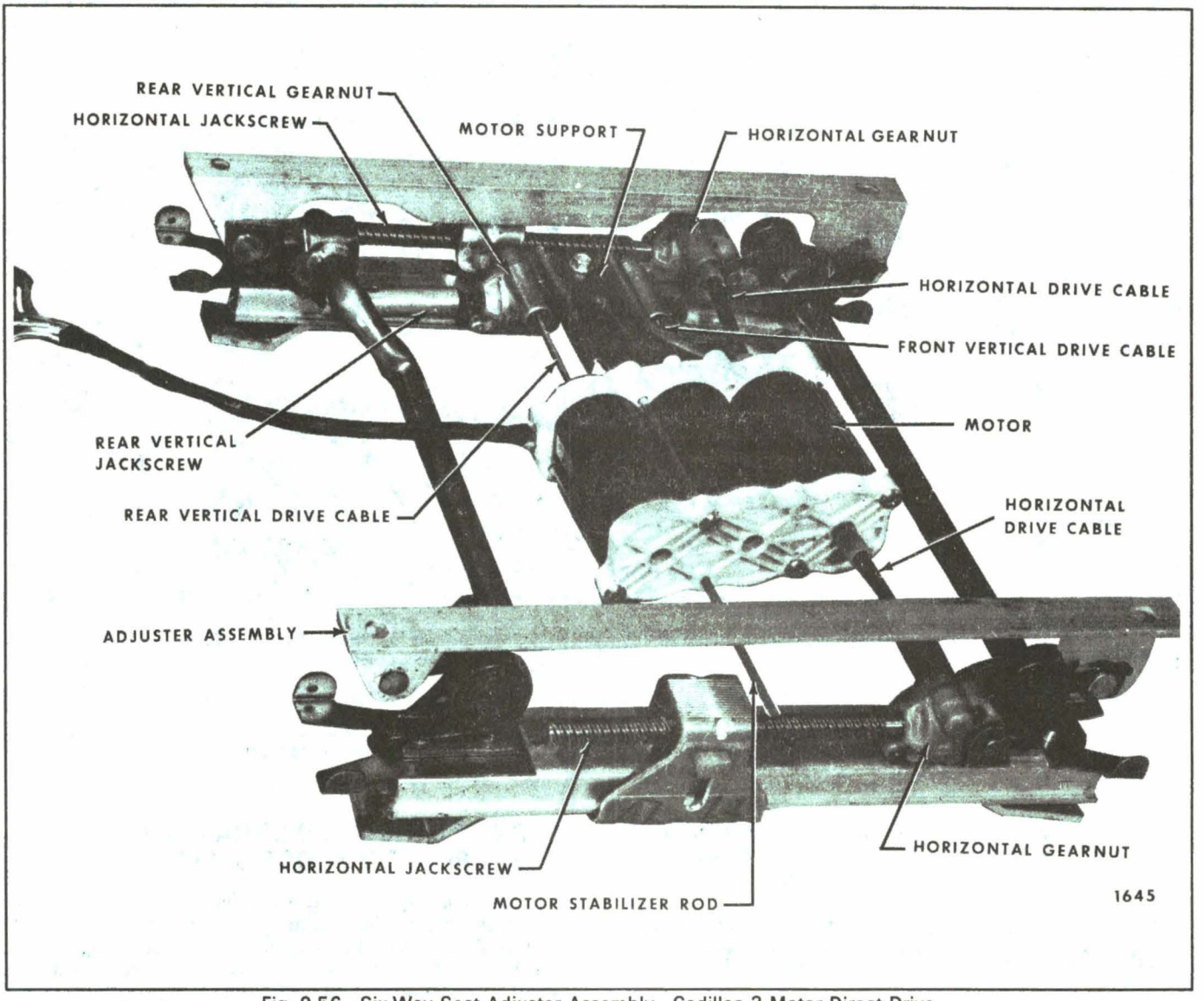


Fig. 9-56 - Six-Way Seat Adjuster Assembly - Cadillac 3 Motor Direct Drive

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 - Split and Split Back Bench Seat Styles

1. If seat is equipped with reclining seat backs, position seat backs in normal upright position. Remove seat assembly from car and place upright on a clean surface.
2. Raise rear of seat until seat back is 6° forward of vertical position and place blocks under rear of seat to hold seat in this position. Use "angle meter" as shown in Figure 9-61. Angle meter can be purchased at hardware or department store.
3. Check seat back lock as follows:
   a. Manually apply enough 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, should not move forward more than 51 mm (2").
   c. With finger pressure, lift the emergency release lever (seat back should release and pivot forward).
   d. Visually check that emergency release lever returns to normal position.
   e. Manually apply enough rearward pressure to return seat back against stop in normal upright position and reapply forward pressure checking for relock.

   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.

Out of Vehicle Check - B,E and G Bucket Seat Styles

The B,E and G bucket seat inertia locks can be checked by following steps 1 through 4 of the out of vehicle check for split and split back bench seat styles (Fig. 9-63).

Removal and Installation - Nonreclining Split and Split Back Bench Seats (Figs. 9-62 and 9-63)

1. Where present, remove seat cushion side panel rear screw and lower rear portion of side panel.

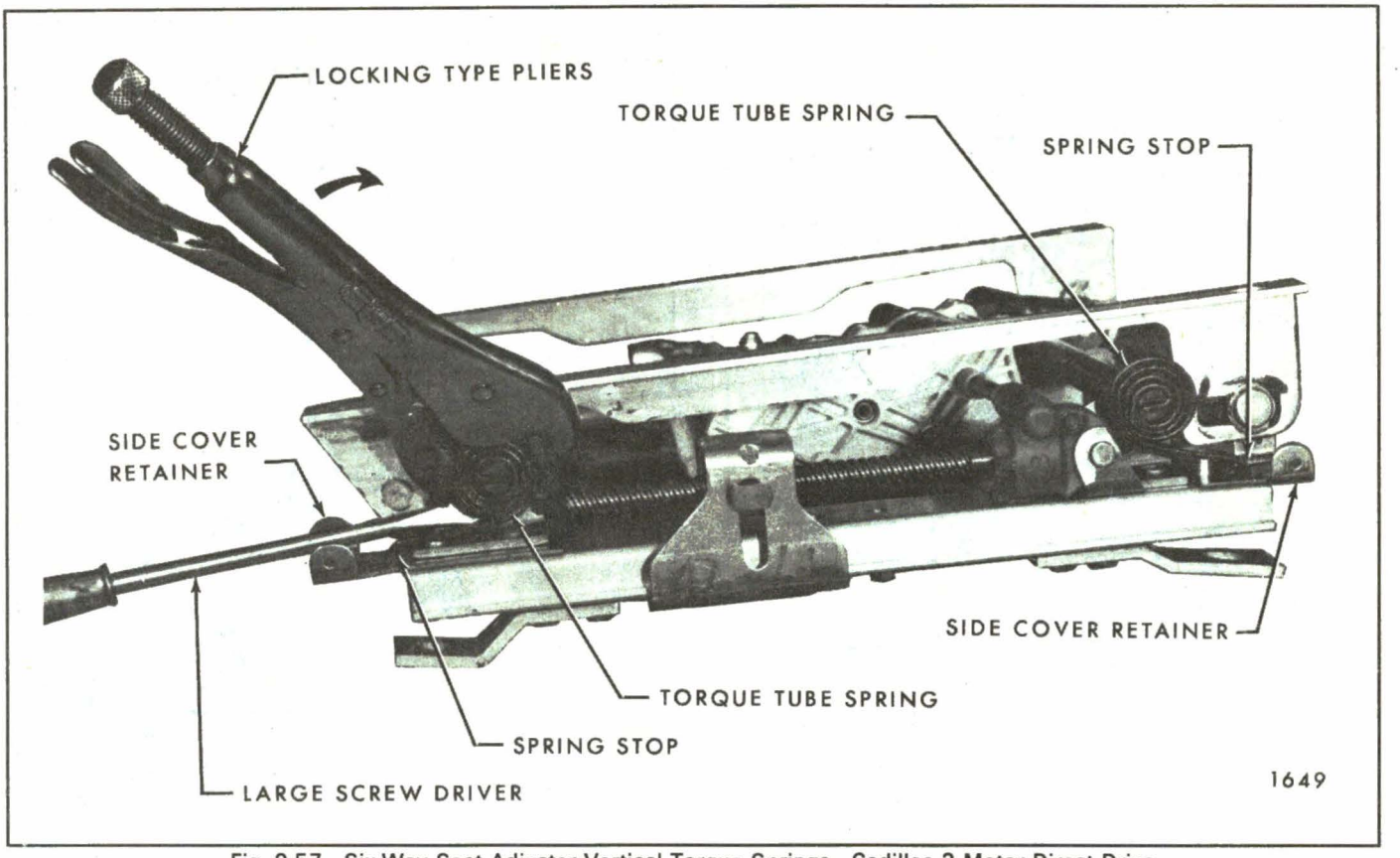


Fig. 9-57 - Six-Way Seat Adjuster Vertical Torque Springs - Cadillac 3 Motor Direct Drive

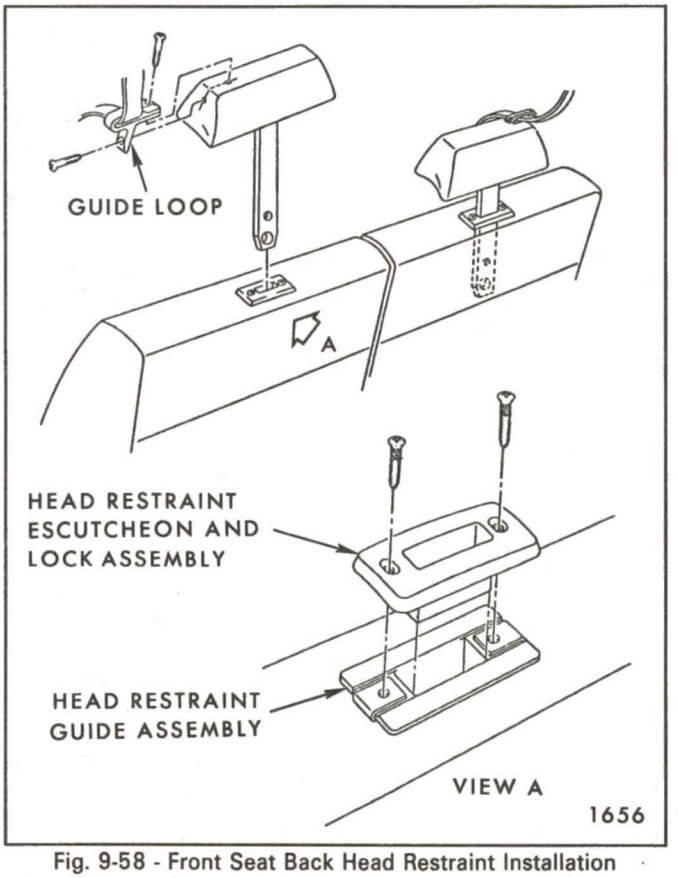


Fig. 9-58 - Front Seat Back Head Restraint Installation

2. At seat back outer hinge arm, move aside seat cushion trim with slight hand pressure to gain access to seat cushion to seat back inertia lock attaching bolts and remove bolts.

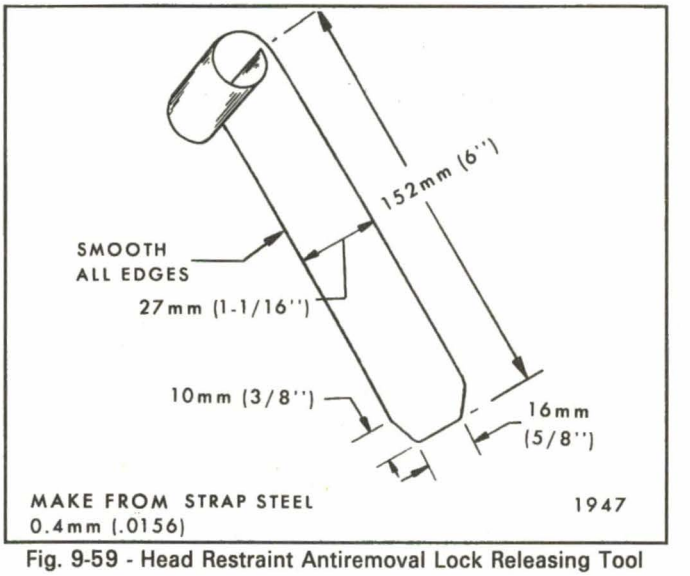


Fig. 9-59 - Head Restraint Antiremoval Lock Releasing Tool

3. Rotate seat back forward, pull seat back upward and outward to remove seat back with attached inertia lock from car.
4. Place seat back on a clean, protected surface.
5. Remove seat back side panel attaching screws and remove seat back side panel.
6. Detach seat back trim to gain access to inertia lock to seat back attaching bolts. Remove both bolts and remove inertia lock.
7. Prior to installing inertia lock assembly, check that lock release lever (inside lock) swings freely and that when release lever is actuated it returns to original position with no evidence of binding or interference.
8. To install inertia lock assembly, reverse removal procedure.

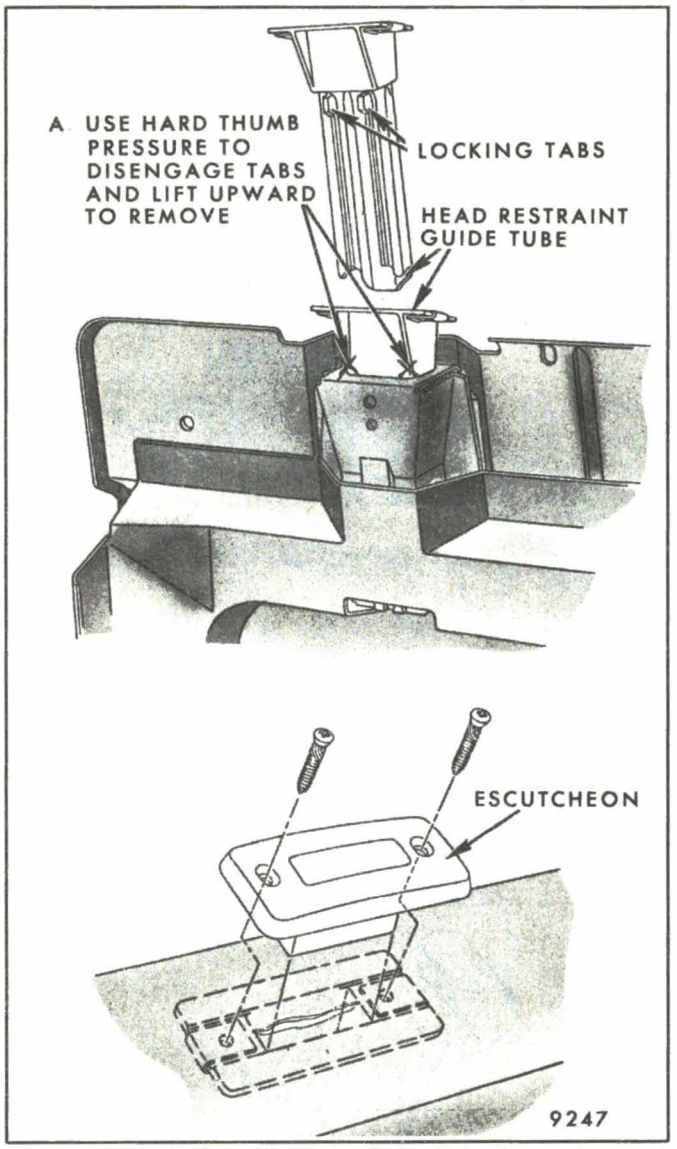


Fig. 9-60 - Head Restraint Guide Tube Removal

Removal and Installation - Reclining Split and Split Back Bench Seats - Linear Type

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 enough to gain access to seat back lock attaching bolts.
3. Remove reclining actuator to seat back hinge pivot arm attaching bolt or pin.
4. Remove two bolts securing inertia lock assembly to seat back frame and remove lock assembly.
5. Prior to installing inertia lock assembly, check that lock release lever (inside lock) swings freely and that when release lever is actuated it returns to original position with no evidence of binding or interference.
6. To install inertia lock assembly, reverse removal procedure.

Removal and Installation - B,E and G Bucket Seats

On bucket seat styles, open inertia lock belt attaching plate to seat back cover. Remove two nuts securing inertia lock belt attaching plate and remove plate.

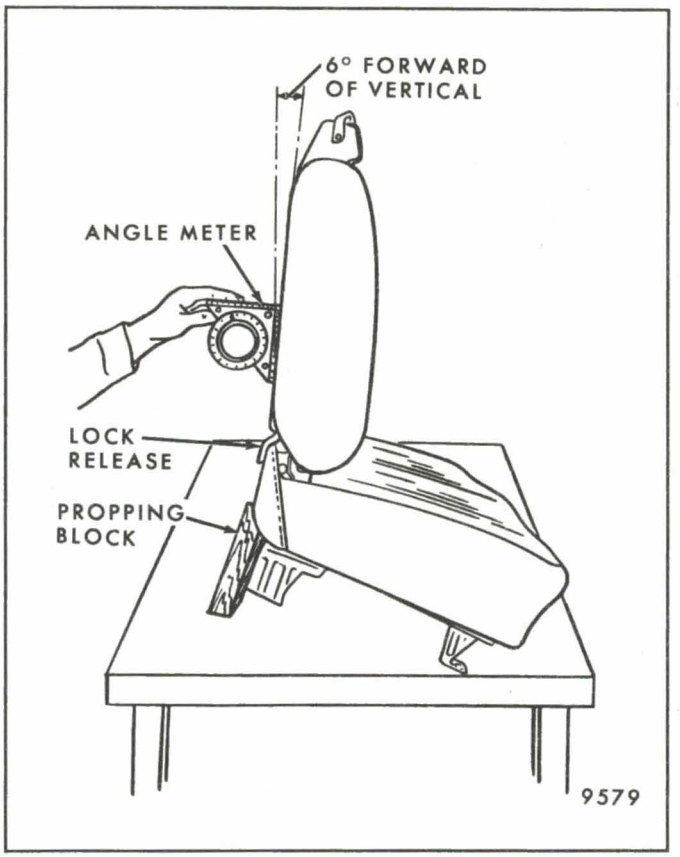


Fig. 9-61 - Front Seat Back Inertia Lock Check - Out of Vehicle

Care must be taken not to damage the inertia lock mechanism during removal or installation.

1. Prior to installing inertia lock assembly, check that lock release lever (inside lock) swings freely and that when release lever is actuated it returns to original position with no evidence of binding or interference.
2. To install inertia lock assembly, reverse removal procedure.

FRONT SEAT BACK ASSEMBLY (RIGHT OR LEFT) - B,C,E AND G SPLIT AND FULL WIDTH SPLIT BACK SEATS

Removal and Installation - Nonreclining Seats

1. Where present, remove seat cushion side panel rear screw and lower rear portion of side panel.
2. At seat back outer hinge arm, move aside seat cushion trim with slight hand pressure to gain access to seat cushion to seat back inertia lock attaching bolts and remove bolts.
3. Rotate seat back forward, pull seat back upward and outward to remove seat back with attached inertia lock from car.
4. If necessary, remove inertia lock from seat back.
5. 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). Check operation of seat back locks. On two-door styles equipped with inertia seat back locks, the seat back should remain unlocked except under conditions described under Seat Back Inertia Lock Check.

Removal and Installation - Reclining Seats, Linear Type

1. Remove front seat assembly from car and place on a clean, protected surface.
2. At seat back outer hinge arm, move aside seat cushion trim with slight hand pressure to gain access to seat cushion to seat back inertia lock attaching bolts and remove bolts.

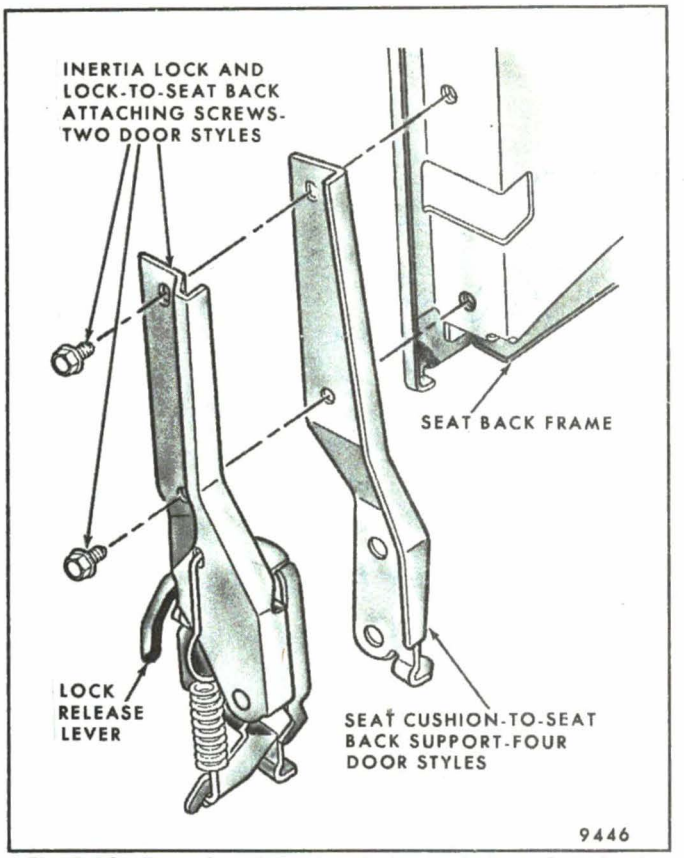


Fig. 9-62 - Front Seat Back Inertia Lock - Split or Split Back Bench Seats

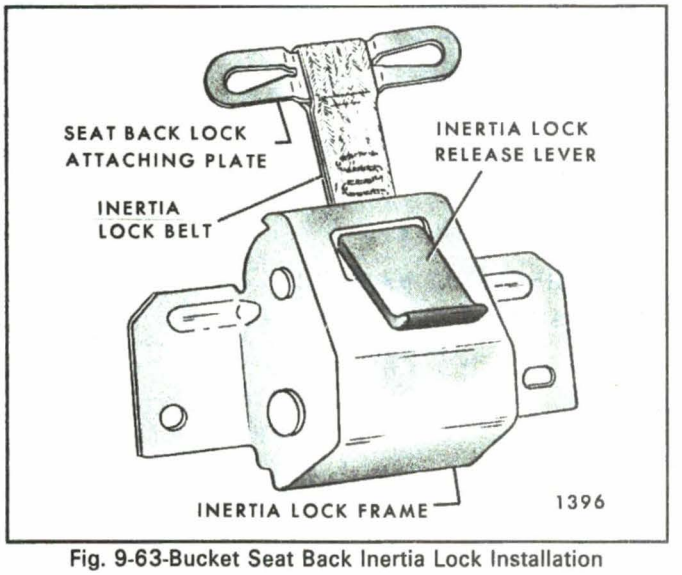


Fig. 9-63-Bucket Seat Back Inertia Lock Installation

3. Rotate seat back forward, pull seat back upward and outward to remove seat back with attached inertia lock from car.

4. If necessary, remove inertia lock from seat back.

5. 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). Check operation of seat back locks. On two-door styles equipped with inertia seat back locks, the seat back should remain unlocked except under conditions described under Seat Back Inertia Lock Check.

FRONT SEAT BACK MANUAL RECLINING UNIT - LINEAR TYPE

Removal and Installation (Fig. 9-64)

1. Remove front seat assembly and place on clean, protected surface.
2. Remove reclining control handle. Detach seat trim outer side facing from right of seat cushion frame and turn back trim enough to gain access to reclining unit front and rear attaching pin retainers.
3. Remove reclining unit front and rear attaching pin retainers and remove attaching pins, then remove reclining unit.
4. To install reclining unit, reverse removal procedure. To ease installation of reclining unit, push plunger into cylinder about 13 mm (1/2″) to shorten unit. This can be done by placing plunger end of unit on floor and pushing down while actuating control lever; then when plunger has moved into cylinder about 13 mm (1/2″), release control lever to lock plunger in position. Check operation of reclining unit to full limits of travel.

Manual Recliner Check

Operation of the front seat manual recliner may be checked as follows:

1. Operate recliner mechanism lever and apply force in aft direction to adjust the seat back into the full reclined position, checking ease of lever operation and seat back movement. Release recliner lever, checking ease of lever operation and that seat back remains fully reclined.
2. Operate recliner lever and manually position seat back forward to an intermediate reclined position. Release recliner lever.
3. Apply manual force to the upper seat back in the rearward direction to check for positive recliner locking action.
4. Operate recliner mechanism lever to adjust the seat back to normal position, checking ease of lever operation and seat back full return. Release recliner lever.
5. Apply manual force to the upper seat back in the rearward direction to check for positive recliner locking action. Recliner release lever should return to normal position without any assistance from operator.

FRONT SEAT POWER RECLINING SEAT BACK, LINEAR TYPE - B, C, E AND K STYLES

A power-operated reclining seat back is available on some 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 about 20° 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.

Power Recliner Check (Split and Bench Seats)

Operation of the front seat power recliner may be checked as follows:

1. Actuate recliner switch to adjust seat back to full recline position to check for ease of operation.
2. Actuate recliner switch to adjust seat back to any intermediate position.
3. Apply manual force in rearward direction to check for positive recliner locking action.
4. Actuate recliner switch to adjust seat back to normal position.
5. Apply manual force in rearward direction to check for positive recliner locking action.

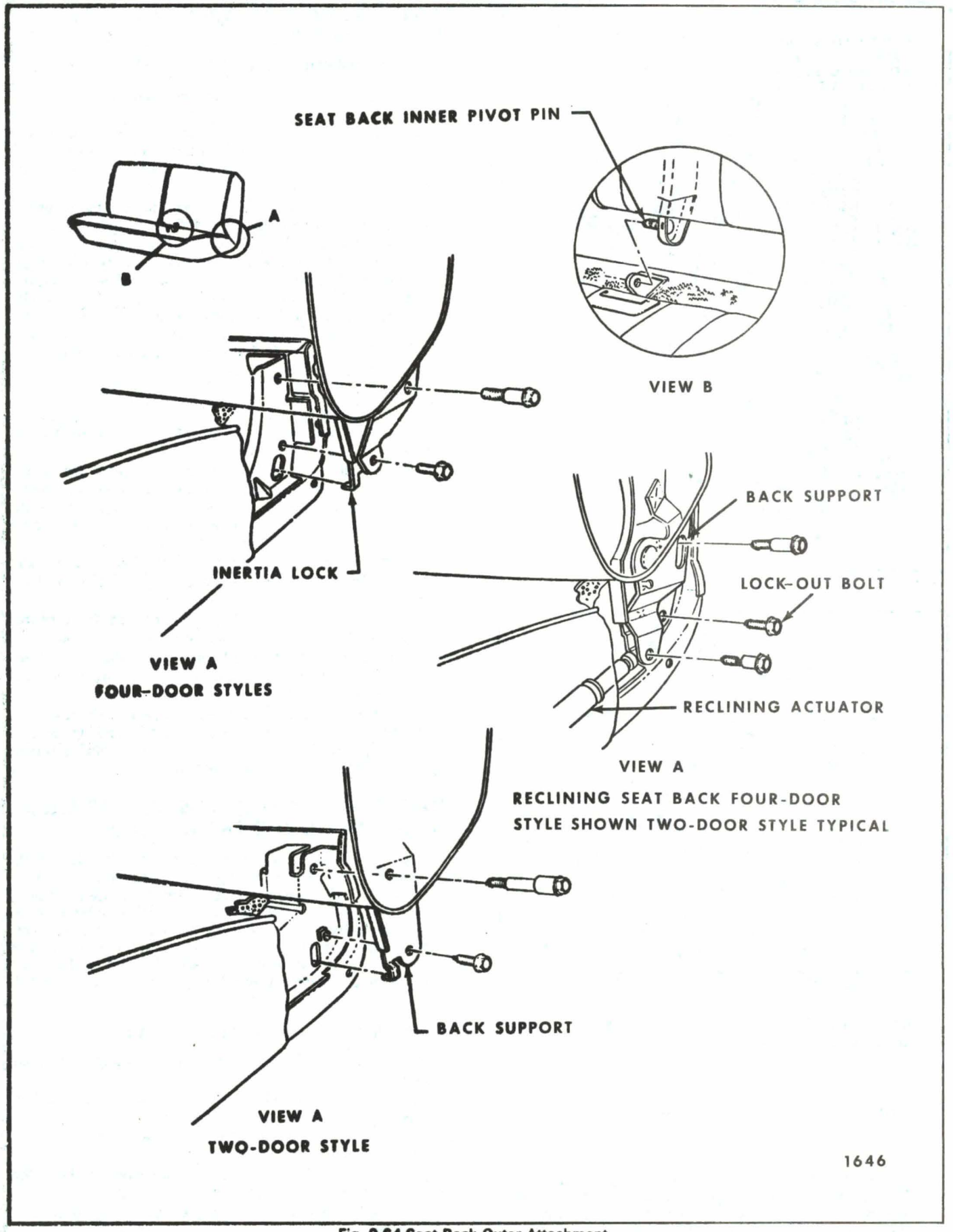


Fig. 9-64-Seat Back Outer Attachment

POWER RECLINER SWITCH

Removal and Installation (Fig. 9-65)

1. Remove seat side panel attaching screws and pull seat side panel outward to expose seat side trim panel molding attaching nuts.
2. Remove trim panel attaching nuts and remove trim panel from seat side panel.
3. Remove seat side panel to seat back recliner switch nuts and screws.
4. Disconnect recliner switch from connector to remove switch.
5. To install, reverse removal procedure.

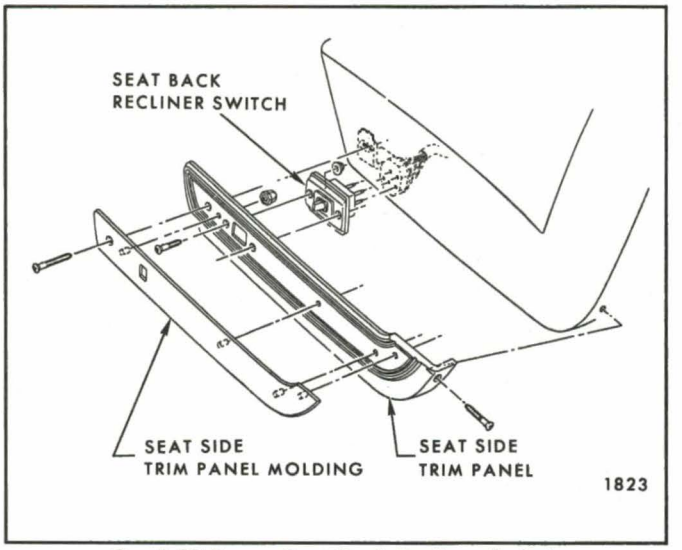


Fig. 9-65-Power Seat Back Recliner Switch

POWER RECLINING ACTUATOR - K STYLE 40-40 SEAT

Removal and Installation (Fig. 9-66)

1. Remove front seat assembly and place upside-down on a clean, protected surface.
2. Detach outboard side of cushion trim enough to gain access to reclining actuator attaching screws and actuator coupling.
3. Unscrew reclining drive cable from reclining actuator and detach cable from actuator.
4. Remove pin retainer and 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.

Disassembly and Assembly (Fig. 9-67)

1. Remove actuator assembly from seat.
2. To remove jackscrew, spacer or coupling, remove jackscrew stop nut; then unscrew jackscrew and coupling out of gearnut assembly.
3. To remove gearnut assembly, remove jackscrew 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.

   Prior to or during installation, lubricate jackscrew.

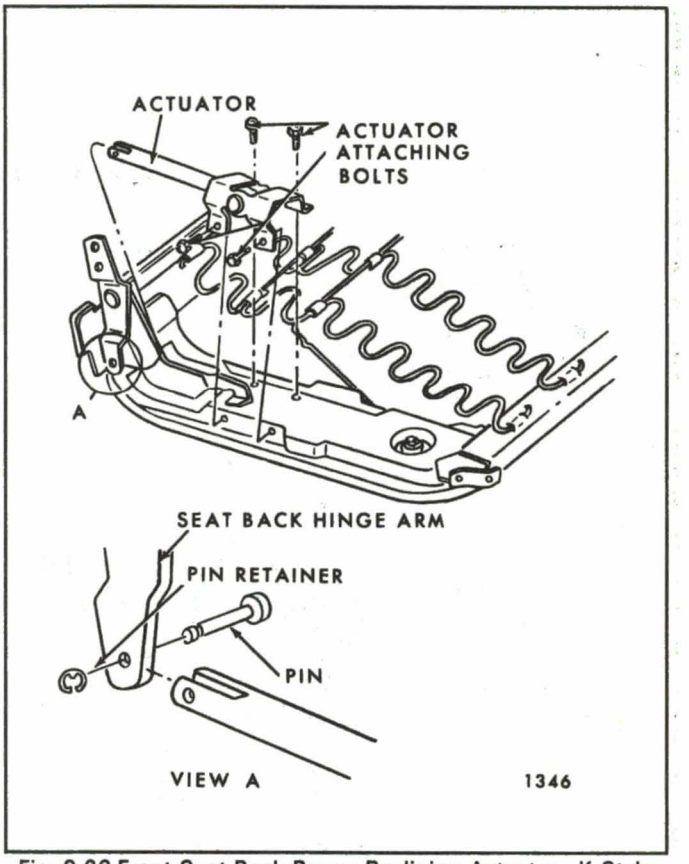


Fig. 9-66-Front Seat Back Power Reclining Actuator - K Style

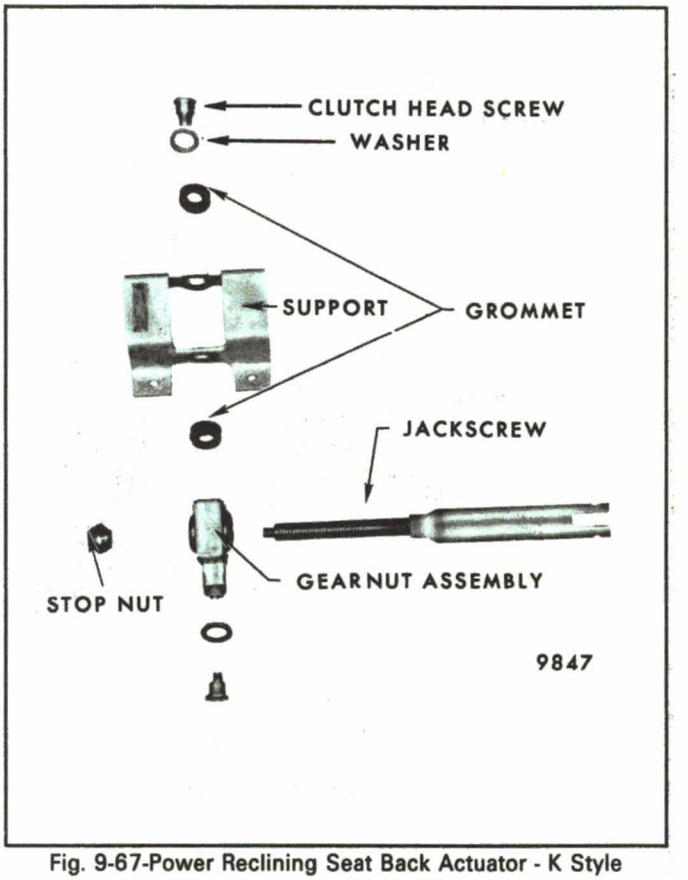


Fig. 9-67-Power Reclining Seat Back Actuator - K Style

MOTOR - B AND C FULL WIDTH BENCH SEAT, E AND K 45-45 SEATS

Removal and Installation (Figs. 9-68 and 9-69)

1. Remove seat adjuster-to-floor pan attaching bolts and nuts. Tilt seat rearward enough to gain access to reclining back motor.
2. To remove motor, disconnect motor feed wire connector, remove motor attaching screws, detach drive cable-to-motor coupling and remove motor.
3. To install motor, reverse removal procedure.

MANUAL OR POWER-OPERATED RECLINING ACTUATOR - B,C,E AND K STYLES

Removal and Installation (Figs. 9-70, 9-71 and 9-72)

1. Remove seat assembly from car and place on a clean protected surface.
2. Detach outboard side of cushion trim cover from cushion frame enough 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. Remove bolt 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. 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 12V power source.

Disassembly and Assembly (Fig. 9-72)

1. With reclining actuator removed, remove actuator jackscrew nut.
2. Unscrew jackscrew out of actuator gearnut.
3. Using a clutch head type screwdriver, remove actuator gearnut attaching screws and remove actuator assembly. Rubber grommets can then be removed from gearnut housing.
4. To assemble actuator assembly, reverse removal procedure.

BUCKET SEATS - B,E AND G STYLES

B, E and G styles feature a bucket seat consisting of a metal shell design cushion frame and seat back. A seat back incorporating a reclining mechanism is also available on some styles.

Removal and Installation

1. On cars equipped with a center console, the seat assembly must be removed from the car to facilitate seat back removal. On cars not equipped with a center console, the seat back can be removed without removing the seat assembly from the car.
2. Remove screws securing lower corners and lower center of seat back panel (Fig. 9-73). Remove ash tray; then remove ash tray receiver attaching screws which also secure back panel to seat frame (Fig. 9-73). On bucket seats with reclining seat back, remove reclining hinge control covers.
3. Remove screws securing upper corners of seat back panel; then remove seat back panel. On Pontiac Grand Prix deluxe bucket seat, detach panel finishing lace from lower panel (Fig. 9-74).
4. On two-door styles, remove nuts securing seat back inertia lock strap retainer to seat back and detach retainer from seat back (Fig. 9-76).

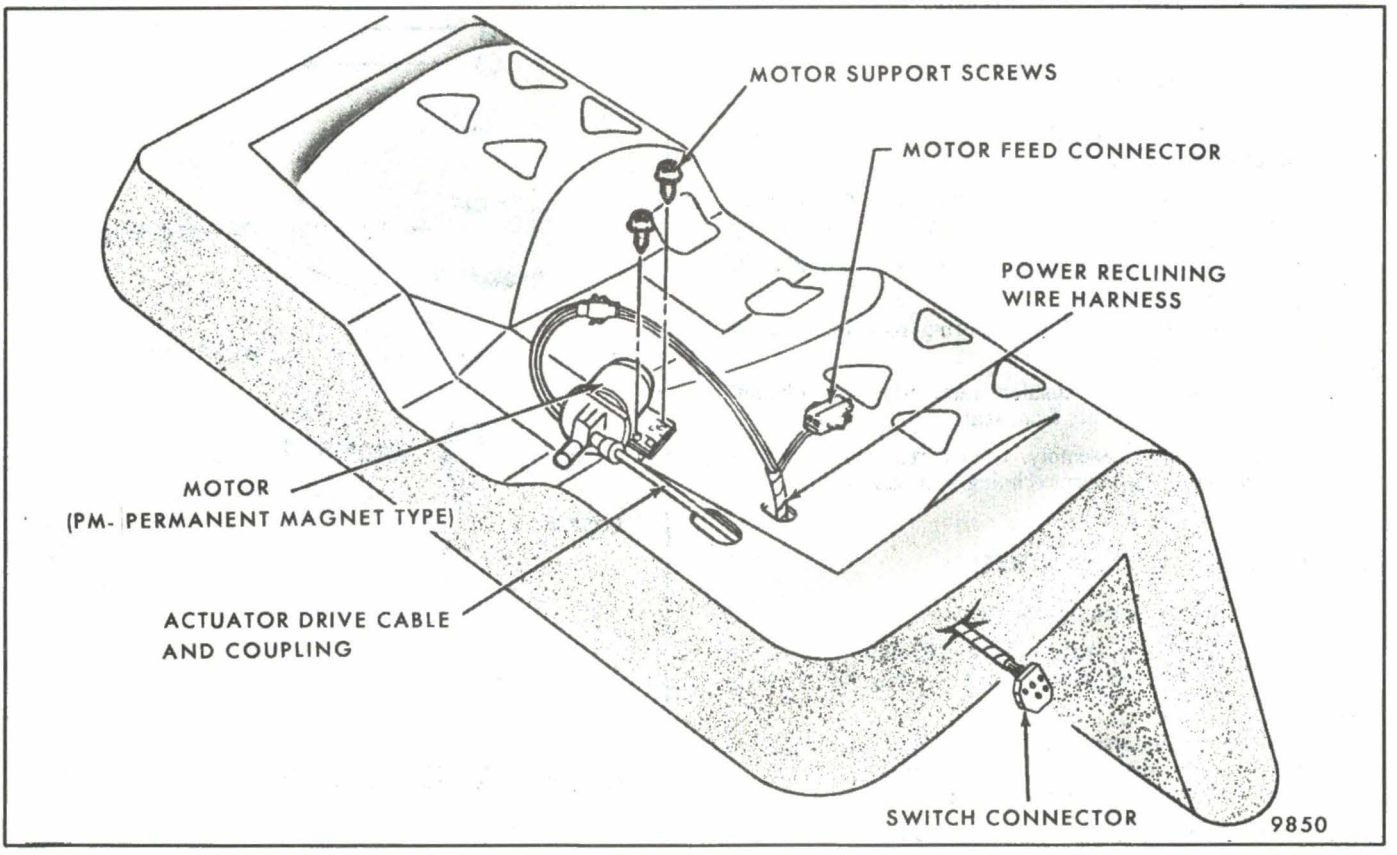


Fig. 9-68 - B and C Style Power-Operated Reclining Seat Back Components - Split Back Seat

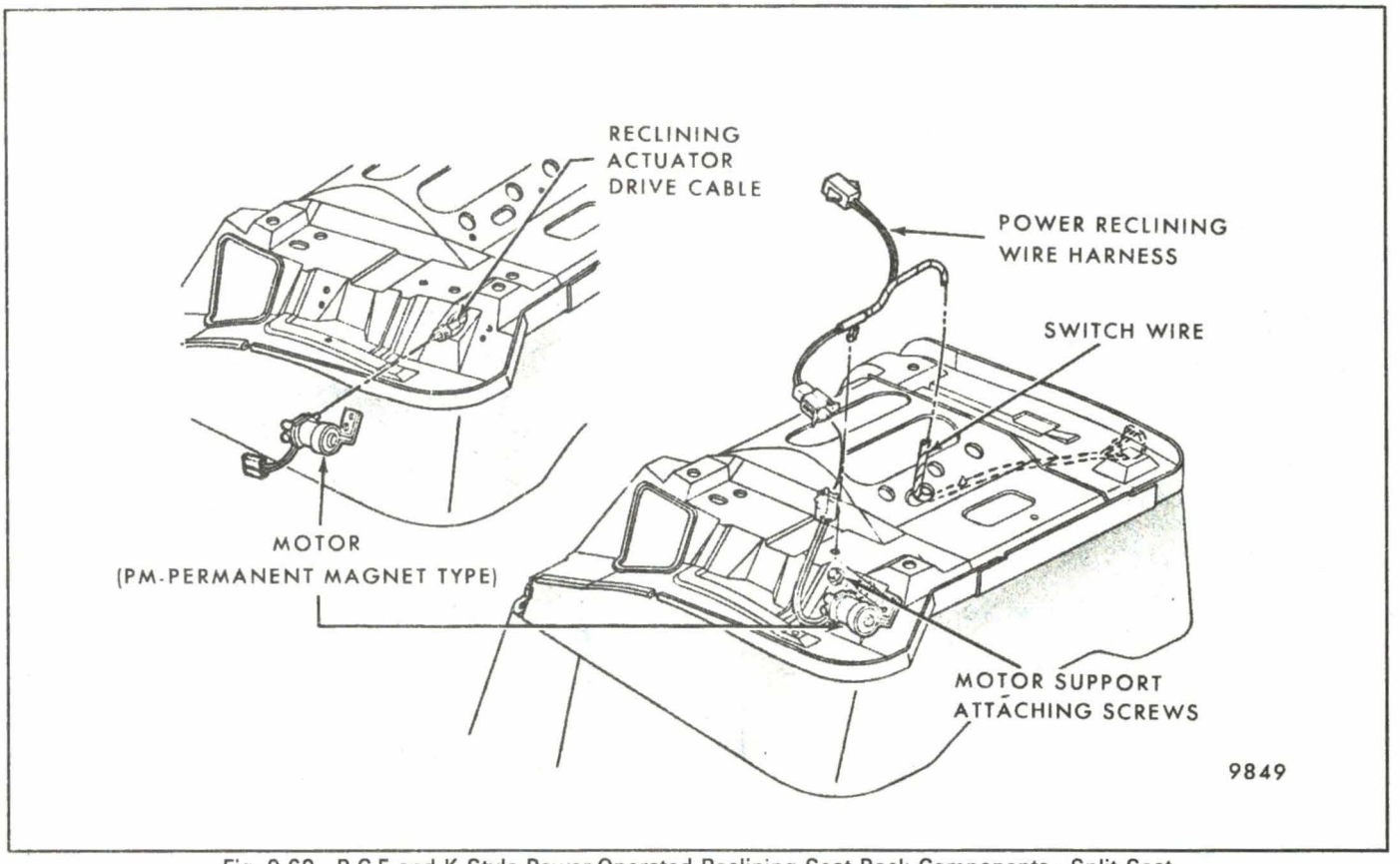


Fig. 9-69 - B,C,E and K Style Power-Operated Reclining Seat Back Components - Split Seat

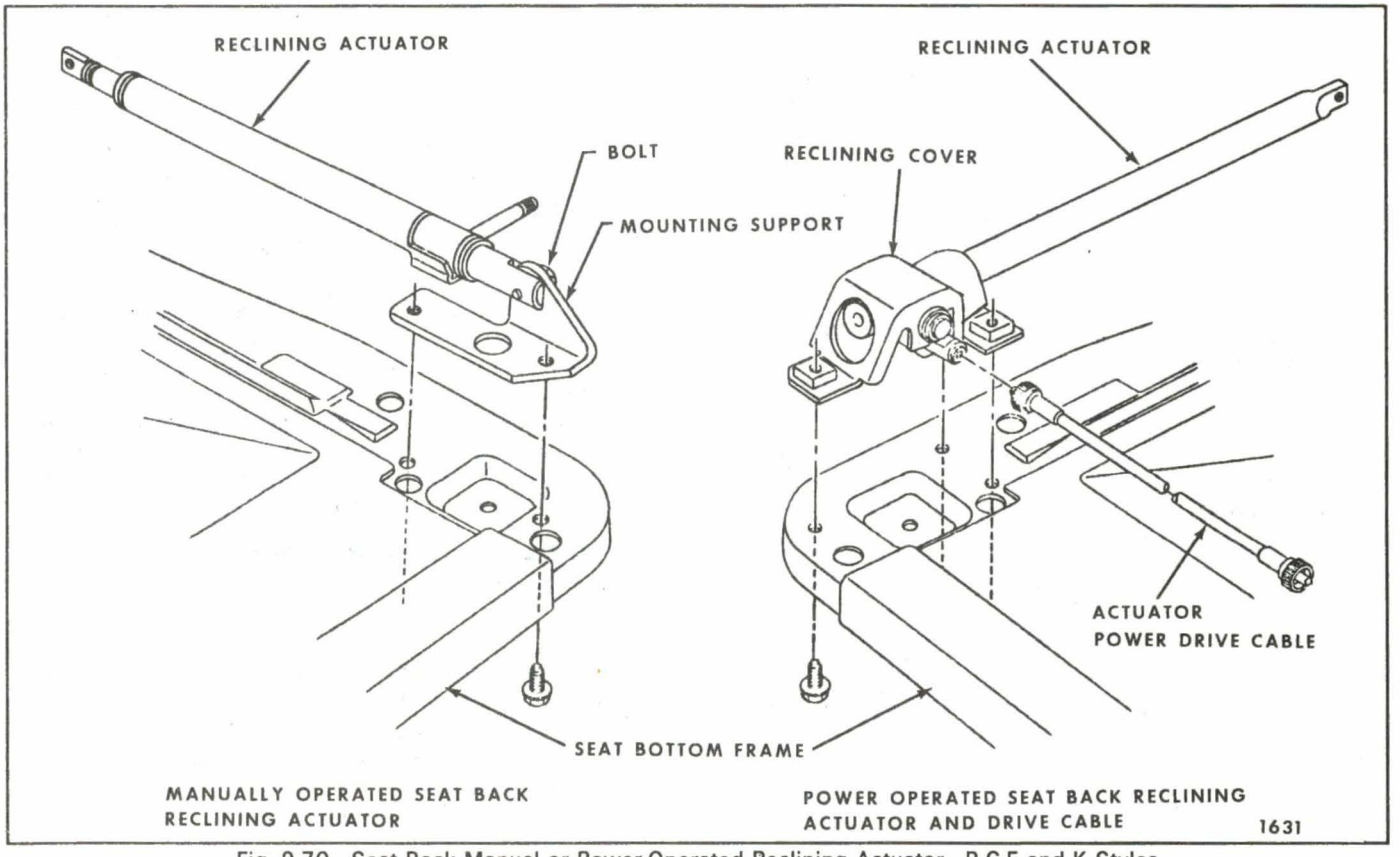


Fig. 9-70 - Seat Back Manual or Power-Operated Reclining Actuator - B,C,E and K Styles

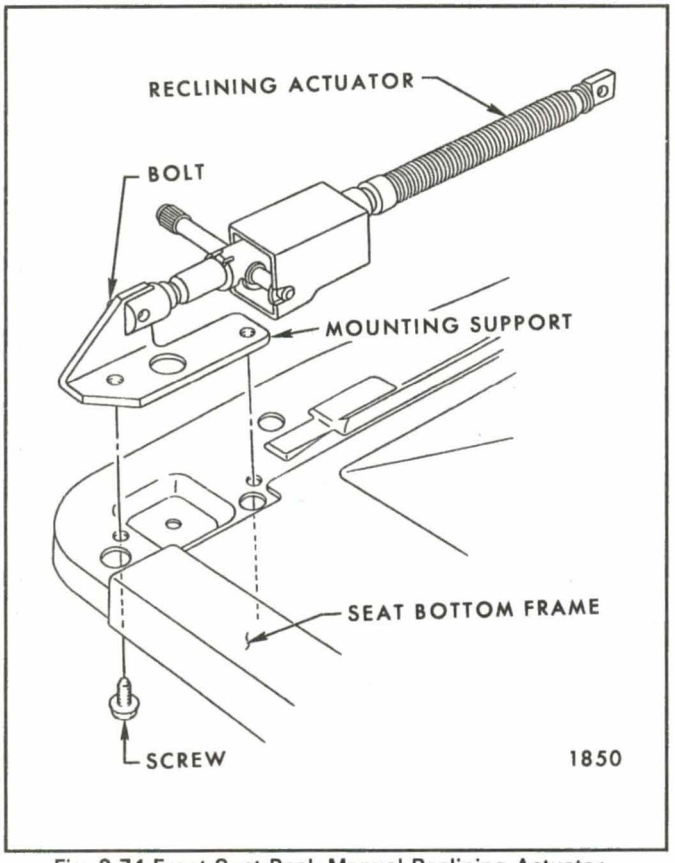


Fig. 9-71-Front Seat Back Manual Reclining Actuator - Oldsmobile and Cadillac 6CB47-69

5. On two-door styles, remove seat back stop cable retainer at seat inner back inner arm or reclining hinge control and detach cable.
6. Remove shoulder bolts securing seat back hinge arms to cushion frame (Fig. 9-74) and on seats with reclining seat back remove reclining hinge-to-seat back bolts from both sides of seat back (Fig. 9-76) and remove seat back assembly.

   Prior to installing seat, check operation of seat back inertia lock as described and illustrated under Seat Back Inertia Lock Check - Out of Vehicle Check.
7. To install seat back, reverse removal procedure.

BUCKET SEAT BOTTOM FINISHING PANEL - B,E AND G STYLES

Removal and Installation

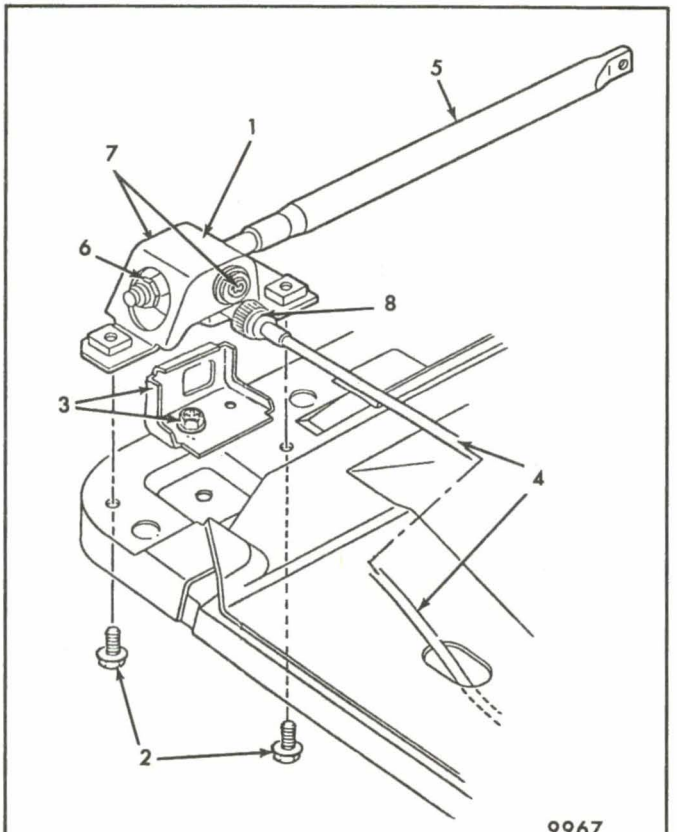
1. Remove seat back and place seat bottom assembly upside down on a clean, protected surface.
2. Remove seat back striker bolt, silencer bushing and washer from both sides of seat bottom (Fig. 9-75).
3. Remove seat bottom finishing panel front attaching screws and remove panel from seat bottom.
4. To install finishing panel, reverse removal procedure.

   Prior to installing seat assembly, check operation of seat back inertia lock, as described and illustrated under Seat Back Inertia Lock Assembly - Out of Vehicle Check, B,E and G Bucket Seat Styles

BUCKET SEAT BACK INERTIA LOCK - B,E AND G STYLES

Removal and Installation

1. Remove seat back and place seat bottom assembly upside down on a clean, protected surface.



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

Fig. 9-72 - Power-Operated Reclining Seat Back Actuator - B,C,E and K Style Full Width Seats

2. Remove seat bottom finishing panel outer front attaching screws. Rotate panel outward from seat bottom to expose inertia lock attaching nuts.
3. Remove inertia luck attaching nuts and remove inertia lock from seat bottom frame (Fig. 9-75).
4. To install inertia lock assembly, reverse removal procedure. Prior to installing seat assembly in car, check operation of inertia lock as described and illustrated under Seat Back Inertia Lock Assembly - Out of Vehicle Check.

BUCKET SEAT RECLINING CONTROL HINGES - B,E AND G STYLES

Removal

1. On cars equipped with a center console, remove the seat assembly and place on a clean, protected surface.
2. Remove reclining hinge control arm covers.
3. 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.
4. Remove inertia lock to seat back nuts and remove inertia lock attaching plate from seat back.
5. Remove seat back hinge arm stop that secures forward stop cable to seat bottom.

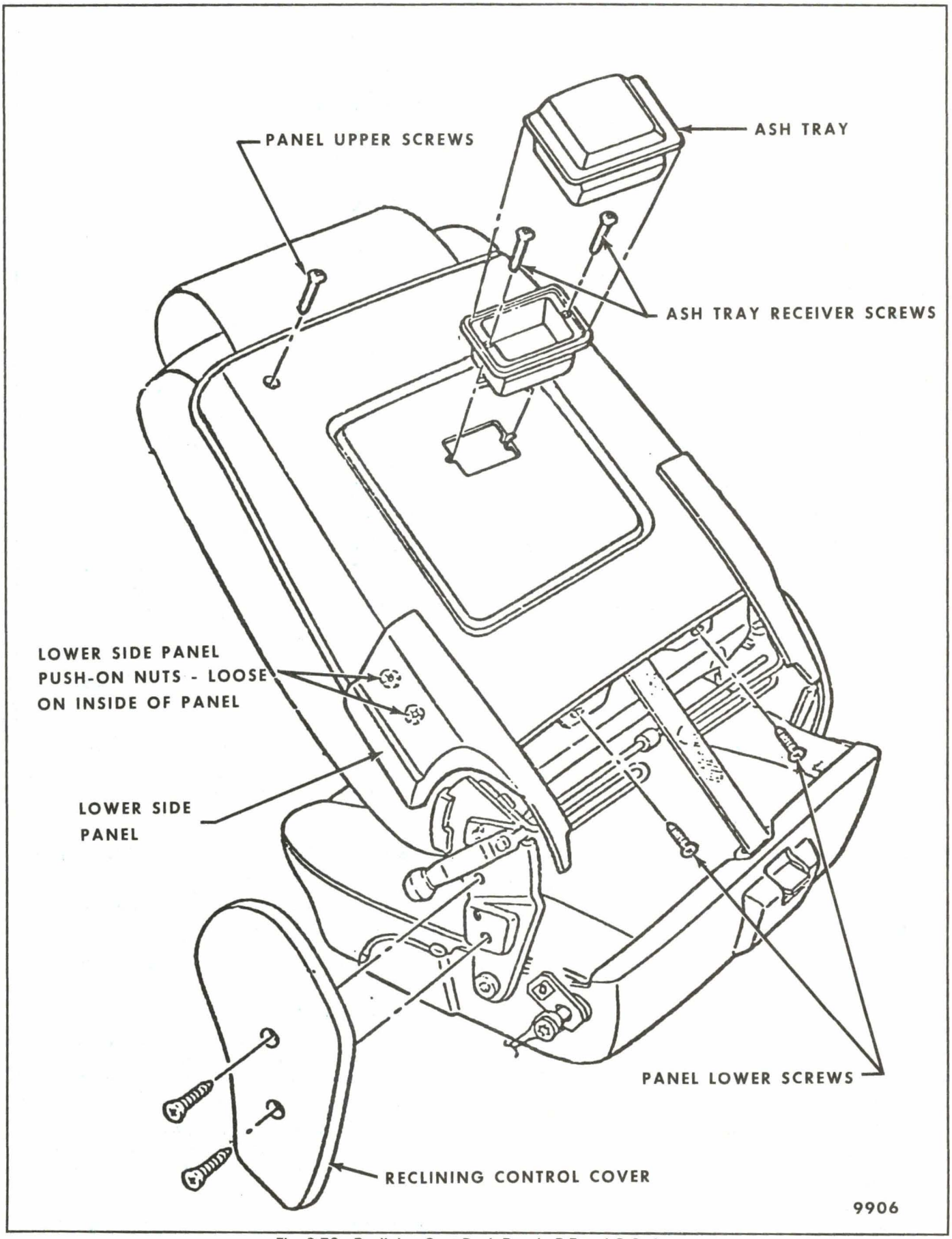
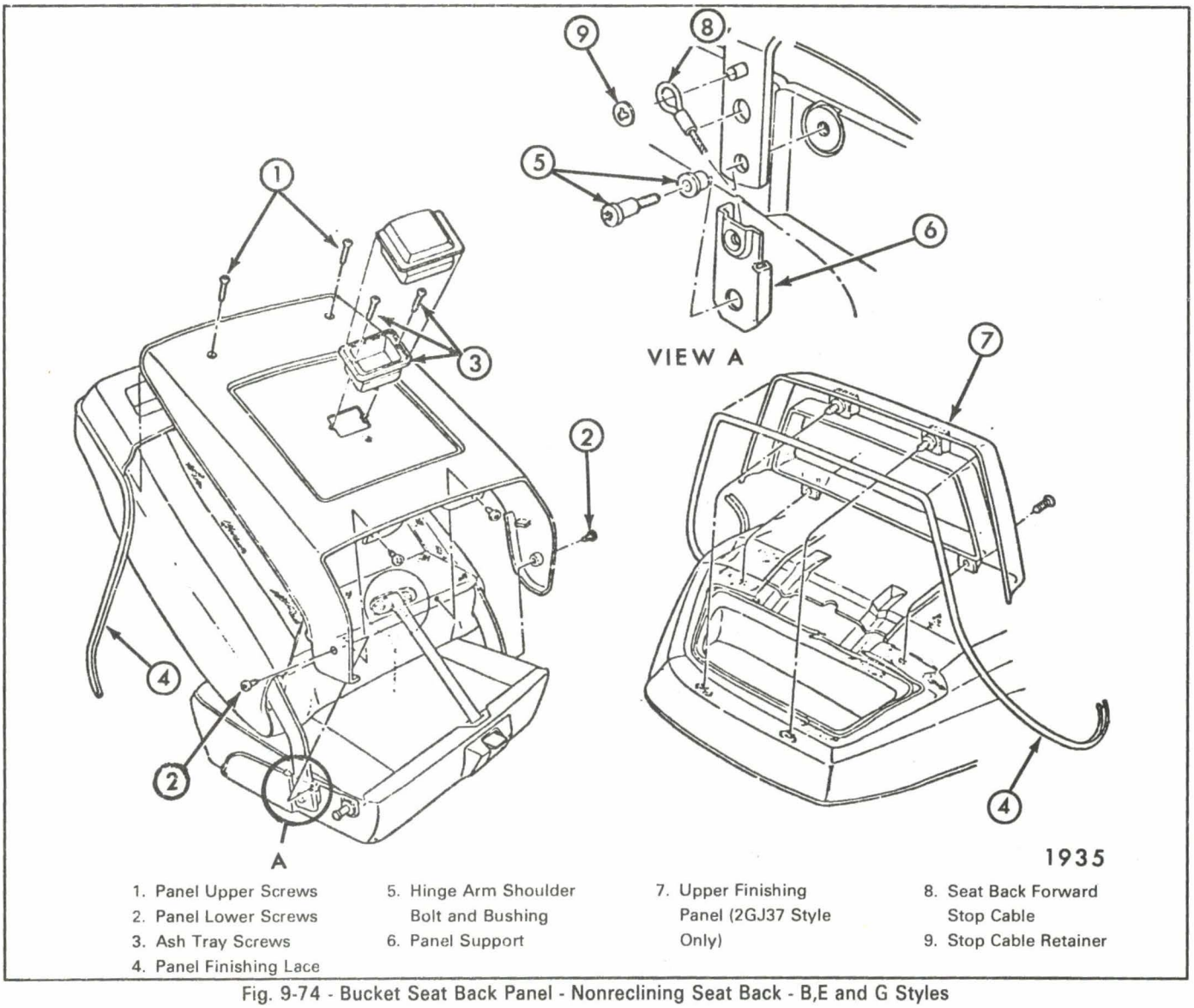


Fig. 9-73 - Reclining Seat Back Panel - B,E and G Styles



1. Panel Upper Screws
2. Panel Lower Screws
3. Ash Tray Screws
4. Panel Finishing Lace
5. Hinge Arm Shoulder Bolt and Bushing
6. Panel Support
7. Upper Finishing Panel (2GJ37 Style Only)
8. Seat Back Forward Stop Cable
9. Stop Cable Retainer

Fig. 9-74 - Bucket Seat Back Panel - Nonreclining Seat Back - B,E and G Styles

6. Remove both inner and outer control-to-seat back bolts (Fig. 9-76) and allow seat back to lie on cushion. Remove both inner and outer control hinge shoulder bolts, then pull controls outward from seat to separate control rod at center male and female connection (Fig. 9-76).

Installation

1. Loosely install front seat back reclining control hinges to seat back assembly.
2. Install seat back assembly to seat bottom frame with hinge shoulder bolts.
3. Assemble forward stop cable, bushing and washer over hinge arm stop bolt and install bolt to seat bottom.
4. Position the seat back assembly against the hinge arm stops in the normal seating position and tighten reclining control to seat back bolts as follows:
   a. Tighten inner and outer lower bolts
   b. Tighten inner and outer upper bolts
5. Install inertia lock attaching plate to seat back.
6. Install seat back panel.
7. Install reclining hinge control arm covers.

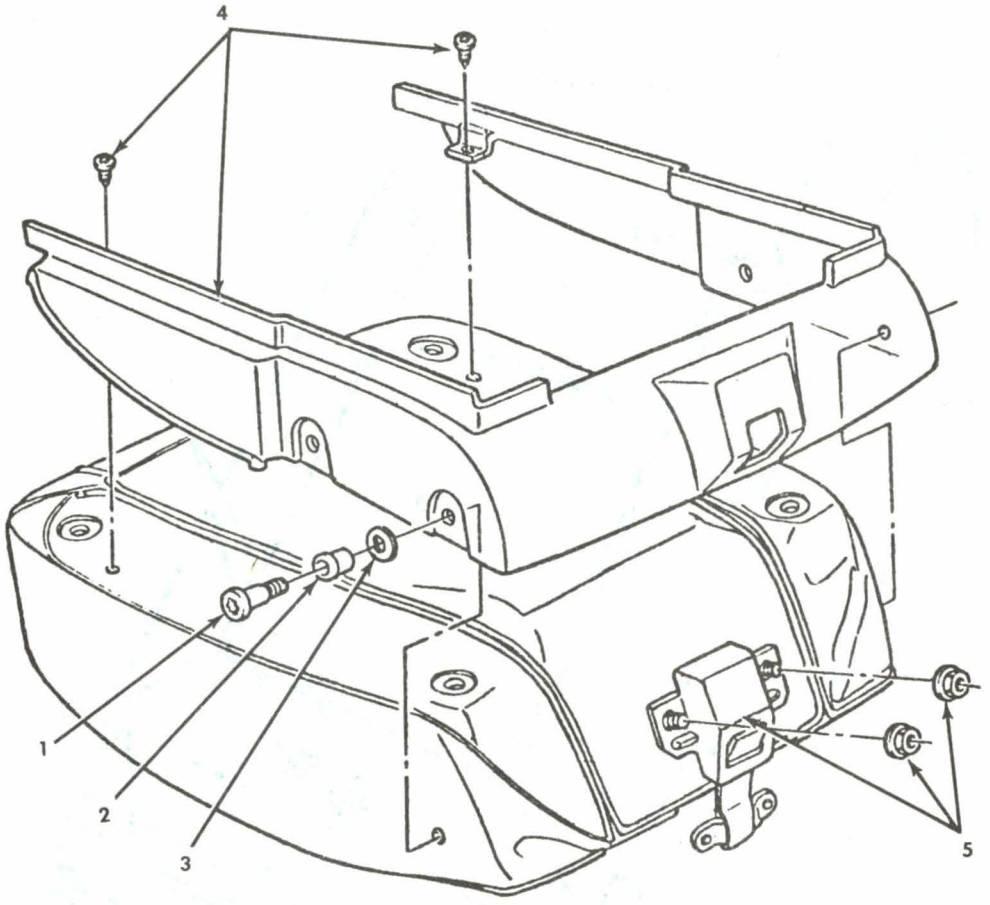
SEAT BACK LOCK STRIKER/SIDE INNER BAR STOP - BUCKET SEATS

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

NOTICE: 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 parts 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.

1. Using door 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



1. Seat Back Striker Bolt
2. Silencer Bushing
3. Washer
4. Seat Bottom Finishing Panel and Front Attaching Screws
5. Inertia Lock and Attaching Nuts

Fig. 9-75 - Bucket Seat Bottom Finishing Panel, B,E and G Styles

or stop 30 to 46 N·m (22 to 34 ft-lb). Use tool J-23457 or BT-7107 or equivalent.

FRONT SEAT CENTER ARMREST, CURTAIN AND LINKAGE - STANDARD FULL WIDTH SEAT BACK - B, C AND D STYLES

Removal and Installation (Fig. 9-77)

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 HINGE ASSEMBLY - NOTCH BACK, 55-45 SEATS

Removal and Installation (Fig. 9-77)

1. Remove seat assembly from body and place on a clean protected 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.

FRONT SEAT CENTER ARMREST, 45-45 SEATS - E AND K STYLES

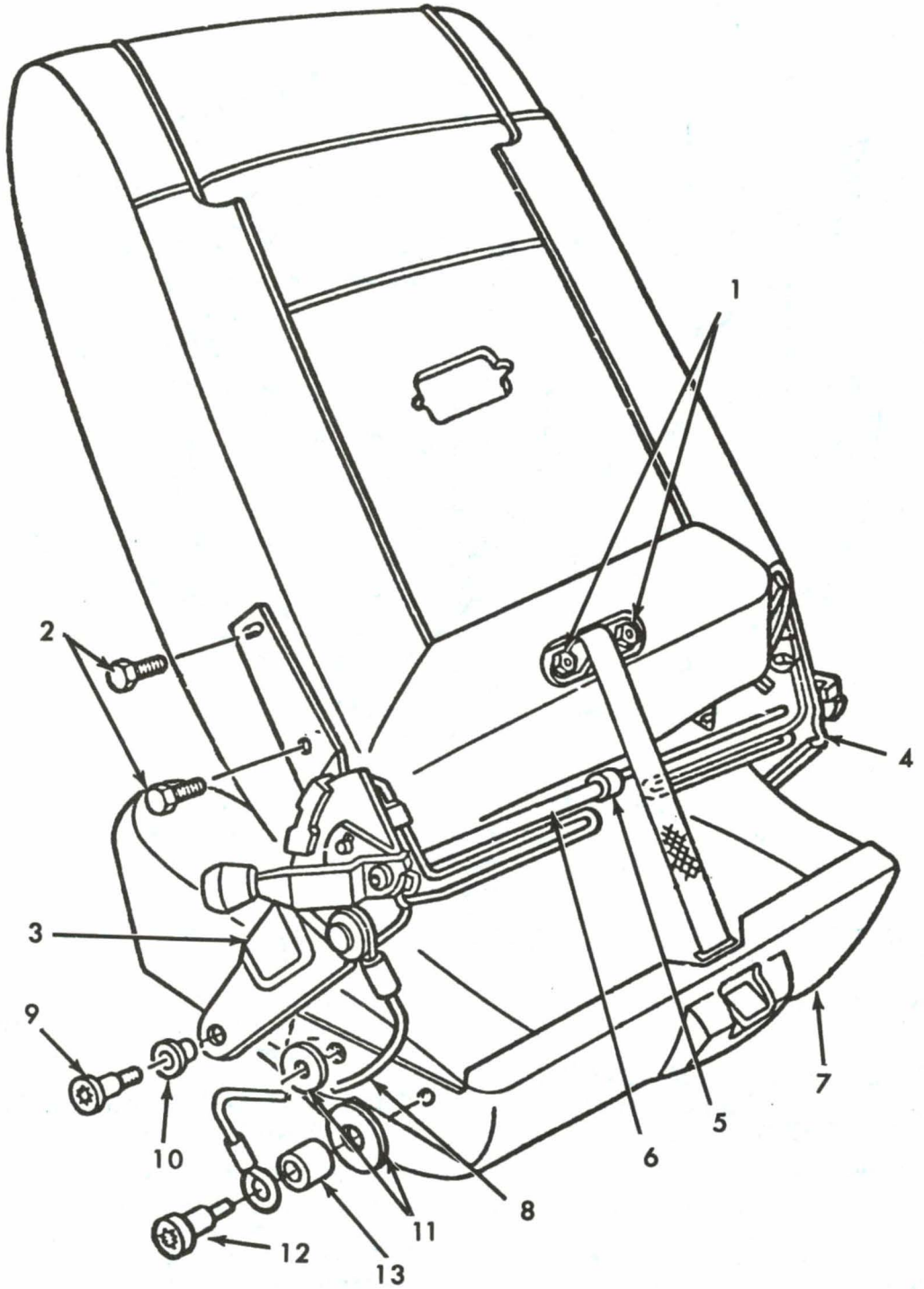
Removal and Installation (Fig. 9-78)

1. Move passenger seat to full forward position and move driver seat to full rearward position.
2. Unzip armrest cover to expose armrest attaching bolt.
3. Remove armrest attaching bolt and remove armrest.
4. Armrest support cover can be removed after armrest is removed.
5. To install, reverse removal procedure.

FRONT SEAT CENTER ARMREST, 45-45 SEAT - CADILLAC C STYLE

Removal and Installation (Fig. 9-79)

1. Position seats as necessary to gain access to armrest
2. Remove the armrest attaching bolts and remove armrest.
3. Armrest support cover can be removed by removing cover attaching screw after armrest is removed.



1. Inertia Lock-to-Seat Back Nuts
2. Reclining Control-to-Seat Back Bolts
3. Reclining Seat Back Inner Control
4. Reclining Seat Back Outer Control
5. Control Rod Female Connection
6. Control Rod Male Connection
7. Seat Bottom Finishing Panel
8. Forward Stop Cable
9. Hinge Shoulder Bolt
10. Hinge Bushing
11. Washer
12. Hinge Arm Stop
13. Hinge Arm Stop Bushing

Fig. 9-76 - Bucket Seat Back Reclining Control Hinges

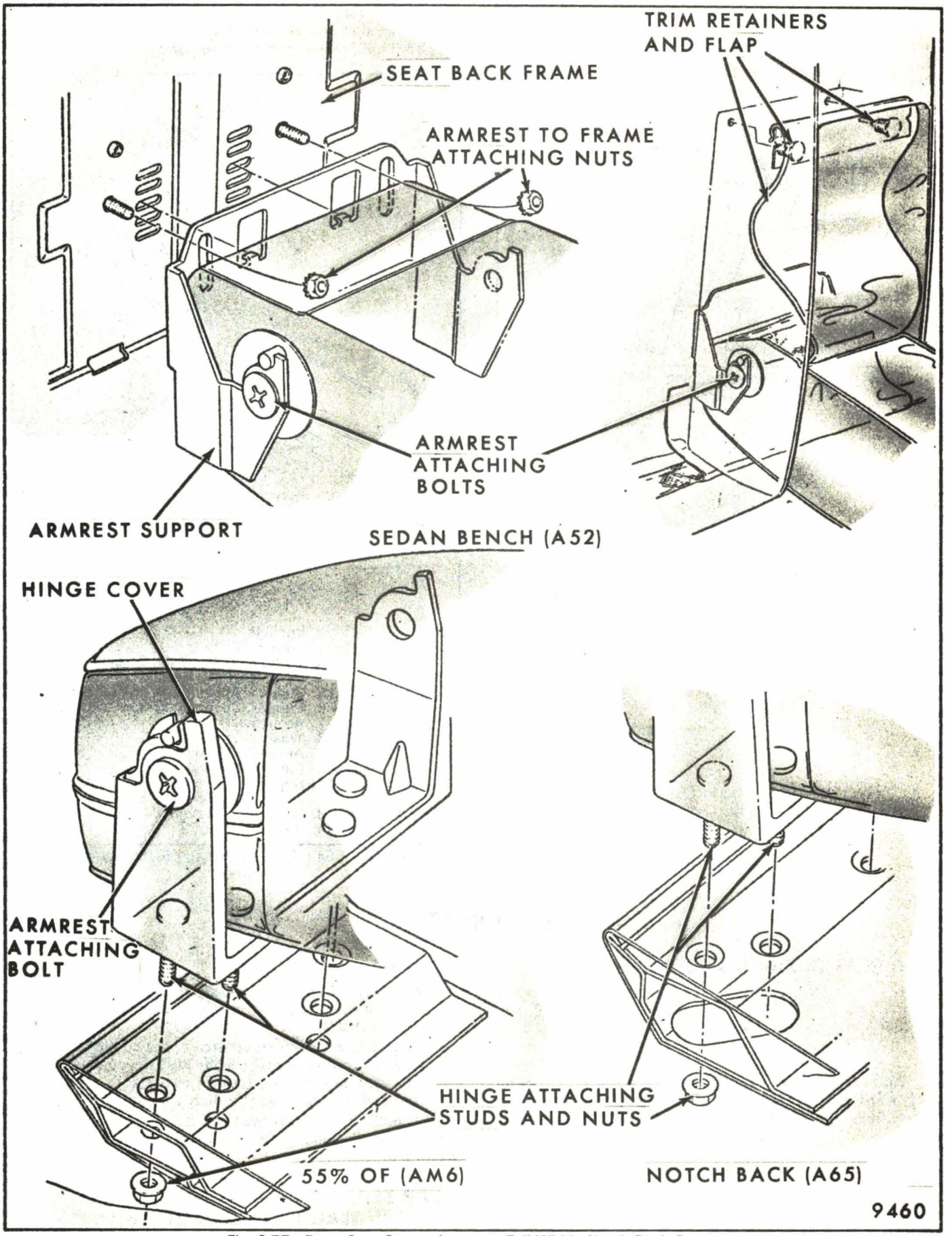


Fig. 9-77 - Front Seat Center Armrest - Full Width, Notch Back Seats

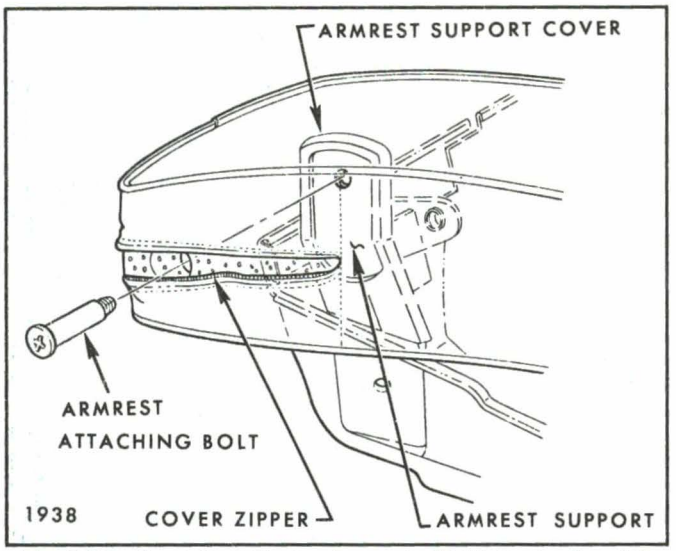
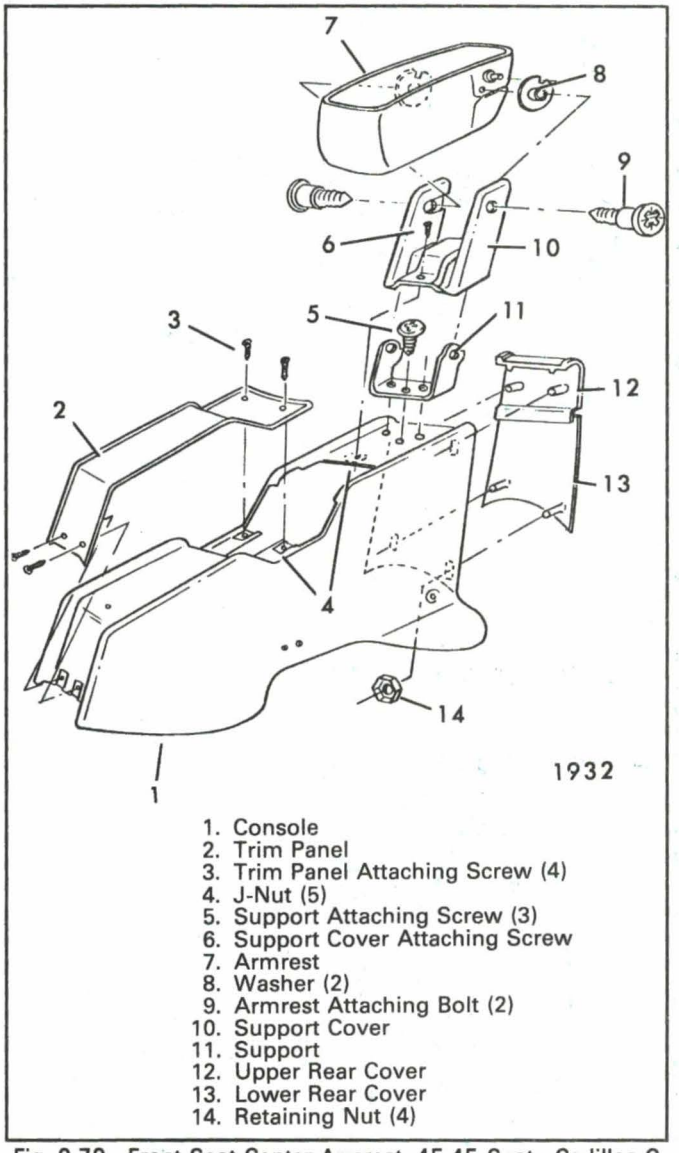


Fig. 9-78 - Front Seat Center Armrest, 45-45 Seats, E and K Styles

4. Armrest support can be removed by removing three attaching screws after armrest support cover is removed.
5. To install, reverse removal procedure.



1. Console
2. Trim Panel
3. Trim Panel Attaching Screw (4)
4. J-Nut (5)
5. Support Attaching Screw (3)
6. Support Cover Attaching Screw
7. Armrest
8. Washer (2)
9. Armrest Attaching Bolt (2)
10. Support Cover
11. Support
12. Upper Rear Cover
13. Lower Rear Cover
14. Retaining Nut (4)

Fig. 9-79 - Front Seat Center Armrest, 45-45 Seat - Cadillac C Style

REAR SEATS

REAR SEAT CUSHION ASSEMBLY

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 (Fig. 9-80).

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 enough rearward pressure to disengage seat from retainers.

Installation

1. Carefully lift cushion into body using care 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. 9-80). Push seat cushion assembly rearward until offsets engage in retainers; then press down and pull cushion forward to fully engage in retainers.

If difficulty is experienced in engaging front of cushion in retainers, use the same method described under removal to engage cushion in retainers.

REAR SEAT BACK ASSEMBLY - ALL EXCEPT STATION WAGONS AND K STYLE

Removal and Installation

1. Remove rear seat cushion.

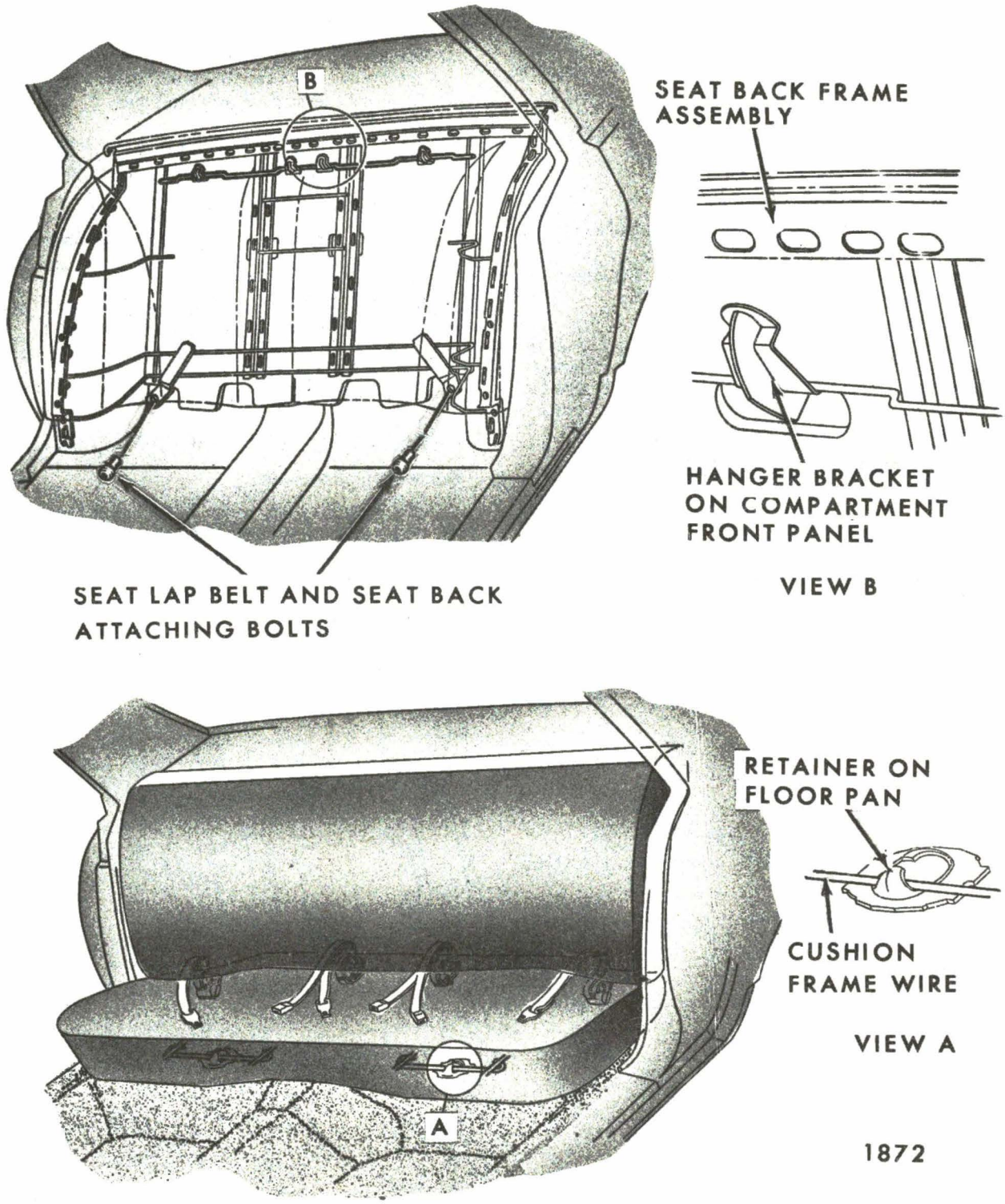


Fig. 9-80-Rear Seat Cushion and Back Installation - B,C,D and G Styles Except Station Wagon

2. At bottom of seat back, remove rear seat lap belts or belt retractor bolts securing the rear seat back (Fig. 9-80).
3. Remove seat back from body.
4. To install, reverse removal procedure, making certain that all attaching body hangers have industrial body tape applied to them to act as an antisqueak. Install lap belt or retractors over seat back lower brackets and tighten retractor bolts to proper torque as specified in lap and shoulder belt section of the manual.

REAR SEAT BACK ASSEMBLY - K STYLE

Removal and Installation (Fig. 9-82)

1. Remove rear seat cushion assembly.
2. At bottom of seat back, remove bolts securing the inner rear seat lap belts and seat back.
3. From rear compartment, remove attaching nuts holding seat back frame to rear seat to back window panel.
4. Remove seat back from body.
5. To install, reverse removal procedure, making certain that seat back frame to back window panel nuts are torqued to 9 to 12 N·m (7 to 9 ft-lb). Install lap belts over seat back brackets and tighten retractor bolts to proper torque as specified in lap and shoulder belt section of manual.

REAR SEAT BACK CENTER ARMREST AND CURTAIN

Removal and Installation (Fig. 9-83)

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 bolts 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. Then remove two bolts securing armrest supports to the armrest.
2. To install, reverse removal procedure.

REAR SEAT BACK CENTER ARMREST LINKAGE AND CURTAIN - E AND K STYLES

Removal and Installation (Fig. 9-84)

1. Remove rear seat cushion and back assemblies.
2. Carefully remove hog rings from armrest curtain and fold trim flap forward.
3. Remove screws securing armrest linkage to back frame assembly; then remove armrest from seat back.
4. Remove screws securing armrest linkage to armrest and remove linkage from armrest.
5. To install, reverse removal procedure.

AUXILIARY SEAT ASSEMBLY - D STYLES

Removal and Installation

1. Place auxiliary seat in the folded forward position.
2. Remove footrest support and hinge attaching screws and remove footrest assembly (Fig. 9-85).
3. Carefully pull carpet flap rearward and detach staples securing carpet flap to board foundation between front legs of auxiliary seat.
4. Remove auxiliary seat hinge pin cap screws; then remove cap and auxiliary seat assembly (Fig. 9-86).

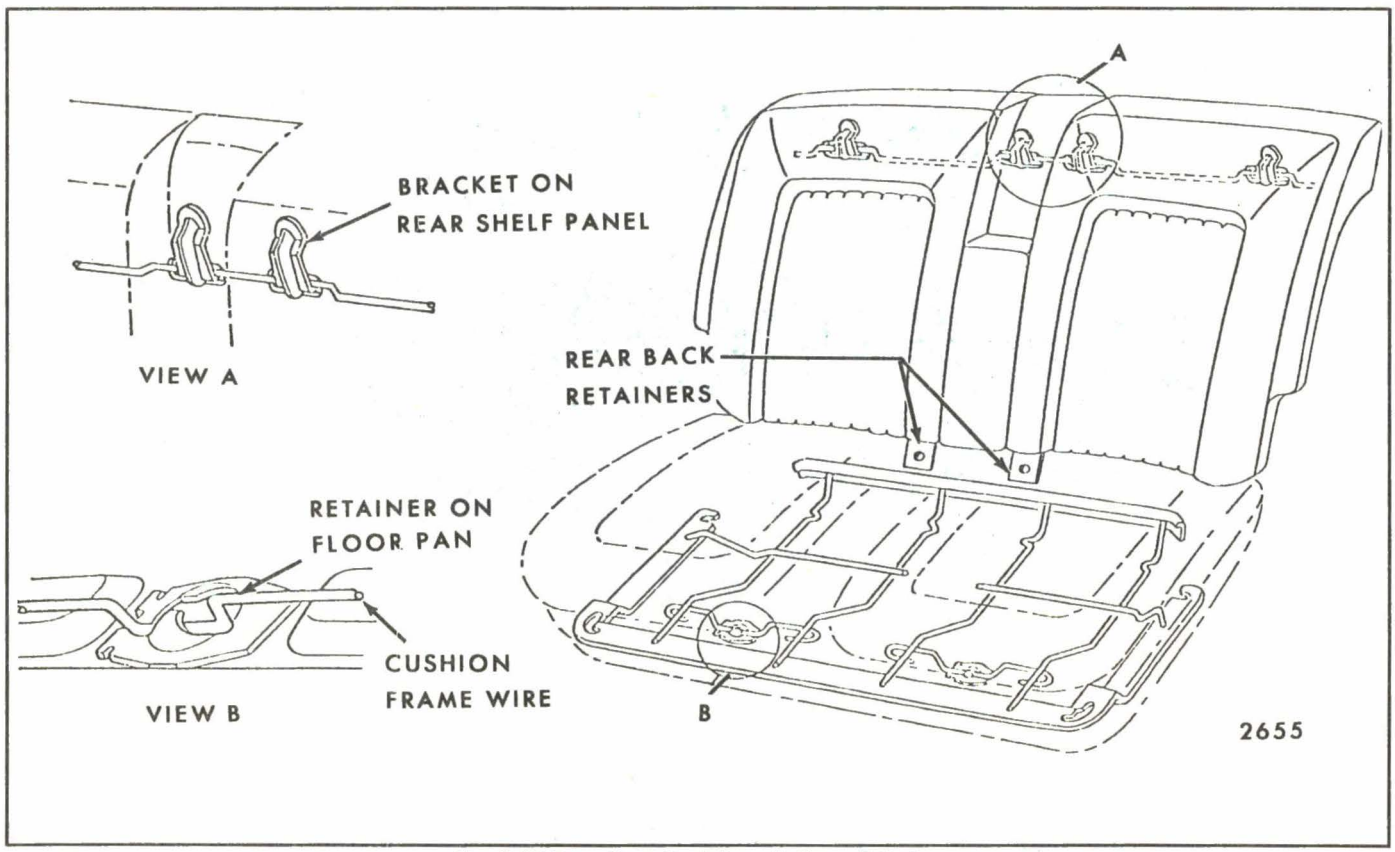


Fig. 9-81-Rear Seat Back Installation - E Styles

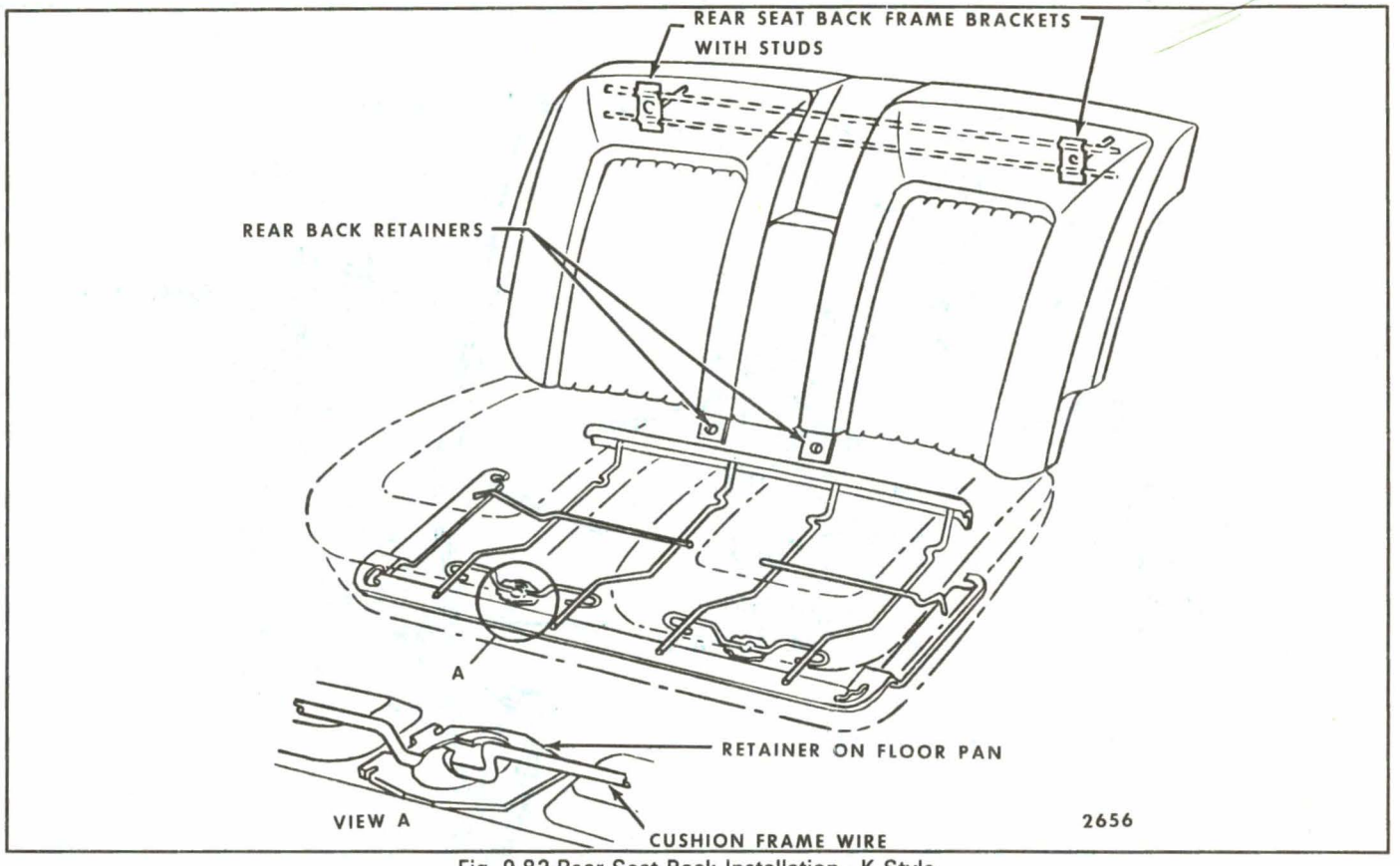


Fig. 9-82-Rear Seat Back Installation - K Style

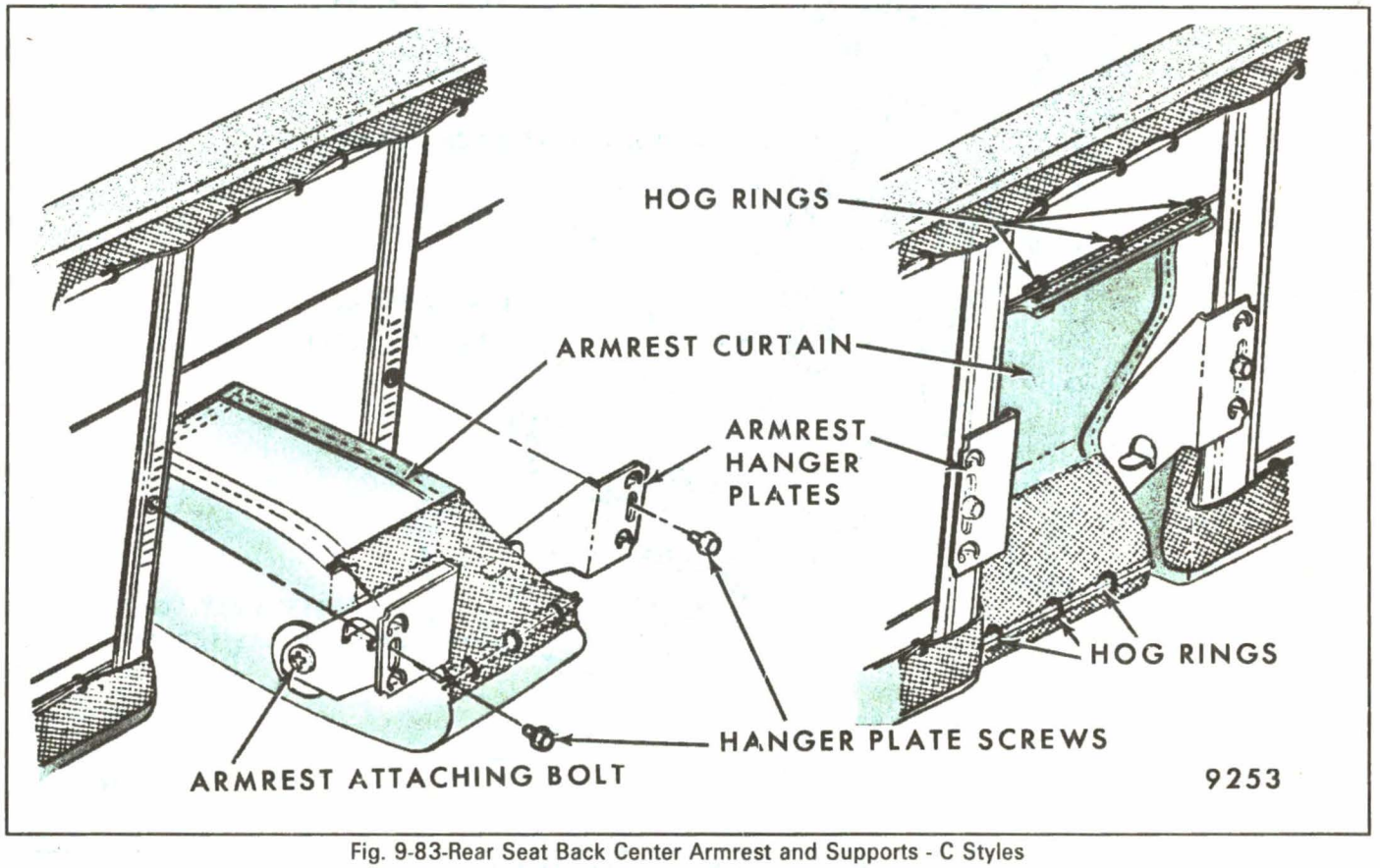


Fig. 9-83-Rear Seat Back Center Armrest and Supports - C Styles

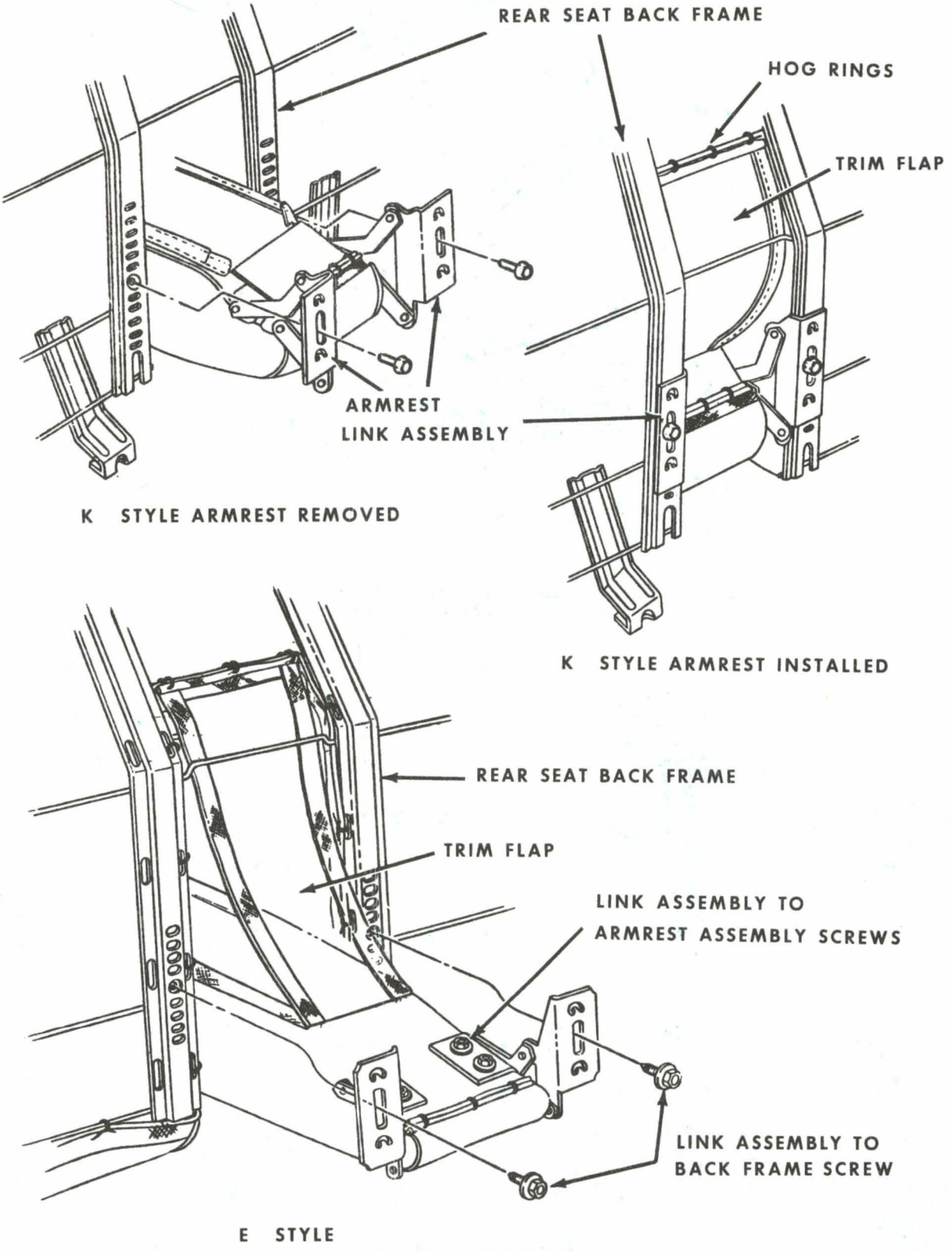


Fig. 9-84 - Rear Seat Back Center Armrest Installation - E and K Styles

5. To install auxiliary seat assembly, reverse removal procedure.

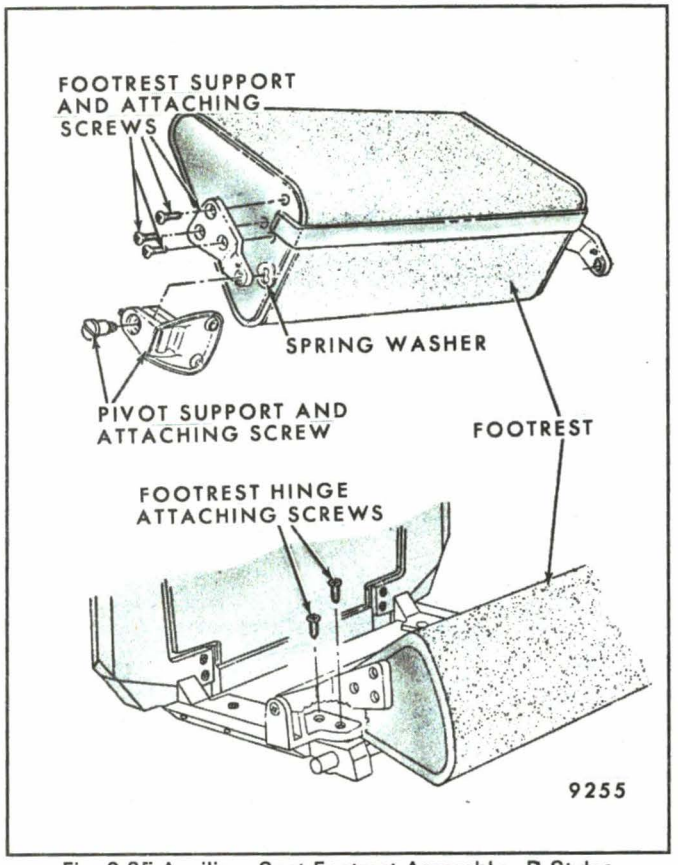


Fig. 9-85-Auxiliary Seat Footrest Assembly - D Styles

Adjustment

The auxiliary seats can be adjusted to provide additional leg room for auxiliary seat passengers.

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 (Fig. 9-86).
4. Carefully turn the adjusting screw 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 159 mm (6-1/4") from rear seat cushion to auxiliary seat.

AUXILIARY SEAT LOWER SUPPORT ASSEMBLY - D STYLES

Removal and Installation

1. Remove auxiliary seat assembly.
2. Remove lower support assembly attaching screws shown in Figure 9-86 and remove support assembly.
3. To install auxiliary seat lower support assembly, reverse removal procedure.

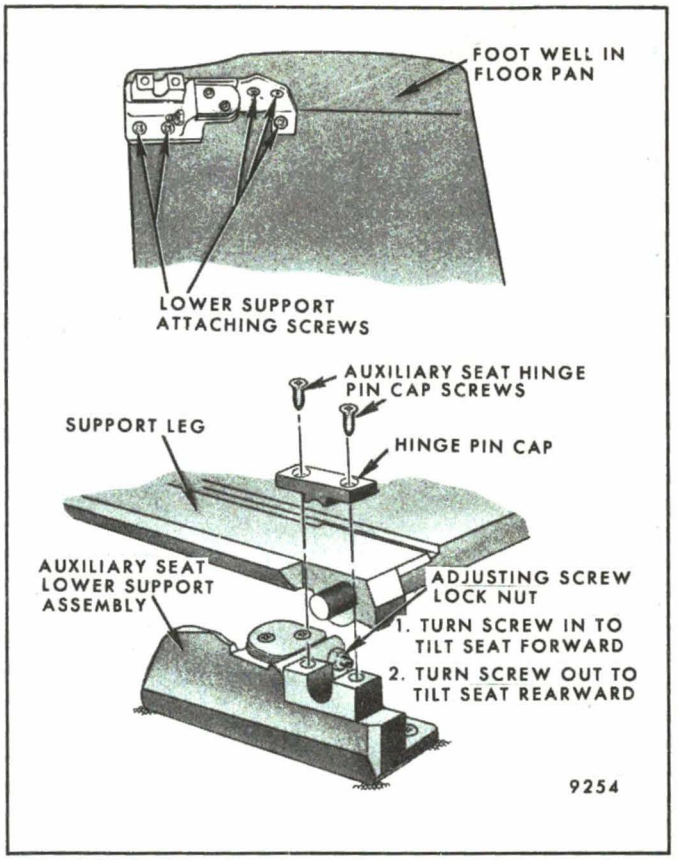


Fig. 9-86-Auxiliary Seat Lower Support and Adjustment - D Styles

REAR SPEAKERS - ALL EXCEPT 35 STYLES AND E STYLES

One basic type of speaker assembly is installed to the rear seat to back window panel. Access for removal 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 (Fig. 9-87, views B and D).

If a perforated vinyl coated panel is used, the speaker is retained with either a metal retainer (Fig. 9-87, view D) or a bolt and clip assembly (Fig. 9-88, 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 (Fig. 9-88, view A and B).
2. Disconnect speaker wire from body harness.

   If replacing speaker remove baffle retainer as shown in Figure 9-87, 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 (Fig. 9-88).
4. On styles using metal retainer assembly to secure speaker to rear seat to back window panel (Fig. 9-87, view D) disengage spring hook from tab at rear of panel and swing speaker assembly downward to remove.
5. To install, reverse removal procedure.

REAR SPEAKERS - BUICK B,C AND E STYLES (OPTIONAL ORDER)

This optional order system incorporates six speakers. On sedan styles, one speaker is located in each door and two speakers are located in the rear seat to back window panel.

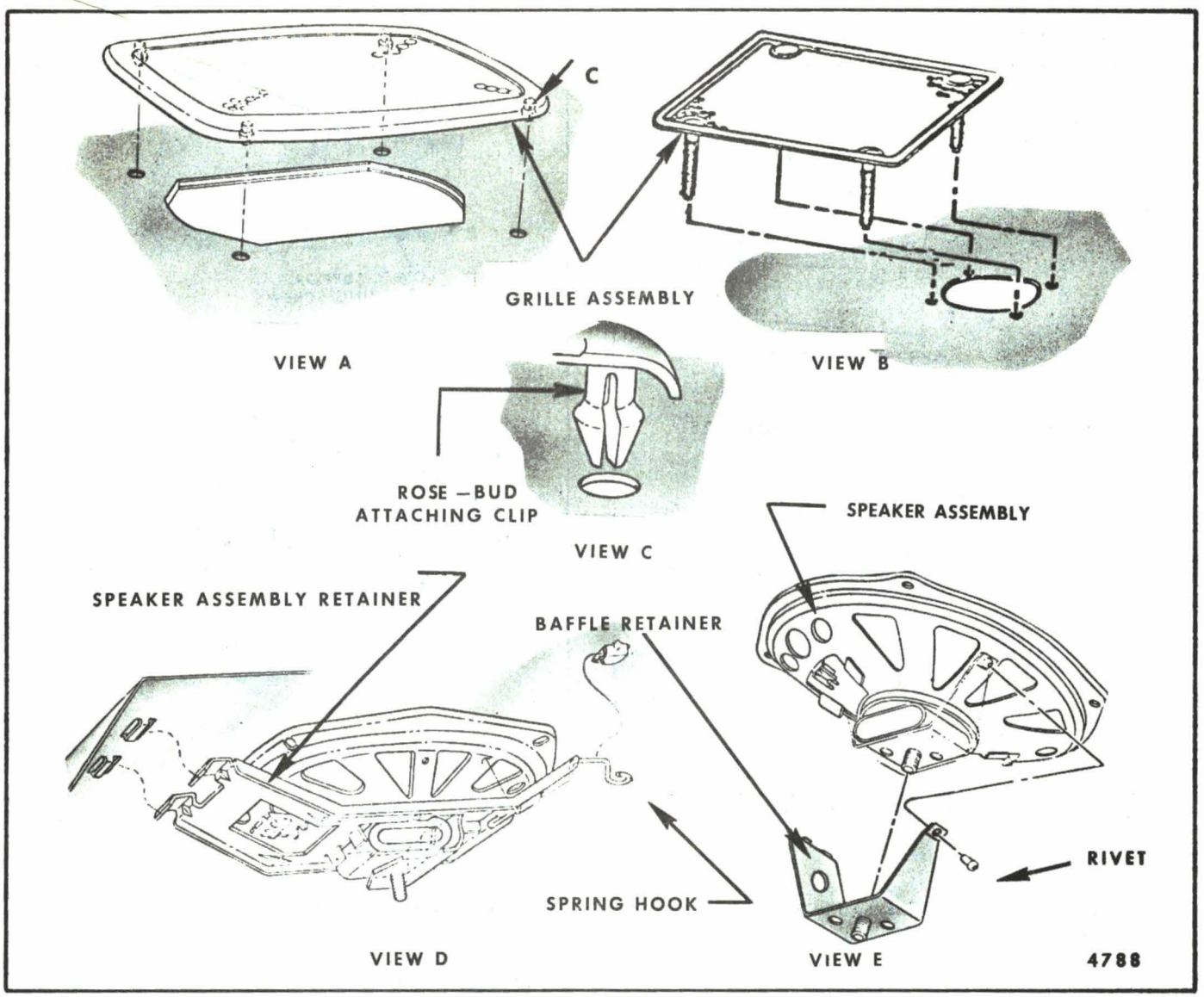


Fig. 9-87-Grille and Speaker Attachment

On coupe styles, one speaker is located in each front door, one speaker in each quarter panel and two speakers in the rear seat to back window finishing panel.

Removal and Installation

The door speakers can be serviced as described in section 5 of this manual. Quarter speakers can be removed as follows.

1. Remove quarter trim assembly as described in section 6 of this manual.
2. Remove screws holding speaker retainer assembly to body.
3. Disconnect speaker wire from speaker (Fig. 9-89, view A).
4. Remove speaker and retainer assembly.
5. The speaker and retainer are not released to service as an assembly. Therefore, the rivets securing the speaker to the retainer must now be drilled out using a 6.3 mm (1/4") drill bit (Fig. 9-89, view B).
6. Using hand rivet tool J-29022 or equivalent, attach the new speaker to the retainer with 1/4"X0.500" aluminum rivets. 1/4"X20X1/2" bolts and nuts can also be used, but care must be taken not to damage the speaker by overtightening the bolts.
7. Connect the speaker wire and screw the speaker-retainer assembly into the quarter panel.
8. Replace all previously removed trim.

REAR SPEAKERS - B-35 STYLES

The rear speaker(s) on B-35 styles are mounted to the back body pillar.

Removal and Installation - Left Side

1. Grasp back body opening upper garnish molding near center and at left end, then slide molding to the right until telescoping end of back body upper finishing panel is exposed (Fig. 9-90).
2. Open stowage compartment door and remove screws that secure left wheelhouse trim panel to quarter belt rail (Fig. 9-92, view B).
3. Grasp wheelhouse trim panel and pull top inboard to separate top edge from between quarter garnish molding and molding retainer. Lift panel upward to disengage bottom edge from slot in load floor, then pull panel rearward to complete removal (Fig. 9-92, view B).
4. Remove attaching screws at bottom of back body upper finishing panel (Fig. 9-90).

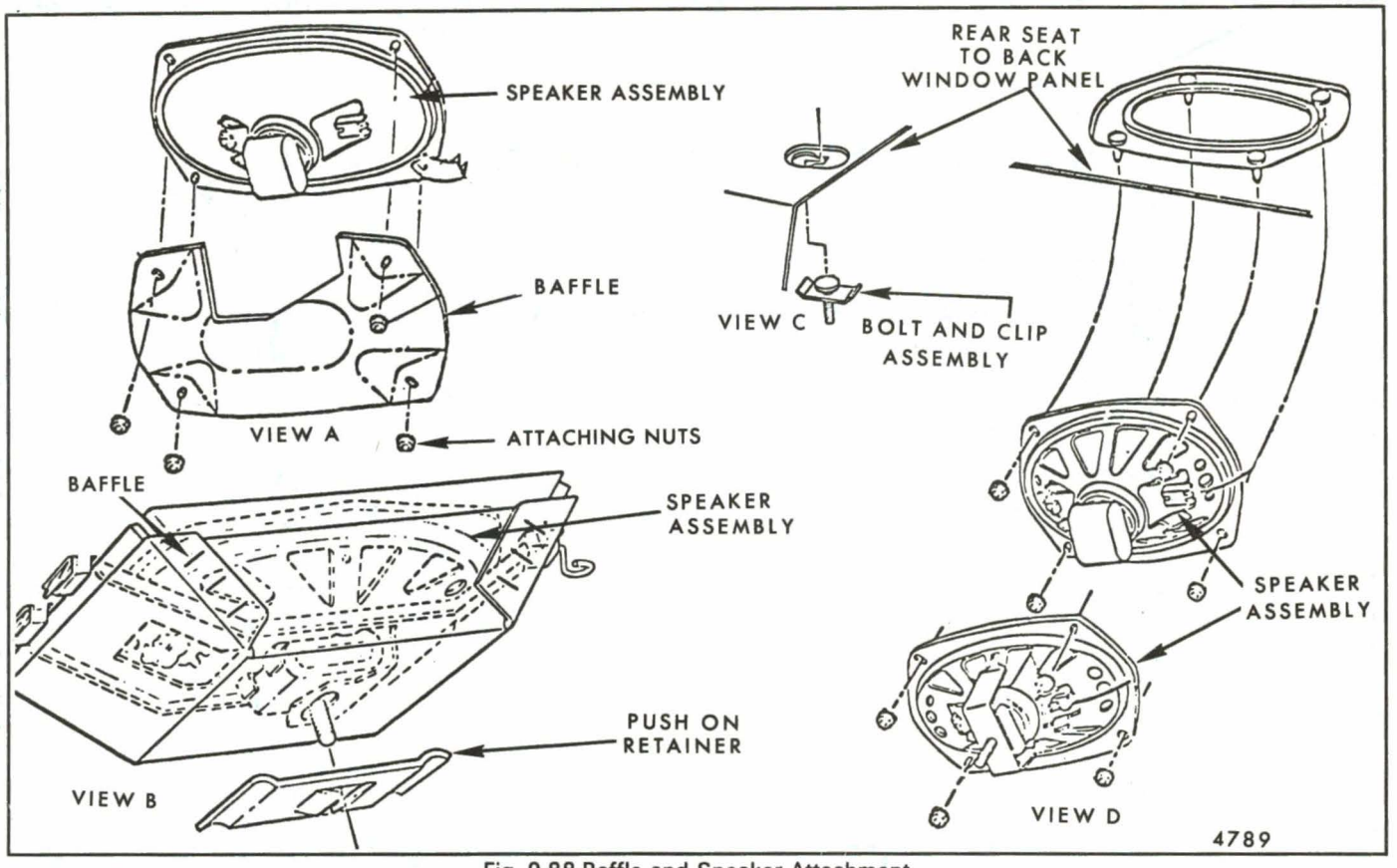


Fig. 9-88-Baffle and Speaker Attachment

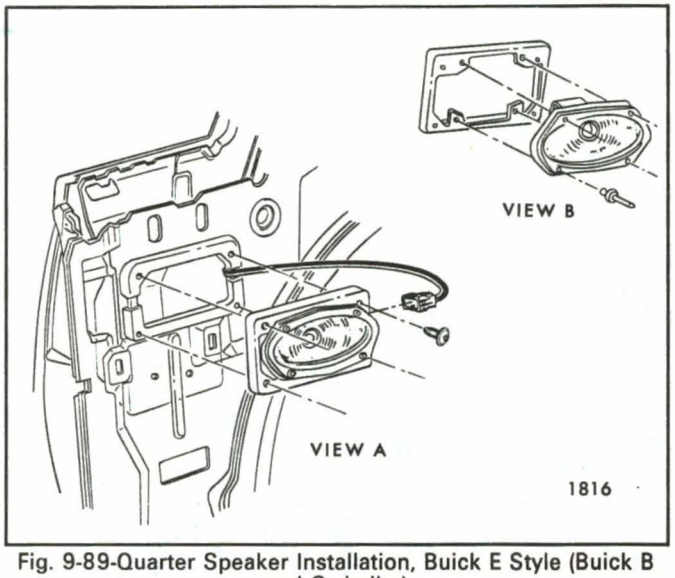


Fig. 9-89-Quarter Speaker Installation, Buick E Style (Buick B and C similar)

5. Grasp end of roof side molding and rotate inboard to release from forward end of back body upper finishing panel (Fig. 9-92, view A).
6. Remove four speaker to back body pillar attaching screws. Disconnect speaker wire and remove speaker.
7. To install, reverse removal procedure.

Removal and Installation - Right Side

1. Slide back body opening upper garnish molding to left as described under step 1, Removal and Installation - Left Side.
2. To complete removal of trim panels on right side of vehicle, repeat steps 3, 4, 5 and 6 of previous procedure. Refer to Figures 9-90, 9-91 and 9-92.
3. To install, reverse removal procedure.

REAR SPEAKERS - G-35 STYLES

Rear speakers on G-35 styles are installed to the inside surface of the quarter trim assembly (Fig. 9-93).

Removal and Installation

1. Remove quarter trim assembly as described in Section 6 of this manual.
2. Disconnect speaker wire from body harness.
3. Remove four speaker assembly-to-grille attaching nuts.
4. Remove grille from quarter trim assembly by lifting upward or outward.
5. To install, reverse the removal procedure.

REAR SPEAKER - E STYLES

The rear speakers are assembled to the rear seat to back window trim panel assembly prior to panel installation. The trim panel must be removed to service the rear speakers (Fig. 9-94).

Removal and Installation

1. Remove screw in center of trim panel (Fig. 9-94).
2. Grasp trim panel at center section and pull upward. Score line at center of trim panel will allow panel to fold upward and disengage from under quarter upper trim panels and back window side garnish moldings.
3. Lift rear seat to back window trim panel and disconnect the harness wire assembly connector at speaker assembly.
4. Remove trim panel.
5. Remove attaching nuts securing speaker to studs in trim panel and remove speakers.
6. To install, reverse removal procedure.

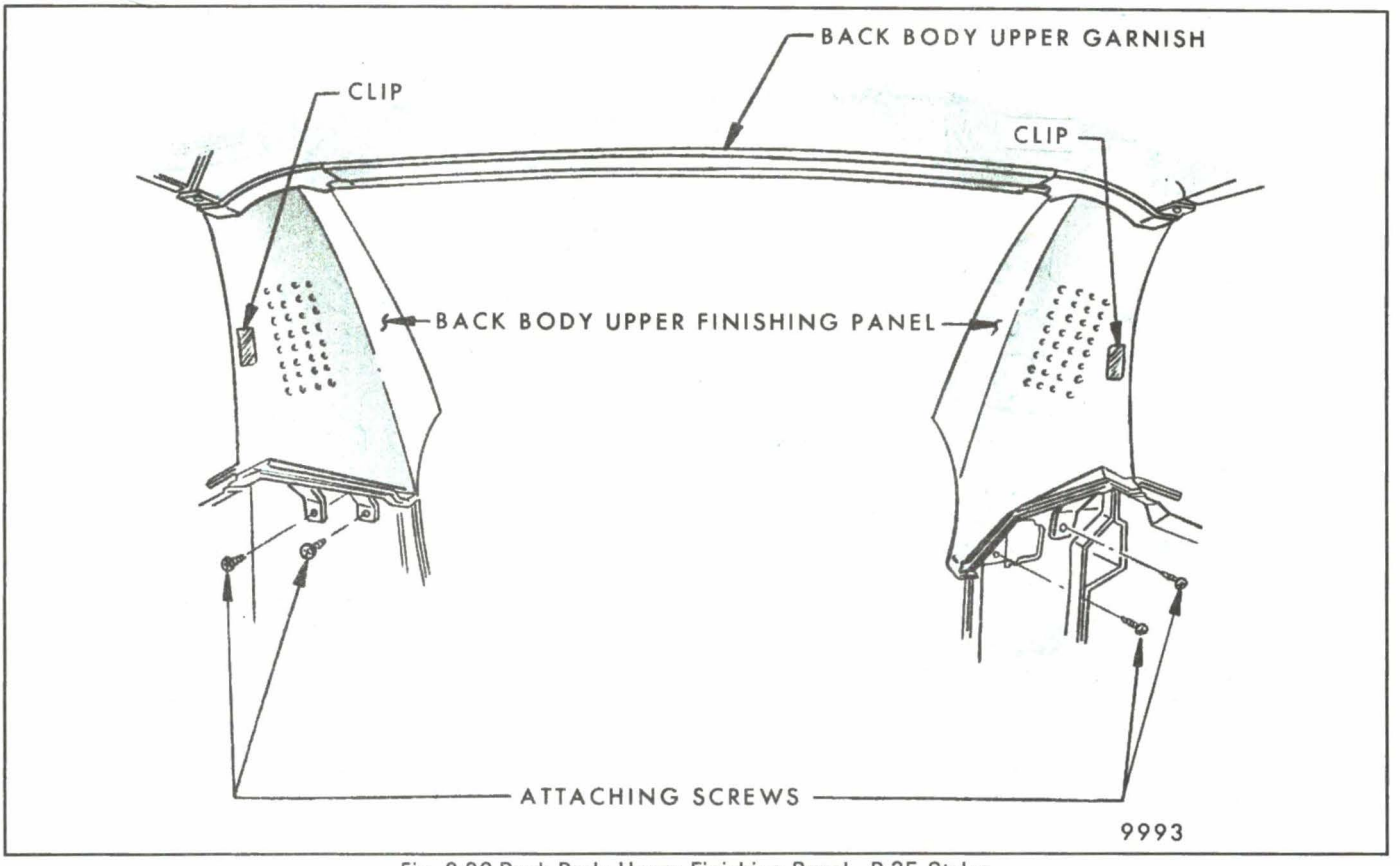


Fig. 9-90-Back Body Upper Finishing Panel - B-35 Styles

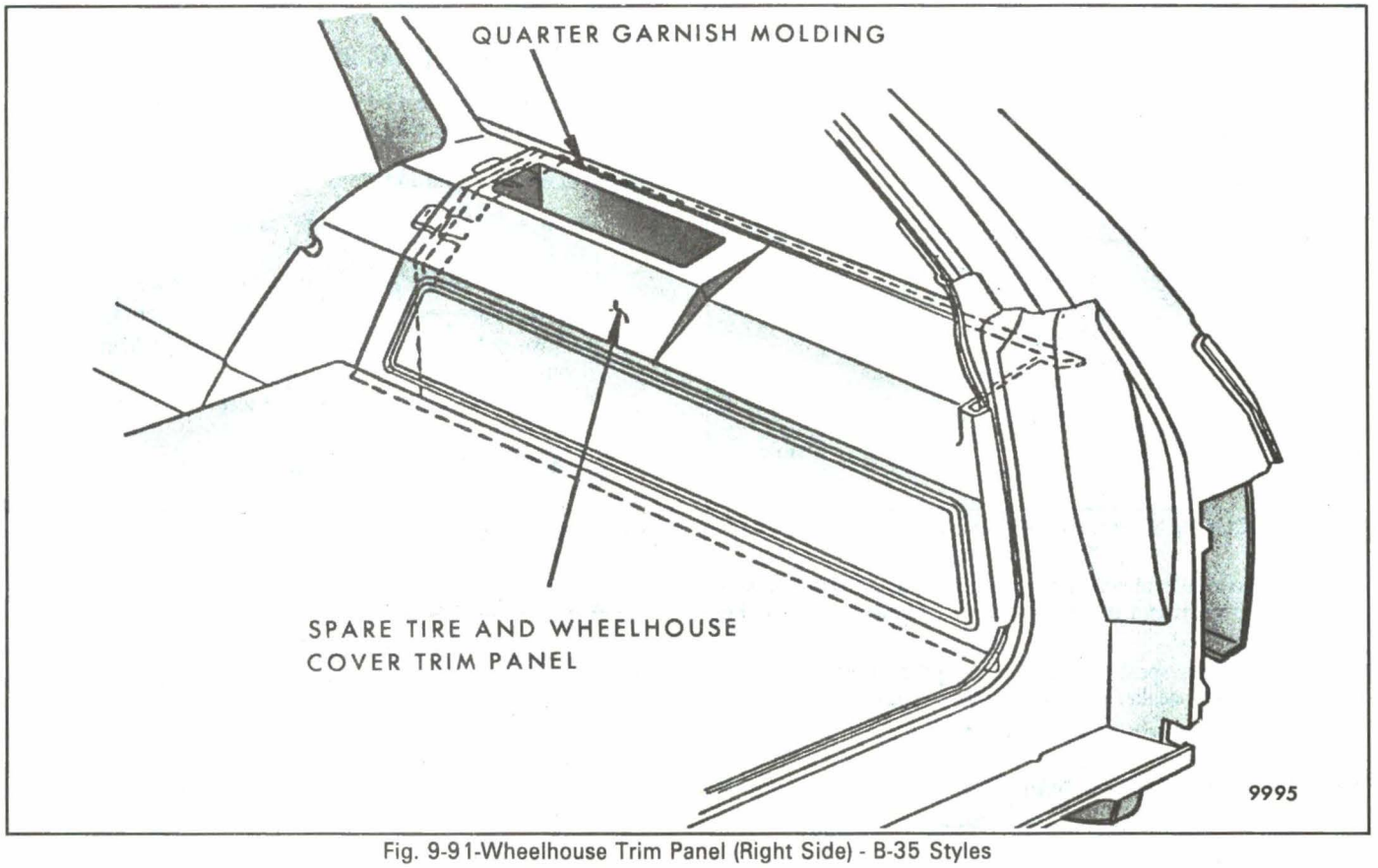
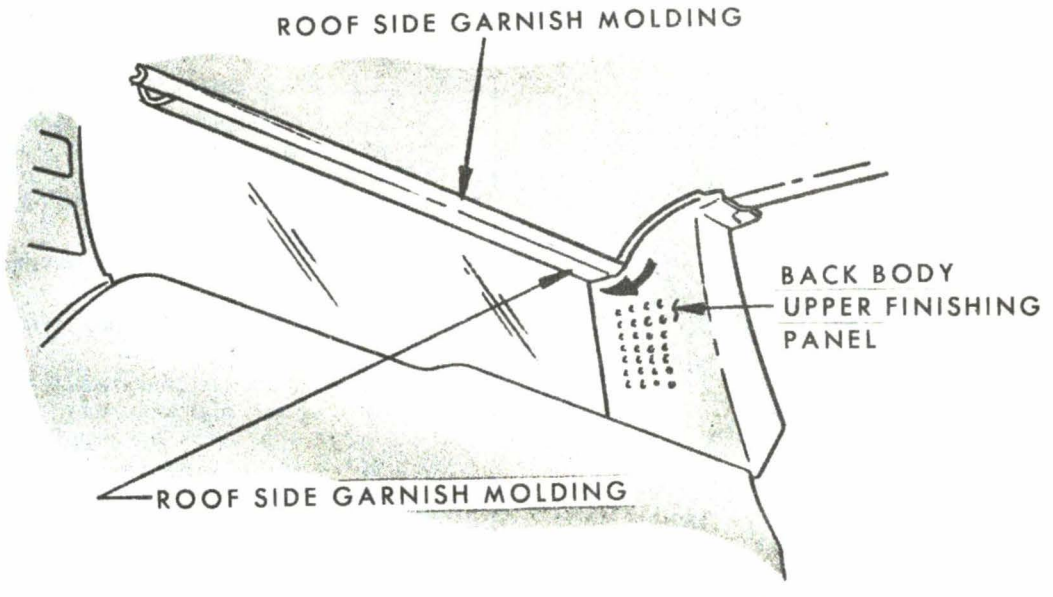
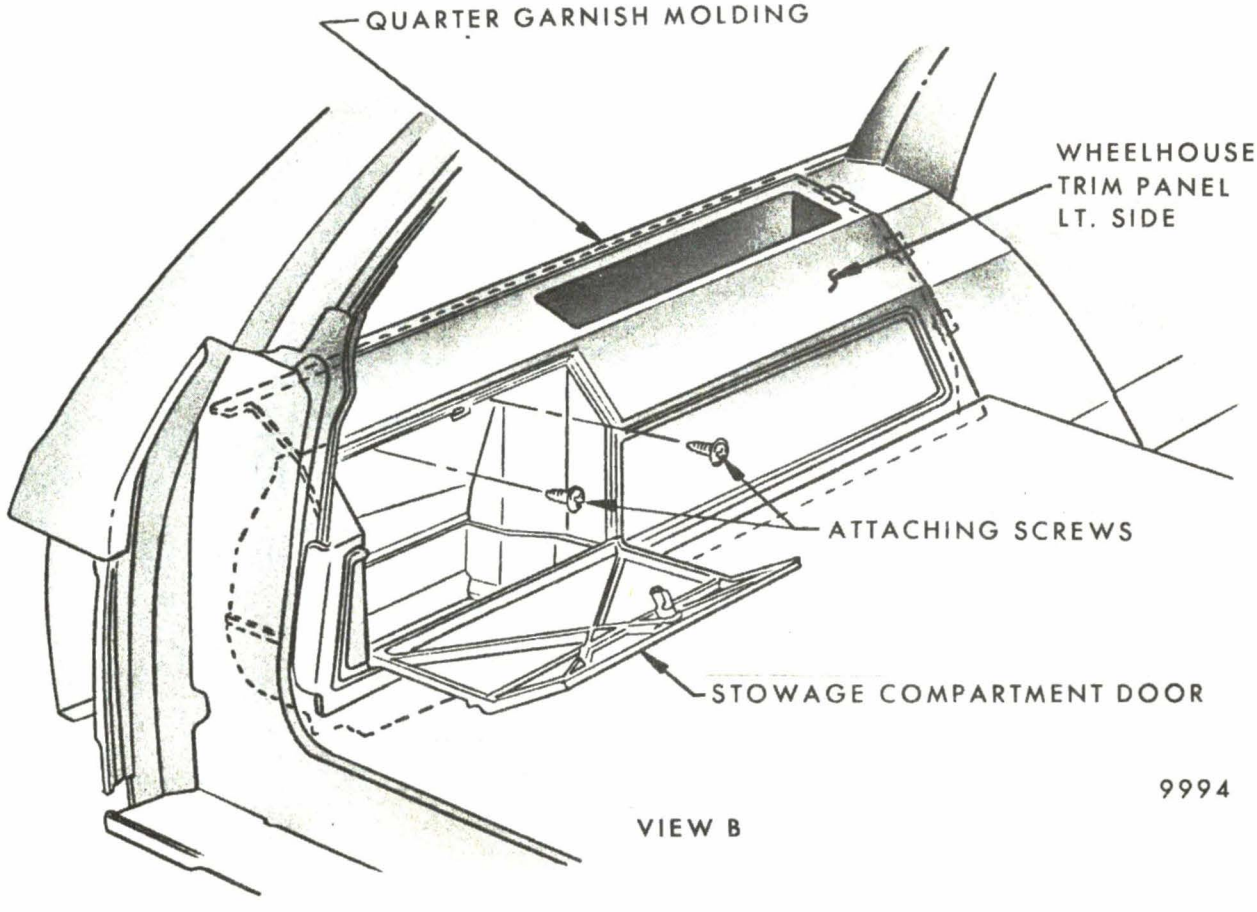


Fig. 9-91-Wheelhouse Trim Panel (Right Side) - B-35 Styles



VIEW A



VIEW B

Fig. 9-92-Wheelhouse Trim Panel (Left Side) - B-35 Styles

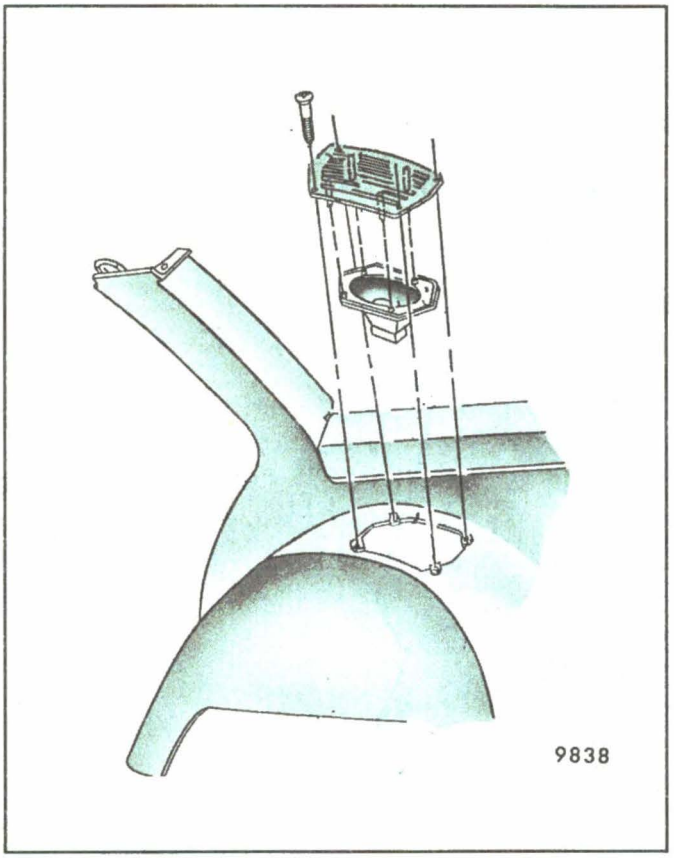


Fig. 9-93-Rear Speaker Installation, G-35 Styles

REAR SEAT TO BACK WINDOW PANEL TRIM ASSEMBLY

Removal and Installation

Refer to proper illustration, Figure 9-97 or 9-98.

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. Carefully bend out retaining tabs and pull front of trim panel forward enough to clear seat back hanger brackets, then lift trim panel upward and forward to disengage rear edge of foundation from under back window flange and remove trim panel.
5. Carefully break cement bond securing trim assembly at seat back panel (Fig. 9-97).
6. Remove trim assembly lifting up front edge and by pulling assembly forward.
7. 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 9-97. 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.

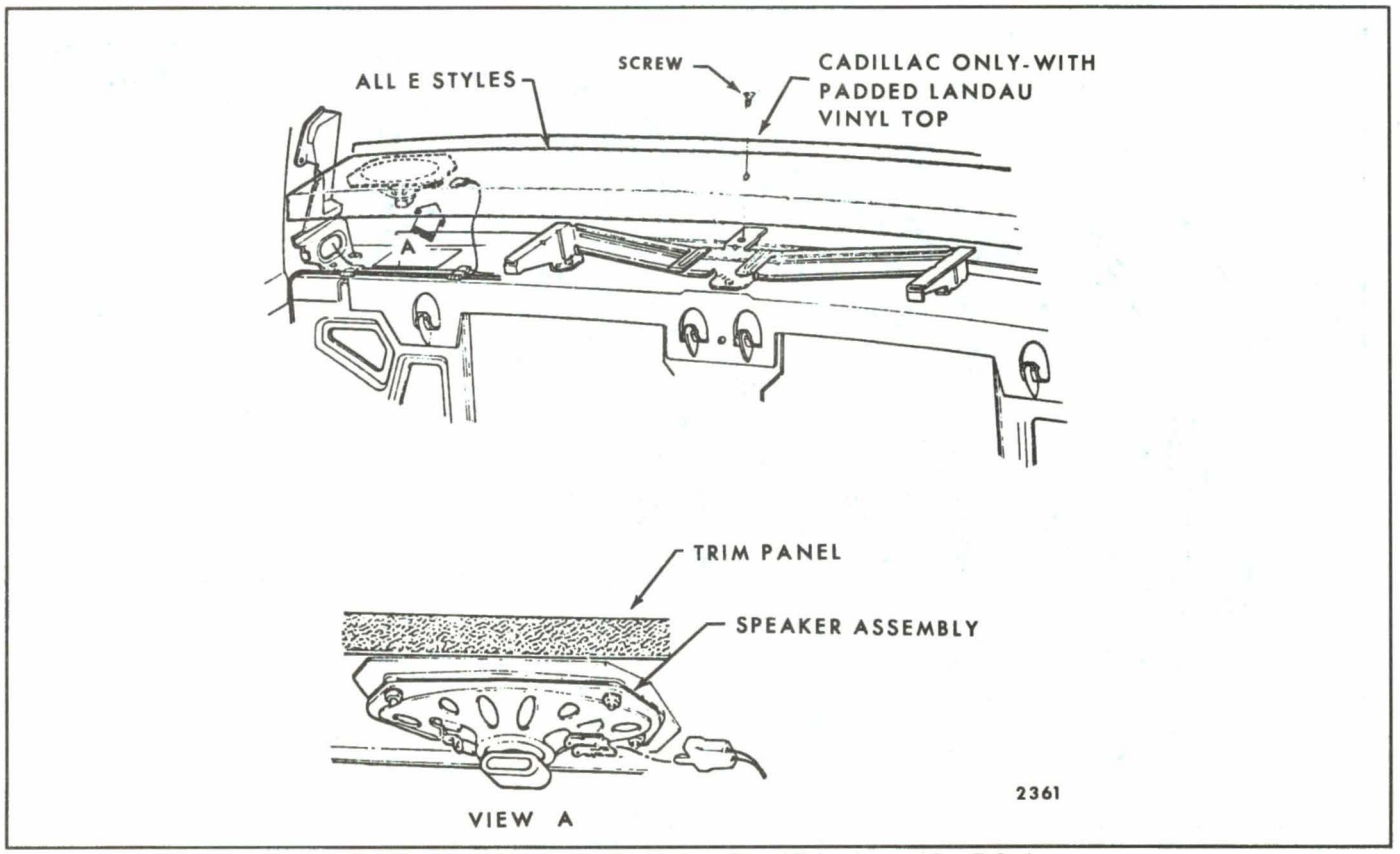


Fig. 9-94-Rear Seat to Back Window Panel Trim Assembly - E Styles

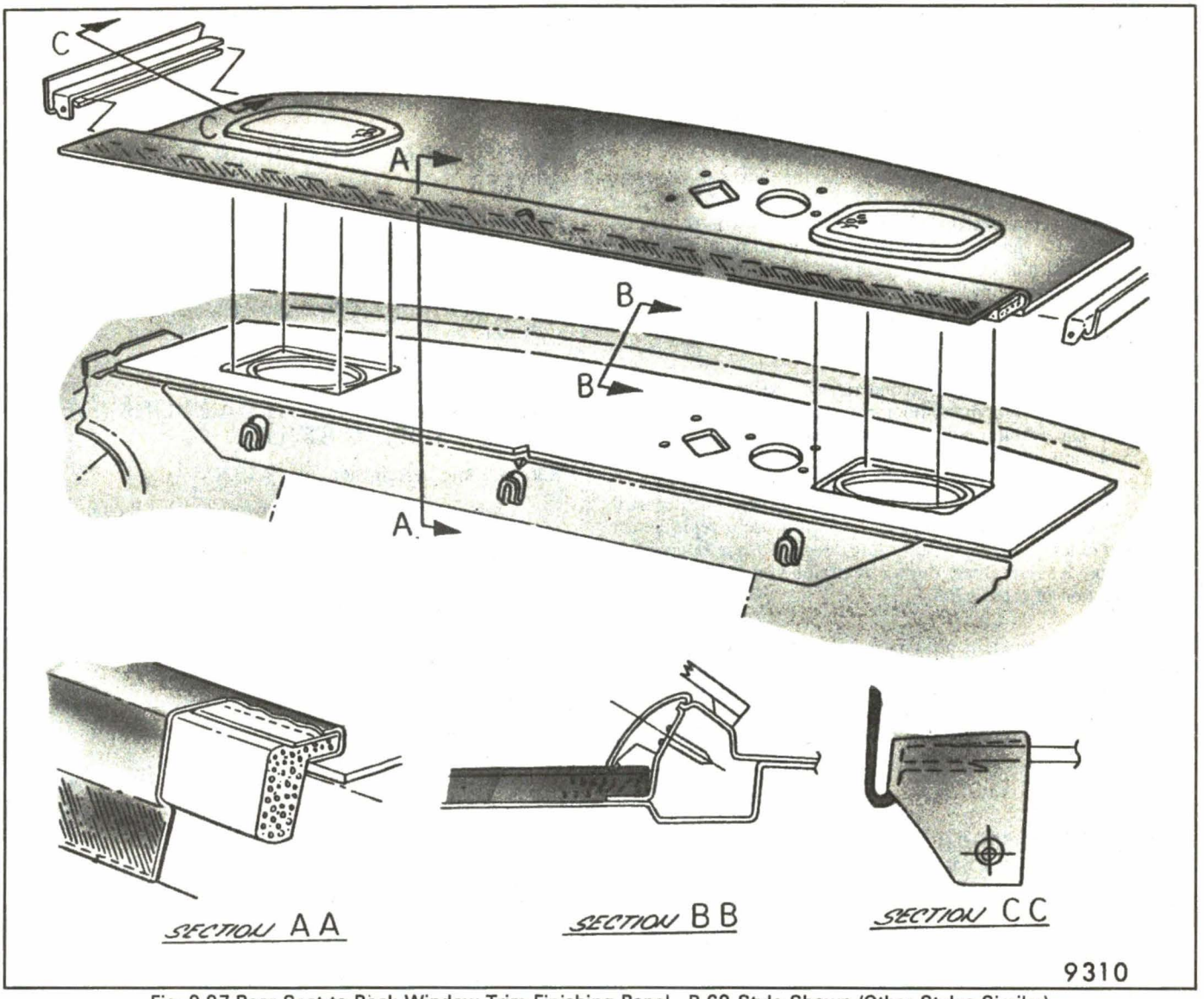


Fig. 9-97-Rear Seat to Back Window Trim Finishing Panel - B-69 Style Shown (Other Styles Similar)

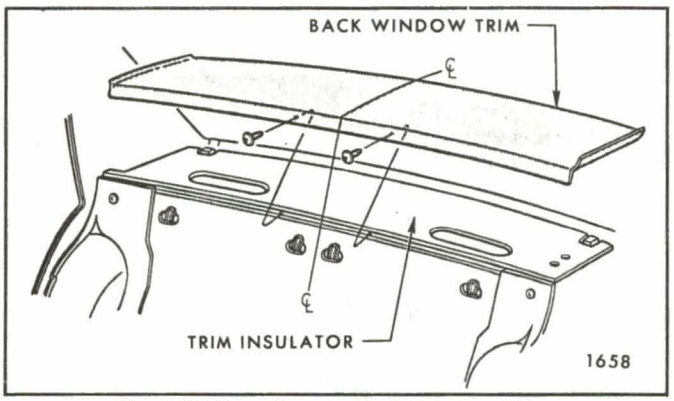


Fig. 9-98-Rear Seat to Back Window Trim

REAR SEAT TO BACK WINDOW TRIM PANEL ASSEMBLY - E STYLES

Removal and Installation

1. Remove rear seat cushion and back assemblies.
2. Remove screws securing trim to seat back panel. Grasp front of trim and pull upward. Scoreline at center of trim panel will allow panel to fold upward and disengage from under quarter upper trim panel and back window side garnish molding.
3. Lift rear seat to back window trim and disconnect wire harness connector at speaker assembly and remove trim panel.
4. Place trim panel upside down on a clean covered work bench and remove attaching nuts securing speaker to studs on trim panel and remove speakers.
5. To install, reverse removal procedure.

STATION WAGON FOLDING REAR SEATS AND LOAD FLOOR PANELS - B AND G STYLES

All station wagon second seat backs have seat back locks located as follows: on B styles at the upper right side of the seat back and on G styles at the center of the seat back.

On B style three-seat station wagons, the third seat back has a lock located at the right lower side of the third seat back. 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.

NOTICE: Station wagon second and third seat attaching parts such as seat support-to-floor pan and seat back linkage-to-filler panel 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.

1. Figures 9-99 and 9-100 are typical of all G style station wagons.
2. Figure 9-101 is typical of all B style station wagons.

LUGGAGE COMPARTMENT PANEL ASSEMBLY - G STYLES

Removal and Installation (Fig. 9-99)

1. Remove back body opening quarter trim as described in Rear Quarters, Section 6.
2. Remove two rail escutcheons and remove luggage compartment to wheelhouse attaching screws located under the rail escutcheons.
3. Remove two luggage compartment panel rear rail spacers by pulling upward and remove two luggage compartment panel attaching screws from each side.
4. Remove six screws along rear edge of the luggage compartment panel.
5. Lower the second seat back halfway to load floor position. Remove both link to second seat back panel attaching bolts. Fold second seat back forward.
6. Remove second seat back filler panel.
7. Remove two luggage compartment panel forward attaching screws and remove luggage compartment panel assembly from body.
8. To install, reverse removal procedure.

LUGGAGE COMPARTMENT PANEL SIDE RAIL - G STYLES

Removal and Installation (Fig. 9-100)

1. Remove luggage compartment panel assembly.
2. To remove front or rear panel side rail(s), remove luggage compartment panel front rail spacer for access to attaching screws.
3. Remove rail attaching screws. Remove rail(s) from luggage compartment panel assembly.
4. To install, reverse removal procedure.

SECOND SEAT BACK FILLER PANEL - G STYLES

Removal and Installation (Fig. 9-100)

1. Move folding second seat back halfway to load floor position.
2. Remove both link to second seat back panel attaching bolts.
3. Along rear edge of filler panel, remove screws which secure panel to floor pan. Remove filler panel from body.
4. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK LINK (RIGHT OR LEFT SIDE) - G STYLES

Removal and Installation (Fig. 9-102)

1. Move folding second seat back forward just enough to remove two link-to-seat back panel attaching screws.
2. Remove two link-to-seat back filler panel retainers and remove link from body.
3. To install, reverse removal procedure.

SECOND SEAT CUSHION - G STYLES

Removal and Installation

1. 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.
2. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK TRIM PANEL ASSEMBLY - G STYLES

Removal and Installation (Fig. 9-103)

1. Raise folding second seat back and remove second seat cushion.
2. Remove both link to second seat back panel attaching bolts.
3. Remove seat back to body right side attaching bolt.
4. Lift upward on right side seat back and disengage left side pivot pin, remove seat back from body and place on a clean, protected surface.
5. On underside of folding second seat back remove screws securing the back trim to the seat back frame.
6. Push seat trim upward to disengage retaining tabs and remove trim assembly.
7. To install, reverse removal procedure.

SPARE TIRE COVER PANEL HOLD-OPEN ROD - G STYLES

Removal and Installation (Fig. 9-104)

1. Open spare tire cover panel.
2. Disengage hold-open cover clip from hold-open rod.
3. Remove hold-open rod from hold-open guide.
4. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK LOCK HANDLE - G STYLES

Removal and Installation (Fig. 9-105)

1. Move folding second seat back halfway to load floor position.

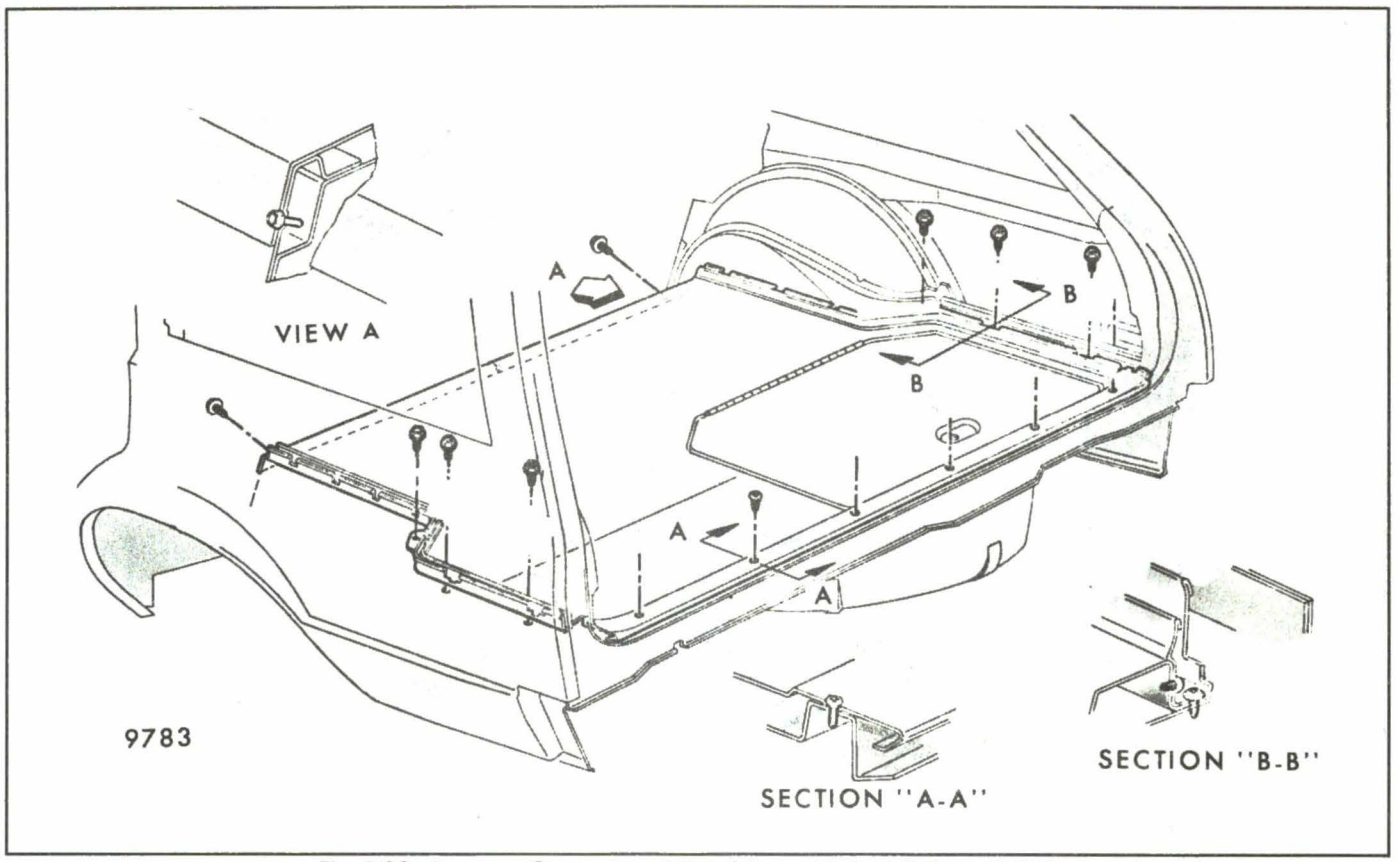


Fig. 9-99 - Luggage Compartment Panel Assembly Installation - G Styles

2. Remove handle attaching screws. Pull straight upward on handle to disengage handle rod from lock assembly.
3. To install reverse removal procedure.

SPARE TIRE COVER PANEL LOCK - G STYLES

Removal and Installation (Fig. 9-106)

1. Open spare tire cover panel.
2. On underside of spare tire cover panel, remove retainer and cover latch.
3. Remove lock cylinder case retainer, then remove lock cylinder from panel.
4. To install, reverse removal procedure.

SPARE TIRE COVER ASSEMBLY - G STYLES

Removal and Installation (Fig. 9-104)

1. Open spare tire cover assembly.
2. Remove hold-open rod by snapping rod out of retaining clip in luggage compartment panel.
3. Fold spare tire cover assembly forward.
4. Remove four nuts from underside of luggage compartment panel, forward of spare tire cover opening.
5. Remove spare tire cover assembly from body.
6. To install, reverse removal procedure. Torque each nut 2.4 to 3.6 N·m (2 to 3 ft-lb).

SPARE TIRE COVER SEALING STRIP - G STYLES

Removal and Installation (Fig. 9-104)

1. Open spare tire cover assembly, disengage hold-open rod from retaining clip in luggage compartment assembly. Fold cover assembly forward.
2. When installing sealing strip along outer side edge of opening, place sealing strip over both metal edges.

FOLDING SECOND SEAT BACK LOCK - G STYLES

The station wagon full width folding second seat has a seat back lock located at the center of the seat back. The folding second seat can be folded down by actuating the lock handle upward and pulling the seat back down.

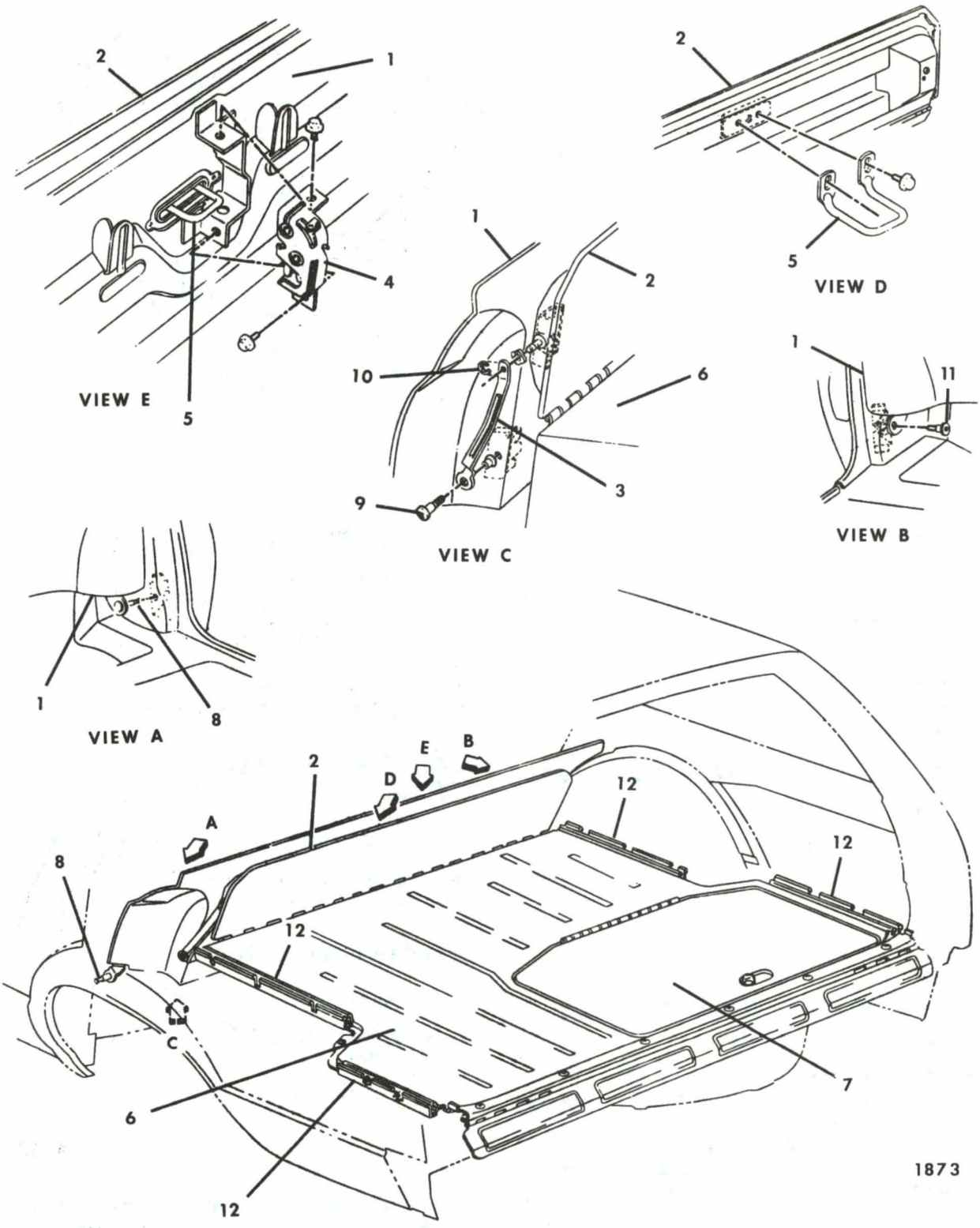
Removal and Installation (Fig. 9-107)

1. Remove folding second seat back.
2. Remove seat back lock handle attaching screws and remove lock handle.
3. Remove seat back lock attaching screws and remove lock from seat back.
4. To install seat back lock, reverse removal procedure.

LUGGAGE COMPARTMENT REAR FILLER PANEL - G STYLES

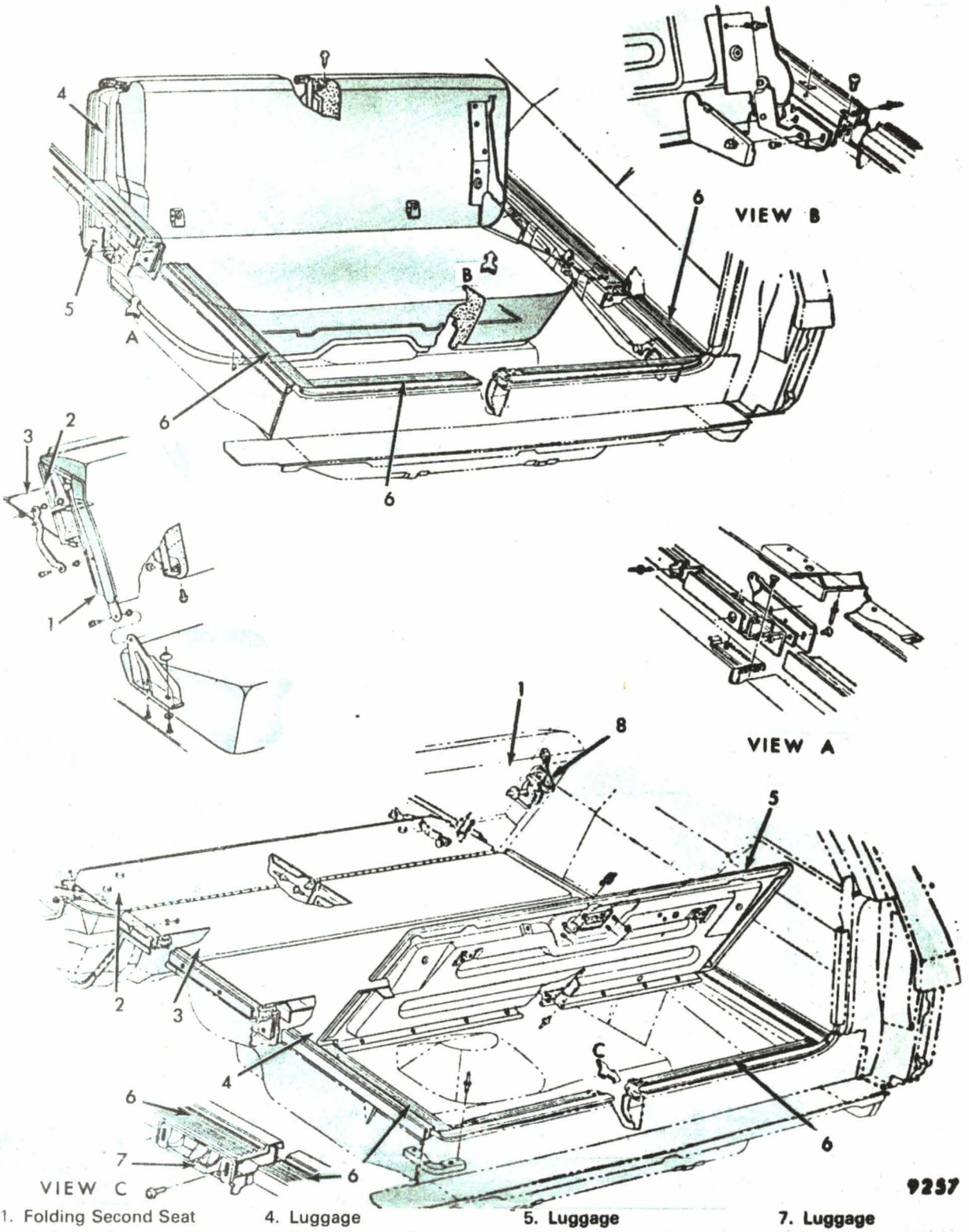
Removal and Installation (Fig. 9-108)

1. Remove luggage compartment panel.
2. Turn over luggage compartment panel and drill out eight 5/32" diameter blind rivets along the rear flange of the luggage compartment panel. Remove filler panel.
3. To install, reverse removal procedure.



1. Seat Back Panel
2. Seat Back Filler Panel
3. Seat Back Filler Panel Link
4. Seat Back Lock
5. Seat Back Lock Striker
6. Luggage Compartment Panel
7. Spare Tire Cover Panel
8. Seat Back Pivot Pin
9. Seat Back Shoulder Bolt
10. Link To Filler Panel Retainer
11. Back Panel To Body Bolt
12. Luggage Compartment Panel Side Rail

Fig. 9-100 - Folding Second Seat Back and Filler Panel - G 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

Fig. 9-101-Folding Seats and Load Floor Panels - B Styles

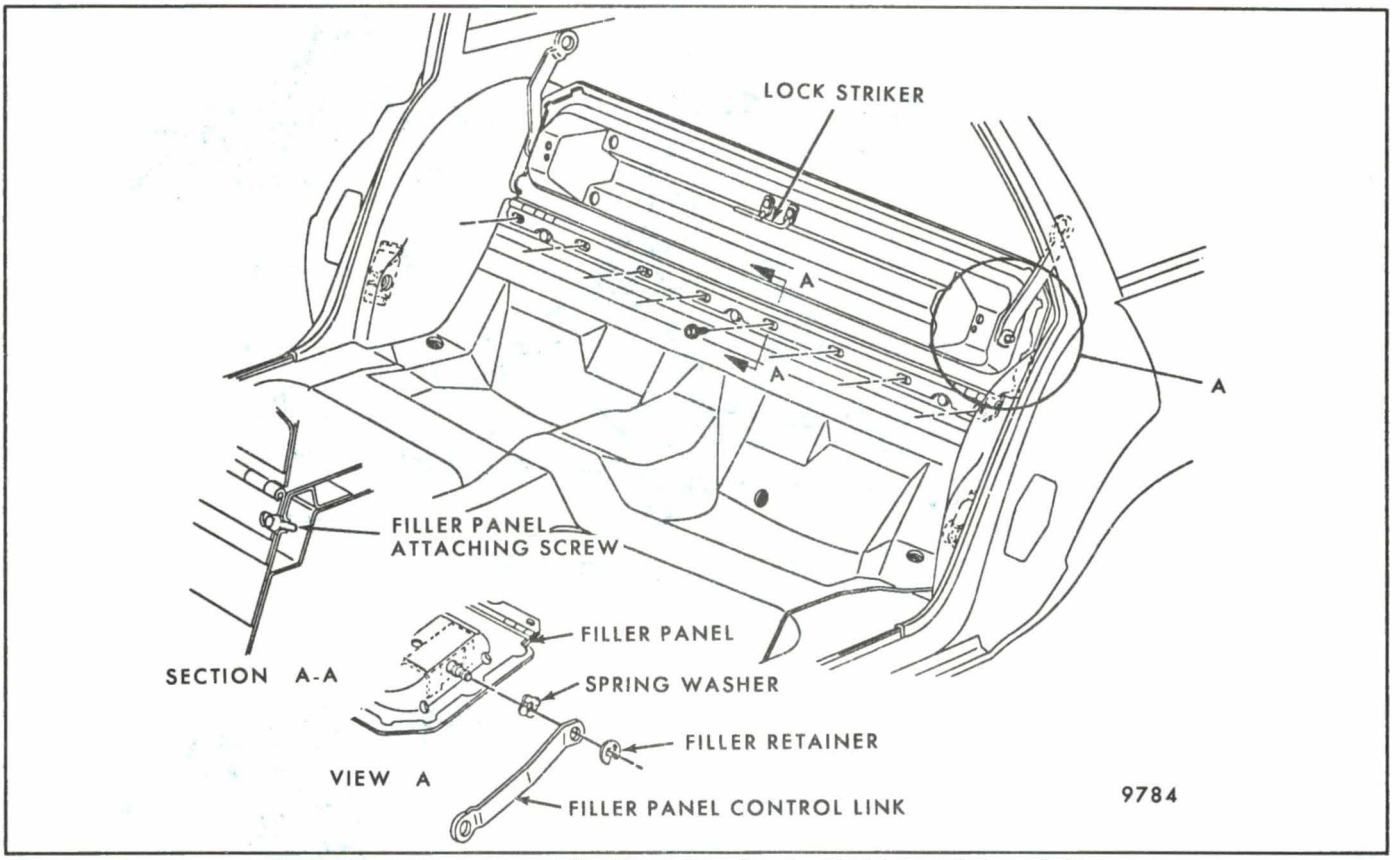


Fig. 9-102 - Folding Second Seat Back Filler Panel and Link Installation - G Styles

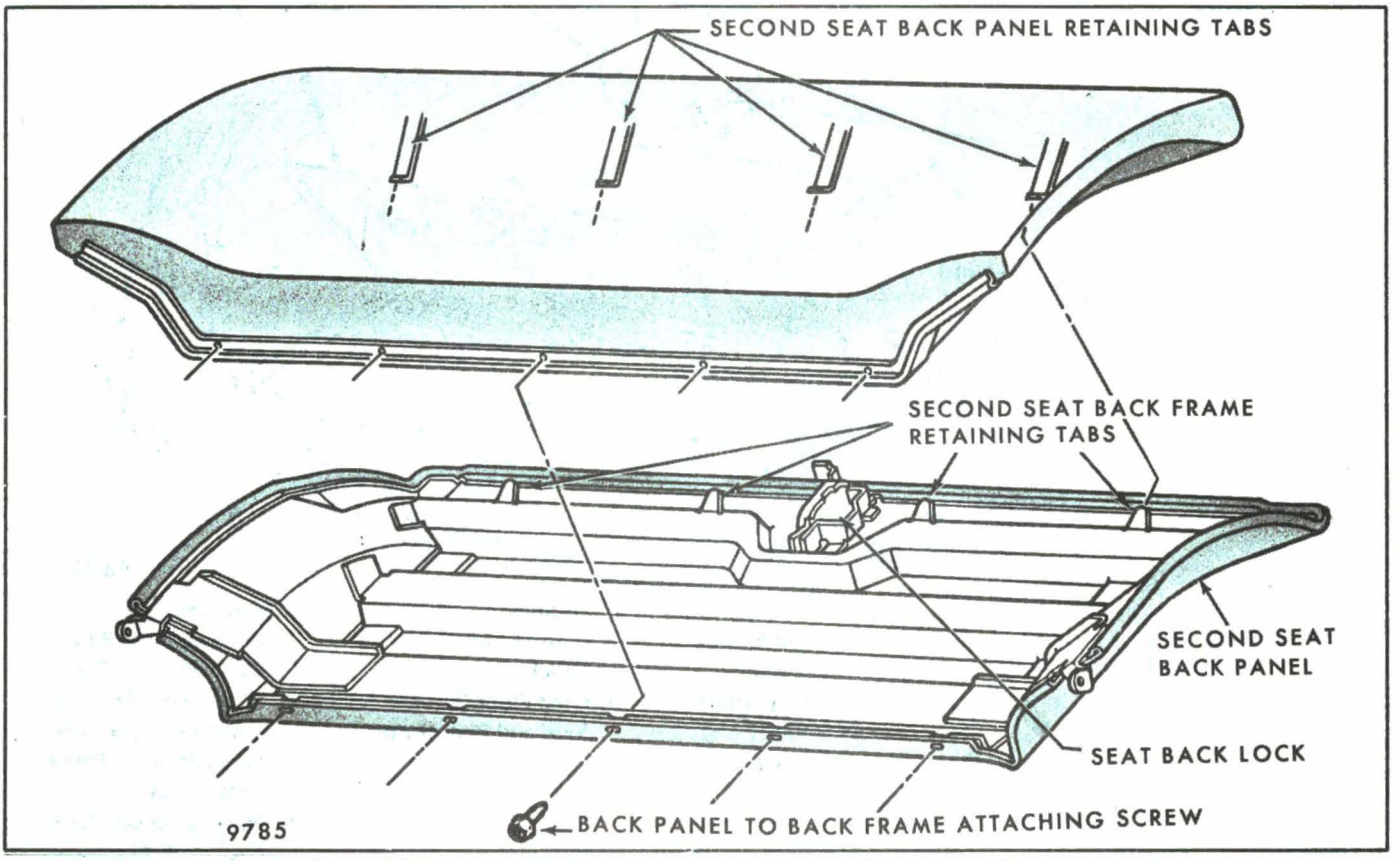


Fig. 9-103-Folding Second Seat Back Trim Assembly Installation - G Styles

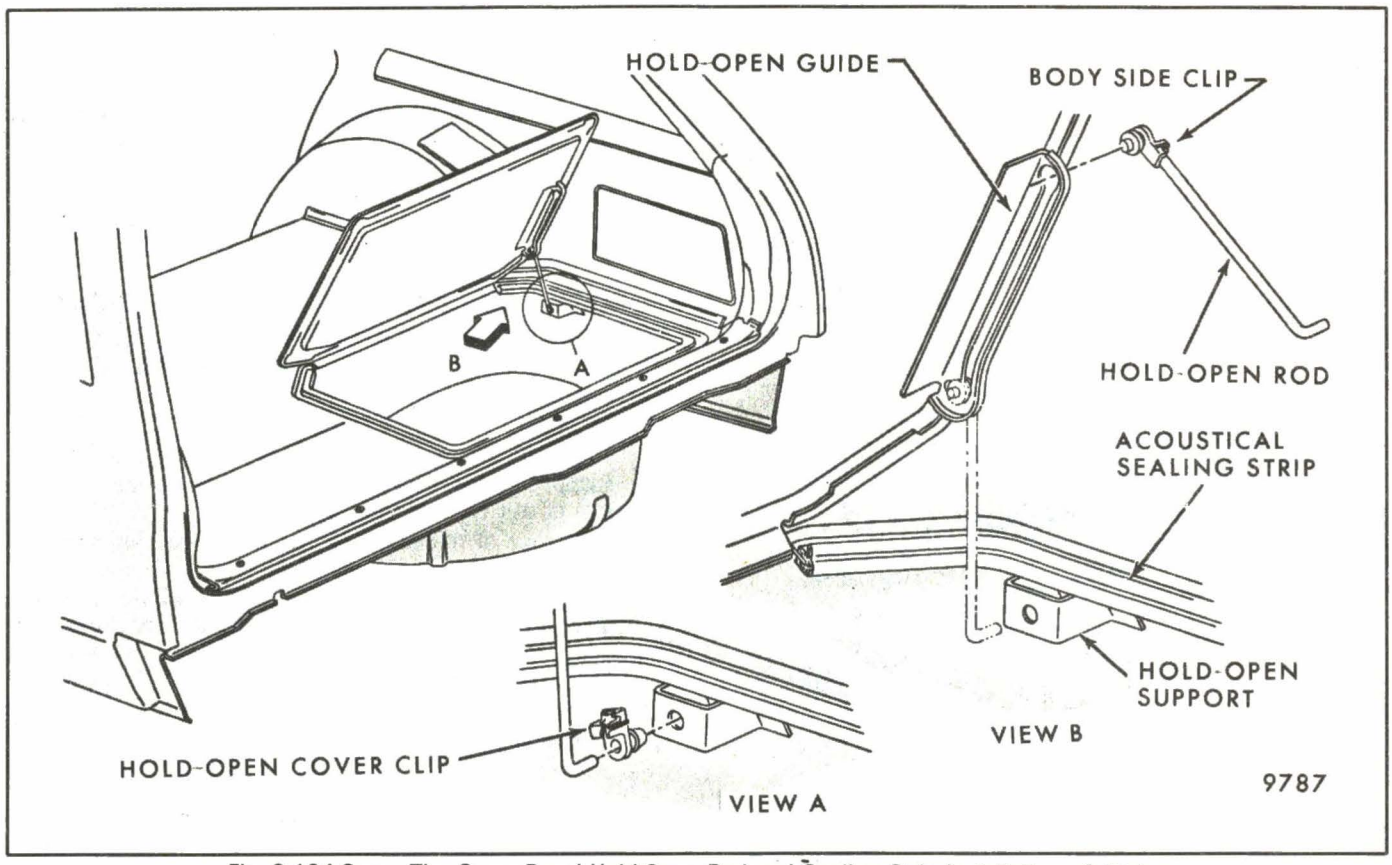


Fig. 9-104-Spare Tire Cover Panel Hold-Open Rod and Sealing Strip Installation - G Styles

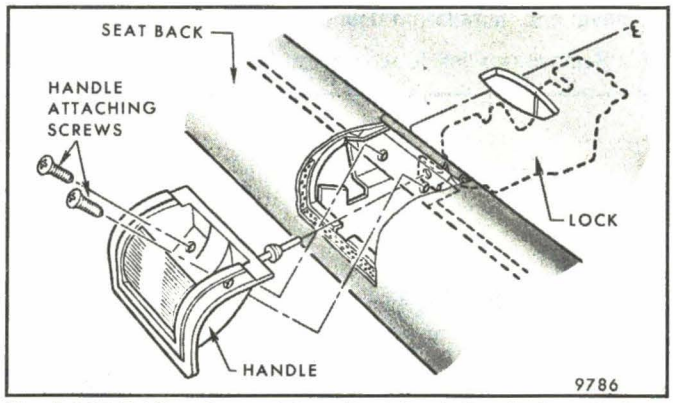


Fig. 9-105-Folding Second Seat Back Lock Handle Installation - G Styles

LOAD FLOOR BUMPER SIDE STRIP (RIGHT, LEFT SIDE OR REAR) B STYLES

Removal and Installation (Fig. 9-101)

1. 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.
2. To install filler panel, reverse removal procedure.

LUGGAGE COMPARTMENT PANEL(S) AND PANEL HINGE ASSEMBLY - TWO AND THREE-SEAT B STYLES

Removal and Installation (Fig. 9-110)

1. Raise luggage compartment panel enough to gain access to panel piano hinge attaching screws; then support panel in this position and remove panel to hinge attaching screws.
2. To install, reverse removal procedure.

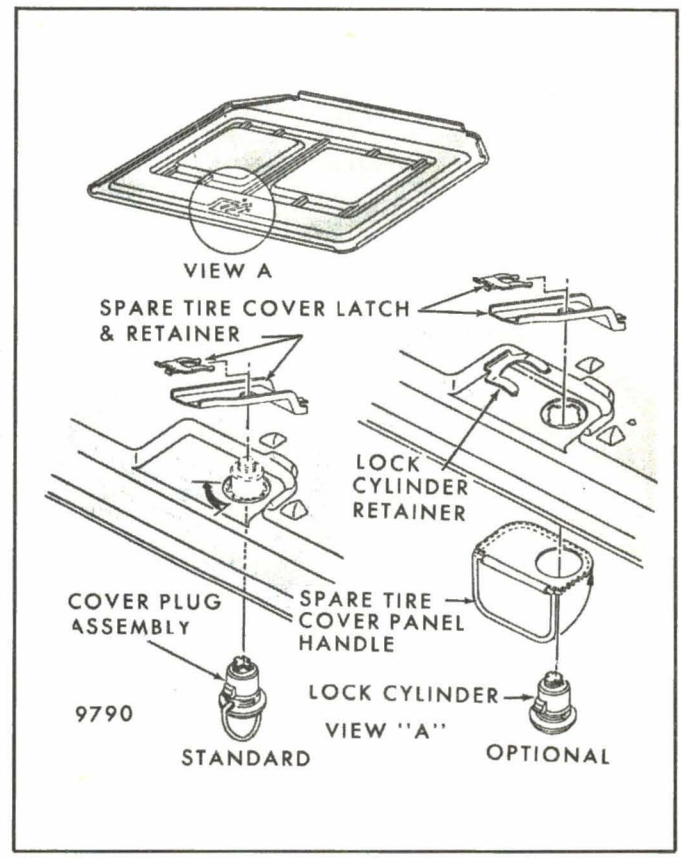


Fig. 9-106-Spare Tire Cover Panel Lock Installation - G Styles

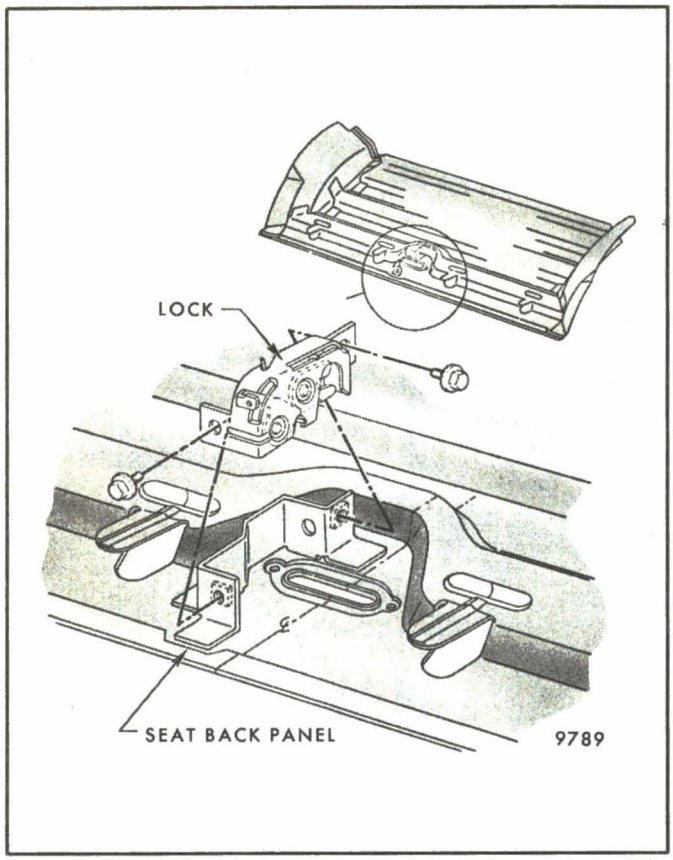


Fig. 9-107-Folding Second Seat Back Lock Installation - G Styles

SECOND SEAT CUSHION - B 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 (Fig. 9-109); 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 - B STYLE TWO AND THREE-SEAT STATION WAGONS

Removal and Installation (Fig. 9-109)

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.
3. At bottom of second seat back, remove five trim and foam pad wire mat attaching screws.
4. Raise seat back enough 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 STYLE STATION WAGONS

Removal and Installation (Fig. 9-109)

1. Remove two link to second seat back panel attaching bolts.

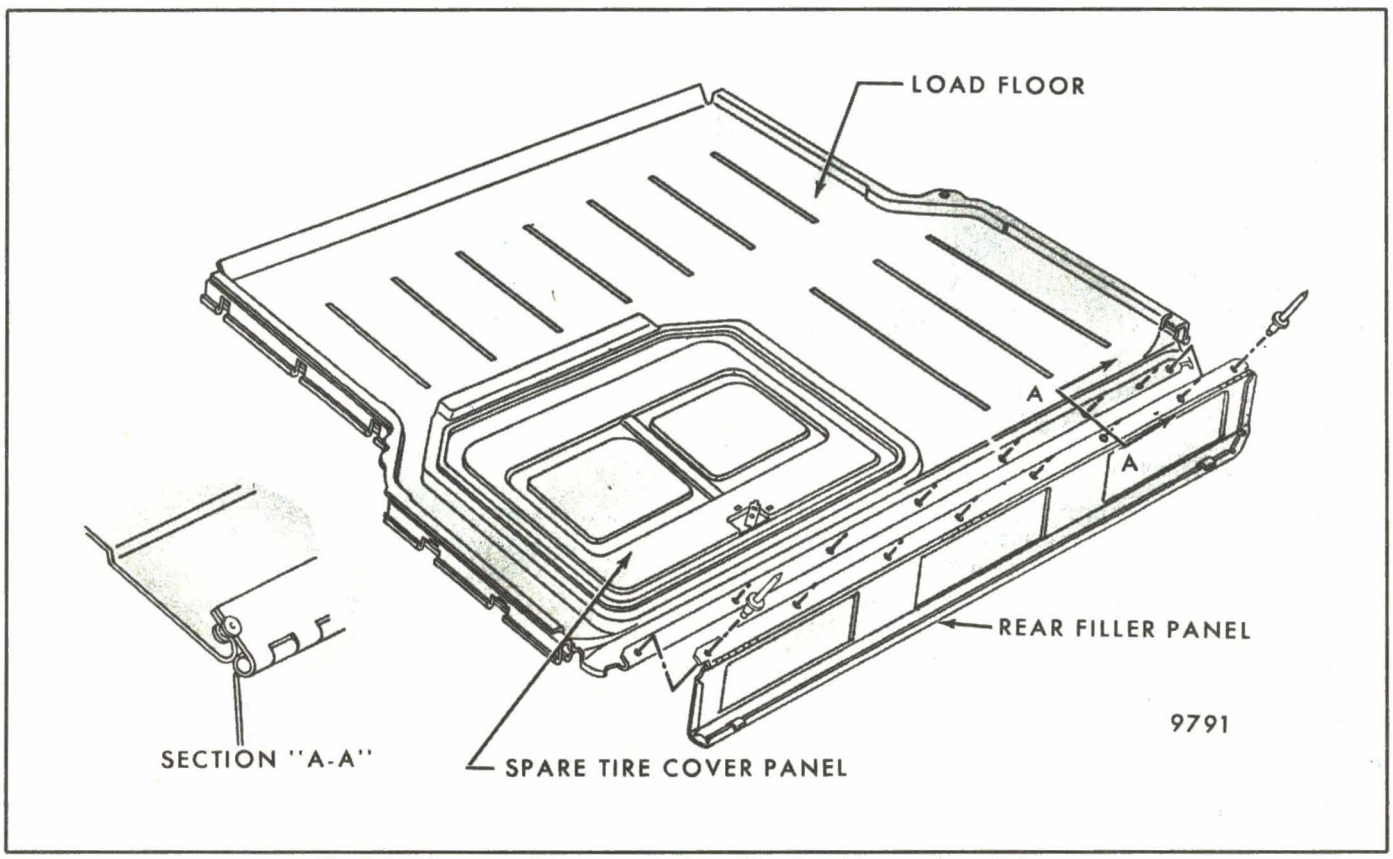


Fig. 9-108-Luggage Compartment Rear Filler Panel Installation - G Styles

2. Remove four floor support to back panel attaching bolts and remove back panel 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 - B STYLES

Removal and Installation (Figs. 9-109 and 9-112)

1. Place second seat back 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 TWO-SEAT STYLES

Removal and Installation (Figs. 9-109 and 9-112)

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 STYLE TWO-SEAT STATION WAGONS

Removal and Installation (Fig. 9-110)

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, drill out 5/32″ blind rivets. To install, reverse removal procedure.
4. To replace luggage compartment front panel, drill out 5/32″ diameter blind rivets to remove hinge and 3/16″ diameter peel rivets to remove pivot support. To install, reverse removal procedure.
5. To replace luggage compartment rear panel, drill out 5/32″ blind rivets along hinge and remove panel. To install, reverse removal procedure.

LUGGAGE COMPARTMENT LOCK CYLINDER - TWO-SEAT B STYLES

Removal and Installation (Fig. 9-110)

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.
3. To install, reverse removal procedure.

FOLDING SECOND SEAT BACK LOCK - B STYLES

The station wagon full width folding second seat has 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 (Fig. 9-111)

1. Place folding second seat in the load floor position.
2. Remove lock pillar trim as described in quarter trim section.
3. Remove two folding second seat back lock retaining screws and remove lock.
4. To install, reverse removal procedure and tighten second seat back lock bolts to 20 to 28 N·m (15 to 21 ft-lb).

FOLDING SECOND SEAT TO LOAD FLOOR RAIL CABLE ASSEMBLY - B STYLES

Removal and Installation (Fig. 9-112)

1. Unlock and lower second seat back until cable is loose.
2. Remove cable ring retainer and slide cable from link stud.
3. Unscrew cable assembly from clevis pin and remove. 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.
   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.

LUGGAGE COMPARTMENT AND FOLDING THIRD SEAT MODULE - B STYLE STATION WAGONS

Removal and Installation (Figs. 9-109 and 9-111)

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 in unlocked position by disengaging the 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. Place three-way tailgate in the gate position. Remove balance of attaching screws along side and rear rails and remove module.
8. To install, reverse removal procedure.

THIRD SEAT AND LUGGAGE COMPARTMENT SIDE OR REAR RAILS - B STYLE

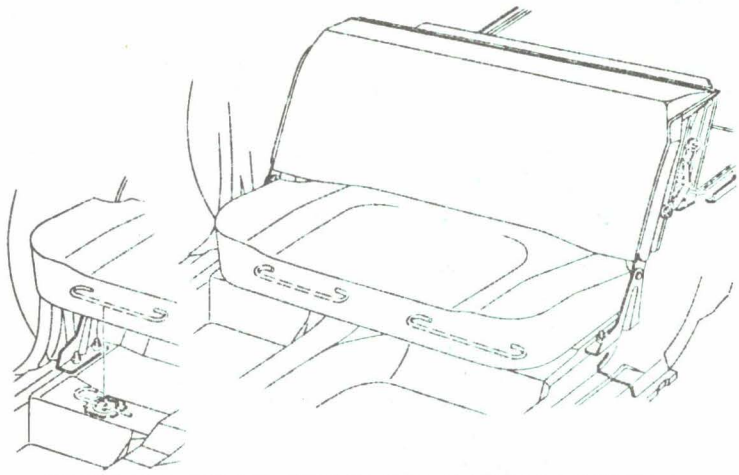
Removal and Installation (Fig. 9-111)

1. Remove module.
2. Drill out 5/32″ blind rivets and remove rail.
3. To install, reverse removal procedure.

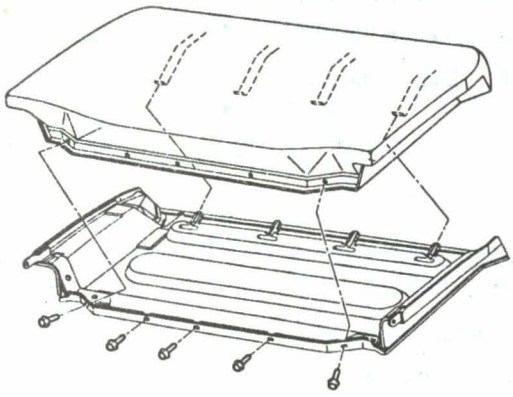
LUGGAGE COMPARTMENT AT KICK-UP PANEL - B STYLE THREE-SEAT STATION WAGONS

Removal and Installation (Fig. 9-111)

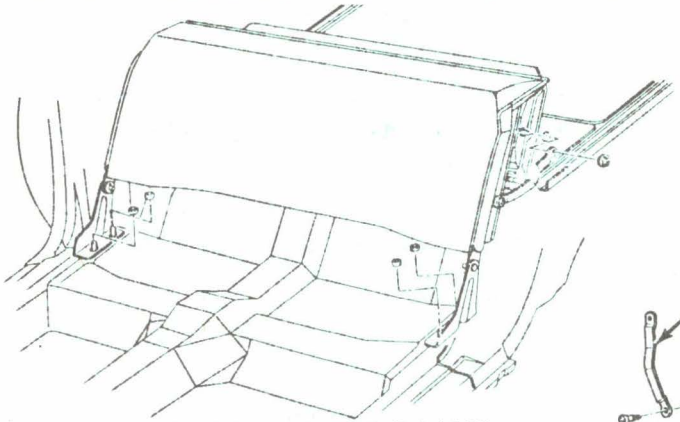
1. Remove two luggage compartment filler panel to second seat back link attaching bolts.
2. Remove module.
3. Drill out 5/32″ blind rivets from side module rails and remove assembly.
4. To install, reverse removal procedure.



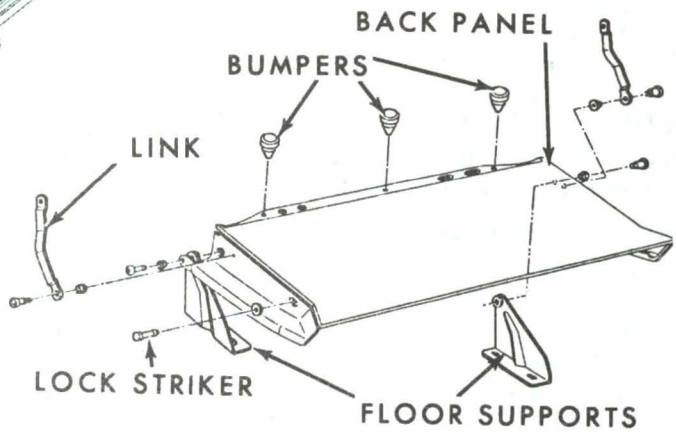
SECOND SEAT CUSHION INSTALLATION

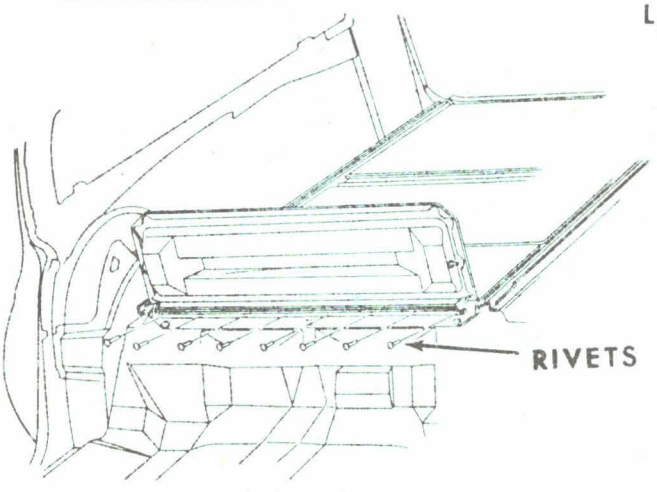


SECOND SEAT BACK TRIM ASSEMBLY INSTALLATION



SECOND SEAT BACK PANEL INSTALLATION





FILLER PANEL INSTALLATION

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Fig. 9-109 - Folding Second Seat Installation - B Styles

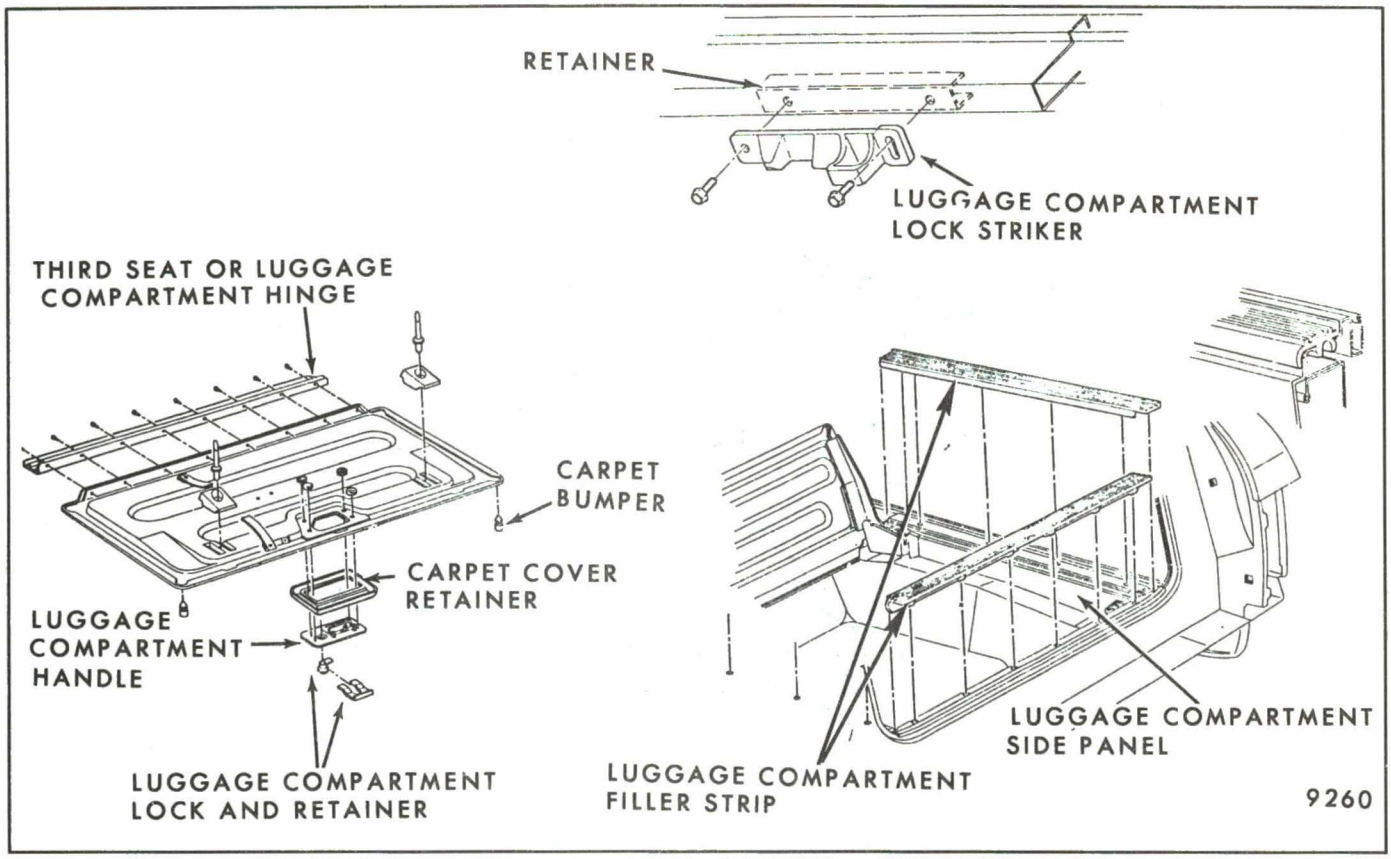


Fig. 9-110 - Luggage Compartment and Lock Installation - B Station Wagon Styles

FOLDING THIRD SEAT BACK PANEL, LOCK, SUPPORT, TORQUE ROD, HINGE OR LUGGAGE COMPARTMENT REAR PANEL - B STYLE

The rearward facing third seat has 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 (Fig. 9-113), the third seat back can be lowered into the load floor position.

Removal and Installation (Figs. 9-110 and 9-113)

1. Remove rubber load floor bumper side strips and plastic trim panels (both sides) using removal tool J-24595 or BT-7323 or equivalent.
2. Position seat back 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 at module side rails.
4. Disengage release cable from keyhole slot in right side lock by pulling downward on spring loaded lock cable retainer to detach cable from lock.
5. Remove panel by pulling panel to the right to disengage torque rod from left side body attachment. To install, position seat back in most forward and upright position to allow torque rod to seat in depression of floor pan. Then complete installation by reversing 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, disengage hinge cover and drill out all 5/32" blind rivets and remove hinge assembly. To install, reverse removal procedure.
8. To replace folding third seat back panel, drill out all 5/32" blind rivets securing hinge, lock, side pivot support and torque rod individual assemblies. To install, reverse removal procedure.
9. To replace luggage compartment rear panel, unlock, fold forward, drill out 5/32" blind rivets along hinge and remove panel. To install, reverse removal procedure.

THIRD SEAT CUSHION ASSEMBLY - B STYLE STATION WAGONS

Removal and Installation (Fig. 9-113)

1. Push seat cushion frame offsets located at the front of cushion forward and lift cushion upward.
2. Push forward on cushion 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 STYLE STATION WAGONS

Removal and Installation (Fig. 9-113)

1. Remove folding third seat back panel.
2. Remove folding third seat cushion trim.
3. Drill out five 3/16" diameter peel rivets and remove lock.
4. To install lock, reverse removal procedure.

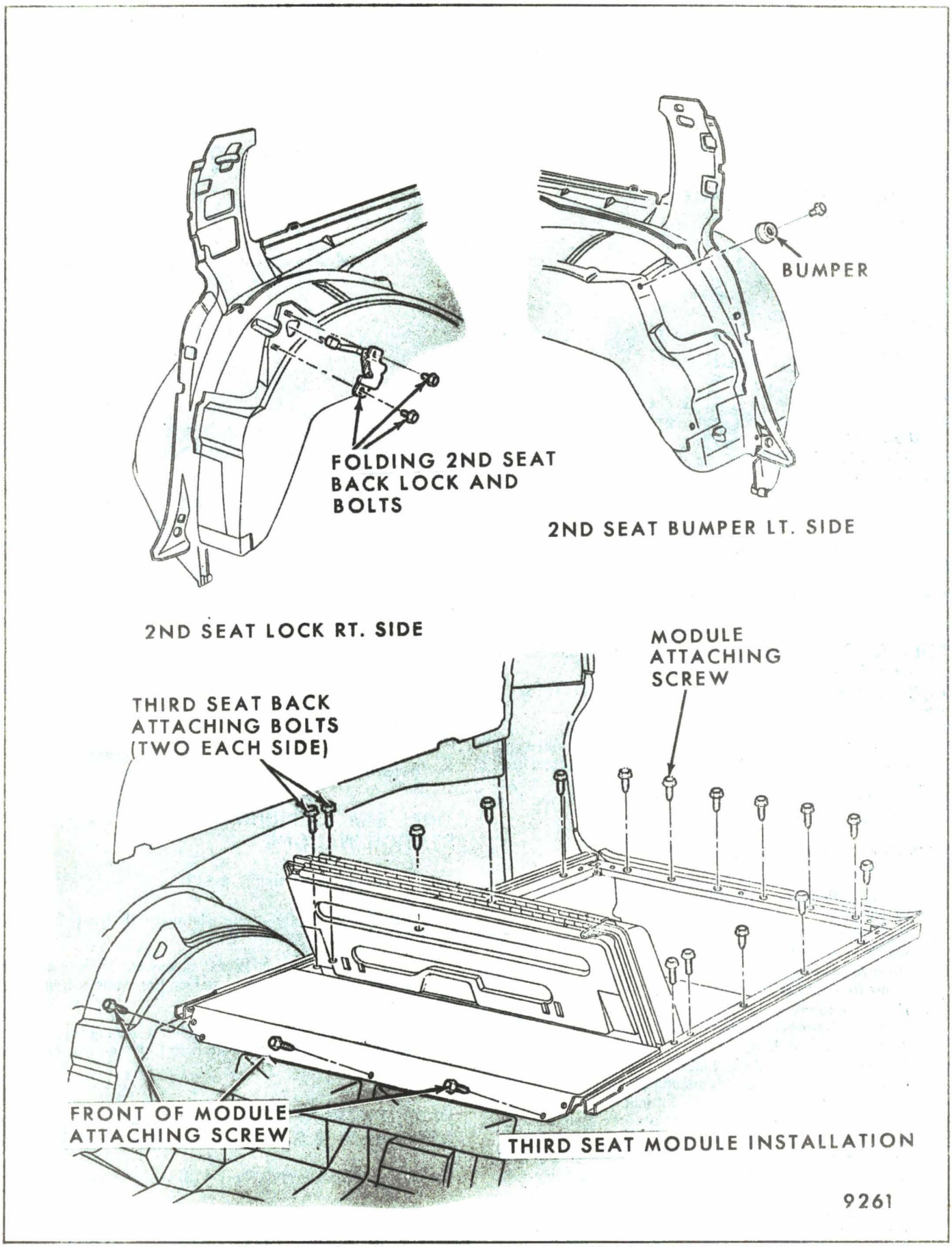


Fig. 9-111 - **Second Seat Back Lock, Bumper** and Third Seat Module Installation - B Styles

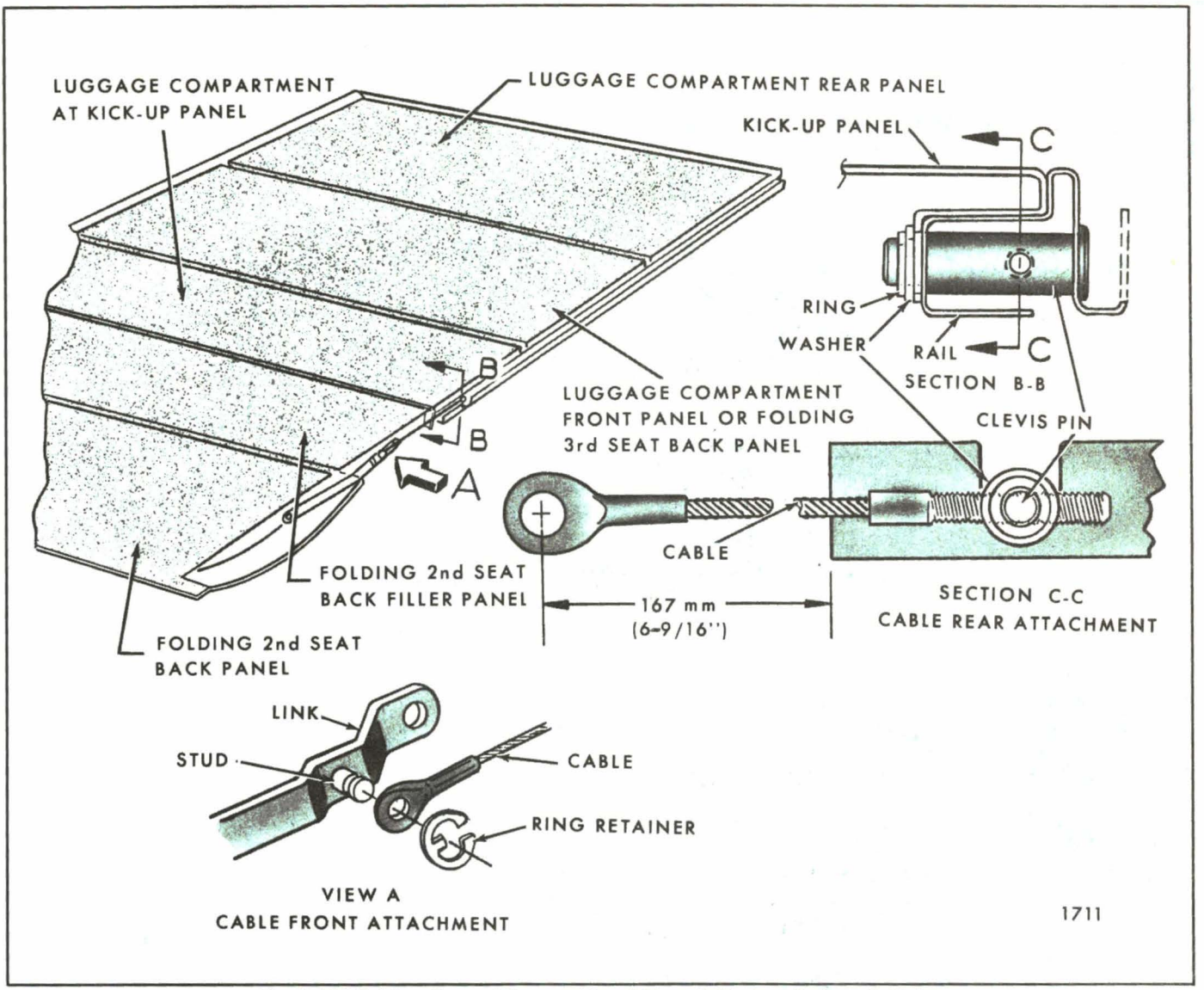


Fig. 9-112-Folding Second Seat and Load Floor Cable Installation - B Styles

FOLDING THIRD SEAT BACK LOCK REMOTE CONTROL HANDLE ASSEMBLY - B STYLE STATION WAGONS

Removal and Installation (Fig. 9-113)

1. Remove right side load floor bumper side strip.
2. Remove right side luggage compartment side trim panel using removal tool J-24595 or BT-7323 or equivalent.
3. Remove handle attaching screw.
4. Remove cable from handle.
5. To install, reverse removal procedure.

FOLDING THIRD SEAT BACK LOCK REMOTE CONTROL CABLE ASSEMBLY - B STYLE STATION WAGONS

Removal and Installation (Fig. 9-113)

1. Remove right side load floor bumper side strip.
2. Remove right side luggage compartment side trim panel using removal tool J-24595 or BT-7323 or equivalent.
3. Carefully remove cable from handle by pulling downward on spring loaded lock cable retainer and slide cable from retainer.
4. To remove snap-on fastener from latch, place a screwdriver between fastener and latch and twist.
5. Remove ball fastener from lock through keyhole slot with aid of screwdriver.
6. To install, reverse removal procedure.

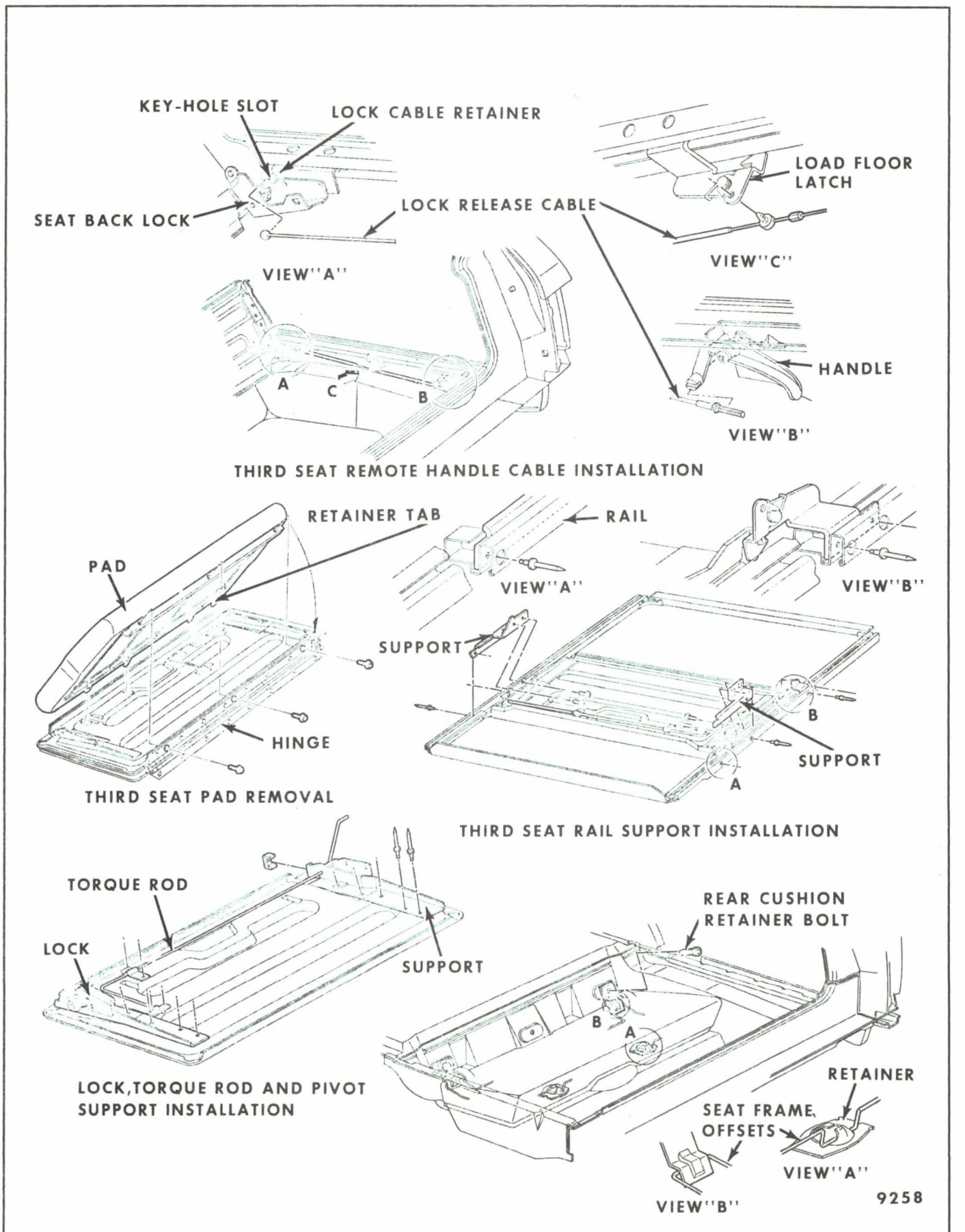


Fig. 9-113-Third Seat Cushion and Back Installation - B Style Station Wagons

SECTION 10

ELECTRICAL

CONTENTS

General Checking and Body Wiring Repair 10-3
Power-Operated Rearview Mirror 10-5
Power Windows 10-15
Power Vents - G Styles 10-27
Power Tailgate Window
B Station Wagon Styles 10-33
G Station Wagon Styles 10-42
Rear Compartment Lid Release System 10-44
Rear Compartment Pull Down Unit 10-44
Power Seats
Two-Way Seat 10-48
Six-Way Seat 10-48
Power Reclining Seat Back 10-55
Memory Seat 10-55
Power Sun Roof 10-69
Diagnosis 10-69
Exterior and Interior Lamps 10-72
Power Door Locks
Diagnostic Procedures 10-84
Automatic Door Locking System
Cadillac Styles 10-84
Buick and Oldsmobile Styles 10-86
Electric Fuel Filler Door Lock 10-107
Electric Back Window Grid Defogger 10-117
Radio Speakers 10-119
Wiring Identification Charts 10-121

Body electrical equipment and circuit diagrams for individual electrical systems are covered in this section for all styles. Refer to the chassis service manual for complete chassis-body wiring diagrams.

Metric size wire harnesses are used on most styles. If it becomes necessary to replace a particular wire within a harness, the proper or equivalent size (gage to metric) should be used. Refer to the gage-to-metric conversion chart shown in Figure 10-1. Wire identification charts which apply to all wiring diagrams, unless otherwise specified, are located near the end of this section. Figure 10-7 illustrates how to identify the circuit number, color and wire size.

Circuit wiring for most power systems is protected by a fuse panel mounted plug-in type 30 amp circuit breaker.

An accessory junction block located on the reinforcement at the left shroud (left and right side on B, C, D, K and G styles equipped with certain options) is used to supply voltage to power equipment circuits (Figs. 10-5 and 10-6). Voltage source to these junction blocks is supplied from the fuse block.

Voltage for systems on some G styles without the junction block is supplied direct from the fuse block to a main body connector located at the left shroud reinforcement.

The front body harness has a harmonica type connector at the front (Fig. 10-3) and a block type connector at the rear (Fig. 10-2). 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 ease disengagement of the connectors, use tool J-24388 or equivalent (Fig. 10-8).

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. 10-4).

LOW PRIMARY CABLE	
METRIC GAGE	CUSTOMARY GAGE
0.5 mm^2	20
0.8	18
1.0	16
2.0	14
3.0	12
5.0	10
8.0	8
13.0	6
19.0	4
	2475

Fig. 10-1-Wire Gage to Metric Conversion Chart

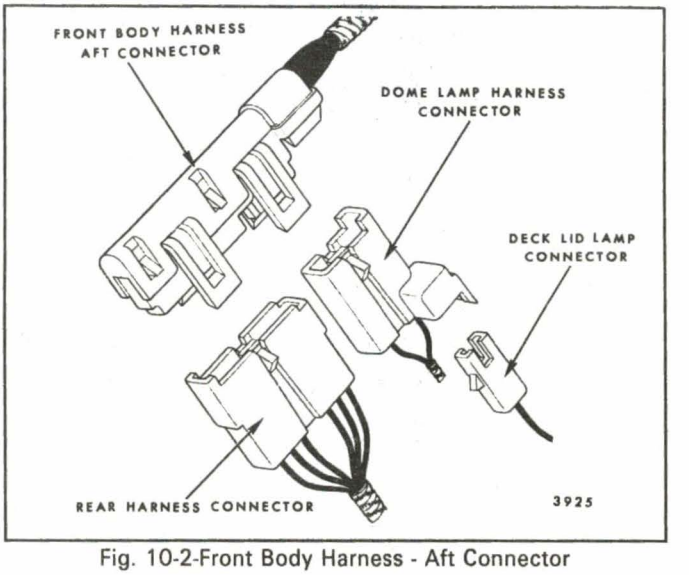


Fig. 10-2-Front Body Harness - Aft Connector

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. 10-9).

When a new jamb switch is installed and the door is closed the first time, the plunger is forced into the sleeve and automatically adjusts the jamb switch for that particular door. If a jamb switch fails, it should not be readjusted by hand. A new jamb switch should be installed.

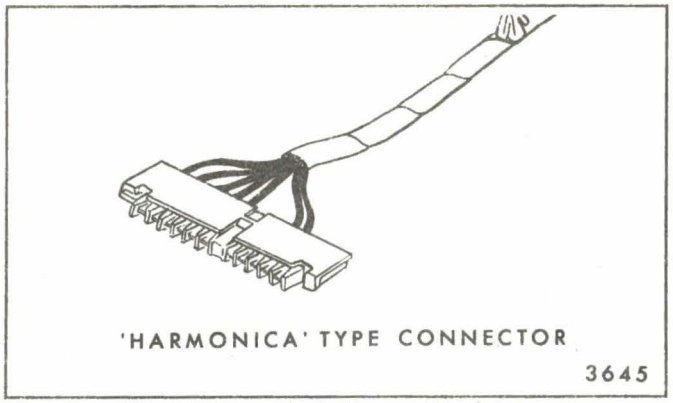


Fig. 10-3-Front Body Harness Connector

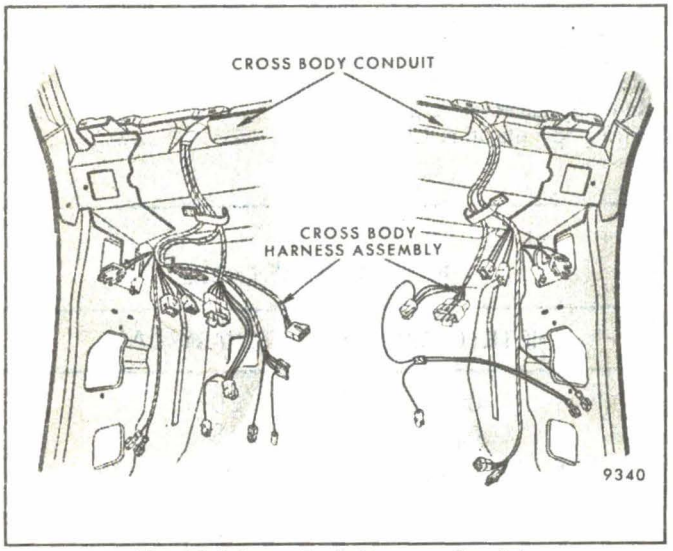


Fig. 10-4-Cross Body Harness Conduit

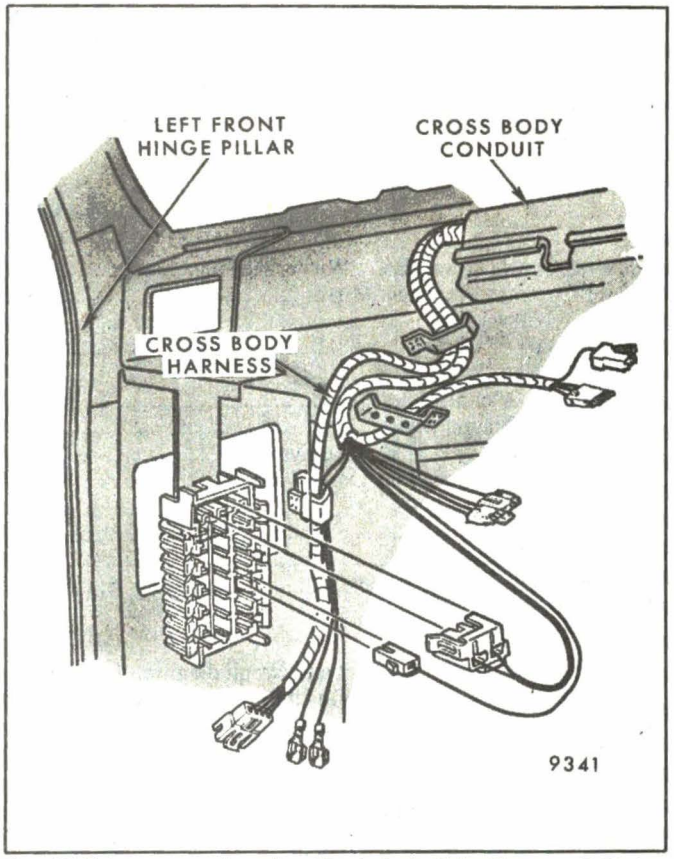


Fig. 10-5-Accessory Junction Block, Left Side Shown - B Styles

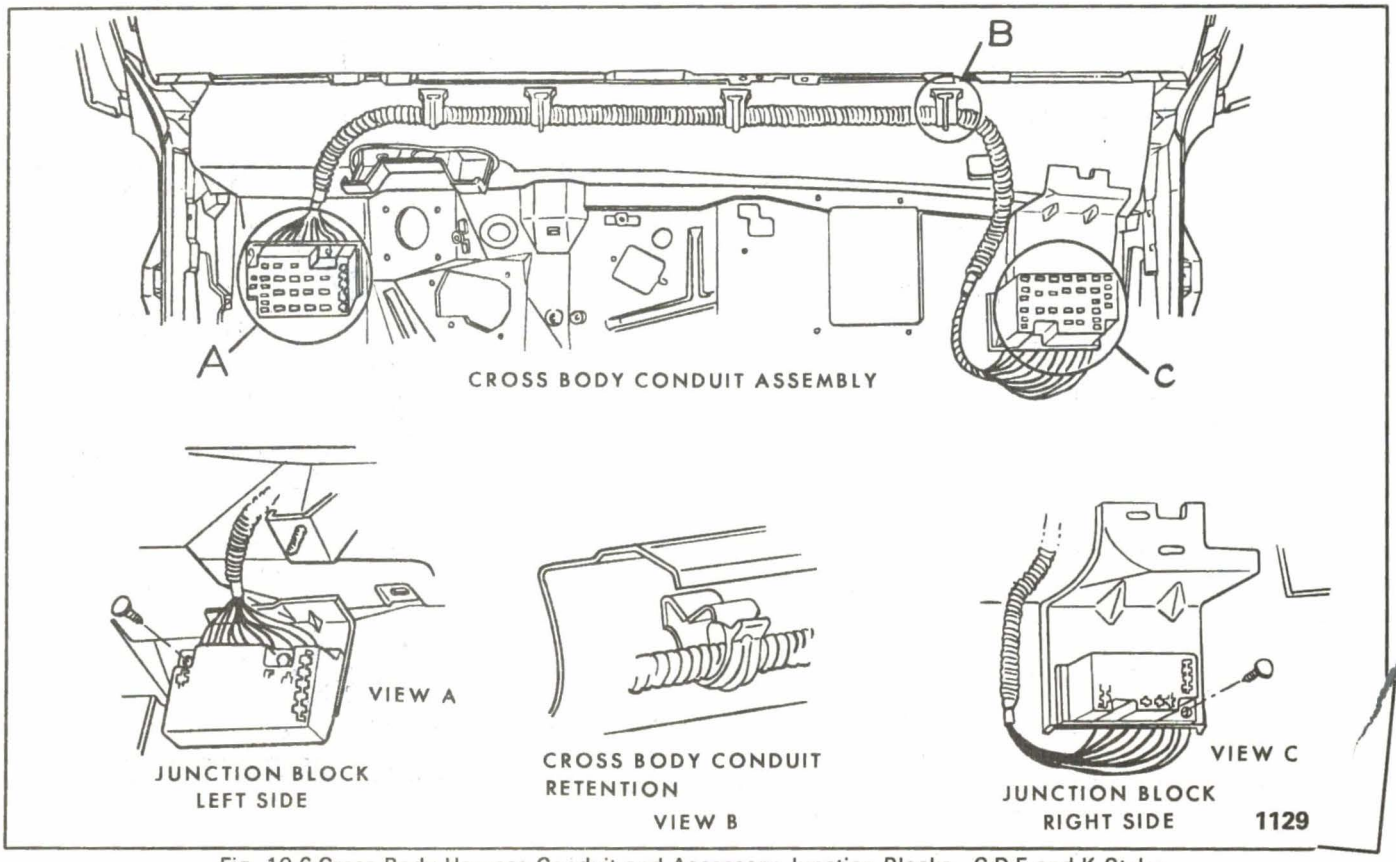


Fig. 10-6-Cross Body Harness Conduit and Accessory Junction Blocks - C,D,E and K Styles

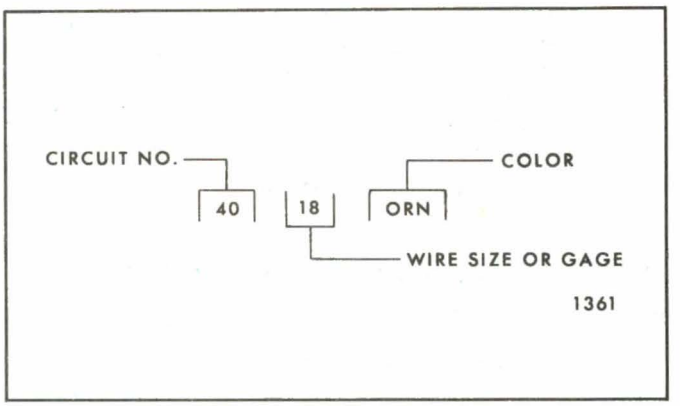


Fig. 10-7 - Circuit (Wire) Identification

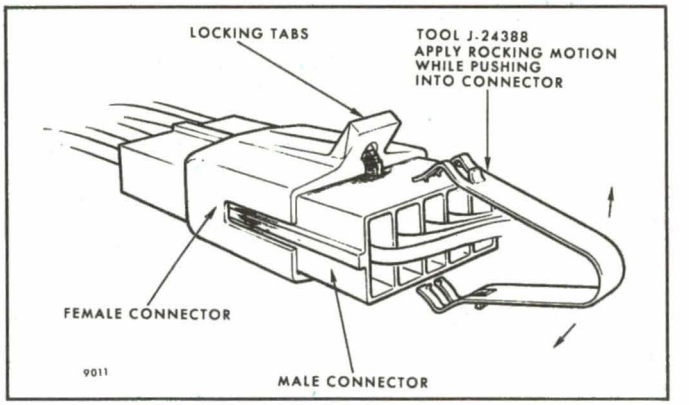


Fig. 10-8-Positive Locking Connectors

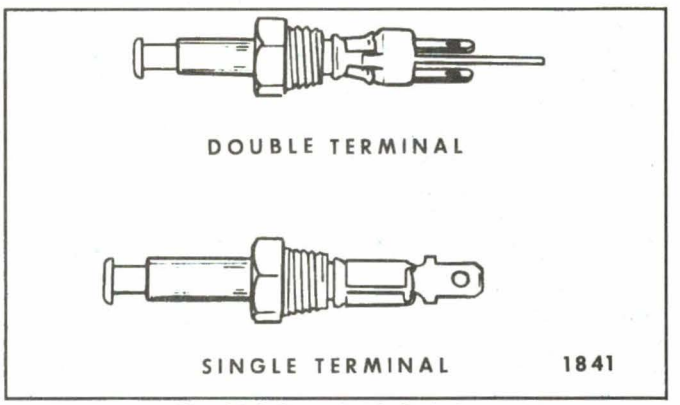


Fig. 10-9-Door Jamb Switches

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 12 gage 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. 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.

   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 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 12 gage jumper wire to body of inoperative unit.
2. Connect other end to a good ground, such as a bare metal panel.

   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. Reestablish the ground.

SHORT CIRCUITS

When a short exists in a 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 used. 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. Refer to 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 done 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 at once by making a snapping noise. (This sound may be accompanied by a warning light on some testers.) This response is a sign 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.

   When the affected circuit has been positively identified, refer again to the proper wire diagram as an aid in the steps that follow. In addition, the switch in the circuit being checked must be held in the 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.

   Since this test will most often be made over 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 102 to 127 mm (4" to 5") 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 (see step 4).
6. Once the short is found, 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)

The aluminum front body wiring harness consists of 14 and 16 gage insulated wires and is enclosed in a black colored plastic 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 150 mm (6") long aluminum wires with terminals attached to one end, splice clips, a tube of corrosion preventive compound and an instruction sheet. To insure minimum resistance through a circuit when making repairs, it is essential that the materials included in this kit be used 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 about 150 mm (6") of wire connected to defective terminal.

   NOTICE: Care should be exercised when stripping insulation from wire. If proper gage strippers are not used, damage to wire may occur and weaken harness assembly at this point.

   b. Using proper gage wire strippers, strip off about 6 mm (1/4") of insulation from end of wire to be repaired and wire from kit with terminal attached.

   NOTICE: To prevent possible damage to wire, do not overcrimp near ends of splice clip.

   c. Place end of one wire in either end of splice clip and crimp firmly to wire. Repeat with remaining wire.
   d. When splice is completed, apply a coat of corrosion preventive compound (petroleum jelly) included in the repair kit to splice area and terminal.

      Do not apply corrosion preventive on splices made to the dome lamp harnesses.
   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 Except Front Body Wiring Harness on All Styles)

Copper wiring is encased in a black conduit and can be repaired using conventional methods such as soldering and taping or solderless connectors. In addition, terminal and connectors are available as replacement parts.

POWER-OPERATED OUTSIDE REARVIEW MIRROR

The power-operated rearview mirror is controlled by a double pole, double throw (D.P.D.T.) switch which is mounted to the door armrest on the driver's side and to the instrument panel for the passenger side. On Buick C and E styles, the switch in the driver's door operates both the left and right-hand mirrors. A selector switch in the base of the control switch controls which mirror operates. The components of the system will be serviced as complete assemblies. A complete circuit diagram is shown in Figures 10-11 and 10-12.

Moving the mirror glass up and down or in a left or right direction is accomplished by reversing polarity to two permanent magnet (P.M.) motors and gear reduction units located in the mirror housing.

Power-operated rearview mirror component service procedures are covered in Section 5 of this manual.

Diagnostic Procedures

Complete diagnostic procedures for the power mirror are covered in Figures 10-15 through 10-18.

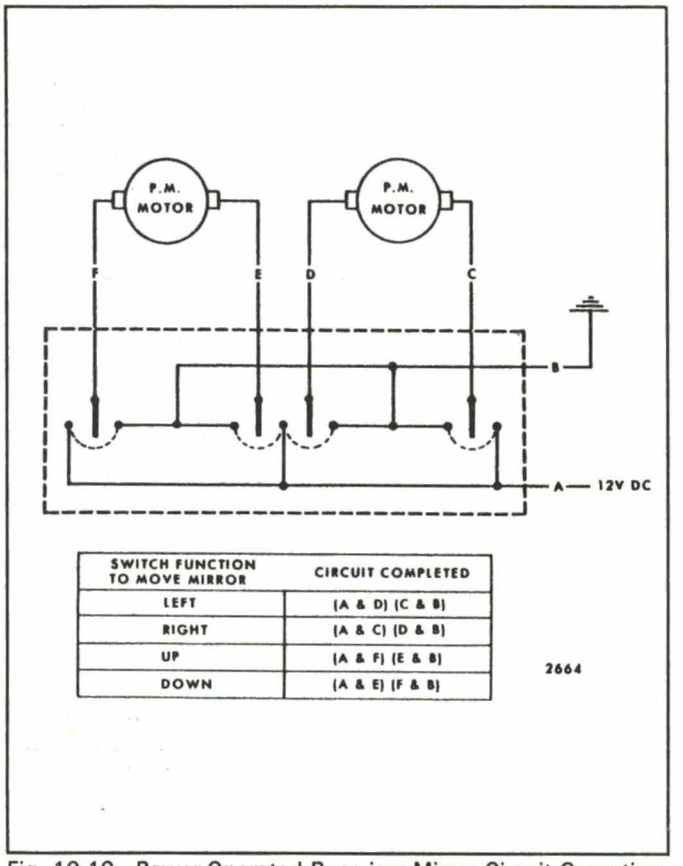
HEATED REARVIEW MIRROR, RIGHT AND LEFT SIDE, Cadillac C, D, E and K Styles

The heated rearview mirrors operate in conjunction with the rear window grid defogger. Voltage is supplied to both systems through the purple wire and protected by the rear grid defogger fuse mounted in the fuse block.

When the grid defogger switch is turned on, both systems will operate until the grid defogger timing circuit automatically shuts both systems off or until the switch on the instrument panel is turned off manually.

The heated mirror assembly circuit consists of a feed wire, an in-line thermistor and a ground lead soldered to the metallic base of the mirror glass. Resistance created by the metallic base allows it to heat up to approximately 65°C (158°F). If the temperature exceeds these limits, the thermistor interrupts the circuit which allows the mirror base to cool.

Heated outside rearview mirror component service procedures are covered in Section 5 of this manual.

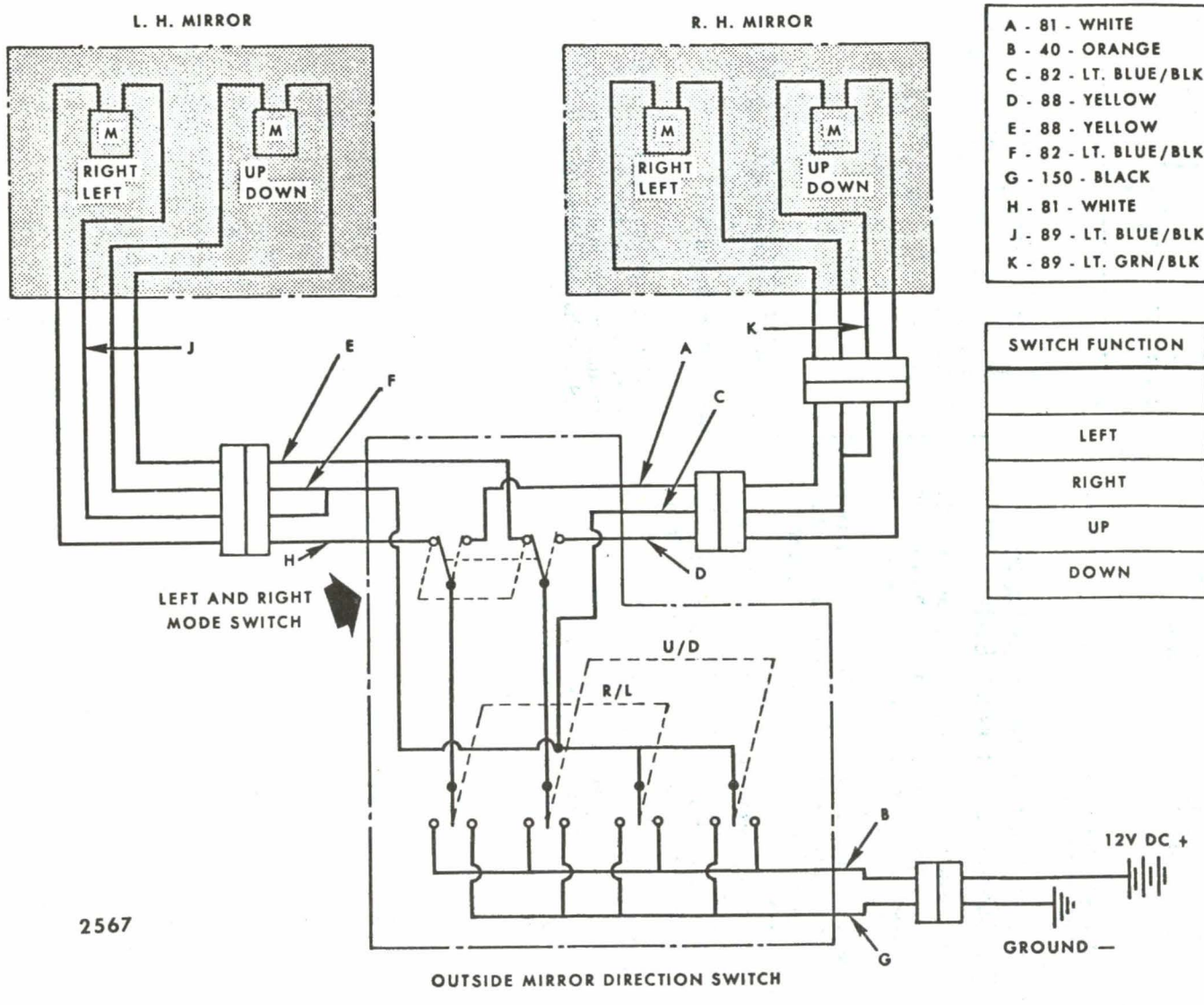


SWITCH FUNCTION TO MOVE MIRROR	CIRCUIT COMPLETED
LEFT	(A & D) (C & B)
RIGHT	(A & C) (D & B)
UP	(A & F) (E & B)
DOWN	(A & E) (F & B)

Fig. 10-10 - Power-Operated Rearview Mirror Circuit Operation, Except Buick C and E

Diagnostic Procedures

With the ignition switch on, actuate rear window grid defogger switch. After five minutes, if the mirror glass(es) is not defrosting, refer to heated rearview mirror circuit diagram (Fig. 10-19) and diagnostic chart (Fig. 10-20).



SWITCH FUNCTION	CIRCUIT FUNCTION	
	LEFT MIRROR	RIGHT MIRROR
LEFT	(F & B) (H & G)	(C & B) (A & G)
RIGHT	(H & B) (F & G)	(A & B) (C & G)
UP	(E & B) (F & G)	(D & B) (C & G)
DOWN	(F & B) (E & G)	(C & B) (D & G)

Fig. 10-11 - Power-Operated Rearview Mirror Circuit Operation - Buick C and E

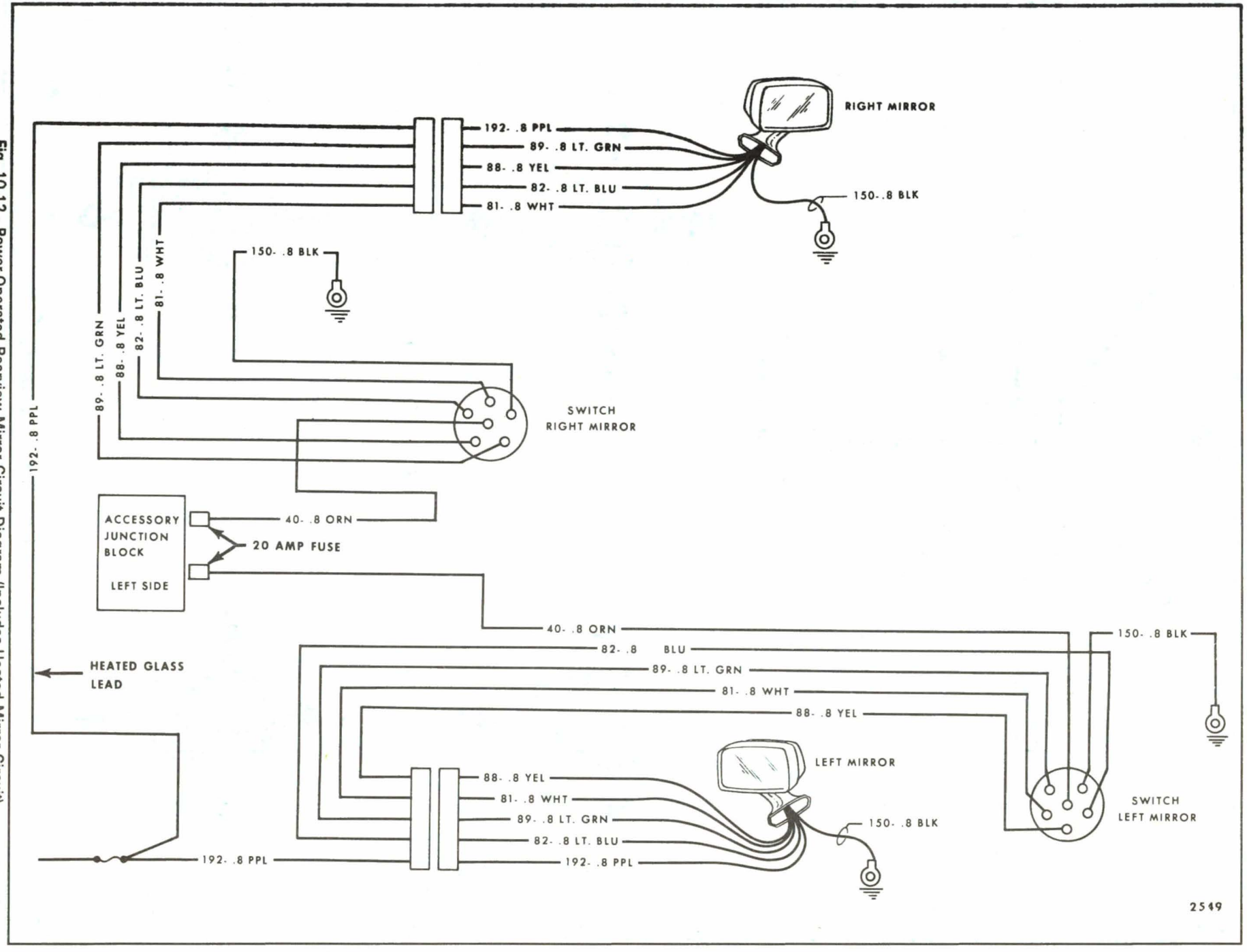


Fig. 10-12 - Power-Operated Rearview Mirror Circuit Diagram (Includes Heated Mirror Circuit)

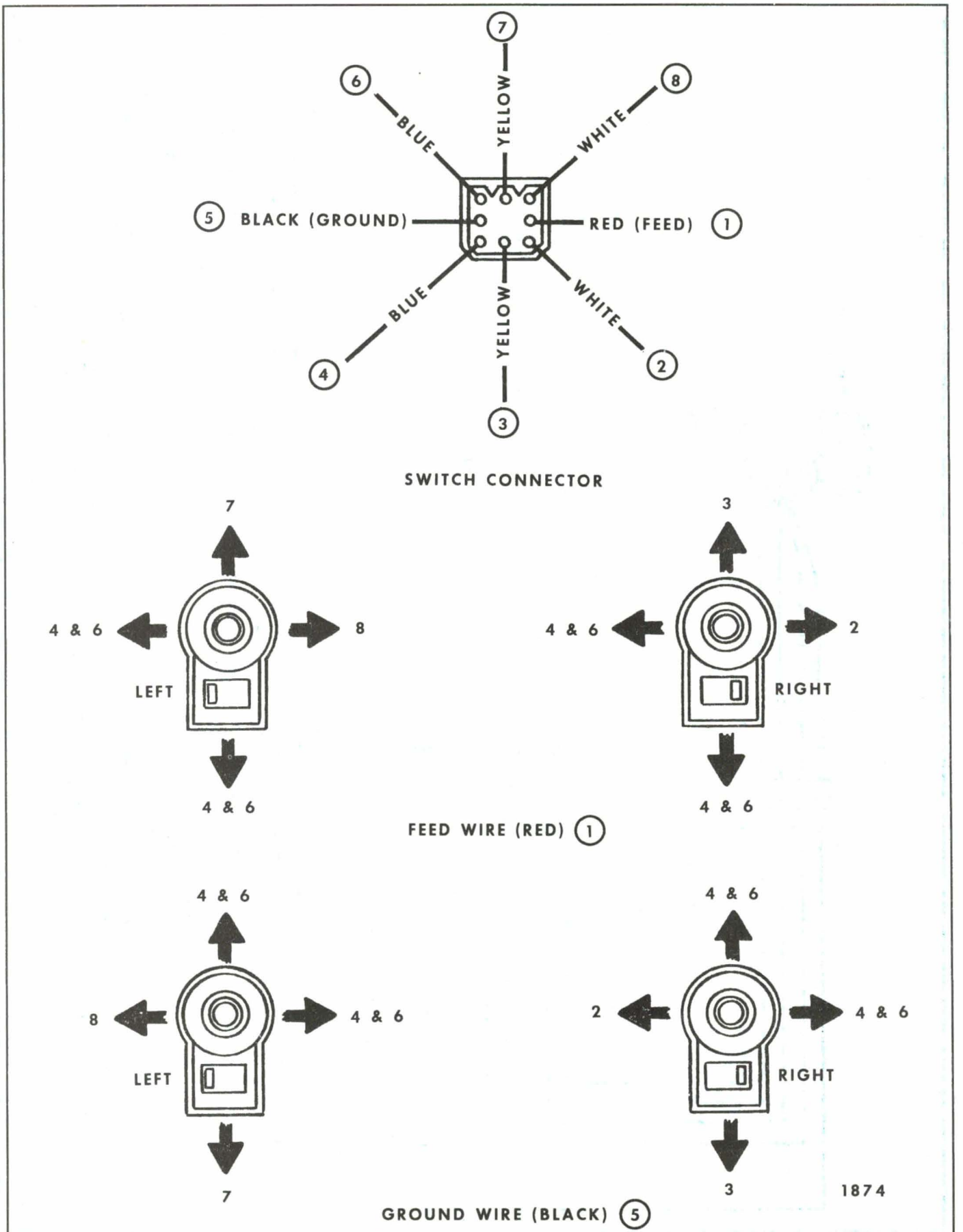


Fig. 10-13 - Power-Operated Rearview Mirror Switch Function - Buick C and E

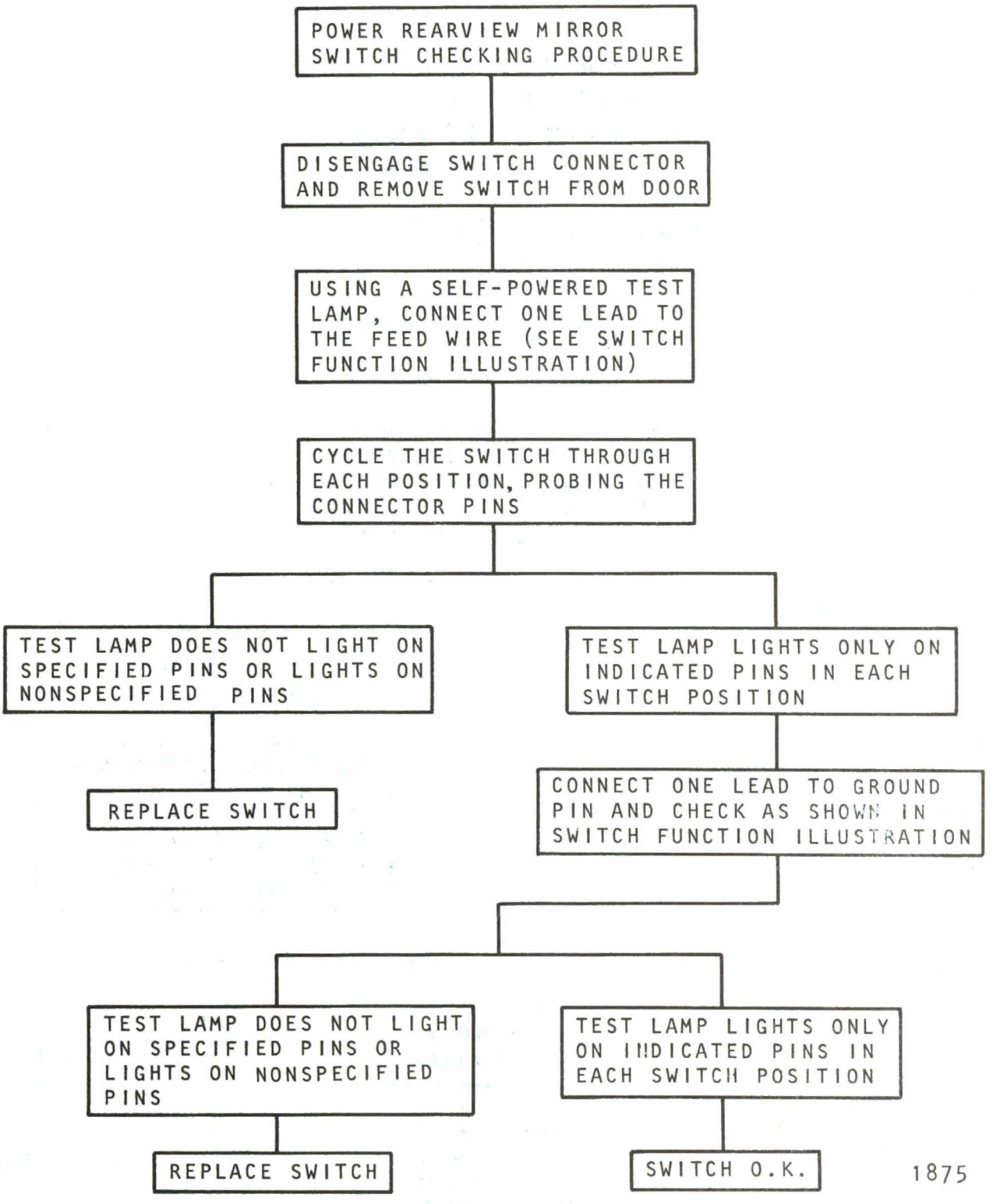


Fig. 10-14 - Power-Operated Rearview Mirror Switch Checking Procedure - Buick C and E

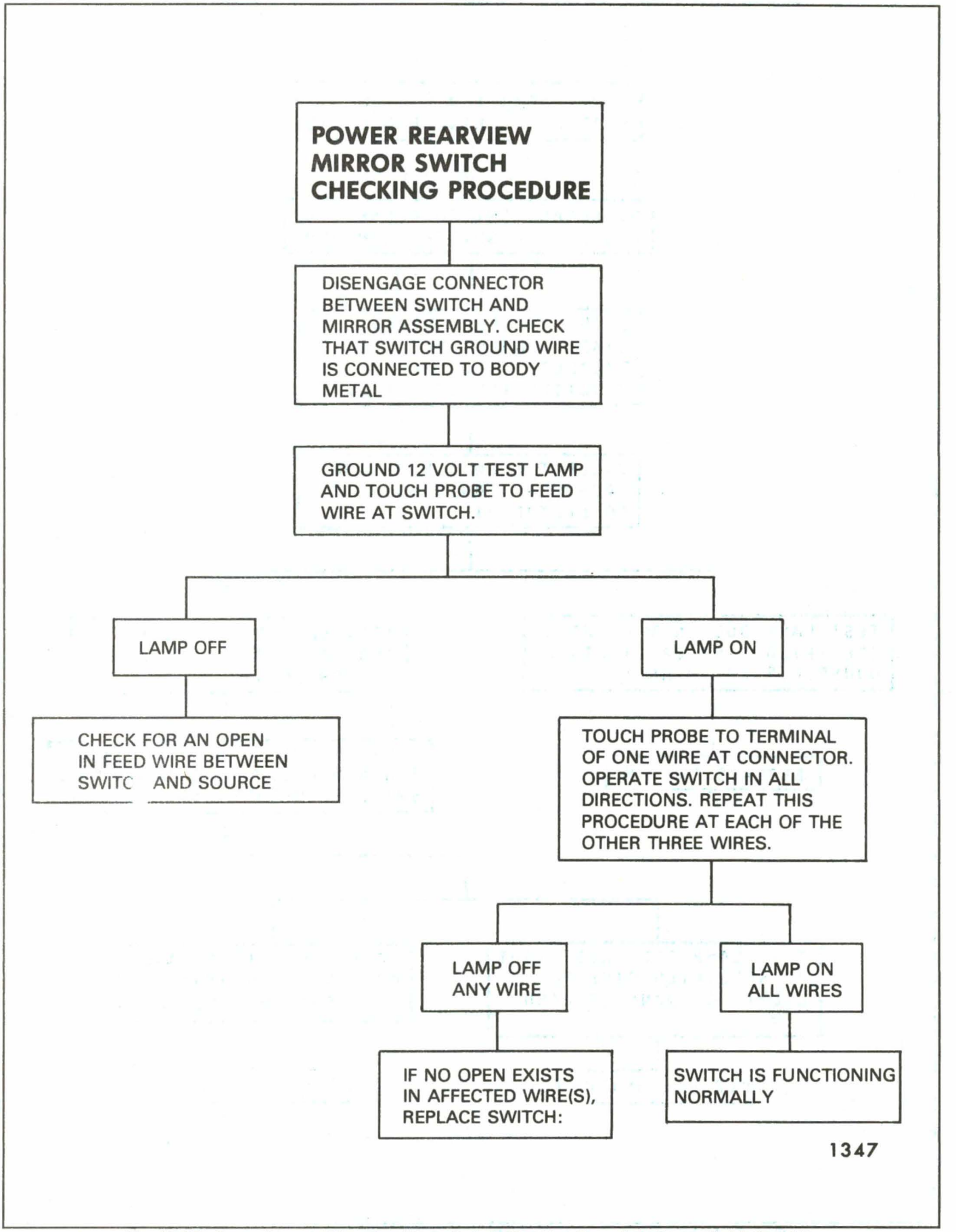


Fig. 10-15 - Power-Operated Rearview Mirror Switch Checking Procedure, Except Buick C and E

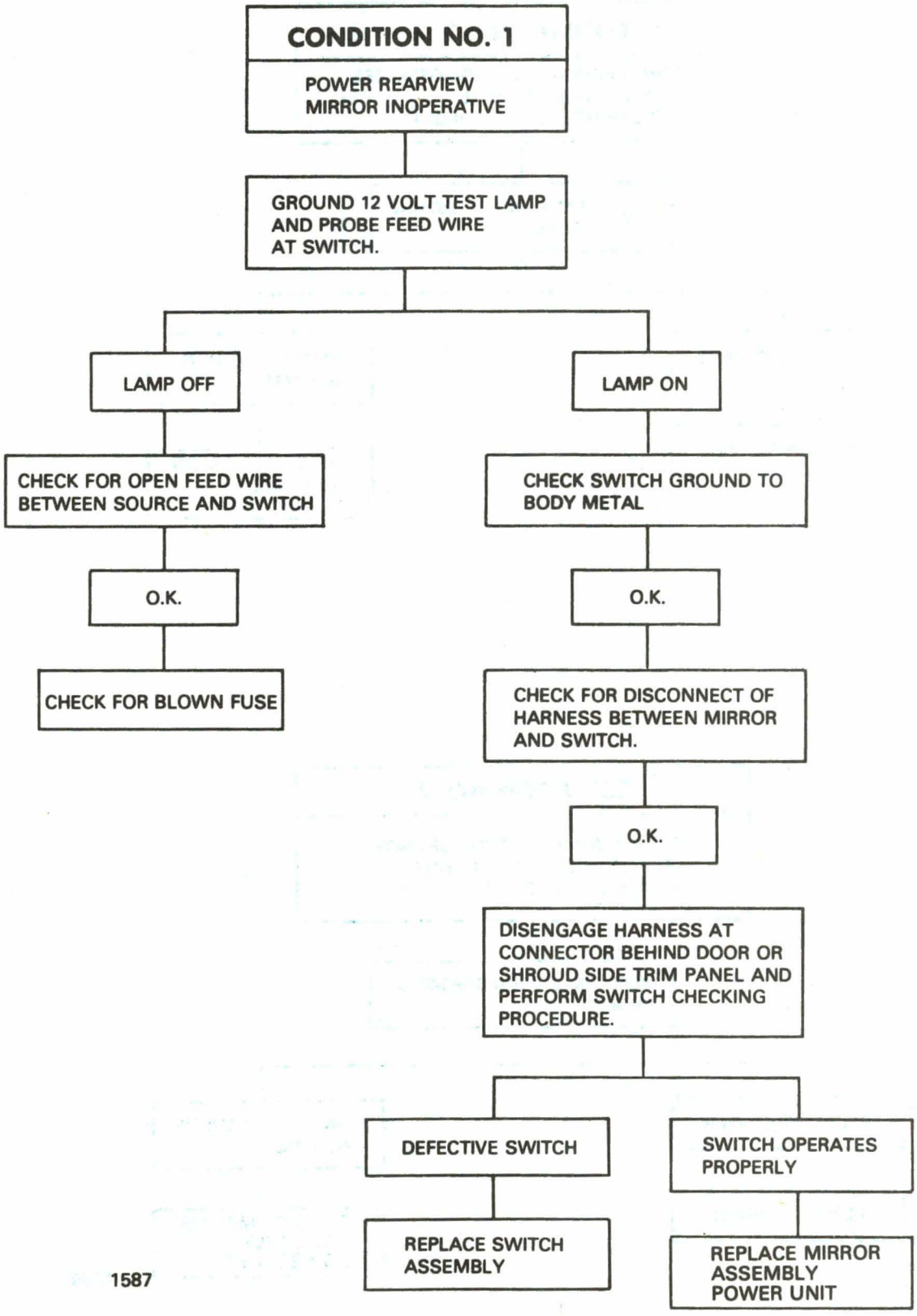


Fig. 10-16 - Power Rearview Mirror Diagnostic Chart Condition No. 1

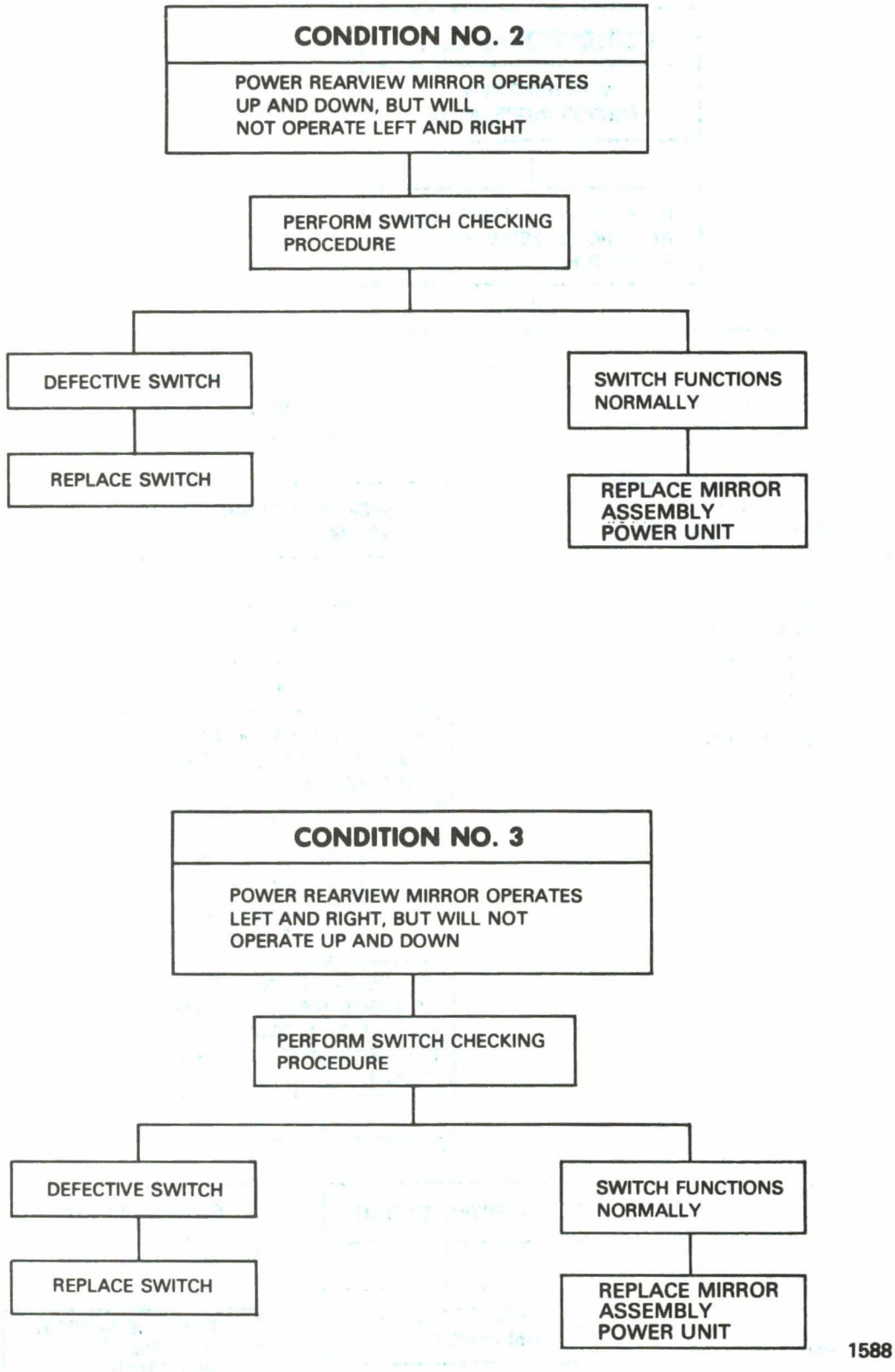


Fig. 10-17 - Power-Operated Rearview Mirror Diagnostic Chart Condition No. 2 and 3

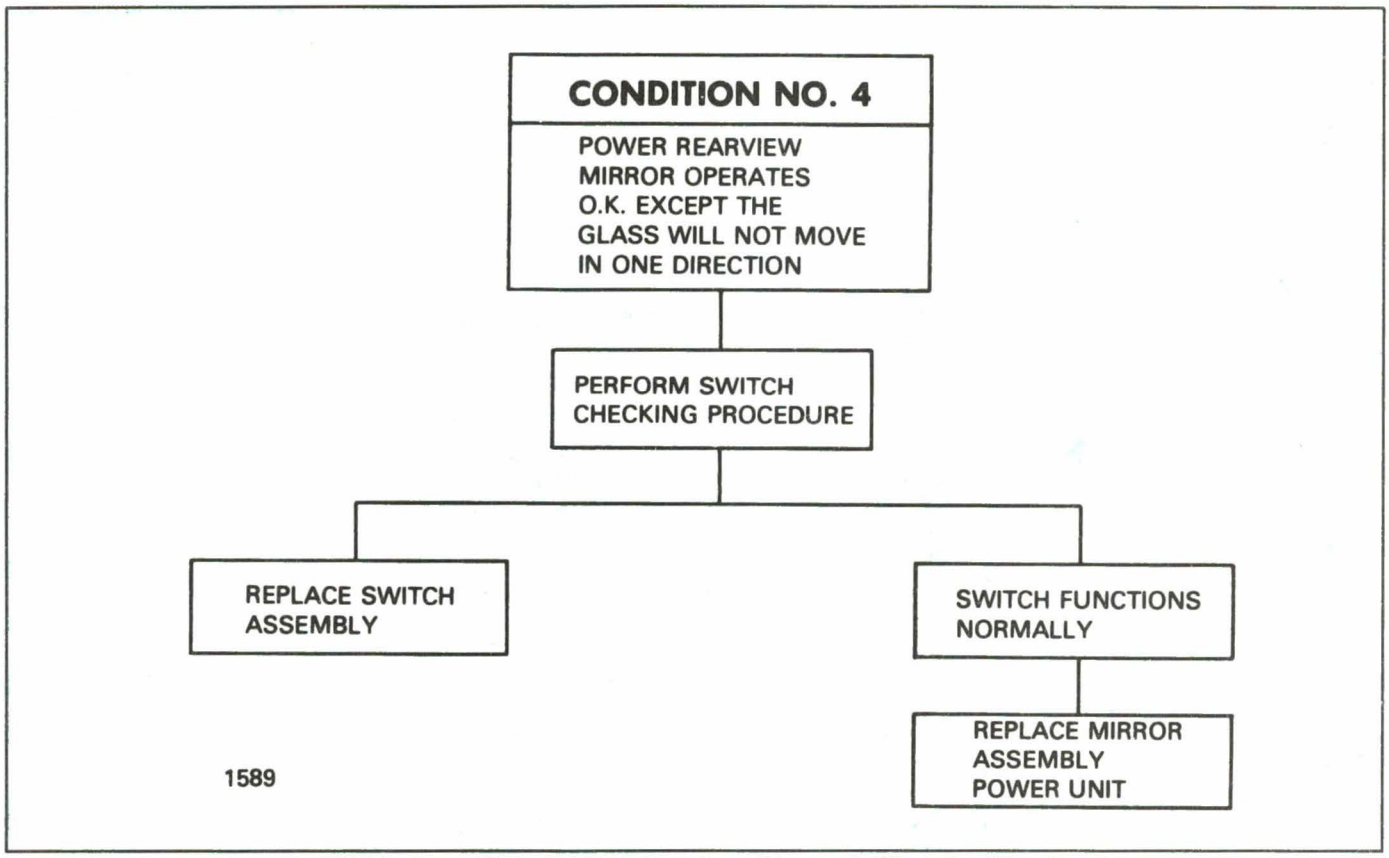


Fig. 10-18 - Power-Operated Rearview Mirror Diagnostic Chart Condition No. 4

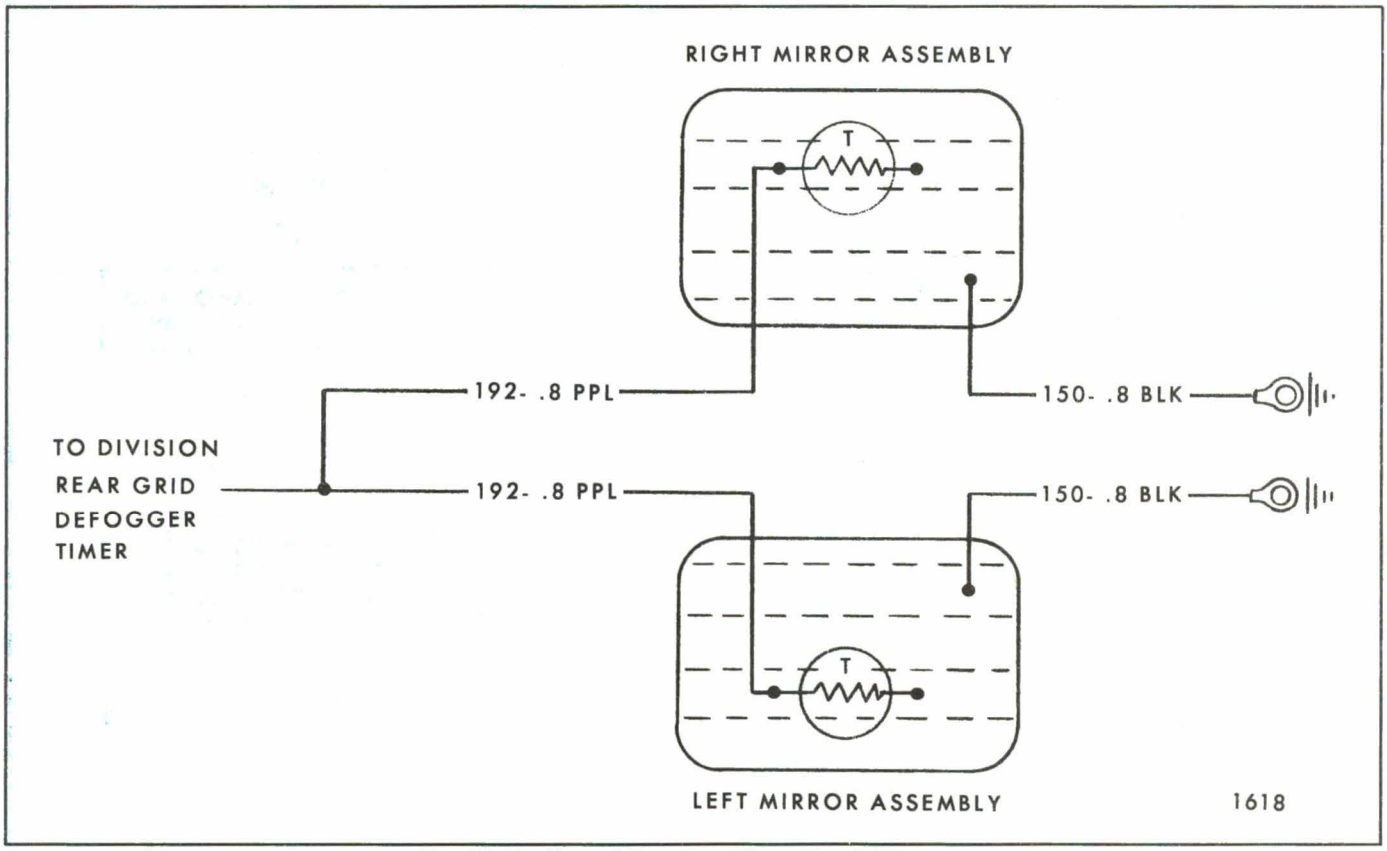


Fig. 10-19 - Heated Rearview Mirror Circuit Diagram

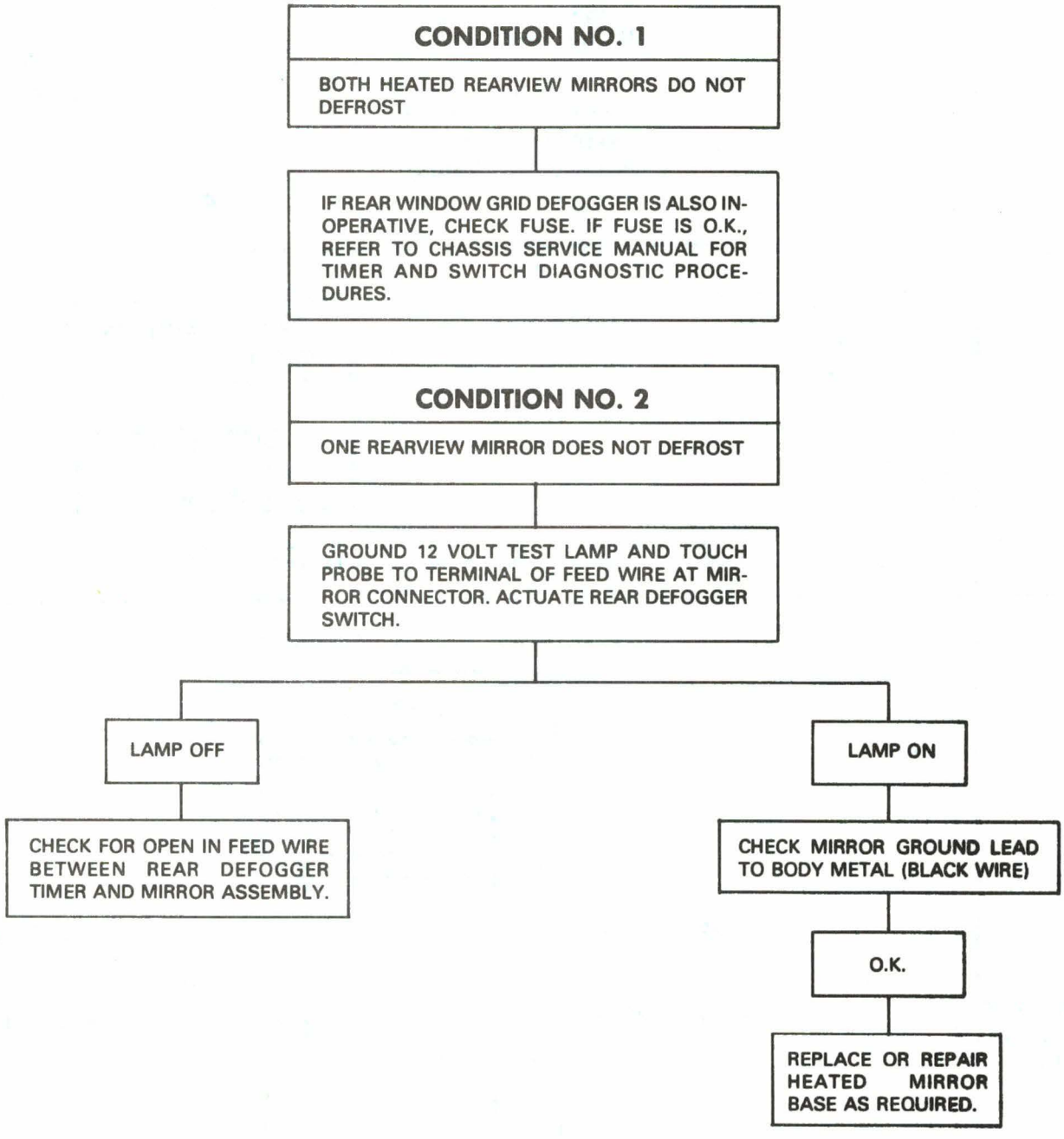


Fig. 10-20 - Heated Rearview Mirror Diagnostic Chart

POWER WINDOWS

The wiring harness for power-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 and C 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. Feed harness to rear doors or quarter windows - on G 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 and C 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 ends at the window motor and window switch.
4. Rear door or quarter window harness - on G 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

The optional power window system consists of a permanent magnet motor and regulator assembly that raises and lowers the door glass when voltage is supplied to the P.M. motor from the control switches.

Permanent Magnet Motor

The permanent magnet motor is a 12V DC motor protected by an internal circuit breaker which is designed to protect the motor for up to 24 hours continuous duty.

The stall torque of the motor is 12.4 N·m (9 in-lb) at an input of twenty-two amps maximum.

When the motor is energized, the armature worm gear engages a nylon and self-locking drive gear that engages the window regulator which raises or lowers the glass. The self-locking drive gear should not be manually reversed.

The feed circuit (pink wire) is ignition switch controlled and protected by a 30 amp circuit breaker which is mounted in the fuse block.

Master Switch - The master switch is mounted in the left front door trim assembly and allows the driver to operate each power window individually from the front seat. This switch is a double pole, double throw (D.P.D.T.) two button switch which provides a common ground for all the circuits in the system.

The individual switch mounted in the right door trim assembly is also a D.P.D.T. switch with normally closed contacts which provide a path to ground back through the master switch.

Diagnostic Procedures

The diagnostic procedures are written for two-door and four-door styles. Circuit diagrams are shown in Figures 10-21, 10-22, 10-23 and 10-24. Prior to using the diagnostic procedures, first find how the system is malfunctioning, then match the condition to the proper chart.

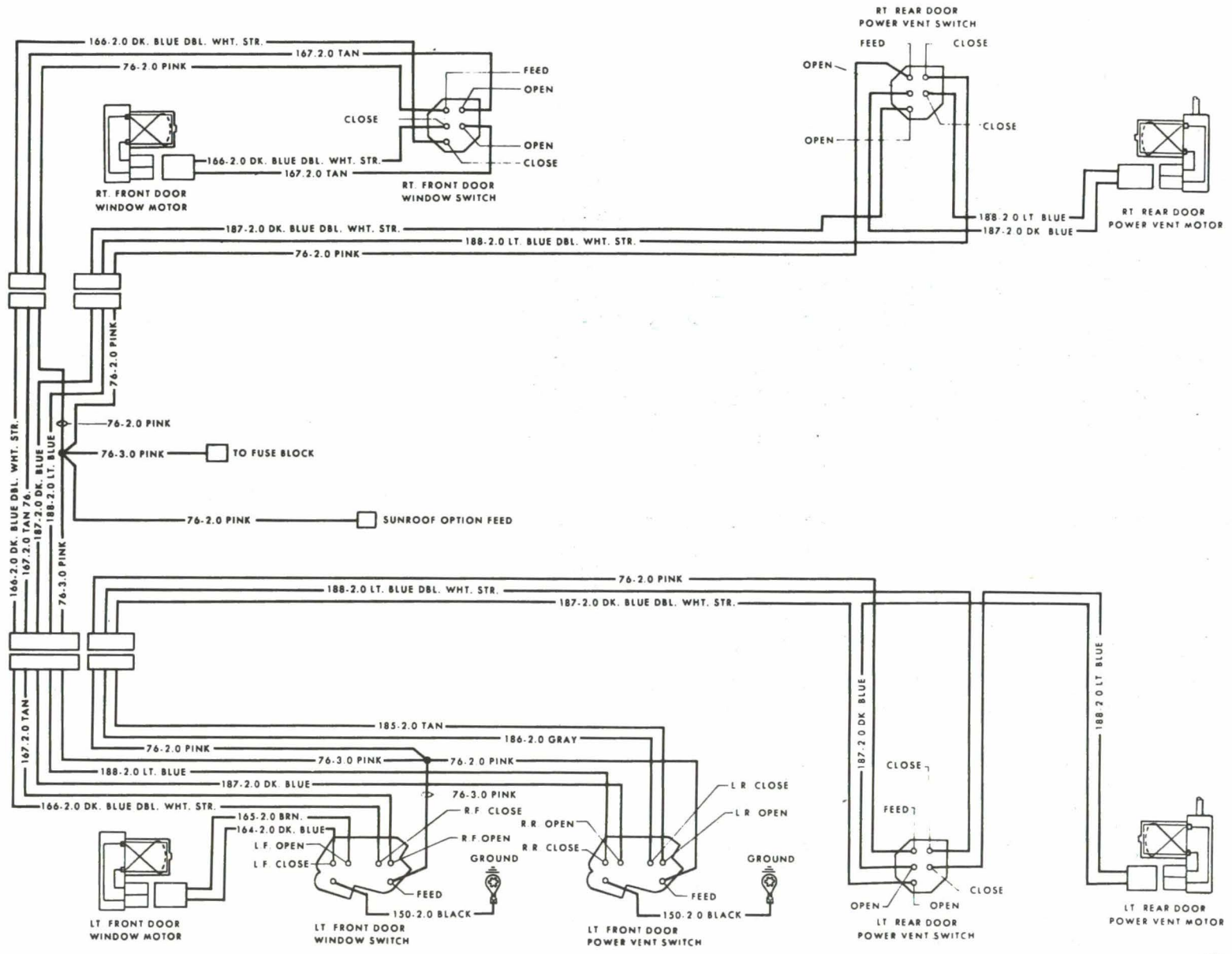


Fig. 10-21-Power Window and Power Vent Circuit Diagram - G Styles

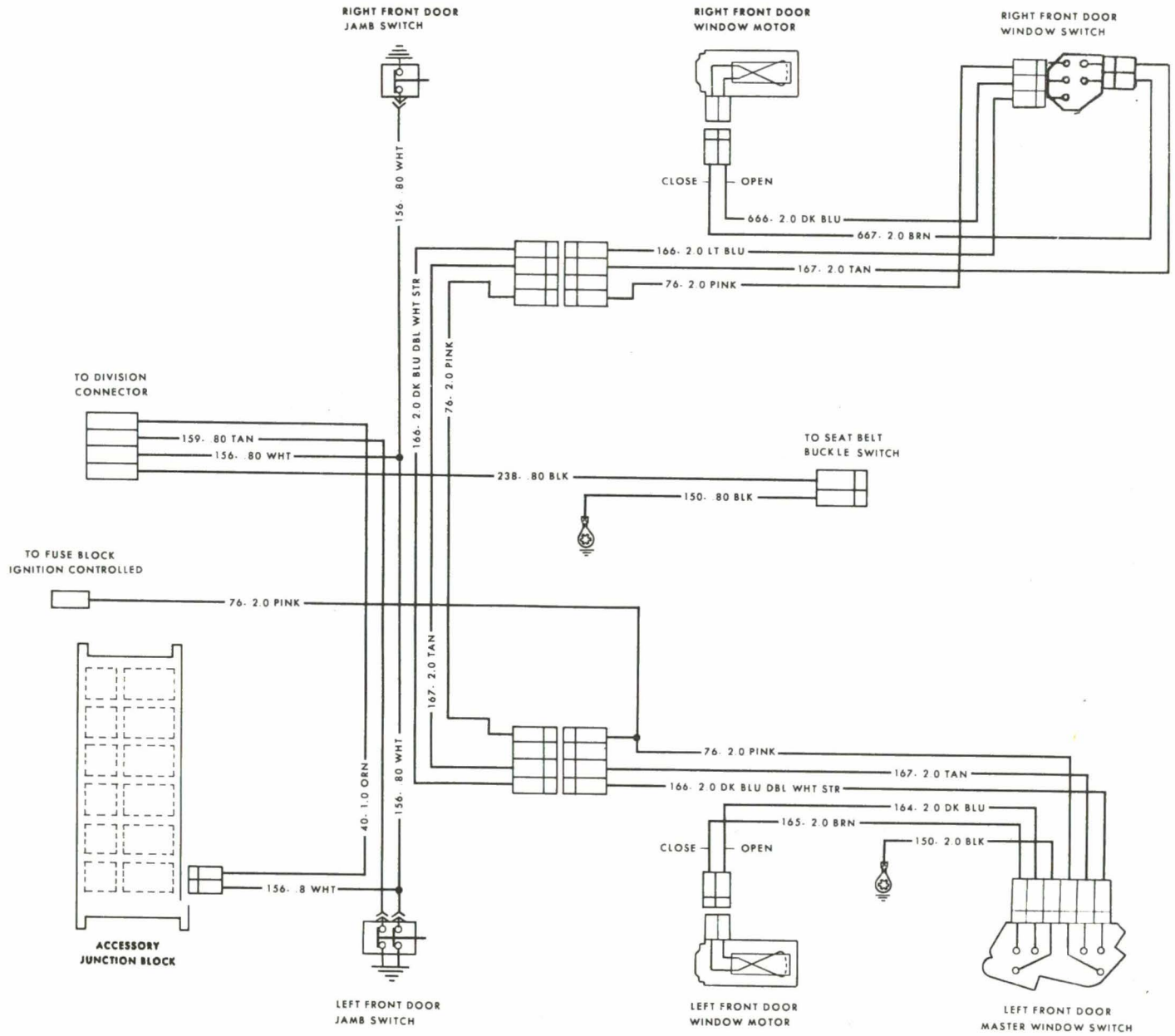


Fig. 10-22-Power Window Circuit Diagram, B Two-door Styles

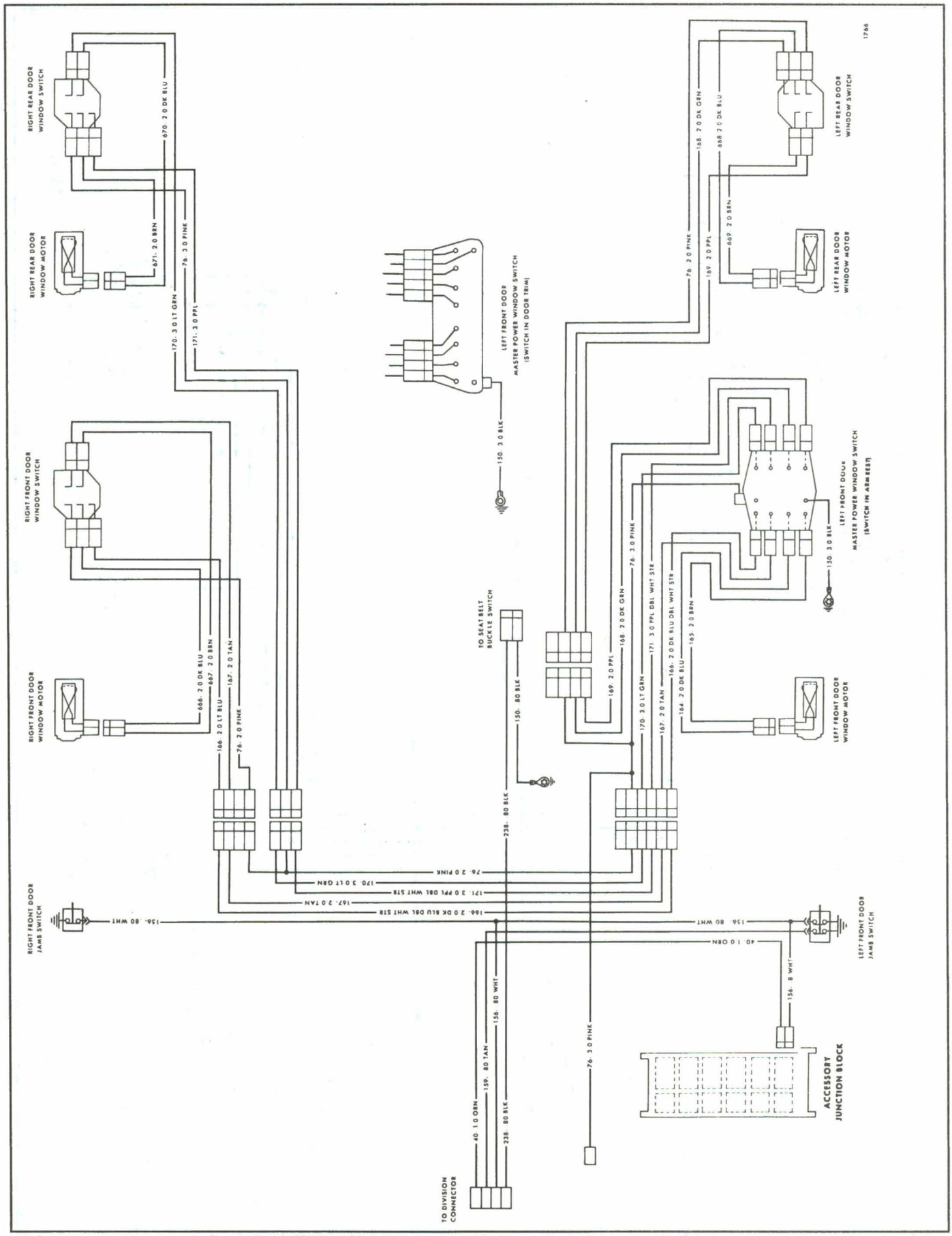


Fig. 10-23-Power Window Circuit Diagram, B Four-door Styles

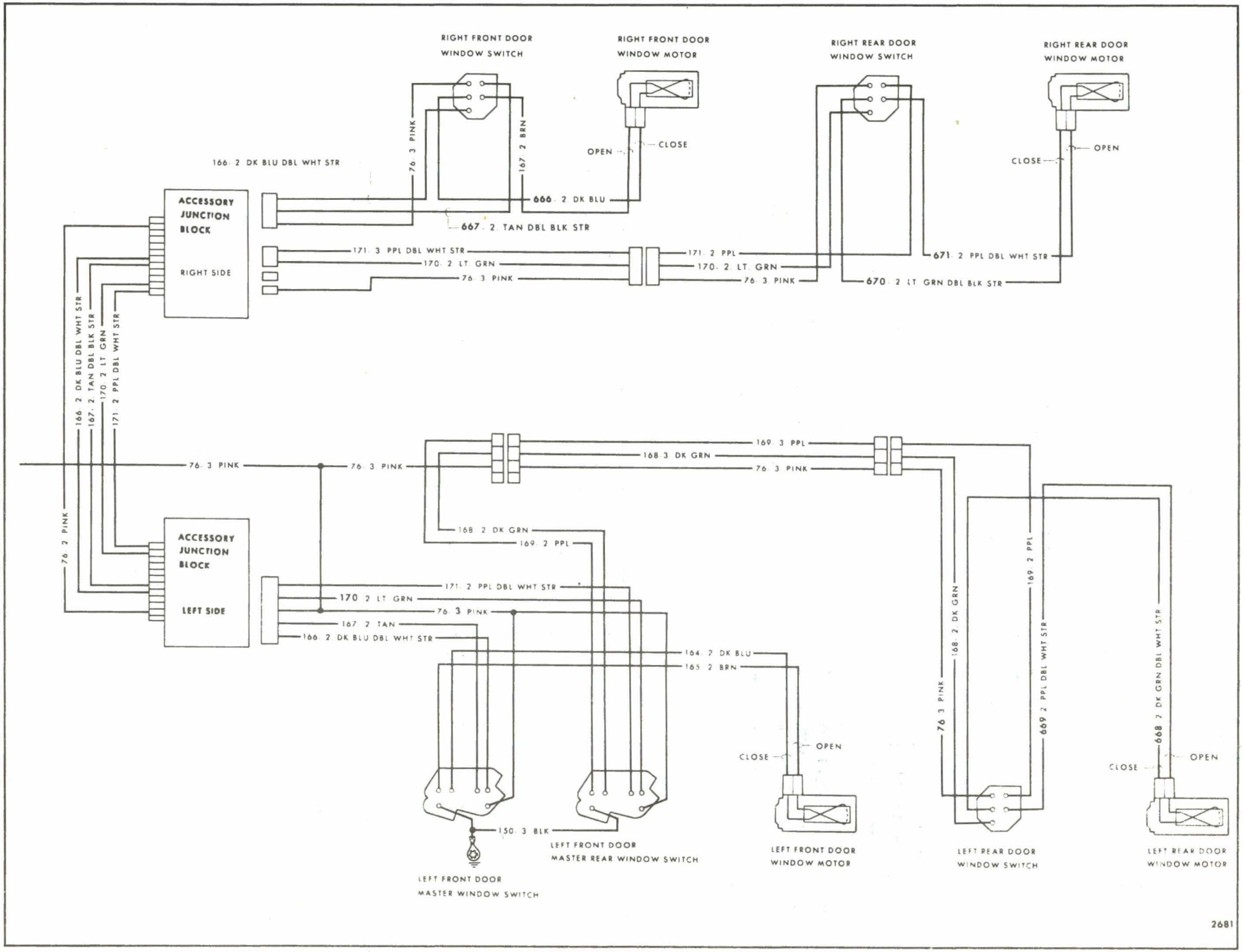


Fig. 10-24-Power Window Circuit Diagram, C,D,E and K Styles (Two-door Styles Similar)

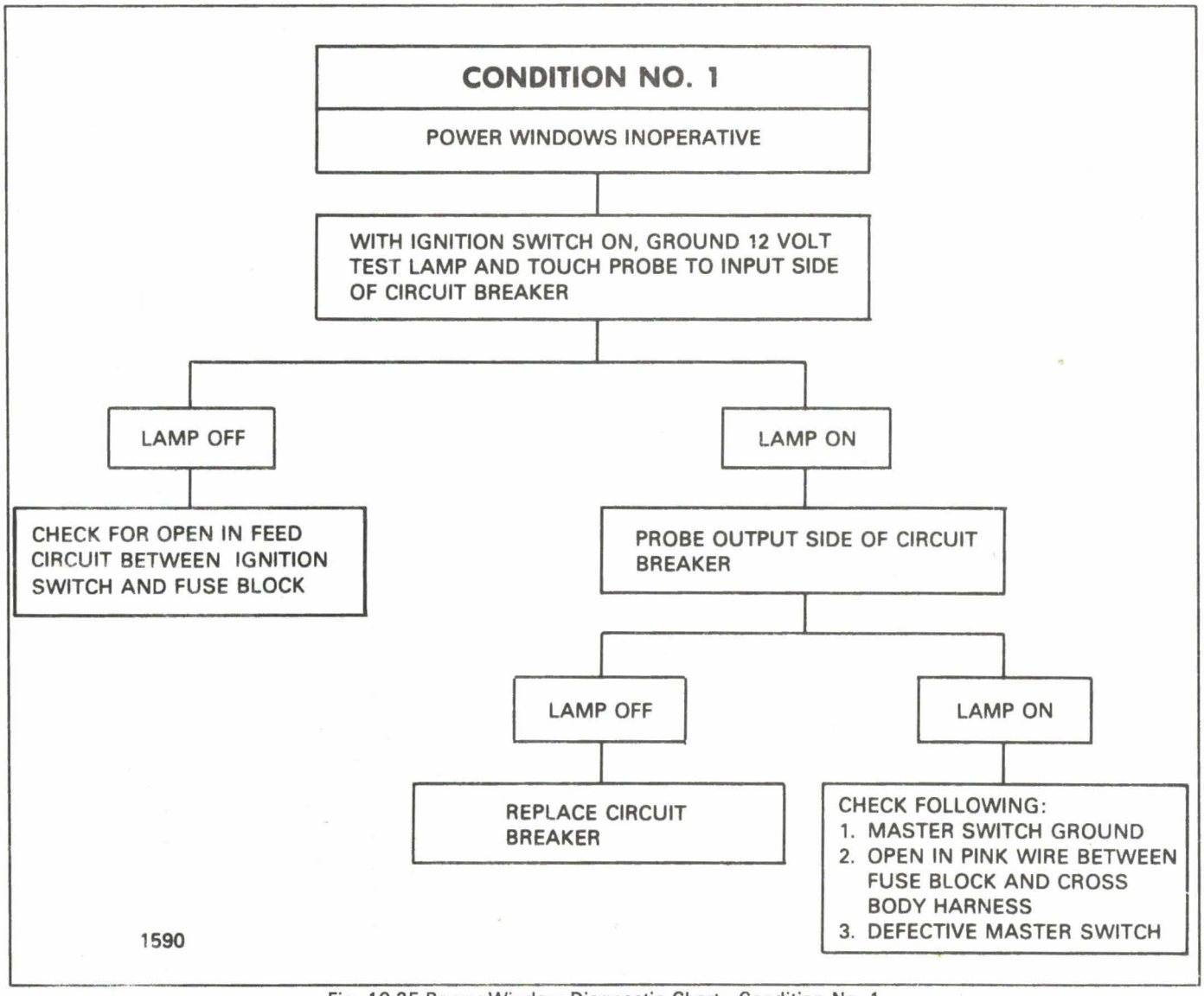


Fig. 10-25-Power Window Diagnostic Chart - Condition No. 1

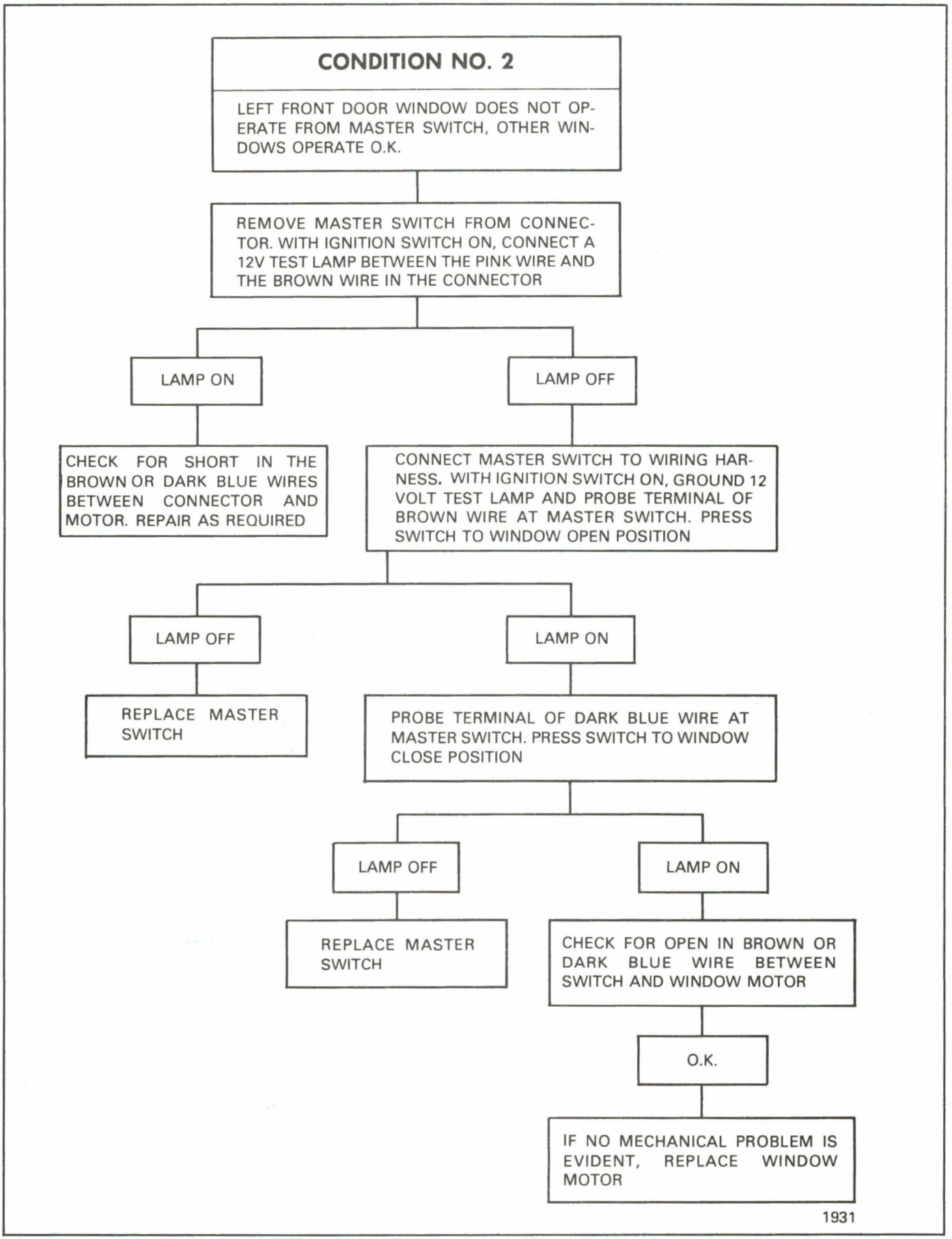


Fig. 10-26-Power Window Diagnostic Chart - Condition No. 2

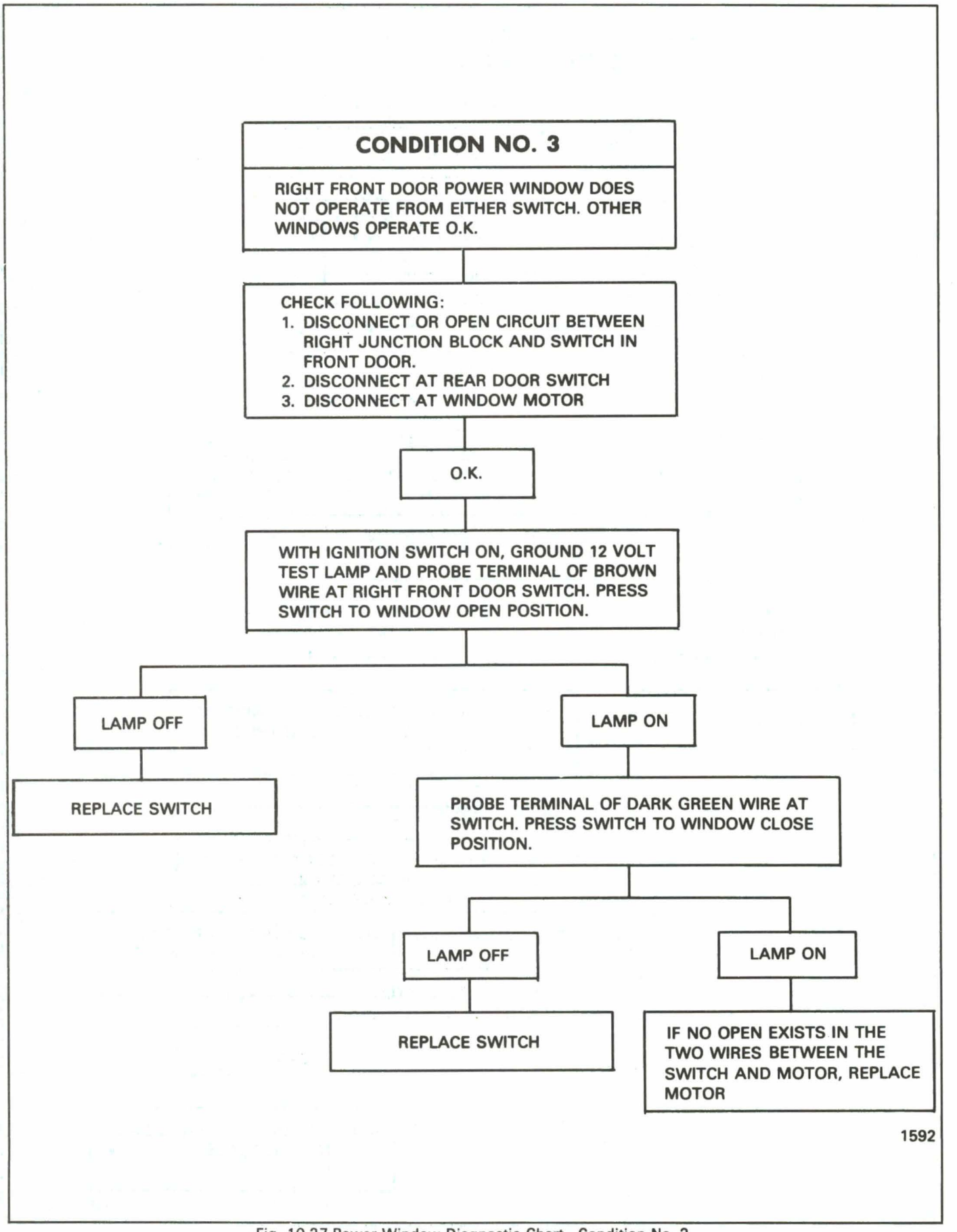
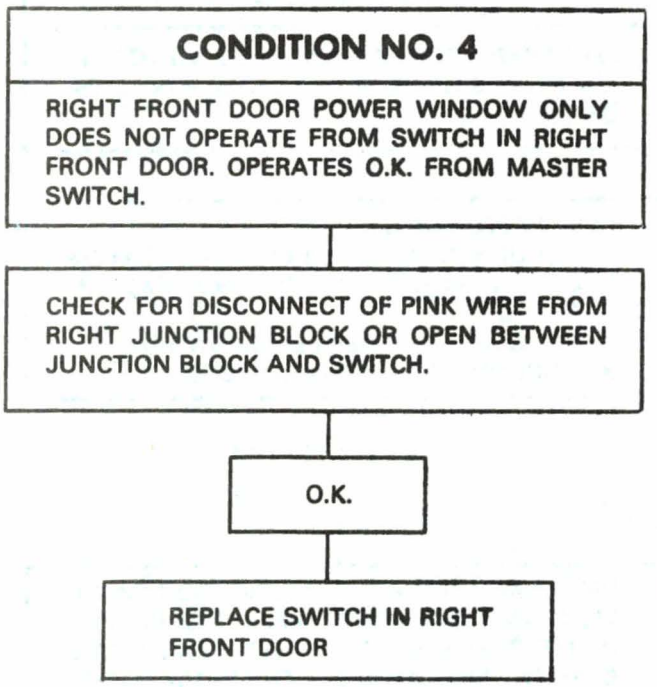
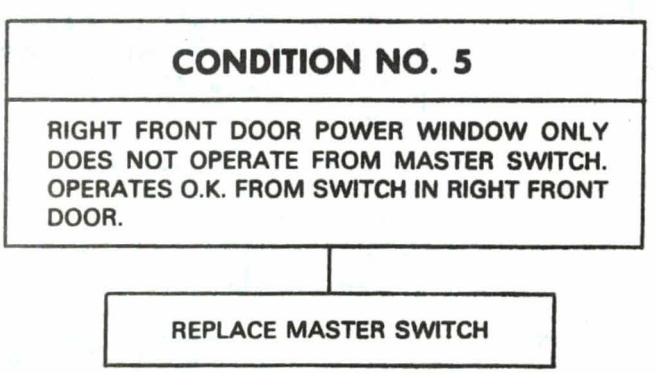


Fig. 10-27-Power Window Diagnostic Chart - Condition No. 3





1593

Fig. 10-28-Power Window Diagnostic Chart - Condition No. 4 and 5

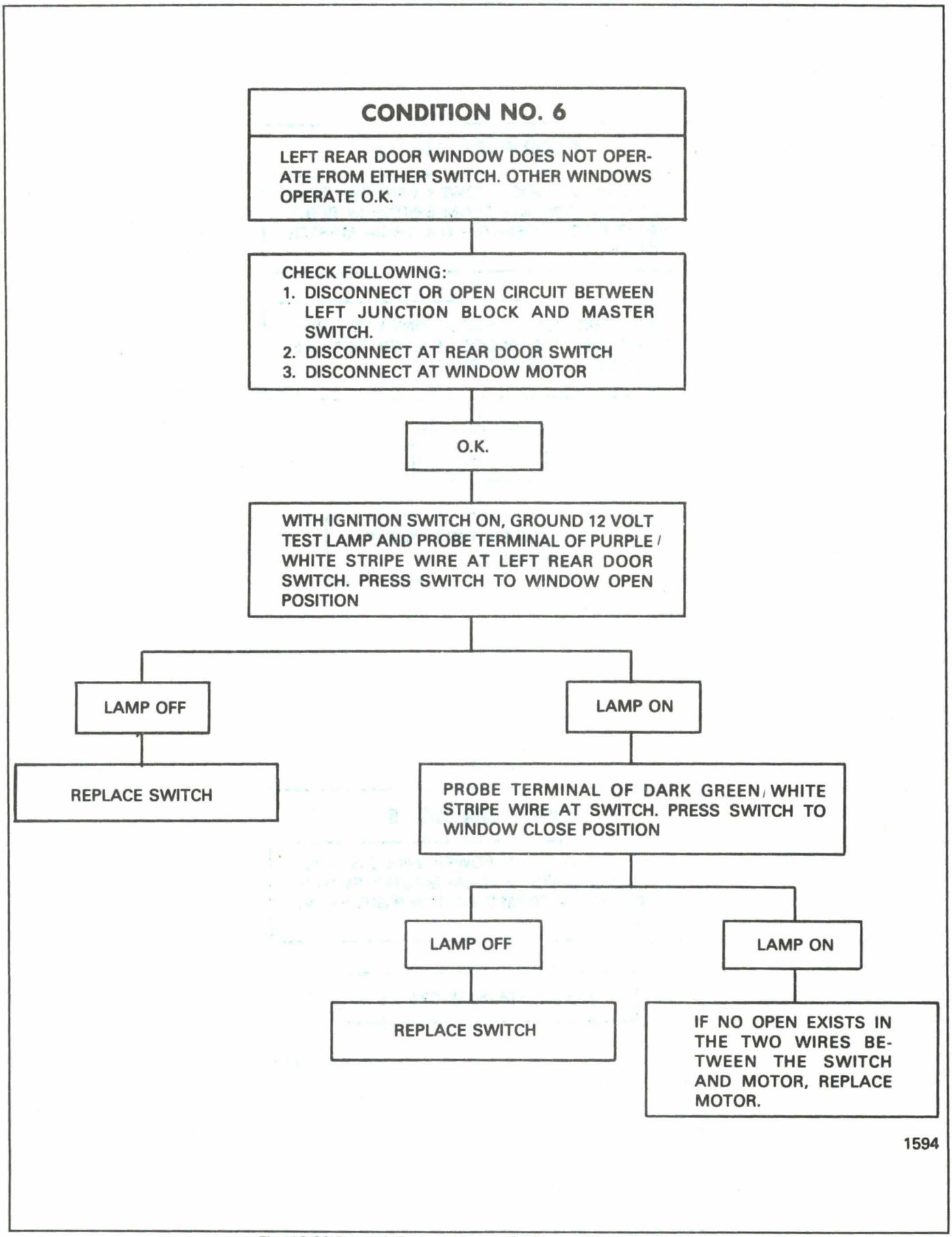


Fig. 10-29-Power Window Diagnostic Chart - Condition No. 6

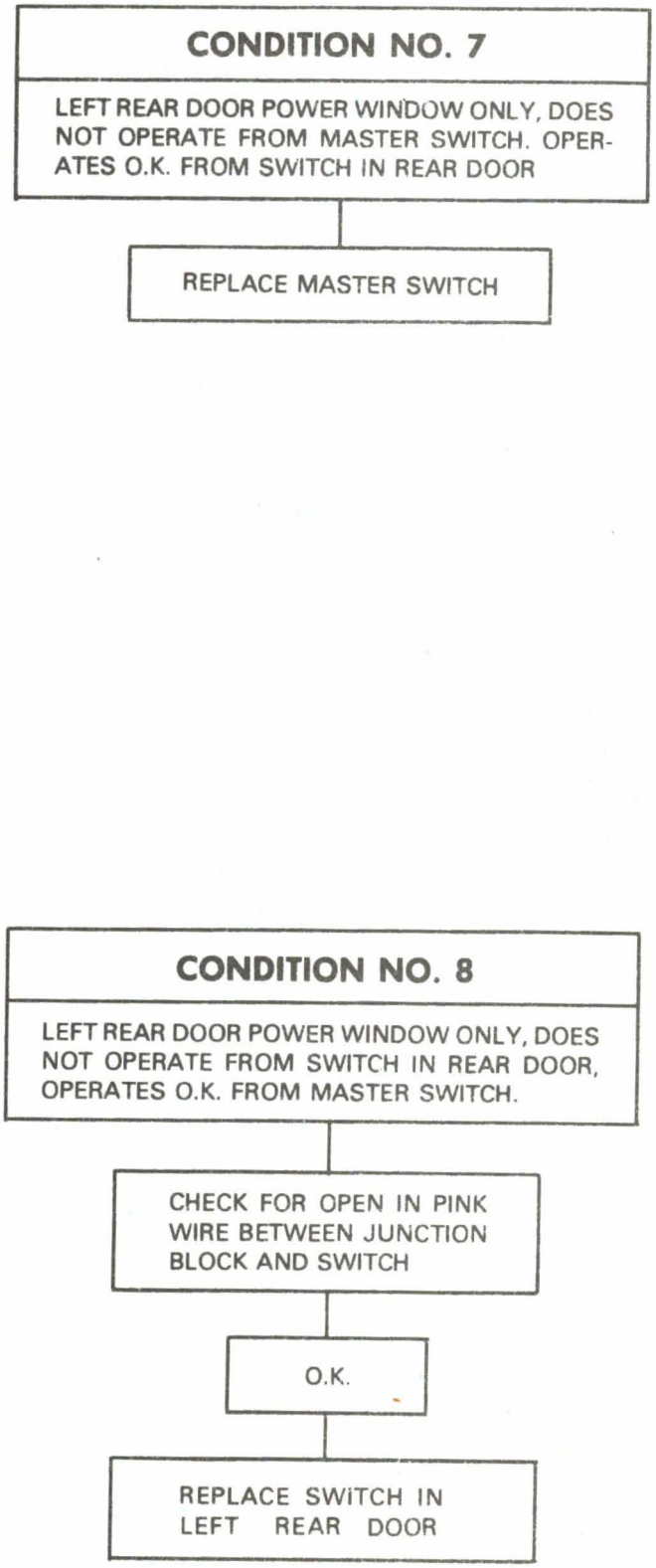


Fig. 10-30-Power Window Diagnostic Chart - Condition No. 7 and 8

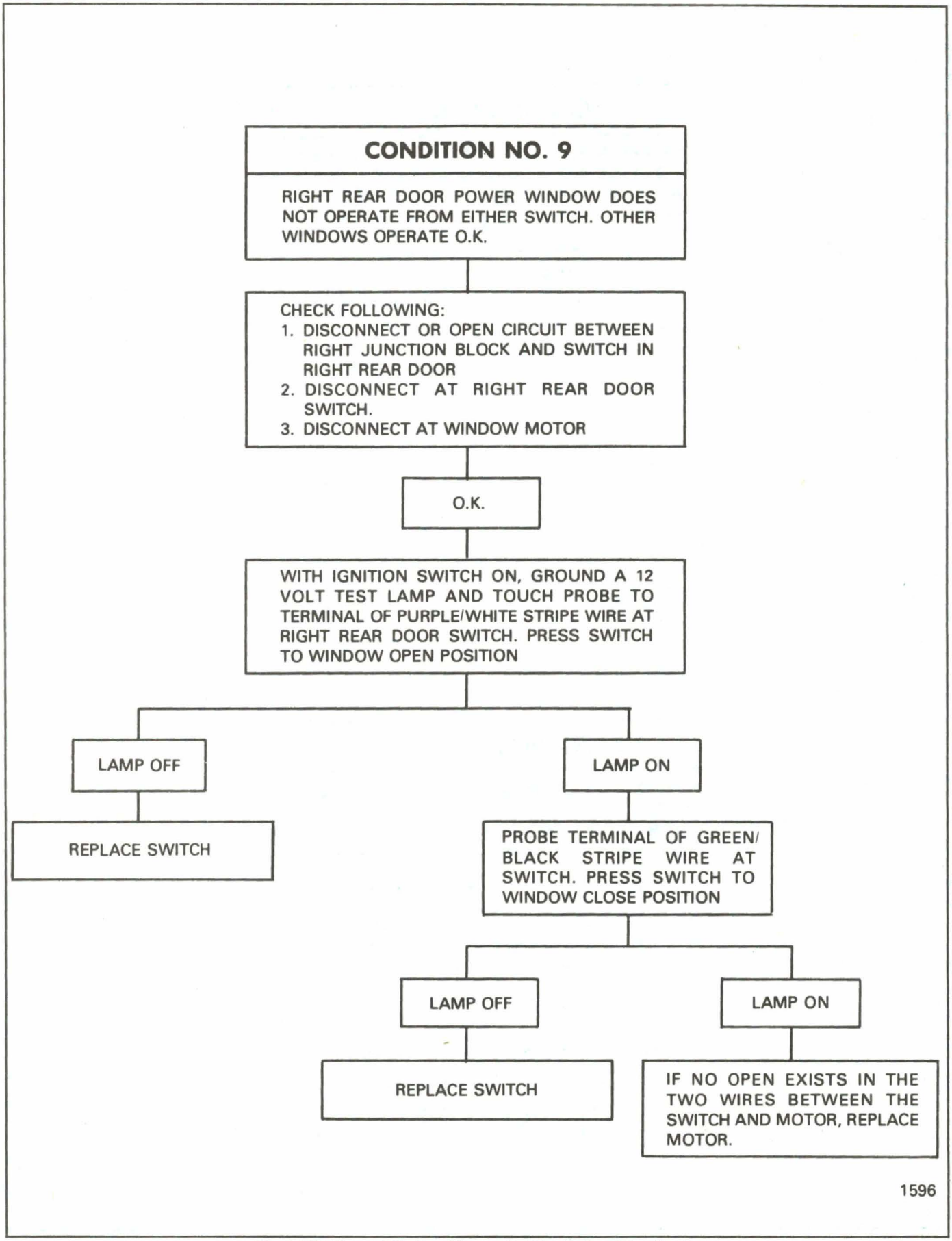


Fig. 10-31-Power Window Diagnostic Chart - Condition No. 9

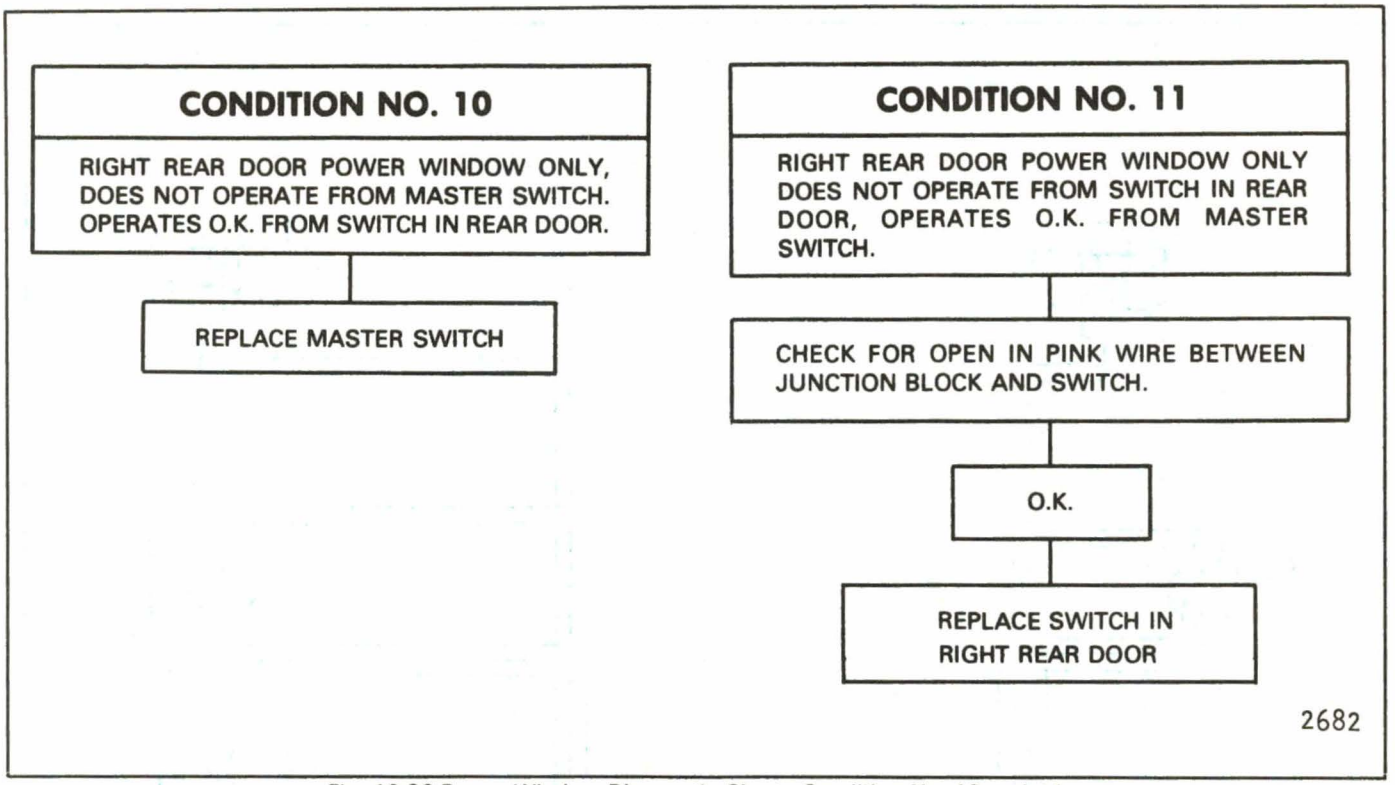


Fig. 10-32-Power Window Diagnostic Chart - Condition No. 10 and 11

POWER VENTS - G STYLES

The power vent window system on G styles consists of a permanent magnet (P.M.) motor and gear reduction unit, drive cable and jackscrew at each window and a master and two individual control switches. When a control switch is actuated, voltage is supplied from the pink wire at each switch to the P.M. motor and gear reduction unit. The gears turn the jackscrew which extends or retracts the cable, opening or closing the power vent window.

The feed circuit (pink wire) is ignition switch controlled and protected by a 30 amp circuit breaker mounted in the fuse block. This circuit also provides the voltage source for the power windows in the front doors.

Components and Location

Master Switch - The master switch is mounted in the left front door trim assembly and allows the driver to operate each power vent individually from the front seat. This switch is a double pole, double throw (D.P.D.T.) two-button switch which provides a common ground for all the circuits in the system.

Individual Switches - These switches are located in each rear door trim assembly and permit the occupants in the rear seat to operate the power vents individually. These switches are also D.P.D.T. switches which have normally closed contacts that provide a path to ground back through the master switch.

Permanent Magnet Motor and Gear Reduction Unit - The P.M. motor and gear reduction unit assembly is attached to each rear door inner panel. The P.M. motor is a reversible motor which is protected by an internal circuit breaker. The polarity is reversed to each motor through the control switches.

The cable and jackscrew extends along the rear door inner panel and up to the vent window pivoting mechanism.

Diagnostic Procedures

A complete circuit diagram is shown in Figure 10-33. Prior to using the diagnostic procedures, first determine how the system is malfunctioning, then match the condition to the proper diagnostic chart.

If intermittent operation of a power vent occurs, the malfunction could be due to one of the following conditions.

1. **Mechanical bind in the gear reduction unit, cable and jackscrew or the power vent pivoting mechanism.** This additional load could cause the P.M. motor to overheat and open the internal circuit breaker in the motor. The motor will not energize again until the motor cools enough to allow the circuit breaker to close.
2. **Feed circuit shorted to ground or pinched against other wires.** This could involve the pink wire between the fuse block and switches as well as the wires leading to the P.M. motors after a switch is actuated. This will result in the circuit breaker located on the fuse block opening and closing.
3. **Loose connection of black wire leading from the master switch to ground.** An open circuit can be a wire which has been severed, a disconnect, a terminal backed out of a connector or switches not making proper contact internally.

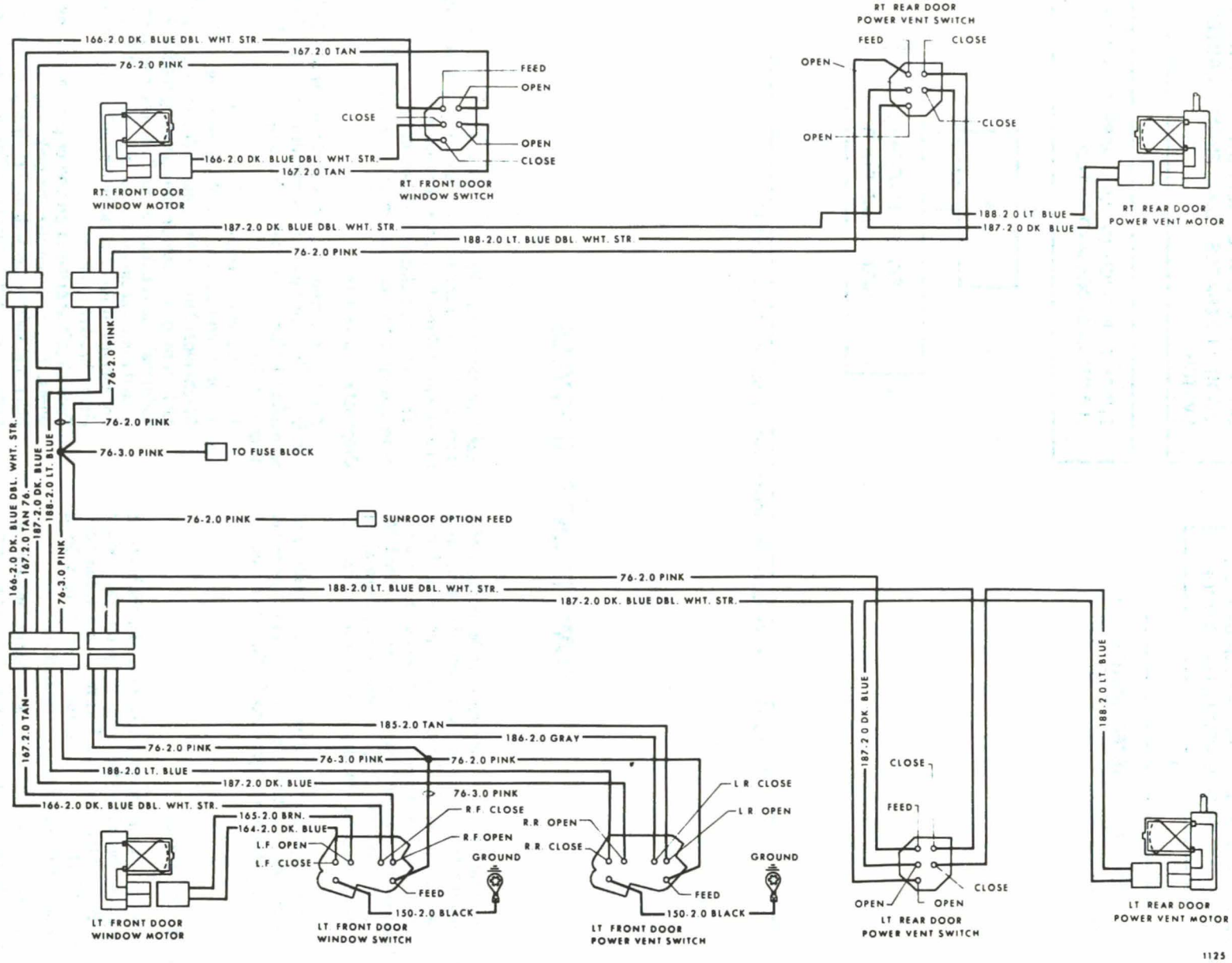


Fig. 10-33-Power Vent and Power Window Circuit Diagram - G Styles

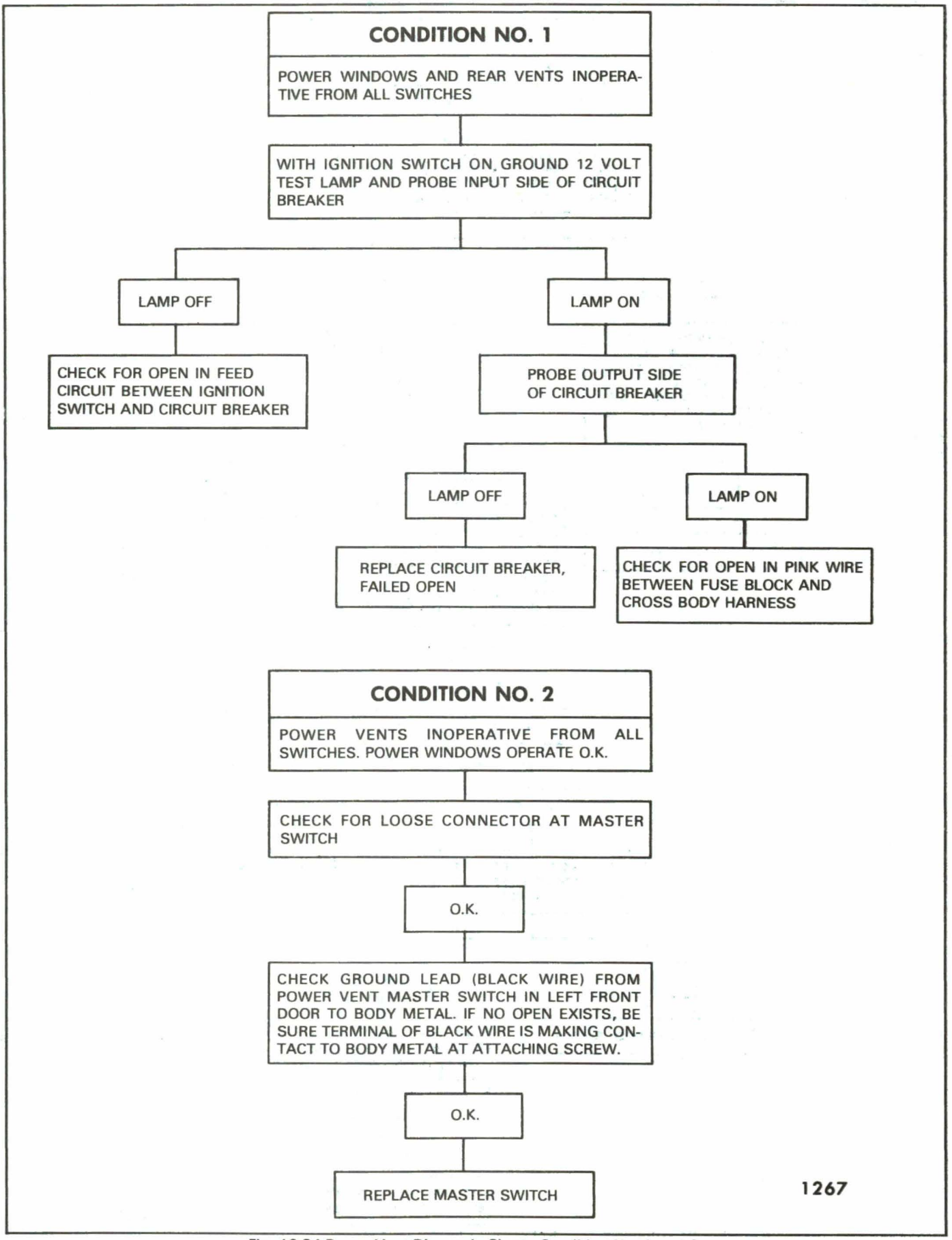


Fig. 10-34-Power Vent Diagnosis Chart - Condition No. 1 and 2

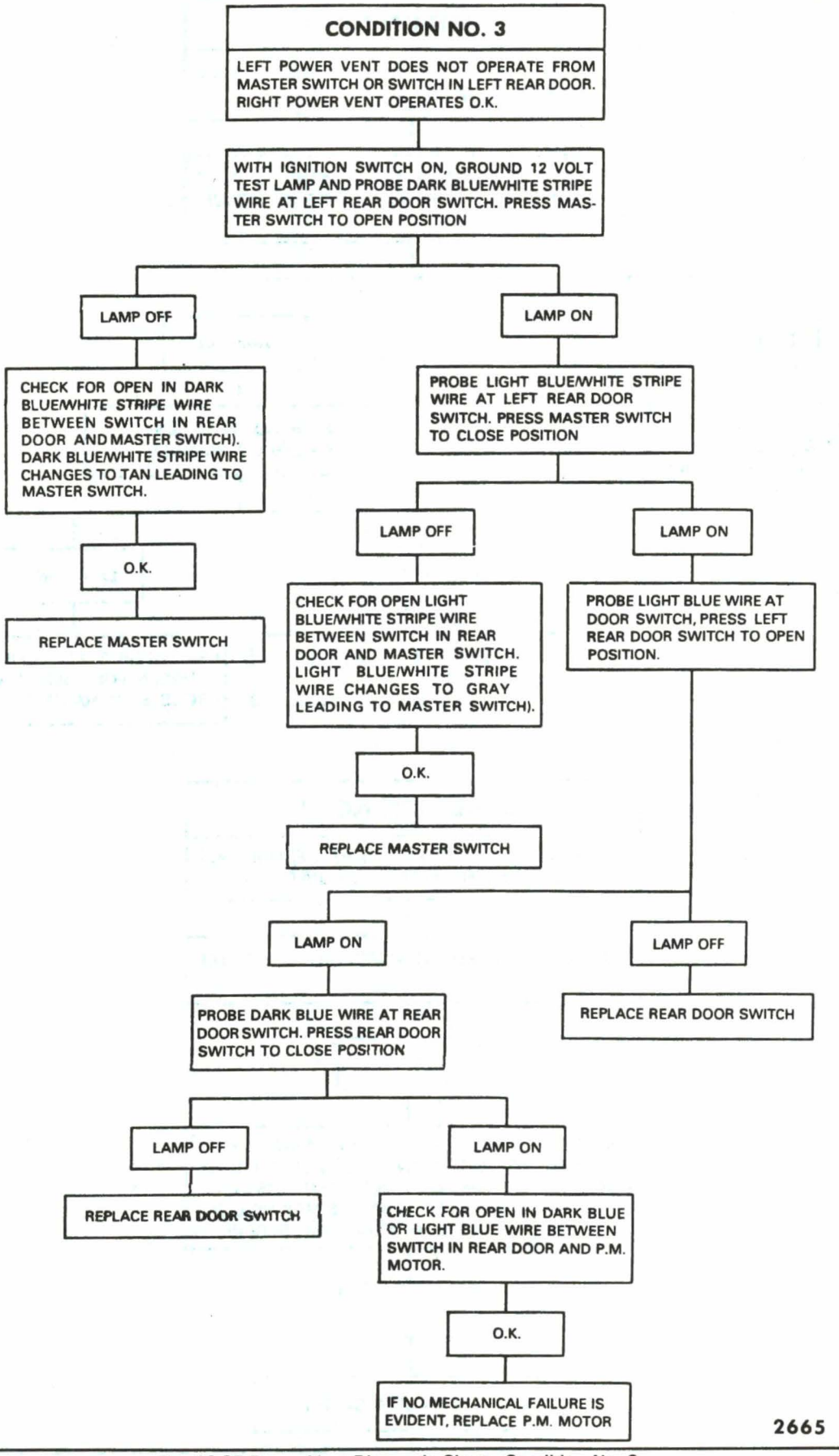


Fig. 10-35-Power Vent Diagnosis Chart - Condition No. 3

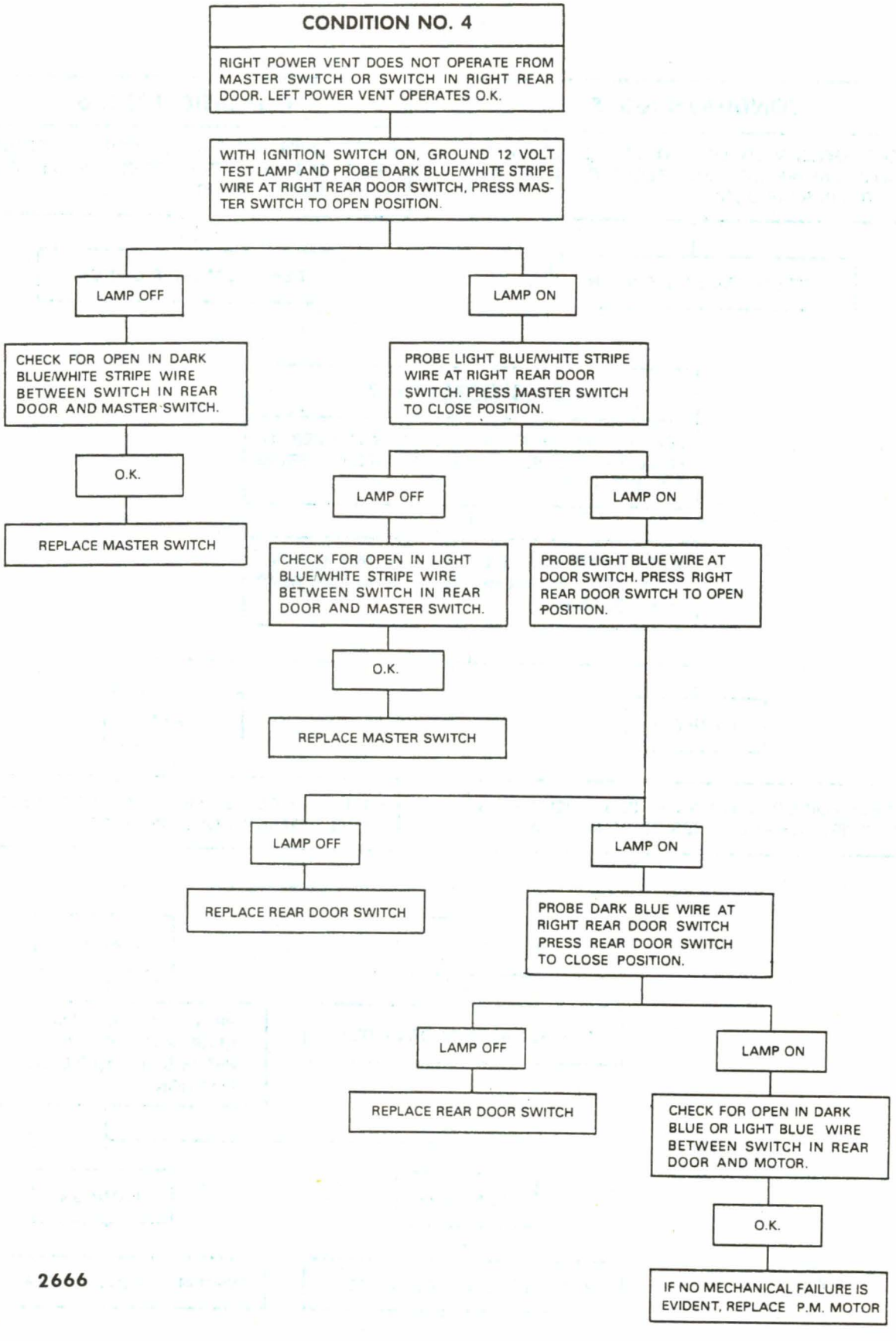


Fig. 10-36-Power Vent Diagnosis Chart - Condition No. 4

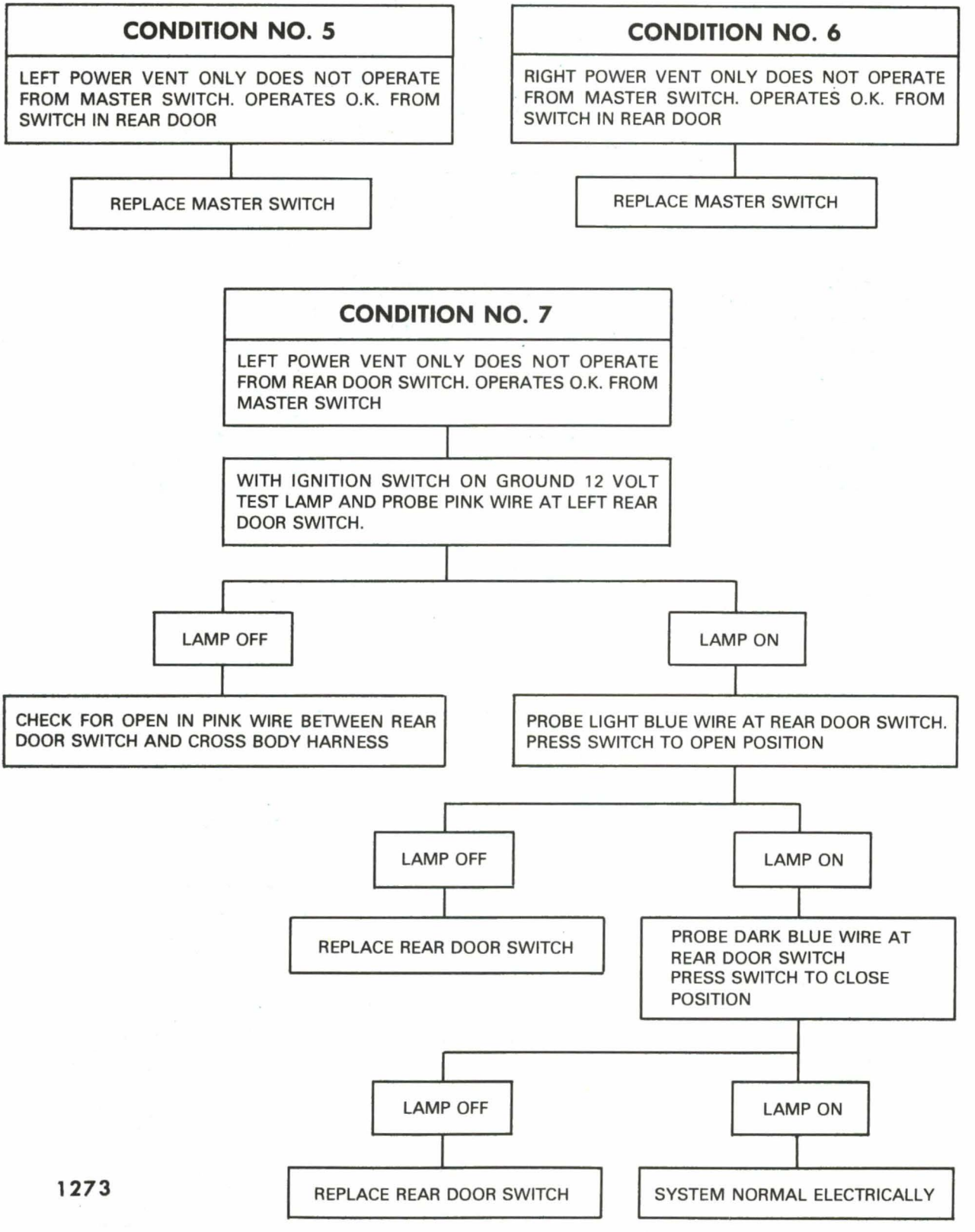


Fig. 10-37-Power Vent Diagnosis Chart - Condition No. 5, 6 and 7

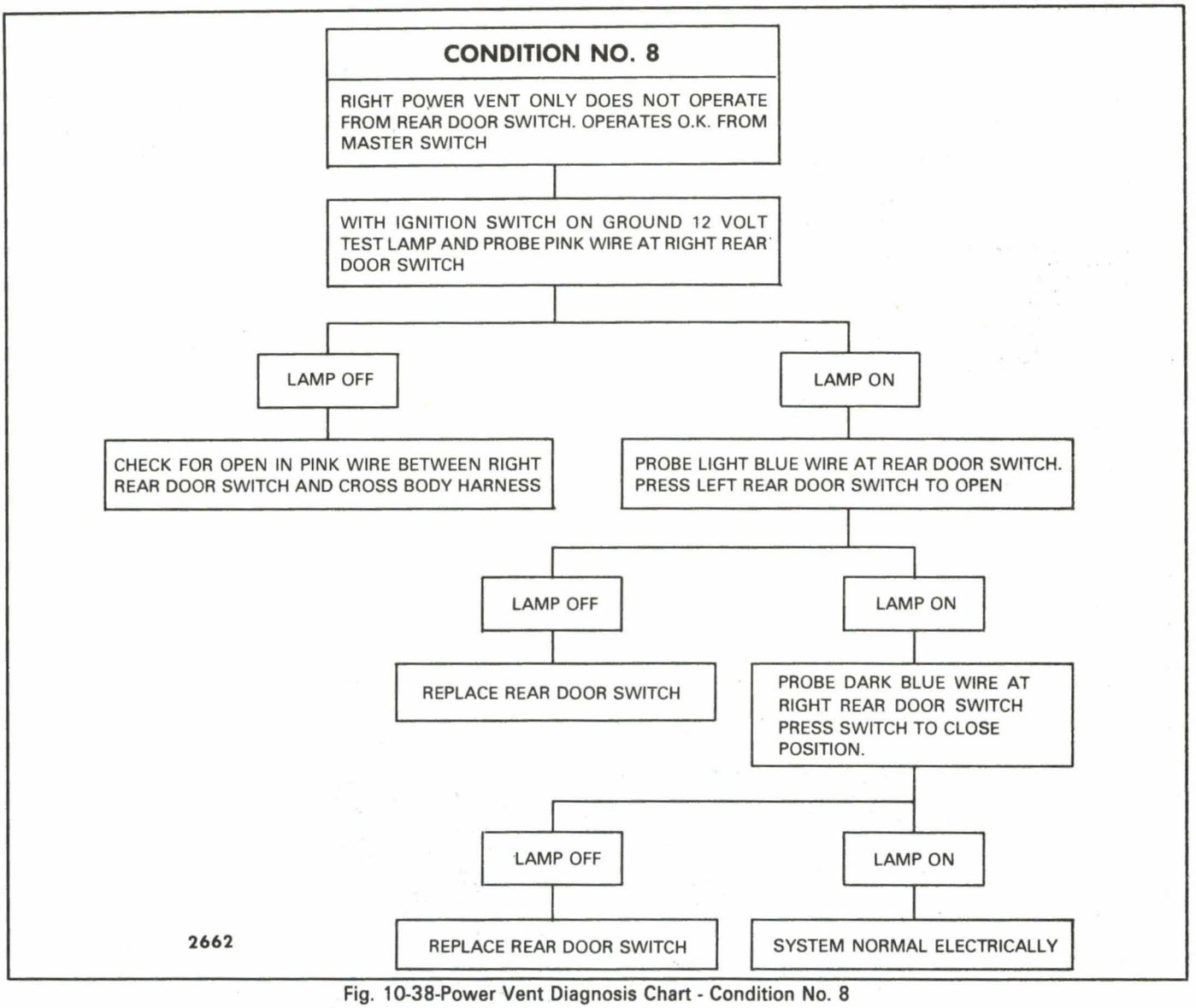


Fig. 10-38-Power Vent Diagnosis Chart - Condition No. 8

POWER TAILGATE WINDOW - B STYLES

POWER TAILGATE WINDOW CIRCUIT

On B station wagon styles the power 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. 10-40).

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. 10-39). A complete circuit diagram of the tailgate power window is shown in Figure 10-41.

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.

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.

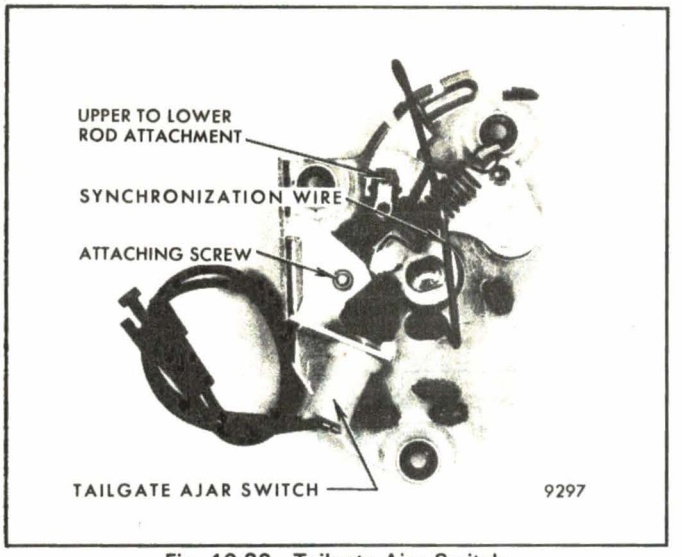


Fig. 10-39 - Tailgate Ajar Switch

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 proper diagnosis chart.

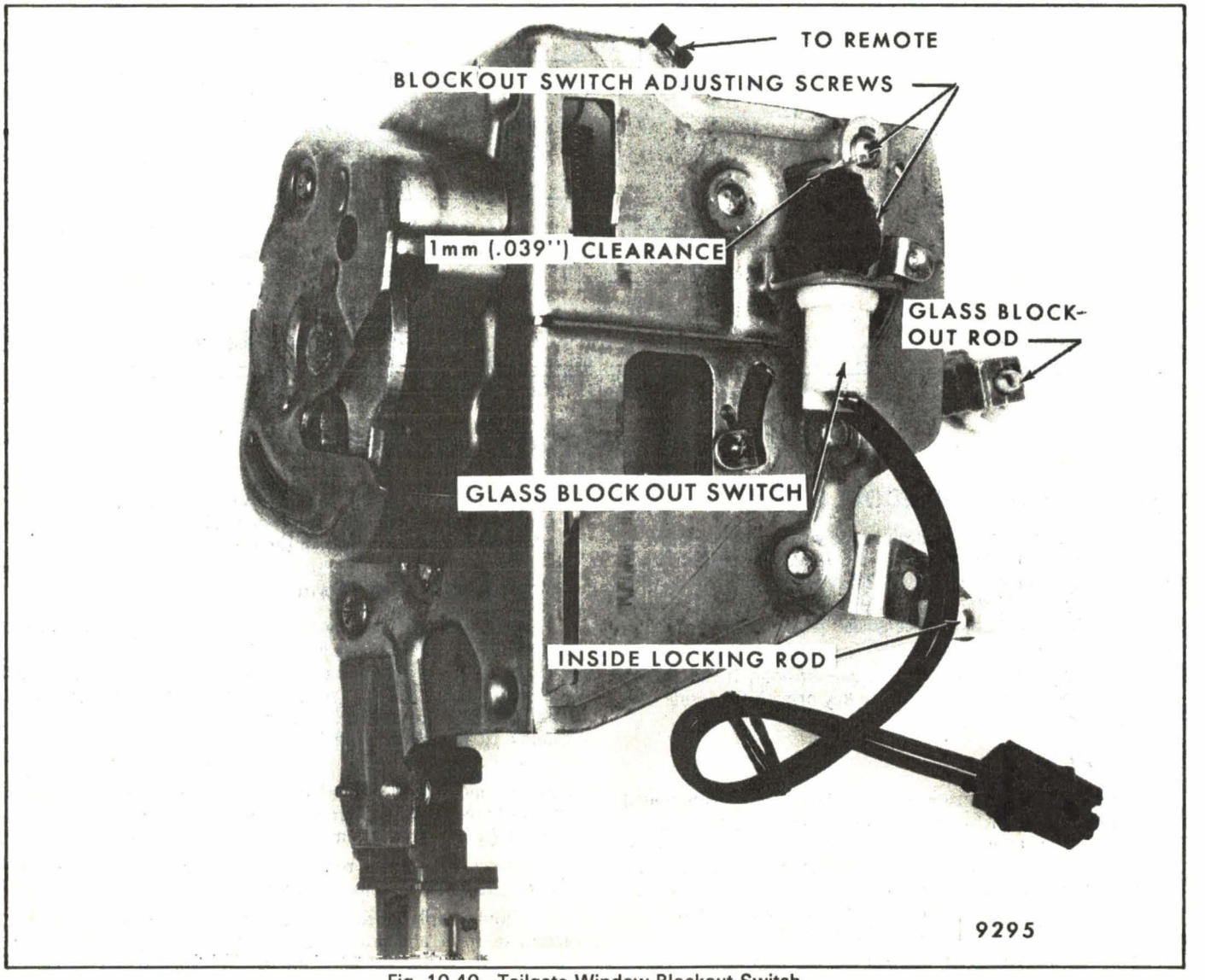


Fig. 10-40 - Tailgate Window Blockout Switch

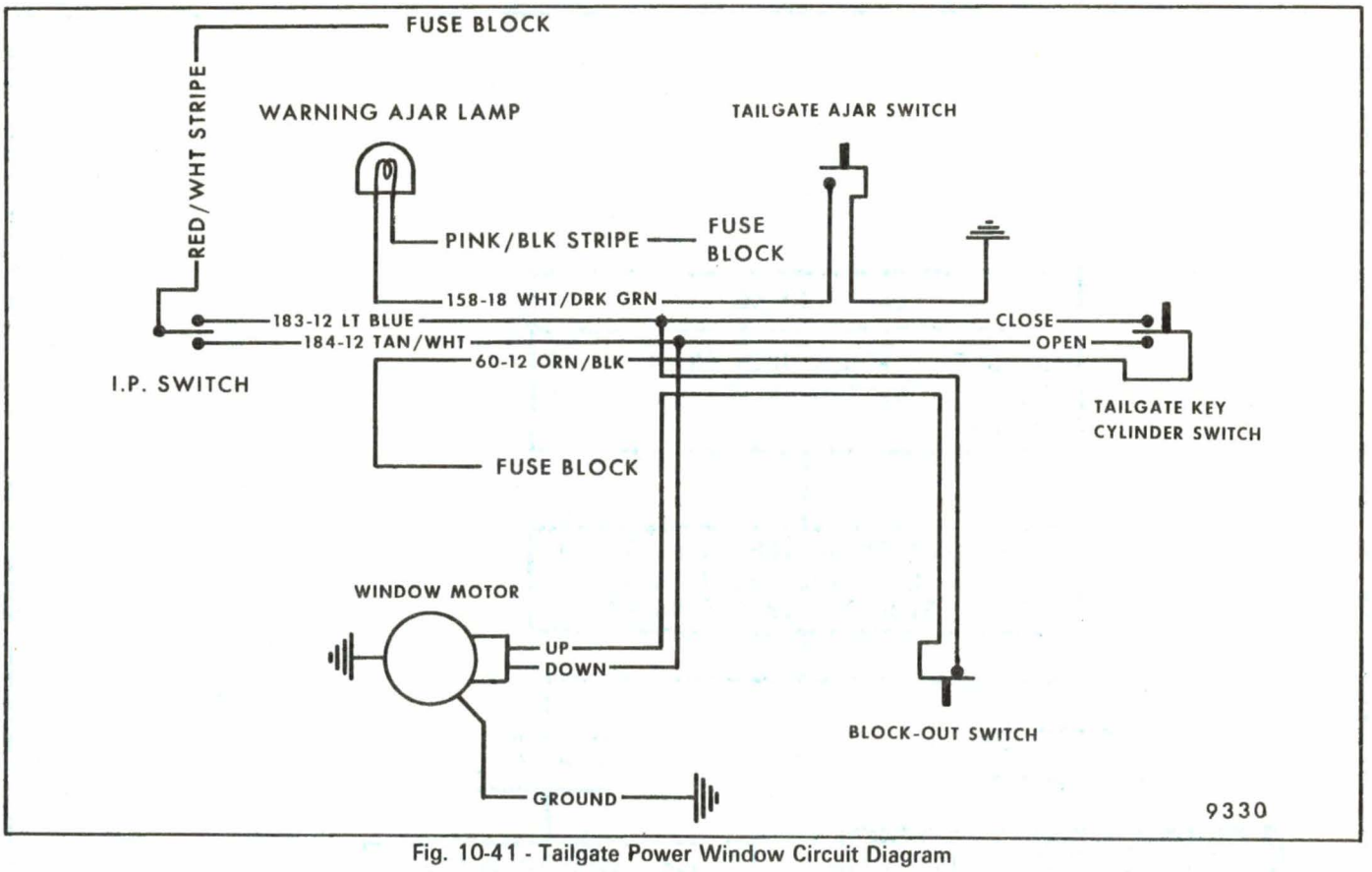


Fig. 10-41 - Tailgate Power Window Circuit Diagram

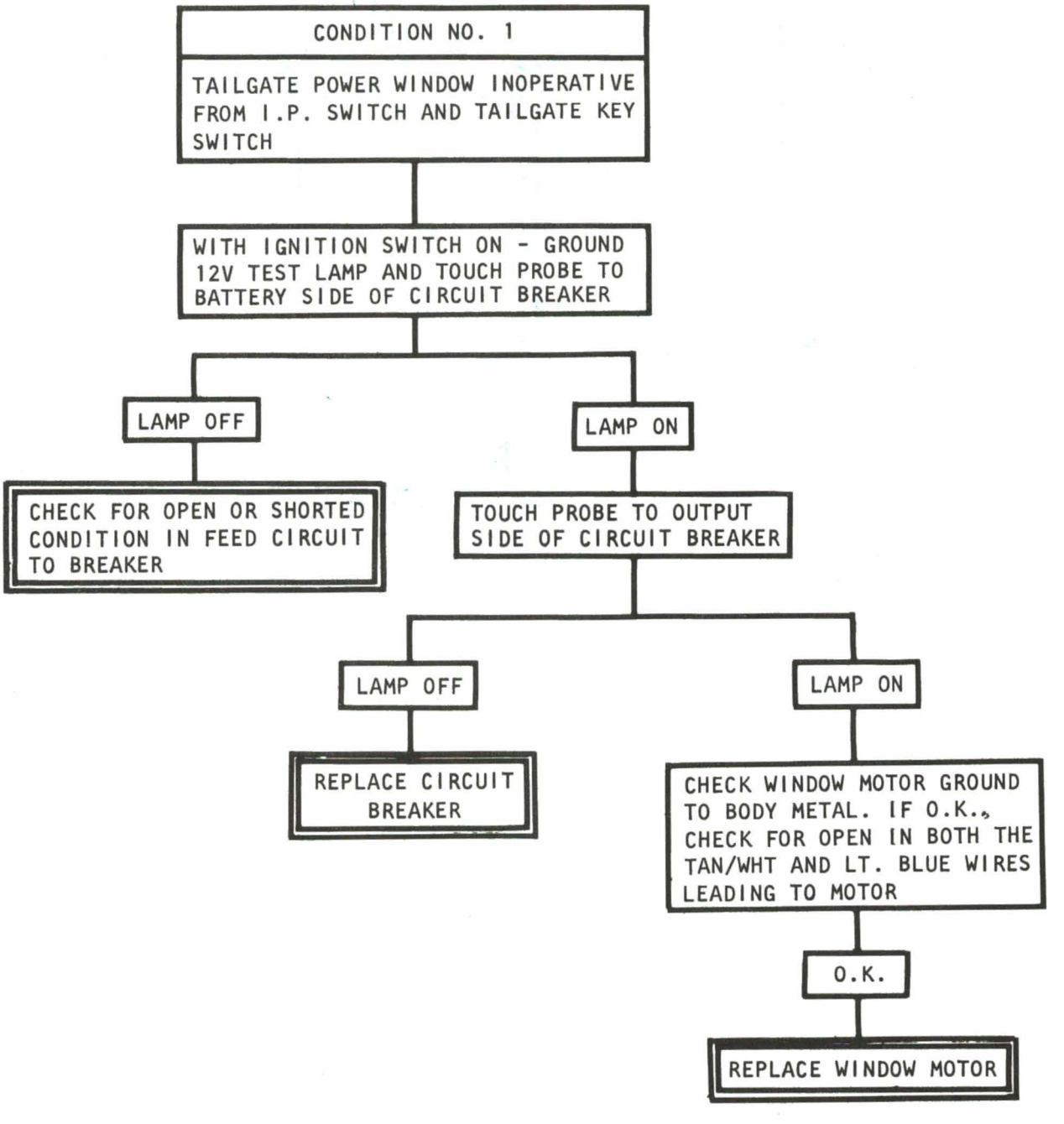


Fig. 10-42 - Power Tailgate Window Diagnosis Chart - Condition No. 1

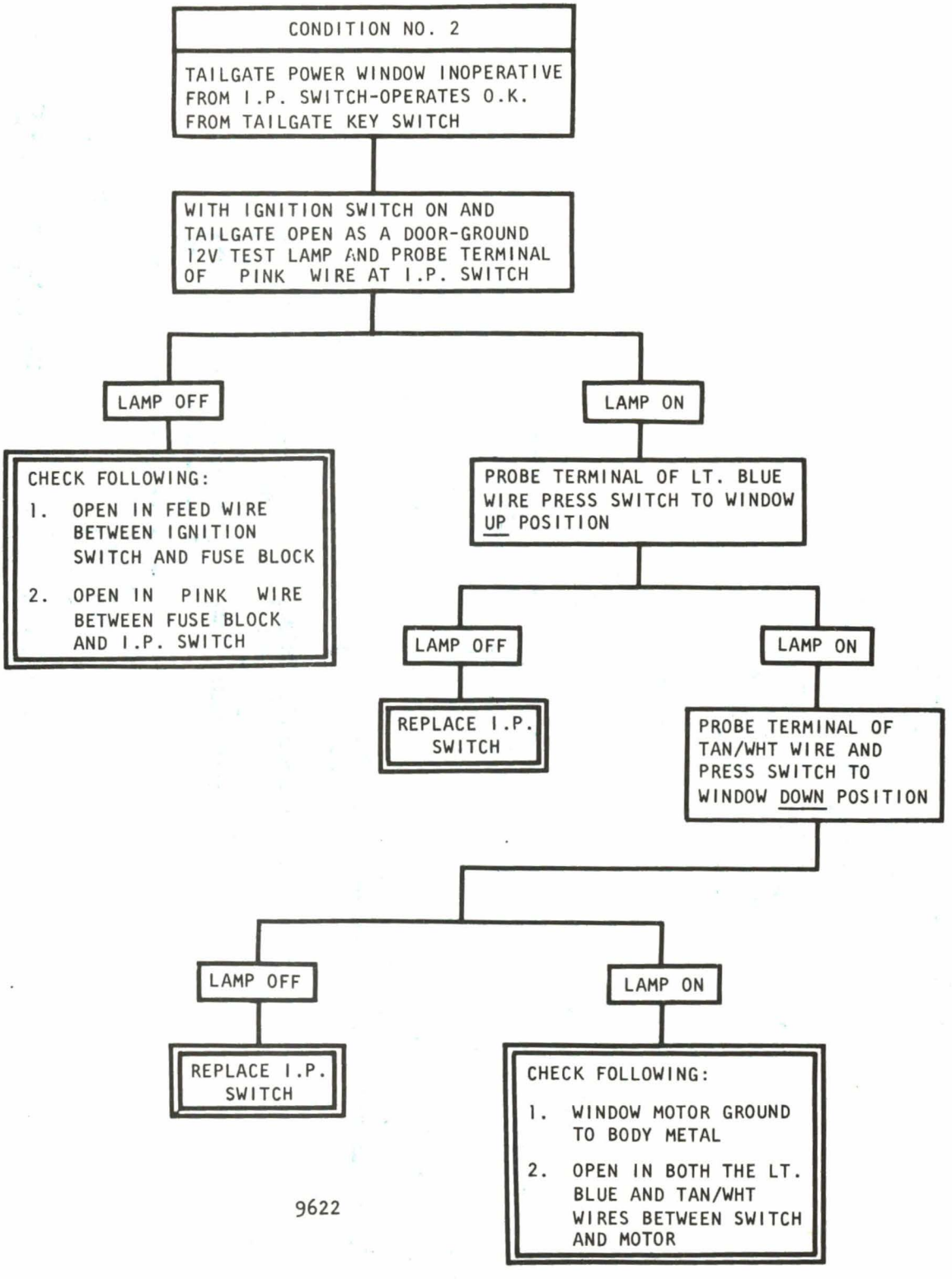


Fig. 10-43 - Power Tailgate Window Diagnosis Chart - Condition No. 2

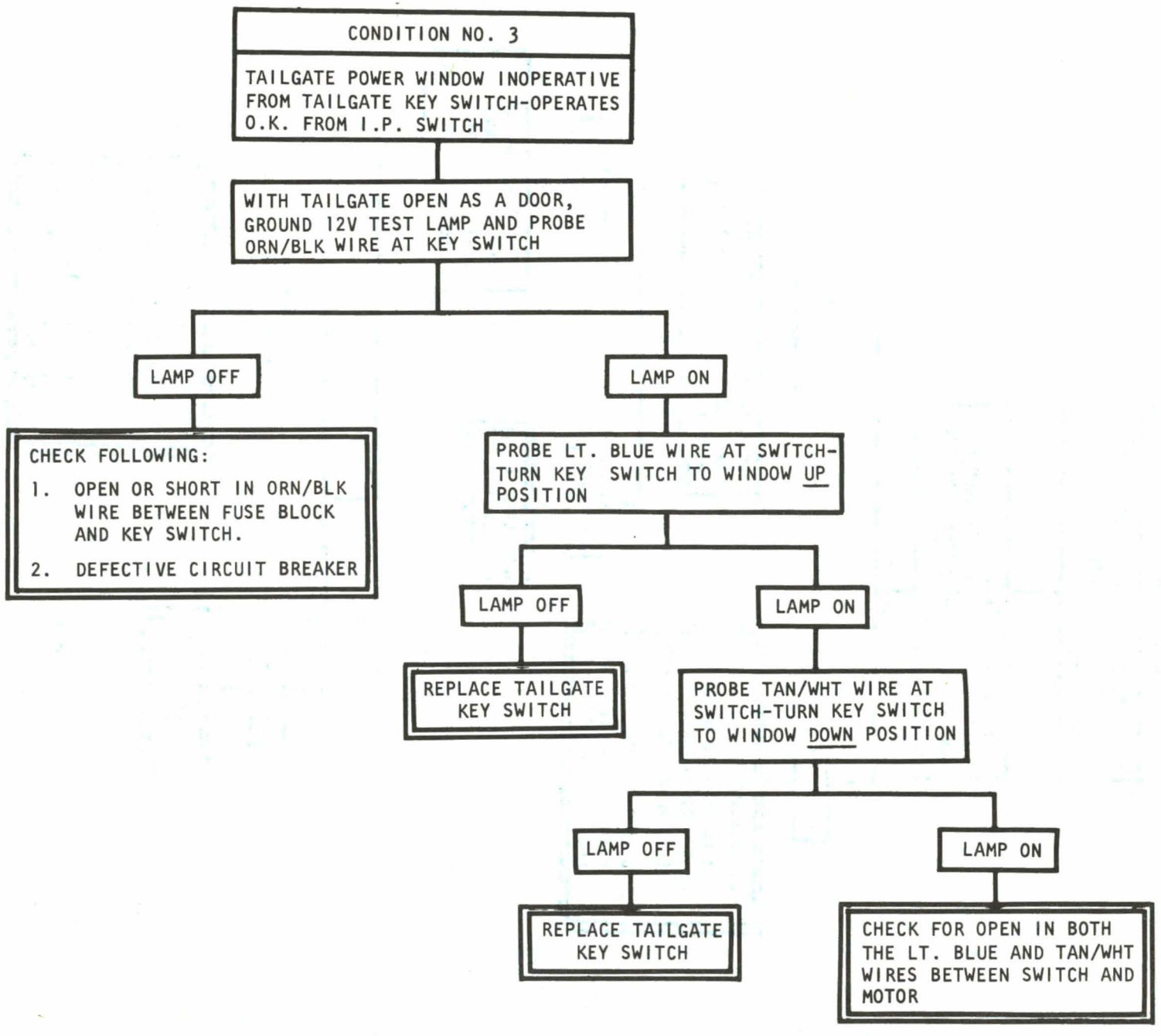


Fig. 10-44 - Power Tailgate Window Diagnosis Chart - Condition No. 3

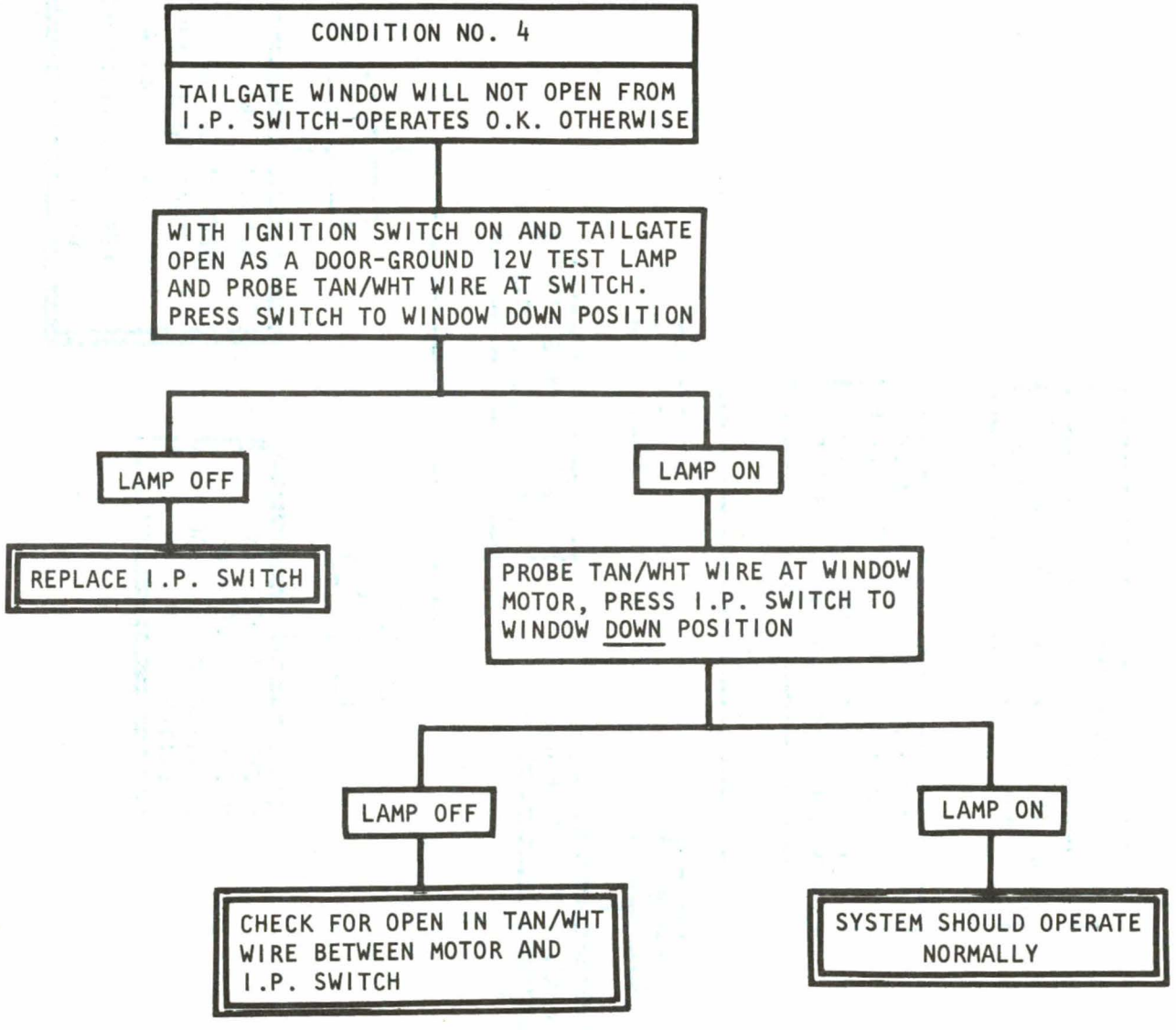


Fig. 10-45 - Power Tailgate Window Diagnosis Chart - Condition No. 4

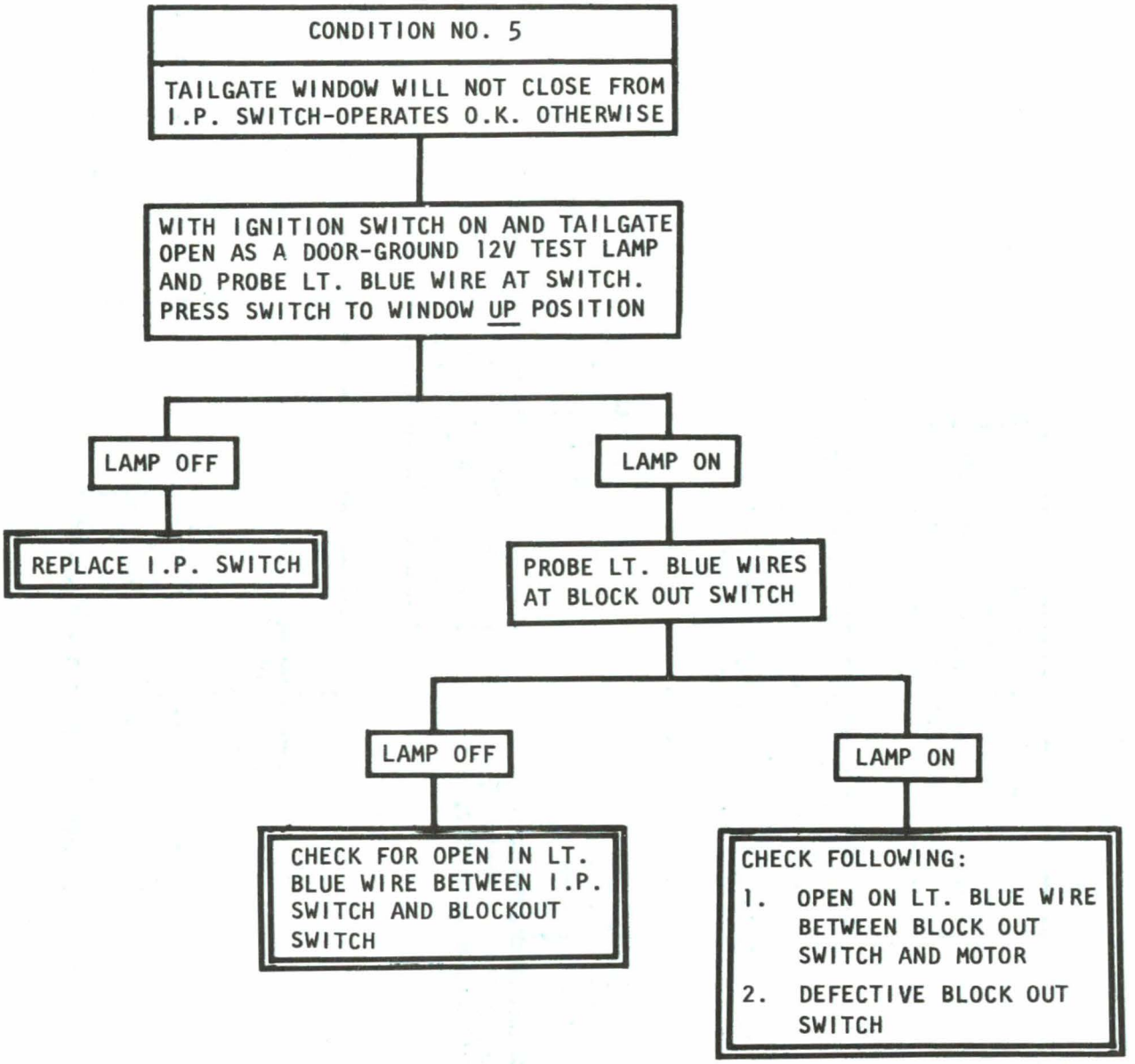


Fig. 10-46 - Power Tailgate Window Diagnosis Chart - Condition No. 5

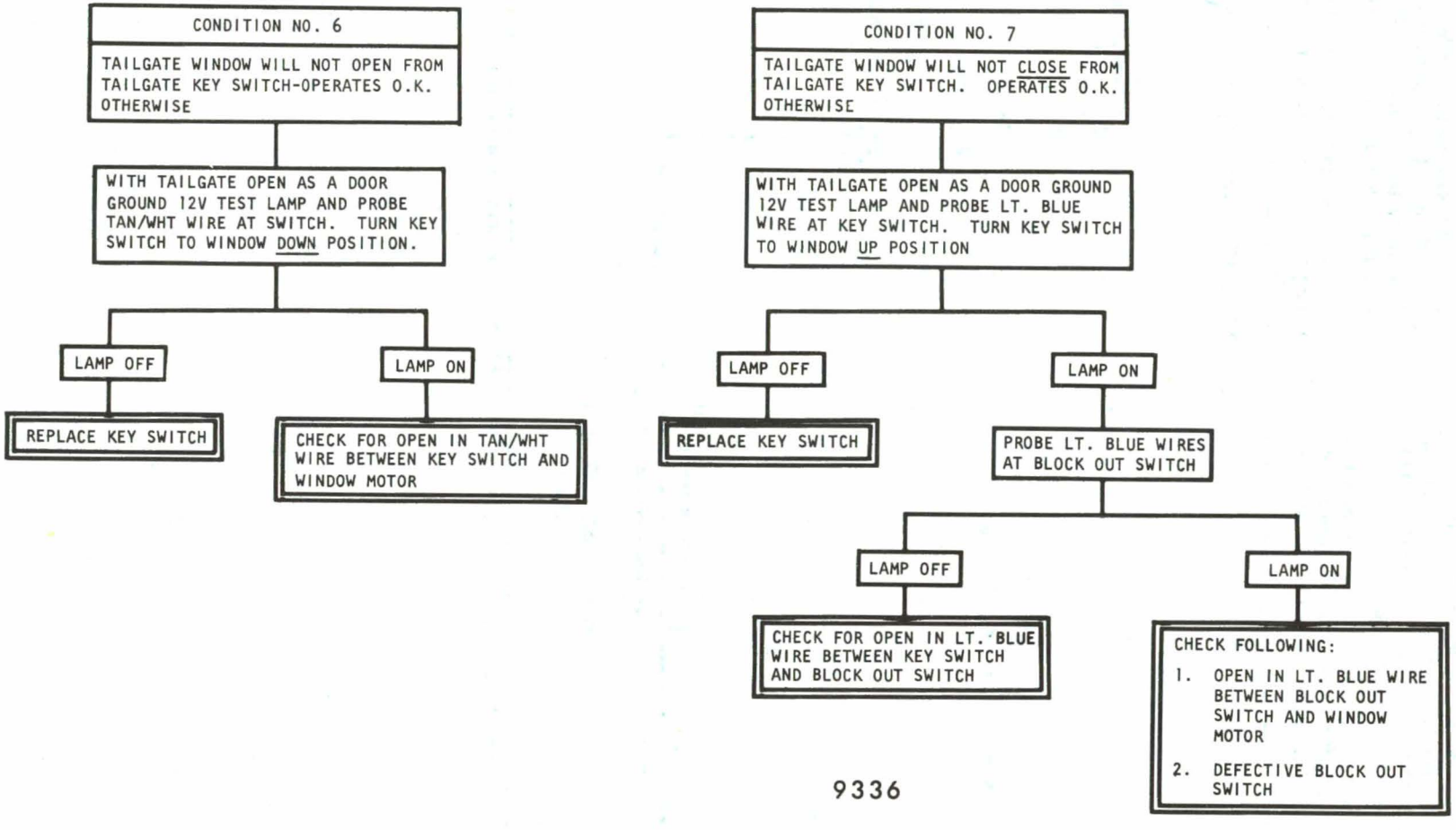


Fig. 10-47 - Power Tailgate Window Diagnosis Chart - Condition No. 6 and No. 7

POWER TAILGATE WINDOW - G STYLES

The tailgate window release system consists of a control switch, a lock release solenoid and a pully and cable assembly.

The push-button type switch is mounted in the glove compartment. The solenoid, pully and cable assembly are mounted to the tailgate inner panel. One end of the cable is attached to the solenoid and the other to the lock mechanism.

When the control switch is actuated, voltage is supplied to the solenoid. The solenoid shaft retracts, pulling the cable which releases the lock pawl from the striker. The striker is mounted to the tailgate glass. This allows the two gas support assemblies to raise the glass.

The tailgate glass can also be released manually by turning the release handle at the tailgate lock cylinder while the key is still inserted into the cylinder. Turning the handle clockwise releases the glass, turning it counterclockwise releases the gate.

A complete circuit diagram is shown in Figure 10-48. Diagnostic procedures are covered in Figure 10-49.

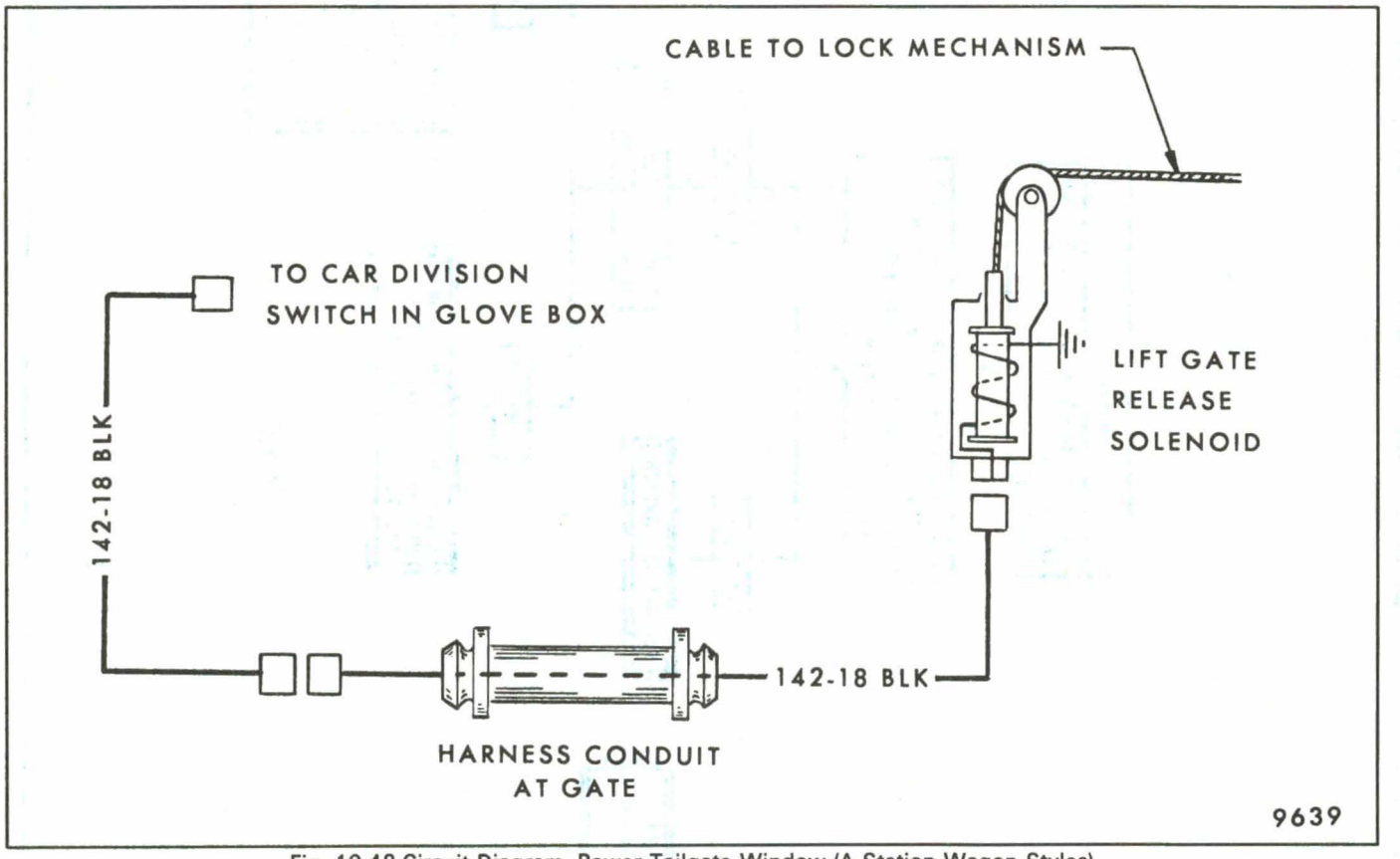


Fig. 10-48-Circuit Diagram, Power Tailgate Window (A Station Wagon Styles)

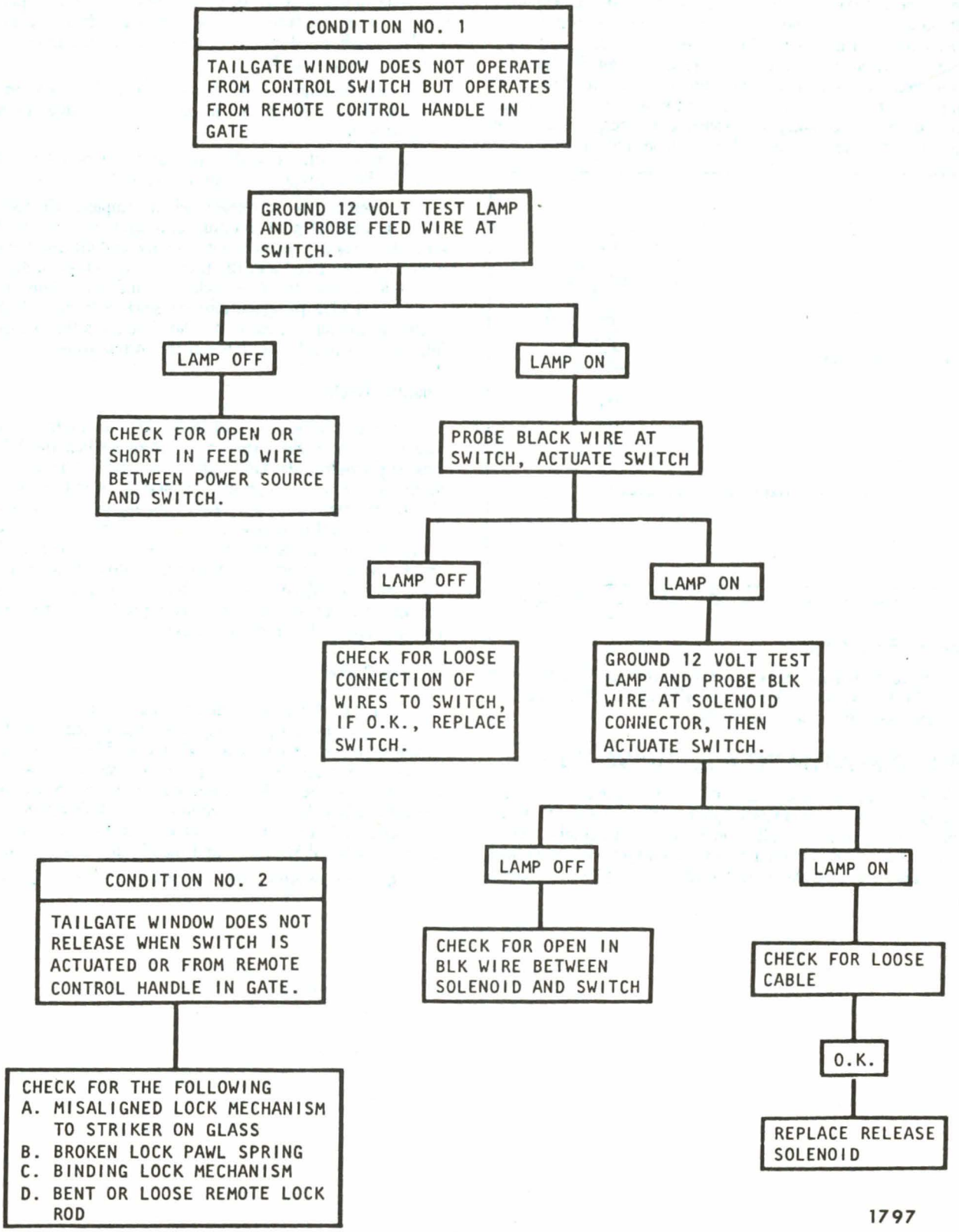


Fig. 10-49-Power Tailgate Window Diagnosis Chart - Condition No. 1 and 2

REAR COMPARTMENT LID RELEASE SYSTEM

The rear compartment lid release system consists of a control switch mounted in the glove compartment and a lock release solenoid assembly which is attached to the rear compartment inner panel. The solenoid is externally grounded through the case and attaching bolts to body metal. The ignition switch must be on to operate the system. When the release button is depressed, voltage is supplied to the solenoid. The solenoid is energized and the plunger retracts, releasing the lock hook from the striker.

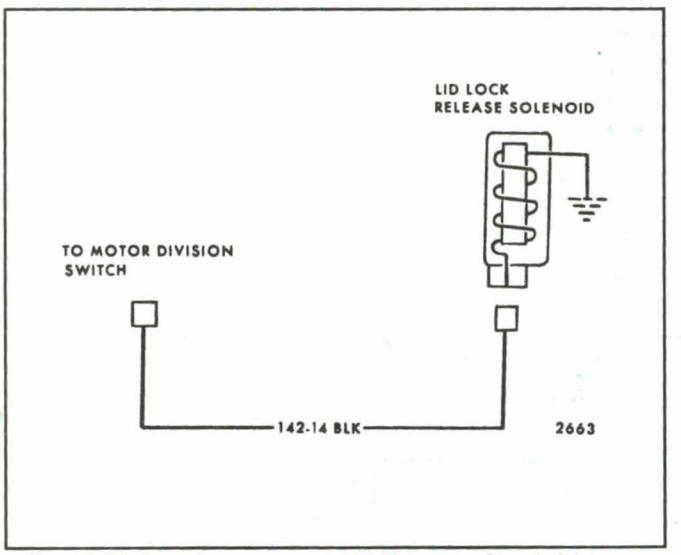


Fig. 10-50-Rear Compartment Lid Release - Circuit Diagram

Diagnostic Procedures

If the rear compartment will not open from the control switch or with the key at the lock cylinder, this condition is due to a mechanical bind in the lock assembly.

REAR COMPARTMENT PULL DOWN UNIT

The rear compartment lid pull down (closing) and release system consists of a permanent magnet motor (P.M.) with a gear reduction unit 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.

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.

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.

A single switch assembly (plunger type) mounted to the unit controls the electrical operation of the unit.

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. The lid is then raised to the full-open position by the force of the torque rods.

Opening Cycle

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 DC to the P.M. motor. The circuit for the motor is completed to ground through a second set of normally closed contacts. The motor is energized and the gear reduction unit rotates 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

When the lid is closed and the lock hook engages the striker of the closing unit, a path to ground is provided from the striker through the lock assembly to body metal. The motor is energized (polarity reversed) and the output gear rotates 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.

A complete circuit diagram is shown in Figure 10-52.

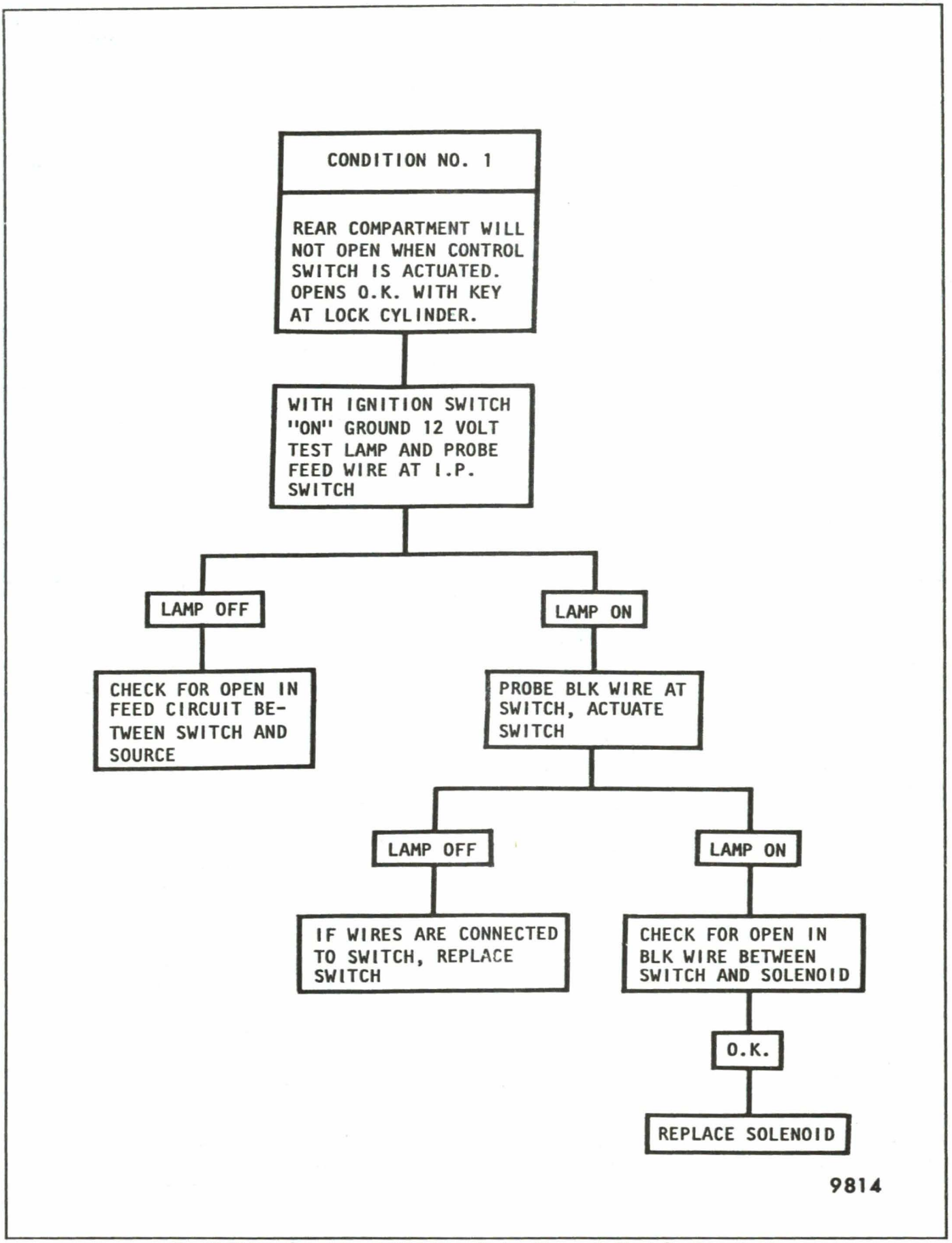


Fig. 10-51-Rear Compartment Lid Release System Diagnostic Chart, Condition No. 1

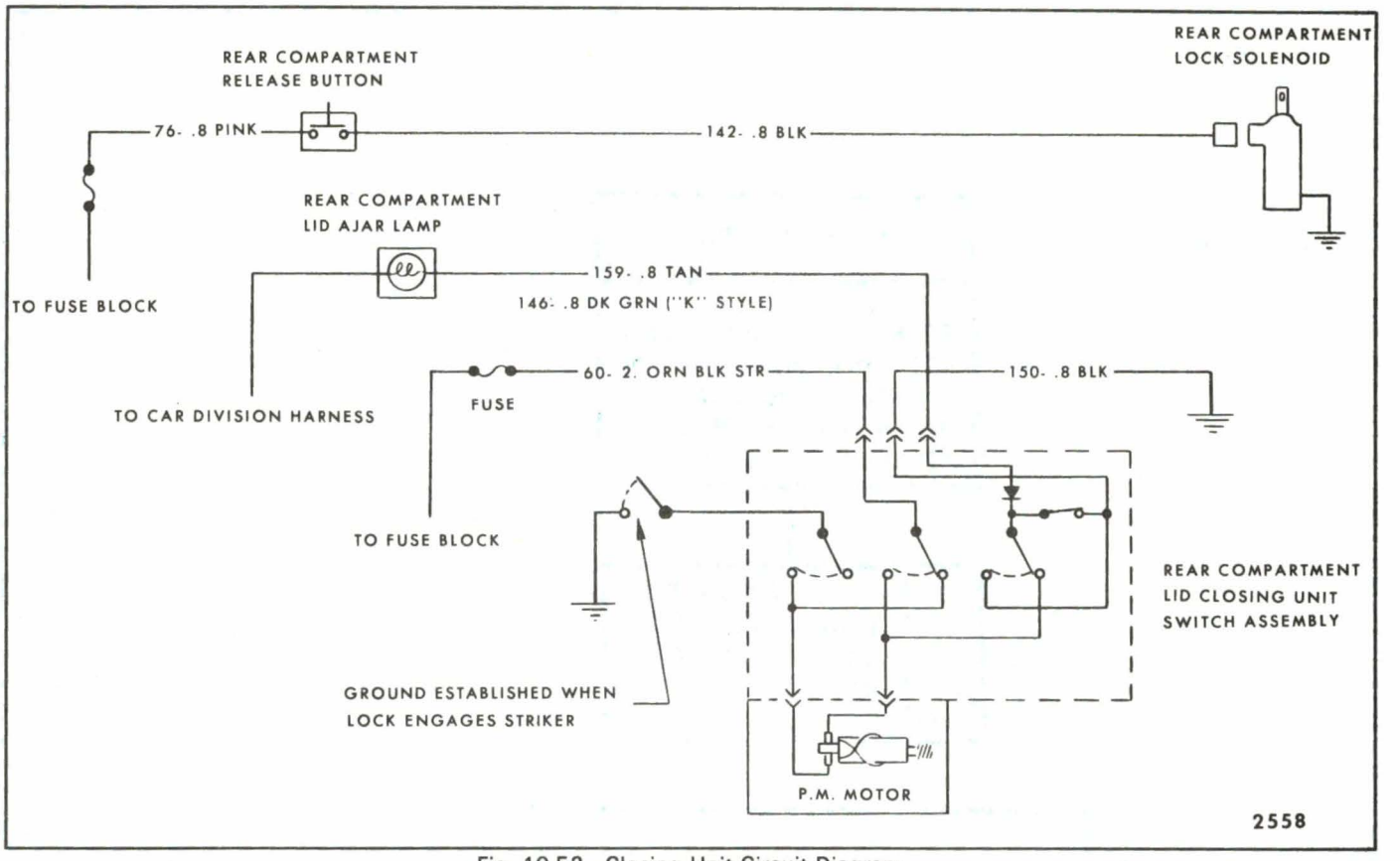


Fig. 10-52 - Closing Unit Circuit Diagram

DIAGNOSTIC PROCEDURES

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 pink wire between switch and source.	a. Reconnect or repair feed wire.
	b. Open in black wire between switch and rear compartment lock solenoid.	b. Reconnect or repair black wire.
	c. Defective release switch	c. Disconnect leads at switch; place jumper wire between leads. If lock solenoid is energized, replace switch.
	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 feed wire between source and closing unit.	a. Reconnect or repair feed wire as required.
	b. Disconnect or open in wires leading to switch.	b. Reconnect or repair as required.
	c. Defective switch assembly.	c. Replace switch assembly.
	d. Defective P.M. motor.	d. Disconnect switch assembly from pull down assembly. Connect 12 volt feed

		source to one terminal and 12 volt ground source to other terminal. If motor does not operate, replace P.M. 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 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). b. Foreign matter between switch contact blade and striker shaft. c. Foreign matter on surface of lock striker or lock hook surface.	a. Adjust blade or replace switch as required. b. Clean as required. c. Clean as required.
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 feed wire between lamp and closing unit switch assembly. b. Defective switch assembly, failed closed.	a. Check for bare or pinched feed wire. Repair as required. b. Replace switch assembly.
9. Lid ajar lamp inoperative. Does not light when lid is opened.	a. Open in feed 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.

POWER SEATS

TWO-WAY POWER SEATS

The seat adjusters are actuated by a 12V 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.

A complete circuit diagram is shown in Figure 10-53. The horizontal seat circuit is protected by a 30 amp circuit breaker.

A junction block located on the reinforcement at the left or right shroud panel is used to supply voltage to the power seat circuit. Voltage is supplied to the junction block from the circuit breaker, and the power seat harness feed wire plugs into the junction block.

Diagnostic Procedures

Diagnostic procedures are covered in Figures 10-54 and 10-55.

SIX-WAY POWER SEAT - Cadillac CB69, K Styles, also E Styles with Biarritz Top

The six-way power seat consists of a control switch and three permanent magnet motors that drive a gear reduction unit and jackscrews to obtain six-way seat movement. The desired movement is accomplished by reversing the polarity to each P.M. motor through the control switch (Fig. 10-56).

SIX-WAY POWER SEAT - B, C, D, G Styles and E Styles without Biarritz Top

The six-way power seat system consists of a conventional control switch which is mounted in the door armrest or seat side panel. The system also includes a relay, P.M. motor and transmission assembly.

When a control switch is actuated to the aft and up position, voltage is supplied to the P.M. motor through a set of normally closed contacts in the relay. This circuit is completed to ground from the motor back through a second set of contacts in the relay to body metal. (Relay is externally grounded.)

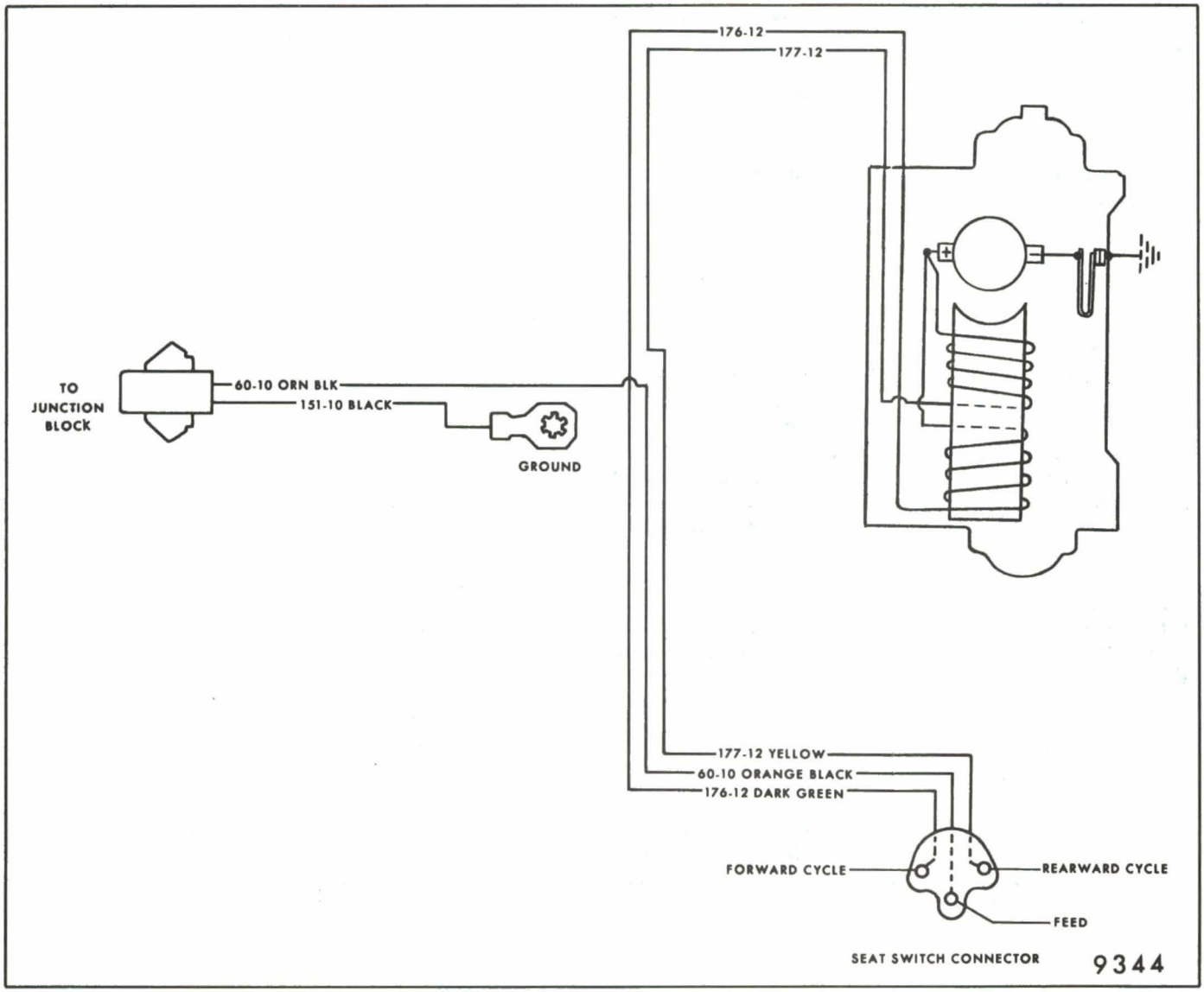


Fig. 10-53-Two-way Power Seat Circuit Diagram

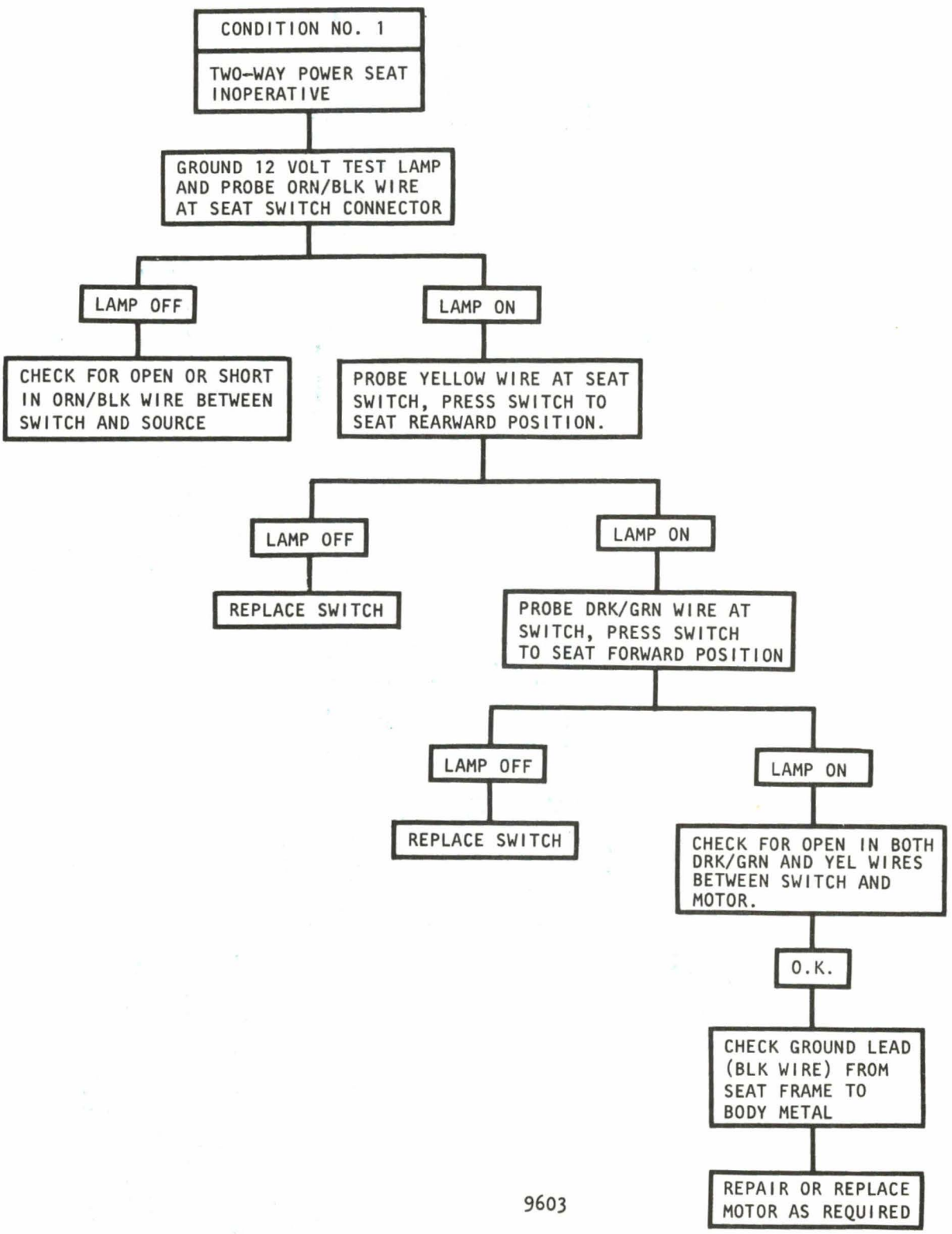


Fig. 10-54-Two-way Power Seat Diagnosis Chart - Condition No. 1

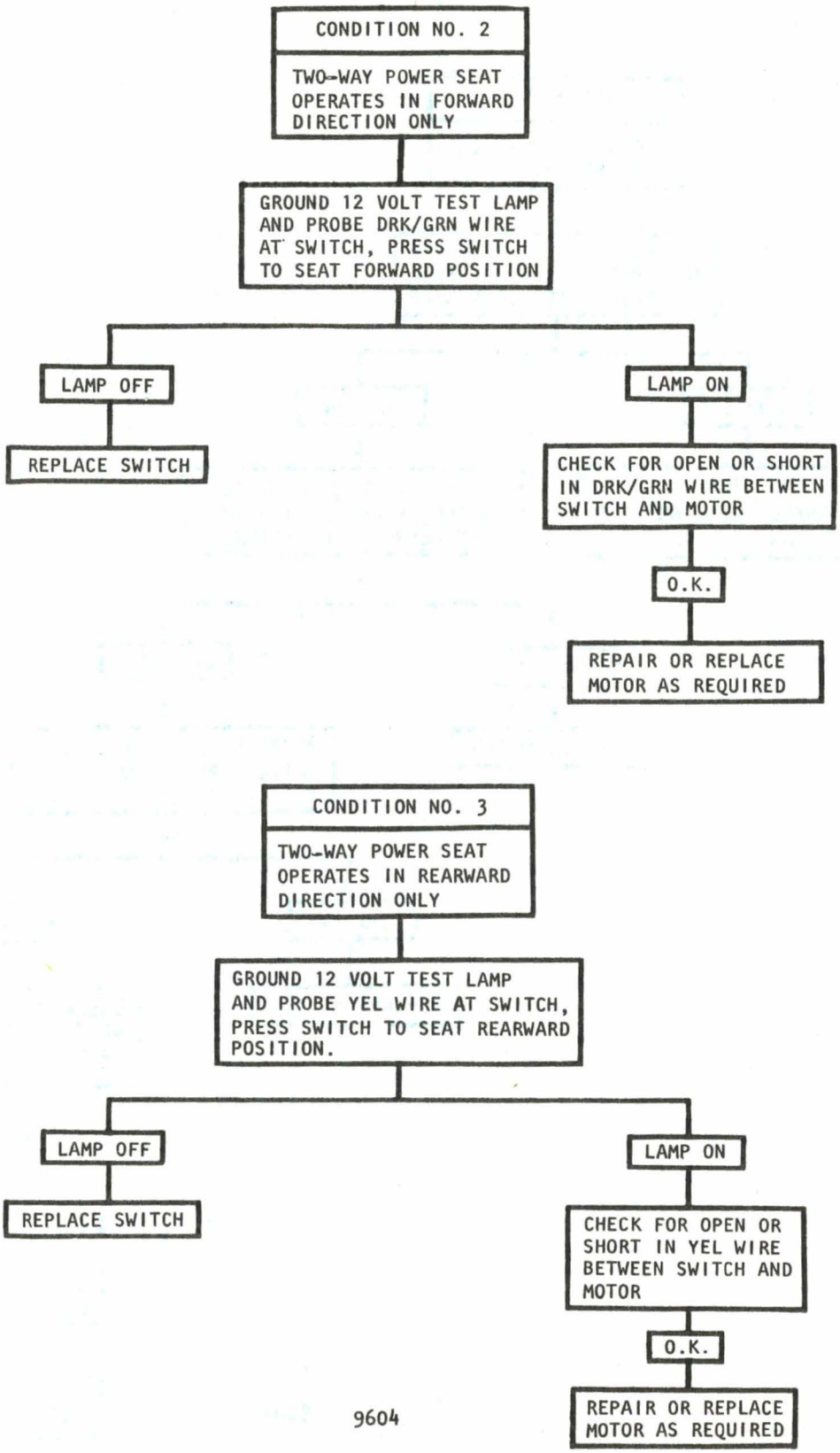


Fig. 10-55-Two-way Power Seat Diagnosis Chart - Condition No. 2 and 3

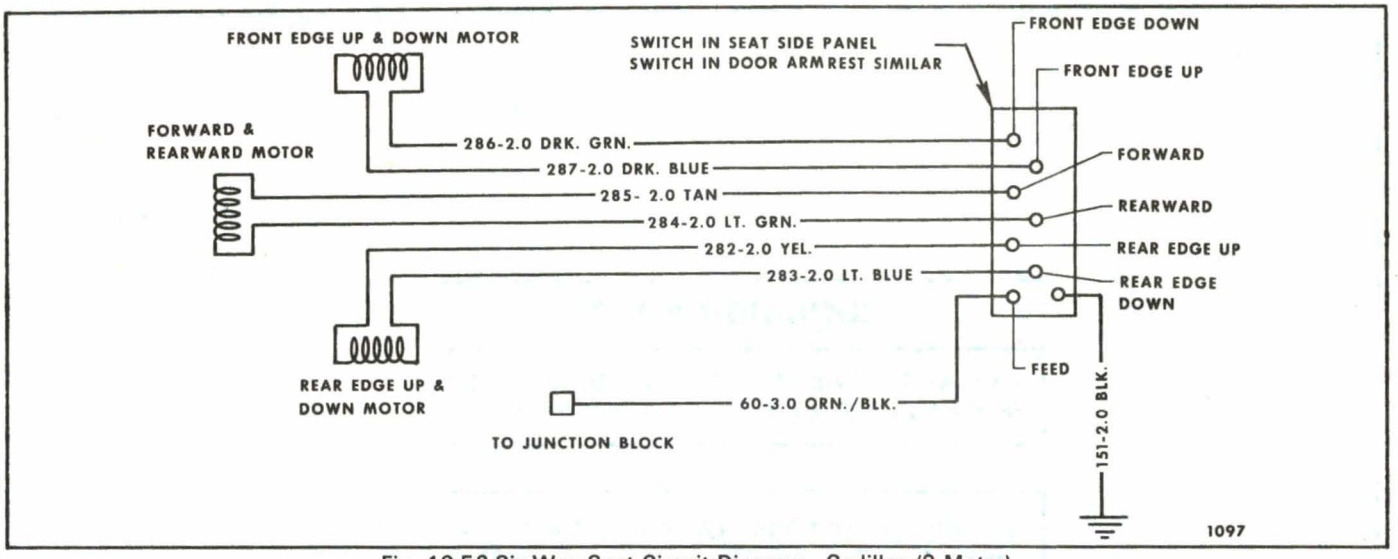


Fig. 10-56-Six-Way Seat Circuit Diagram - Cadillac (3 Motor)

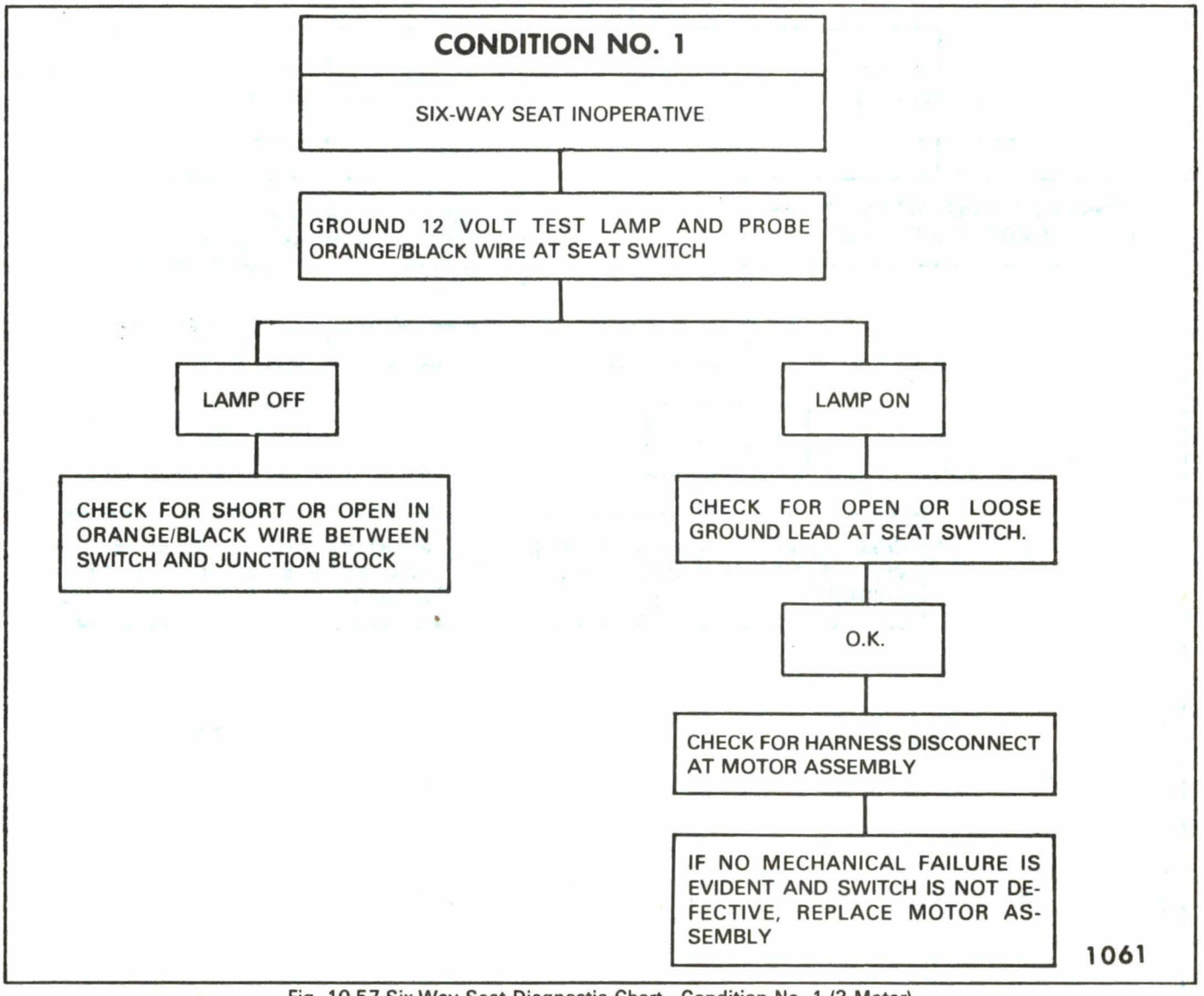


Fig. 10-57-Six-Way Seat Diagnostic Chart - Condition No. 1 (3 Motor)

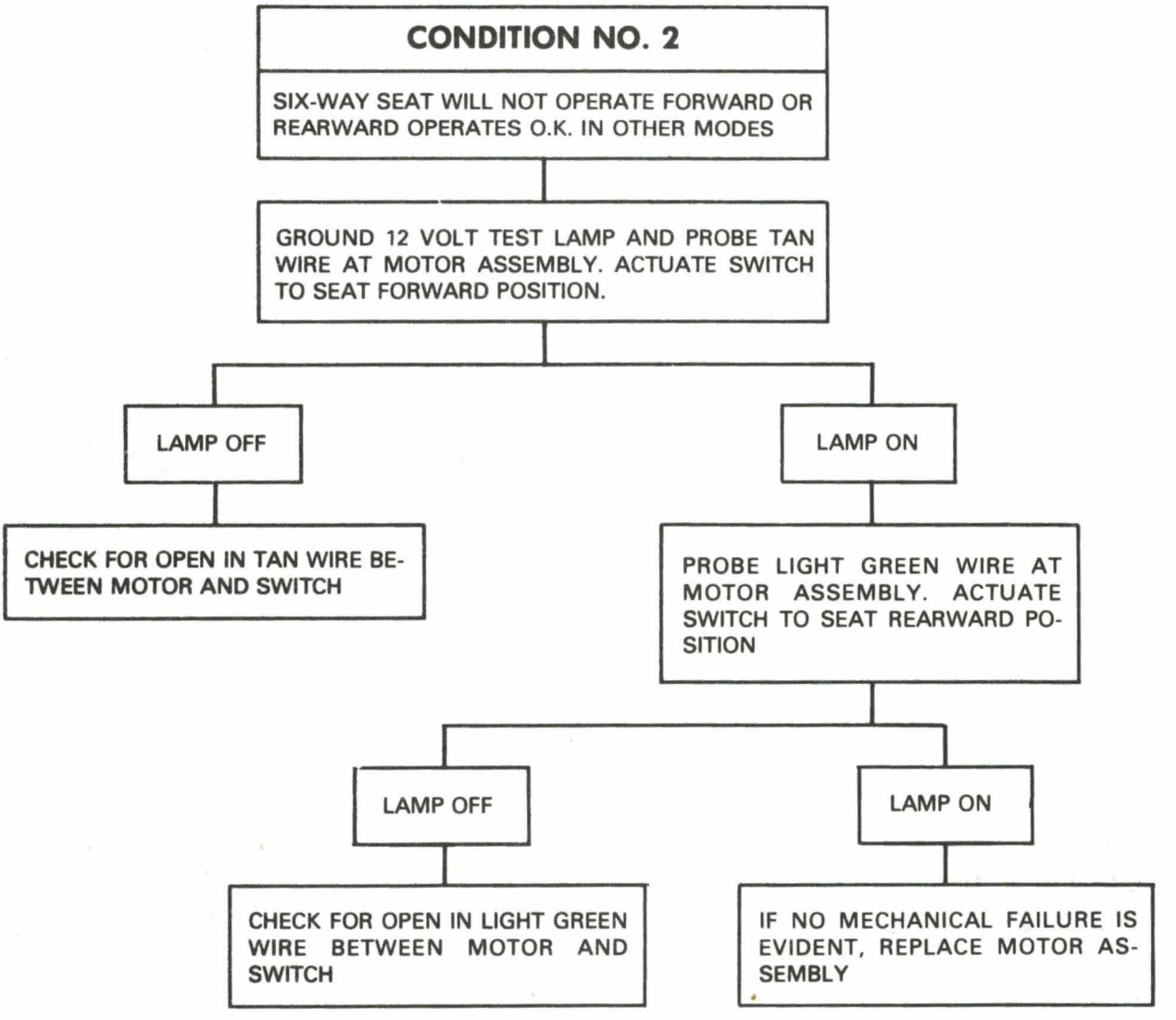


Fig. 10-58-Six-Way Seat Diagnostic Chart - Condition No. 2 (3 Motor)

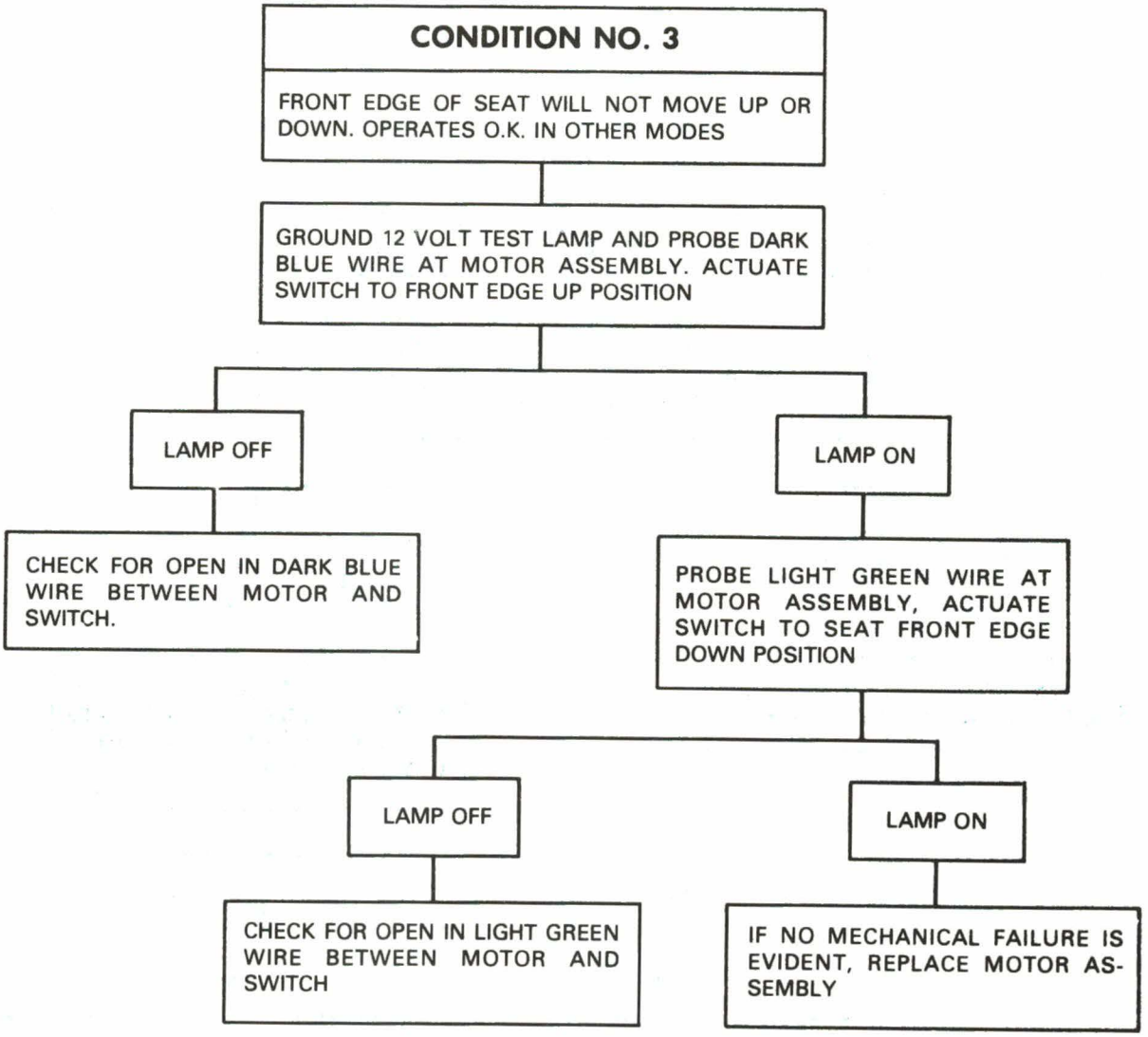


Fig. 10-59-Six-Way Seat Diagnostic Chart - Condition No. 3 (3 Motor)

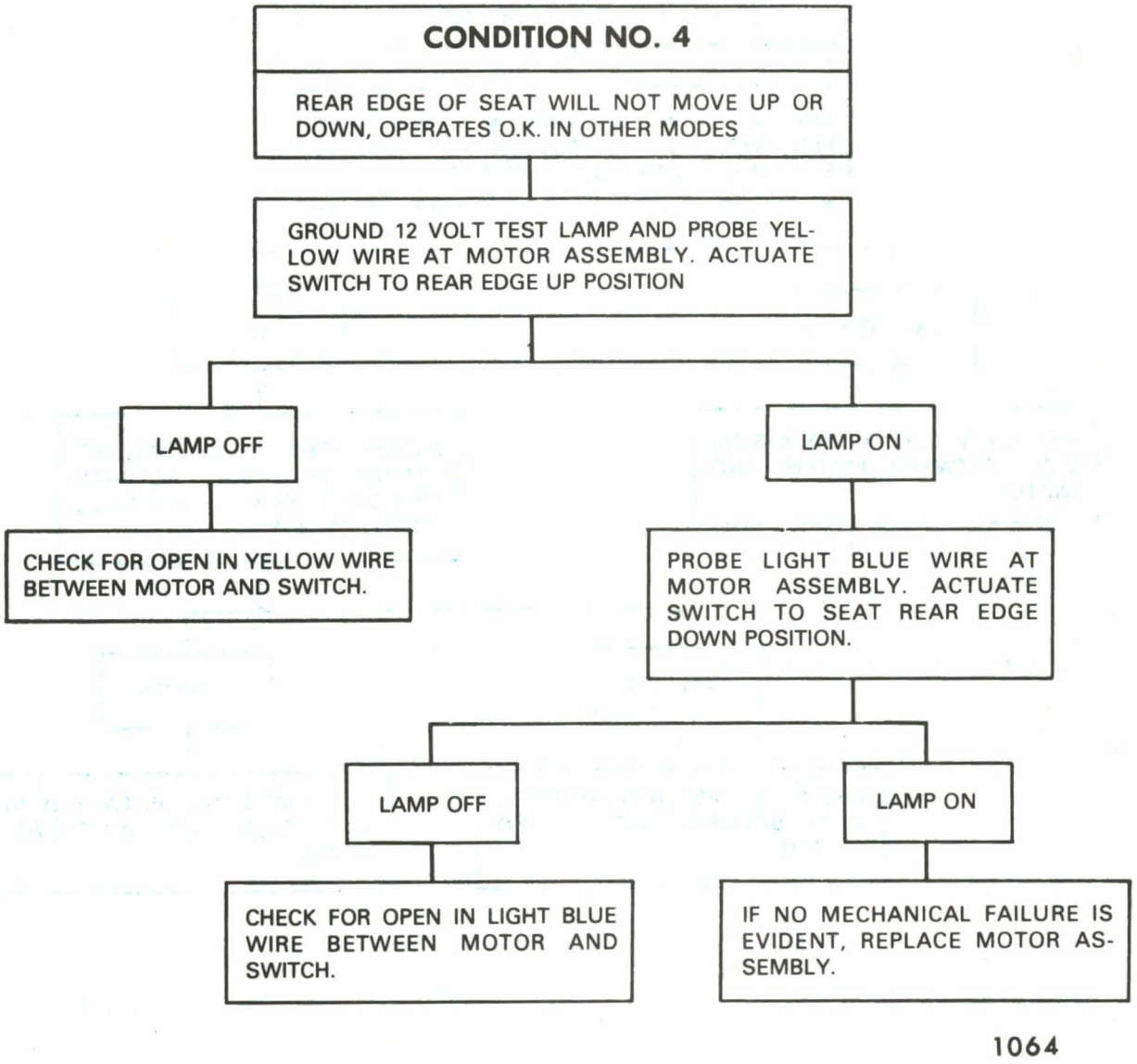


Fig. 10-60-Six-Way Seat Diagnostic Chart - Condition No. 4 (3 Motor)

When the control switch is actuated to obtain seat movement in an opposite direction, polarity to the P.M. motor is reversed. Voltage is supplied to the coil in the relay. Contacts in the relay close providing voltage to the P.M. motor and the motor turns the drive cables in the opposite direction.

The same switch action that energizes the P.M. motor also provides voltage to the solenoid in the transmission assembly, energizing the solenoid coil which results in the solenoid plunger dog engaging the gear mechanism. This rotates the drive cable and the desired seat movement is obtained.

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.

Refer to the seat section in this manual for mechanical diagnosis of this system.

Diagnostic Procedures

The diagnostic procedures for the six-way seat with one motor are covered in Figures 10-62 through 10-66.

SIX-WAY TWO-POSITION MEMORY SEAT SYSTEM - BUICK C AND E, OLDSMOBILE E, CADILLAC C, E AND K STYLES

The memory seat system has a three-button switch assembly located in the left front door armrest which operates in conjunction with the six-way power seat control switch. When any of the six-way seat control switches are activated, power is transmitted through the seat memory module to the motor(s) under the driver's seat.

The memory system can be overriden by moving the six-way seat switch. This action will not eliminate the present memory positions.

The programmable power seat is a semiautomatic system that allows the driver to position the seat to a predetermined position. The driver can record in memory any two seat positions, and recall either one at a future time. As the seat is moved, digital pulses are produced by the motor(s). These pulses are used to increase or decrease the counters that keep track of the seat's position. Calibration is not necessary since the counters are set to their center position when the microcomputer is "powered-up", and the number of motor revolutions are less than half the counter's capacity.

The memory switch assembly consists of a three-button switch, set, memory recall one and memory recall two which are used to record and recall seat positions from the microcomputer's memory. To record a seat position, the set and then the appropriate memory recall button switch must be pressed. When the set button switch is pressed, no action is taken to alter the memory until a memory recall button switch is pressed.

To enter a position in the memory unit, the recall button switch must be activated within 5 seconds of activation of the set button switch. If the proper procedure is not completed within the above time span, no position will be recorded in the memory. This two-step procedure is necessary to prevent accidental changes in the memory.

The memory module will only record or recall a seat position when the gear shift selector is in the park or neutral position. Once a seat position is recorded in the memory, it will remain permanently valid until a new seat position is programmed, or until power is lost (battery removed, disconnect, etc.). When vehicle power is lost to the module, all previously programmed seat positioning will also be lost and must be programmed when power is restored.

The memory seat module assembly is located under the right front of the driver's seat. To check for module failure when the seat fails to operate, the module can be bypassed by connecting the motor connector from the module to the six-way seat switch connector (Figs. 10-72, 10-73, 10-74). This allows the seat to operate as a standard six-way seat. For additional problem diagnostics, see conditions 1, 2 or 3.

POWER RECLINING SEAT BACK (DRIVER OR PASSENGER SIDE) - B,C and K Styles

The power reclining seat back system consists of a permanent magnet motor and a D.P.D.T. 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 1 and ground to terminal 2, the output gear and cable rotate clockwise and the seat back moves forward.

When the polarity is reversed at terminals 1 and 2, the output gear and cable rotate counterclockwise and the seat back reclines. Reversing the polarity is accomplished through the switch assembly.

Control Switch

The control switch used with the power reclining seat back system is a D.P.D.T. type switch that is installed either on the front seat side panel or front door armrest depending on style.

Seat Back Forward Cycle

Voltage is supplied to the control switch from the fuse block via the orange/black wire. When the control switch is pressed to the forward position, voltage is sent through the light green wire to the P.M. motor windings. The circuit is completed from the motor to ground through the light blue wire across normally closed contacts in the switch. 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 P.M. motor windings through the light blue wire. The circuit is completed from the P.M. motor to ground through the light blue wire, across normally closed contacts in the switch. The motor output gear rotates clockwise and the seat back reclines.

Refer to power recliner in Section 9 (Seats) of this manual for mechanical diagnosis.

Diagnostic Procedures (Figs. 10-76 and 10-77)

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 proper diagnosis chart.

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, 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.

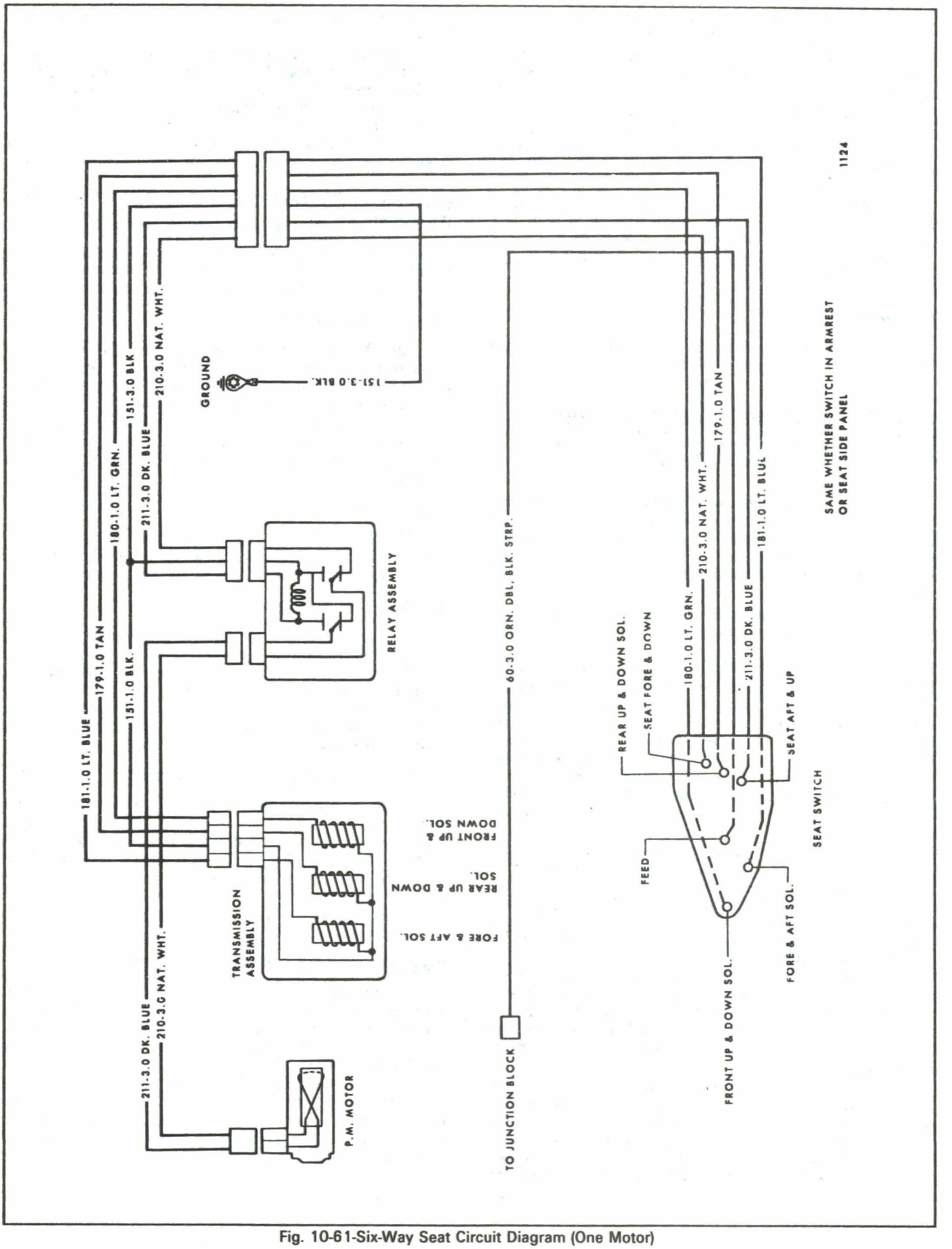


Fig. 10-61-Six-Way Seat Circuit Diagram (One Motor)

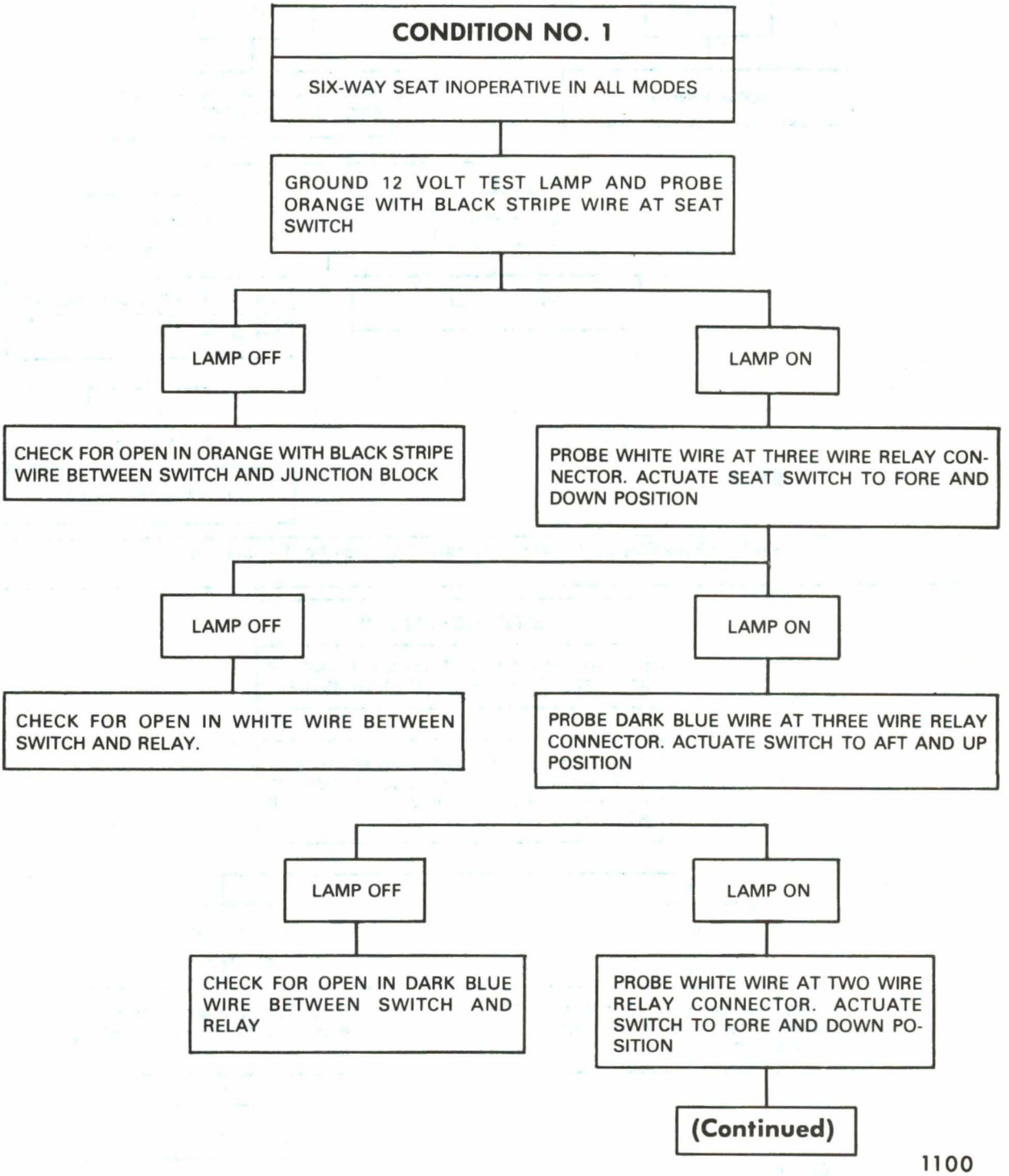


Fig. 10-62-Six-Way Seat Diagnostic Chart - Condition No. 1

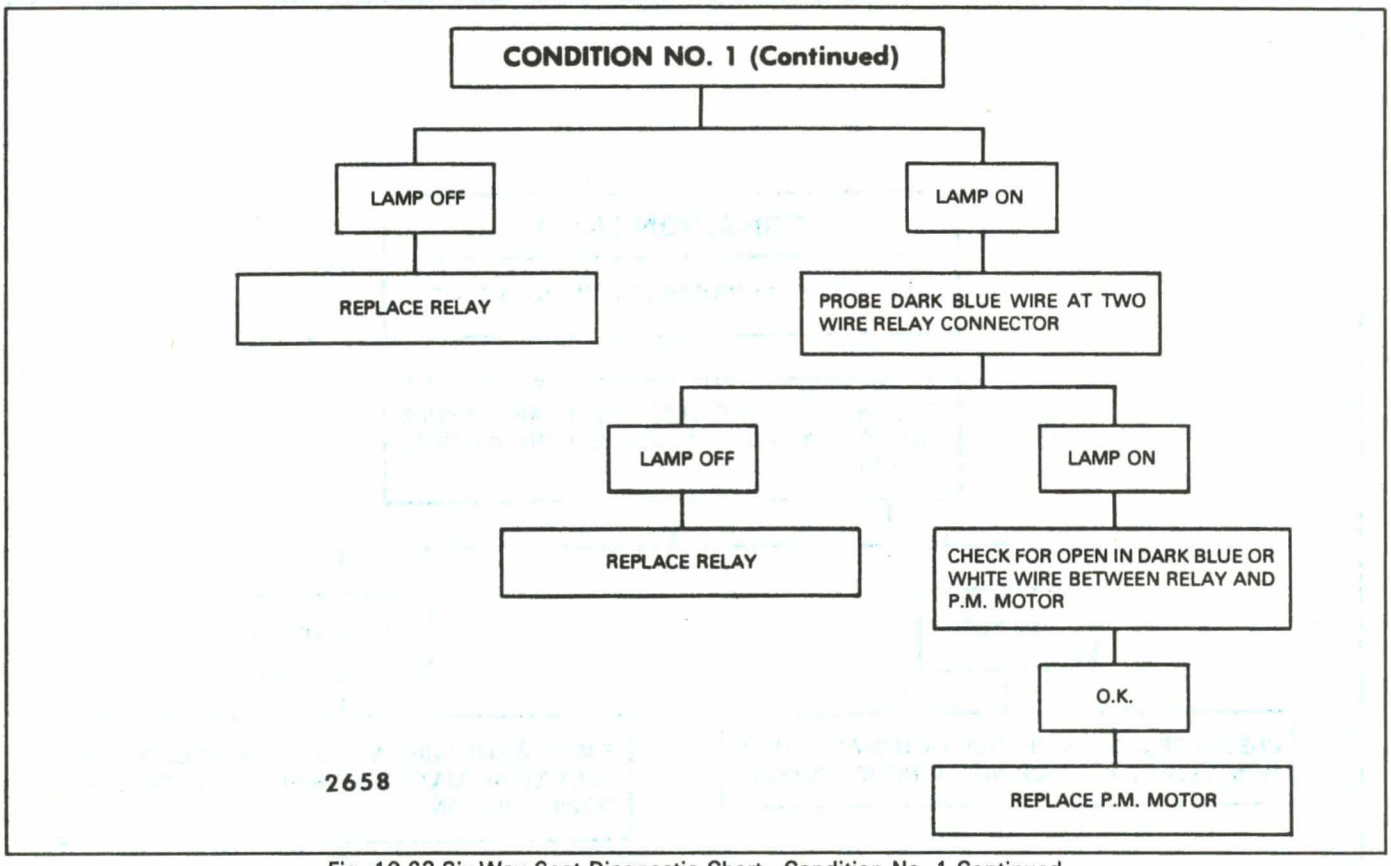


Fig. 10-63-Six-Way Seat Diagnostic Chart - Condition No. 1 Continued

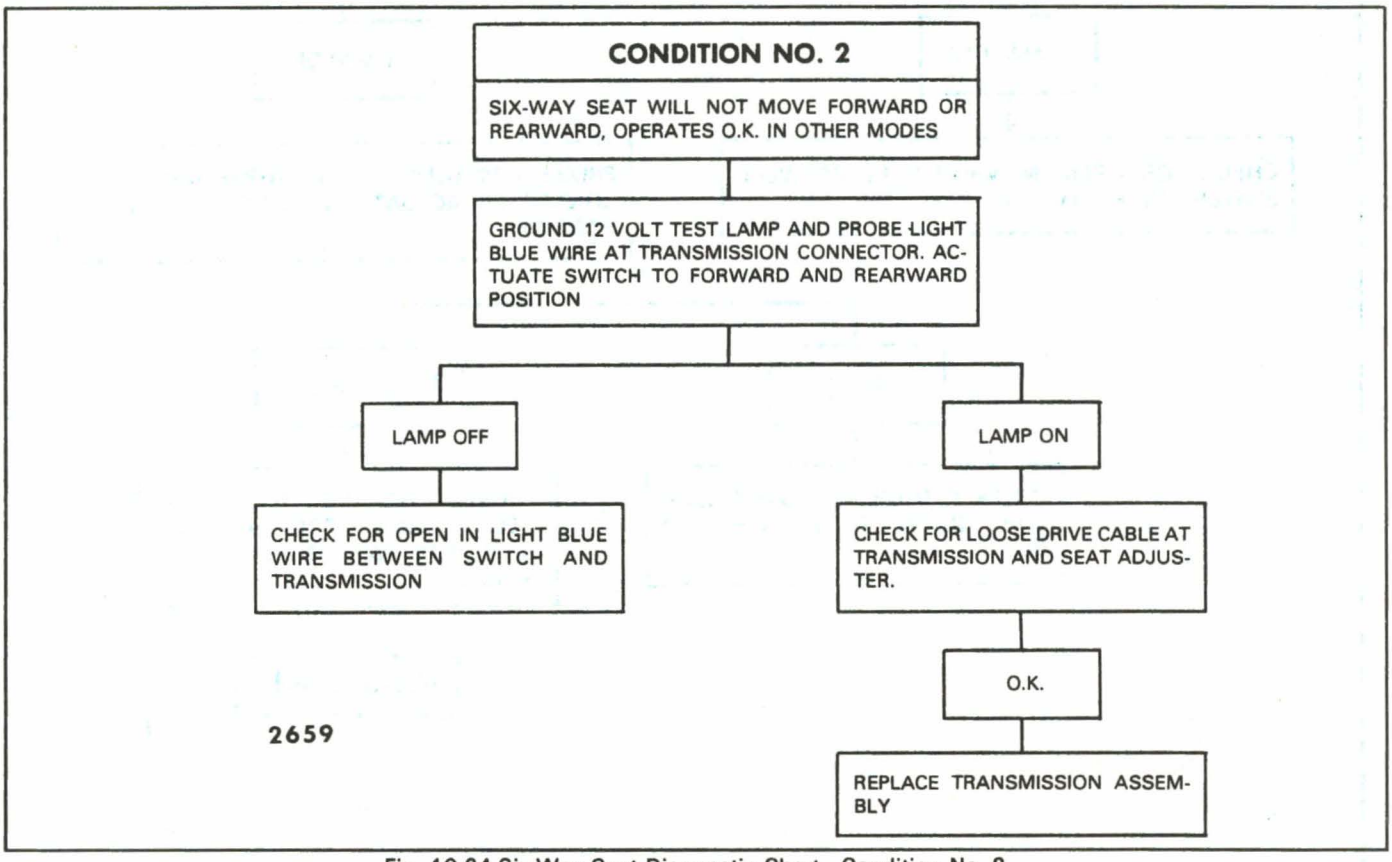


Fig. 10-64-Six-Way Seat Diagnostic Chart - Condition No. 2

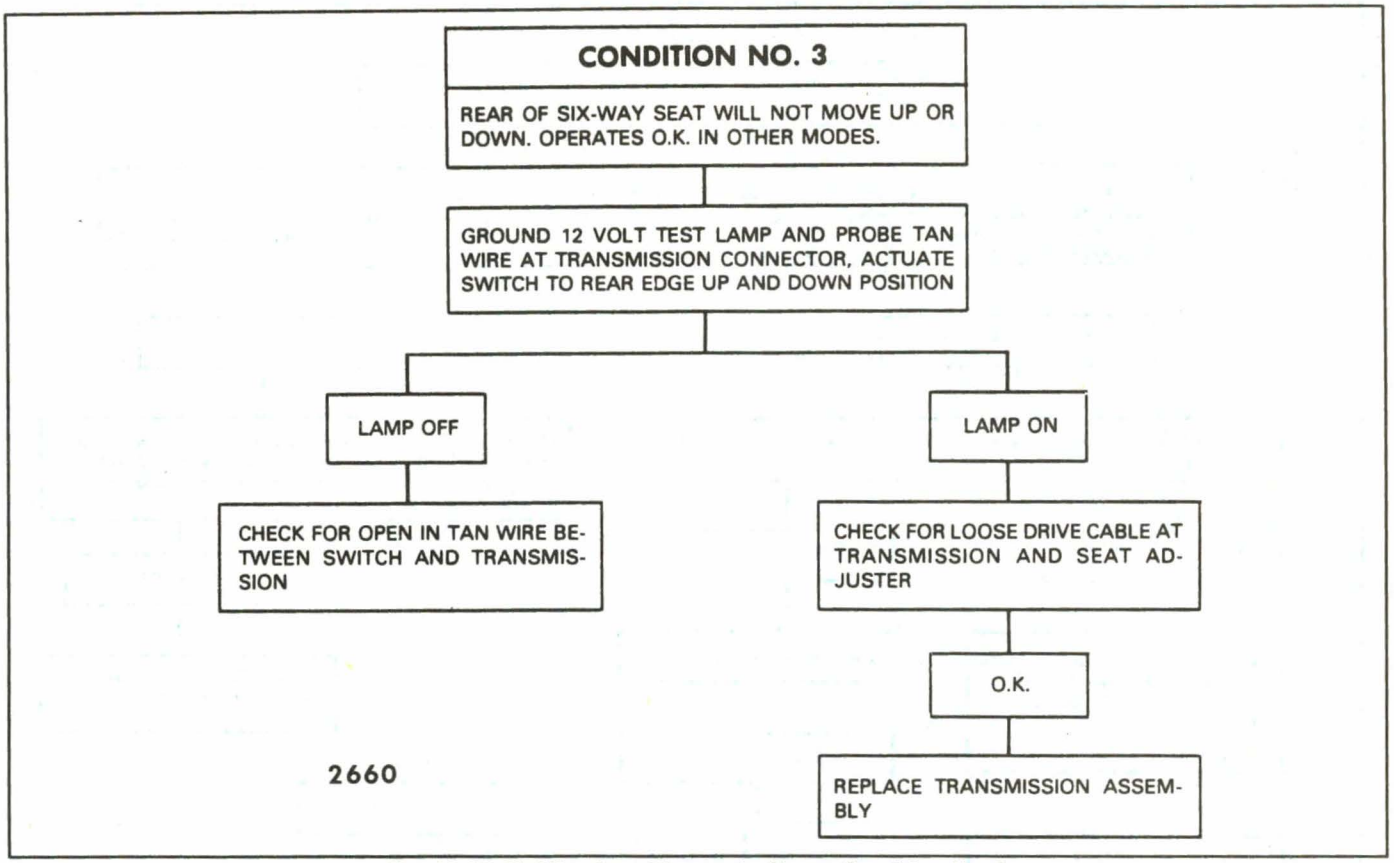


Fig. 10-65-Six-Way Seat Diagnostic Chart - Condition No. 3

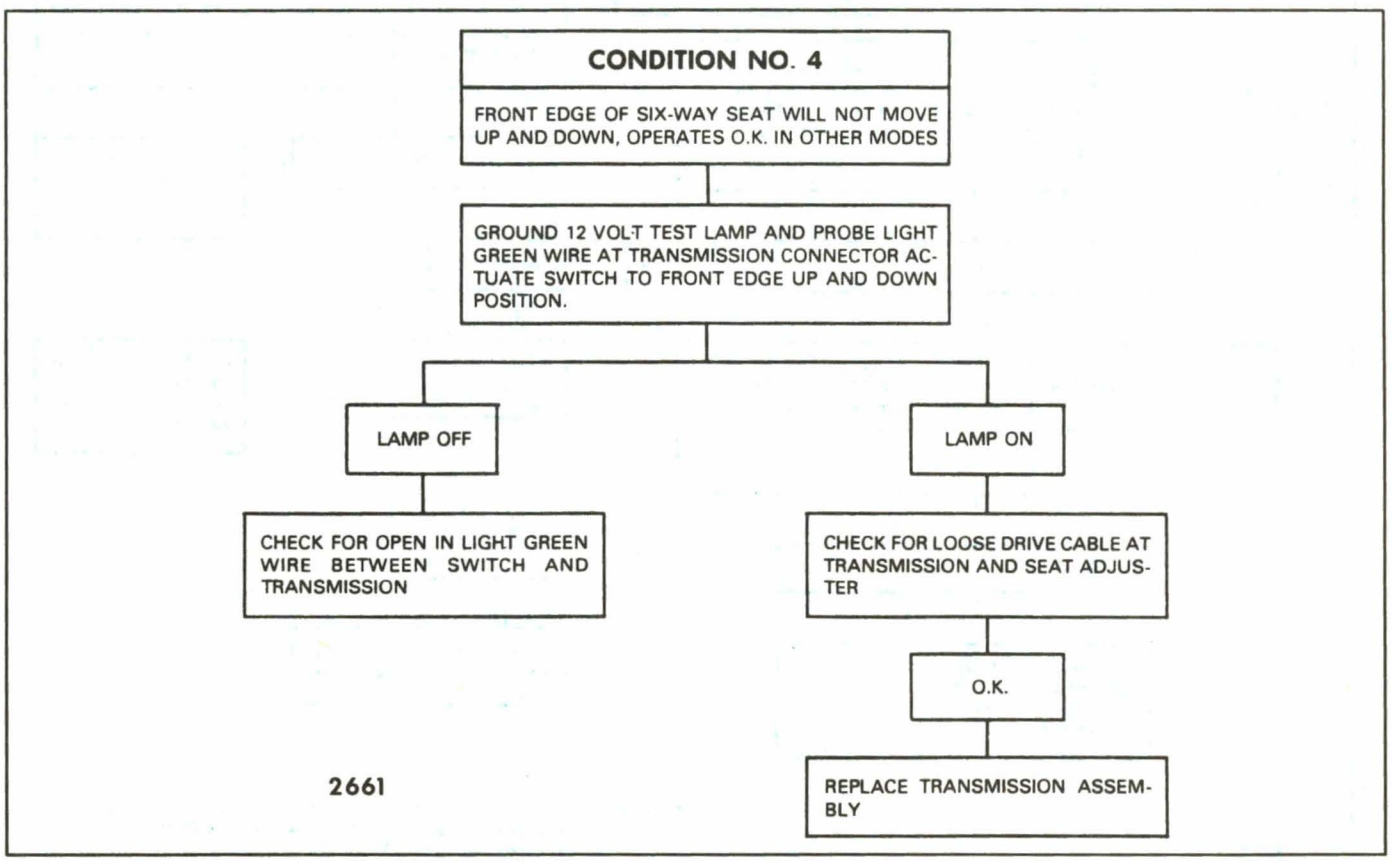


Fig. 10-66-Six-Way Power Seat Diagnostic Chart - Condition No. 4

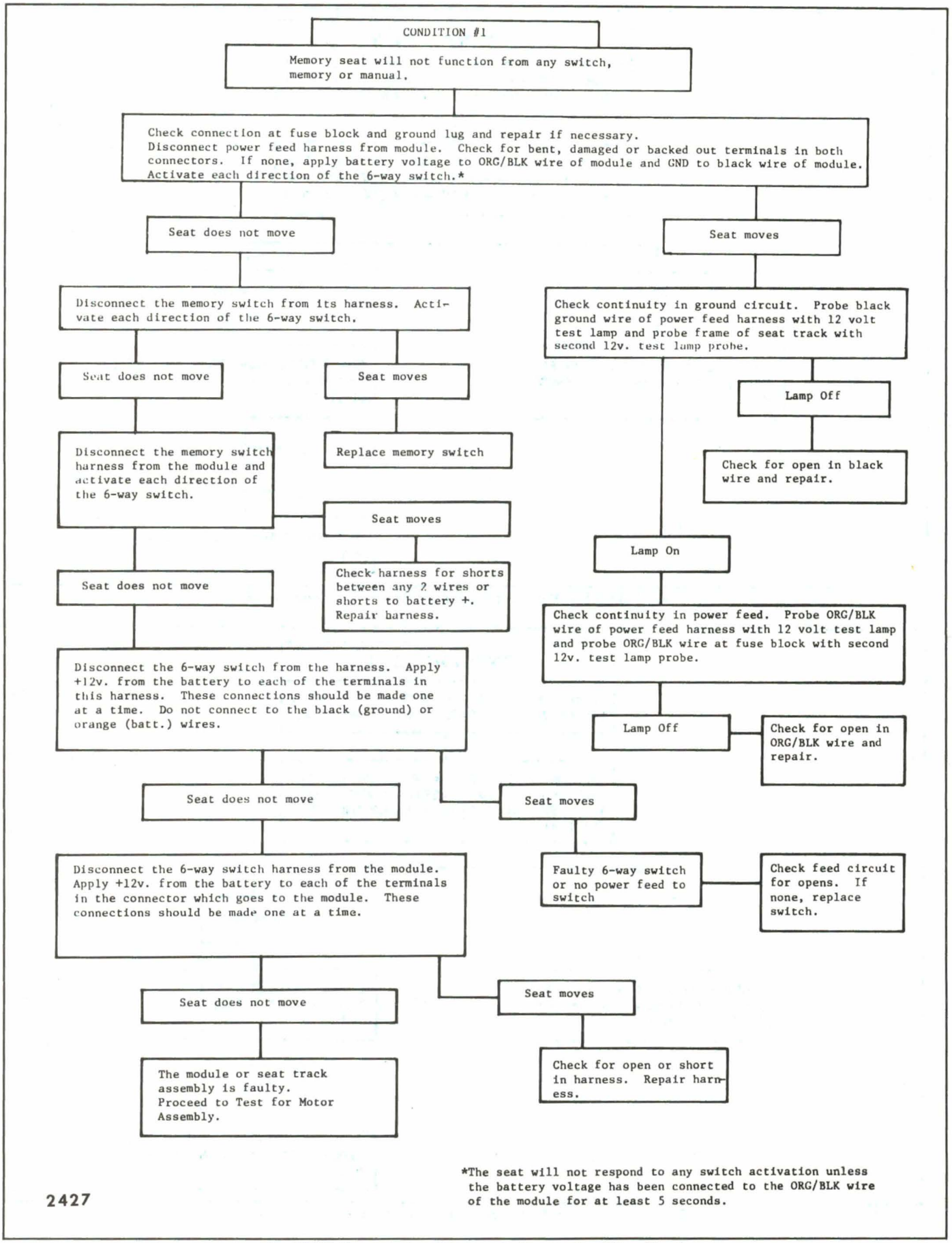


Fig. 10-67-Memory Seat Diagnostic Chart - Condition No. 1

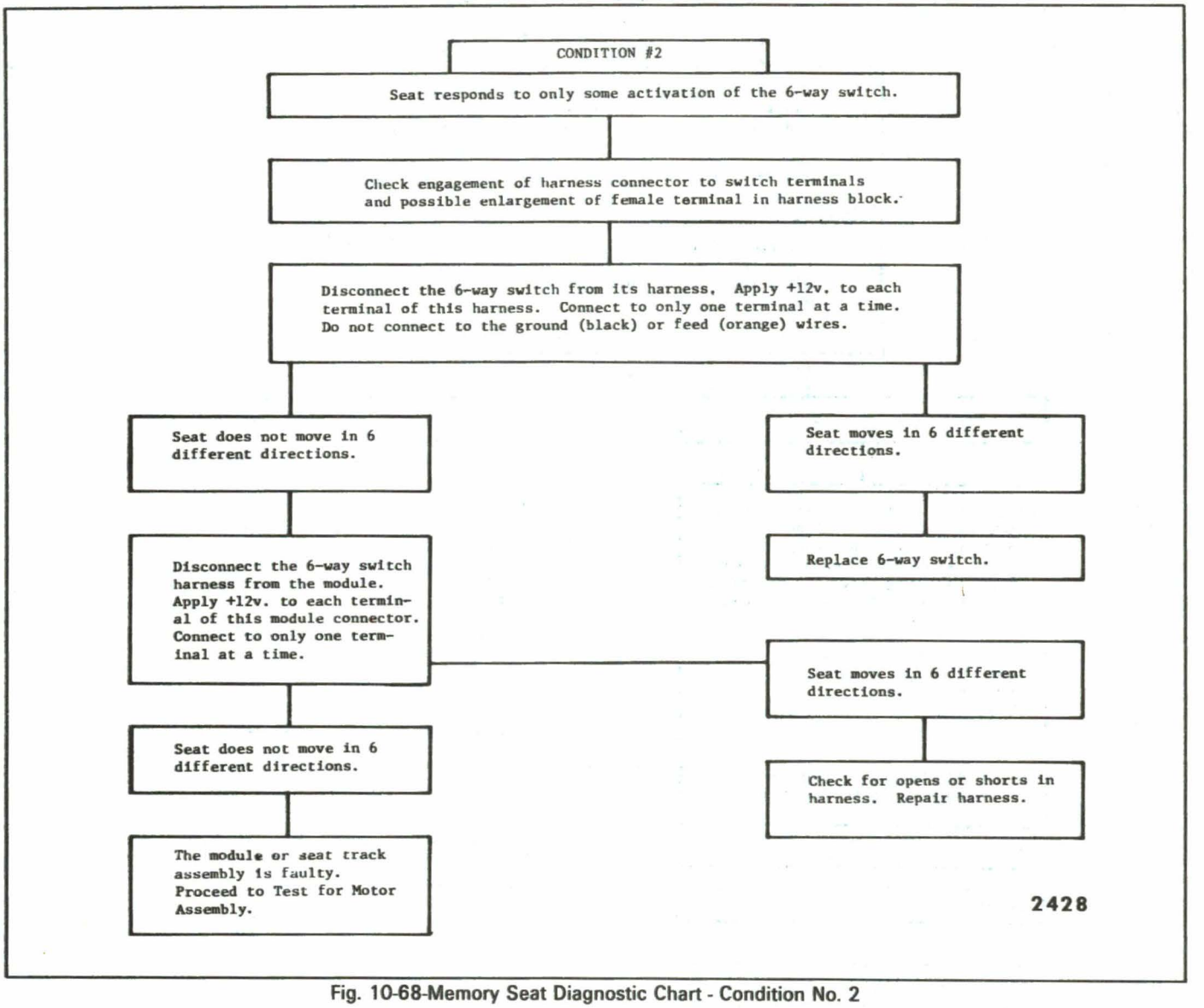


Fig. 10-68-Memory Seat Diagnostic Chart - Condition No. 2

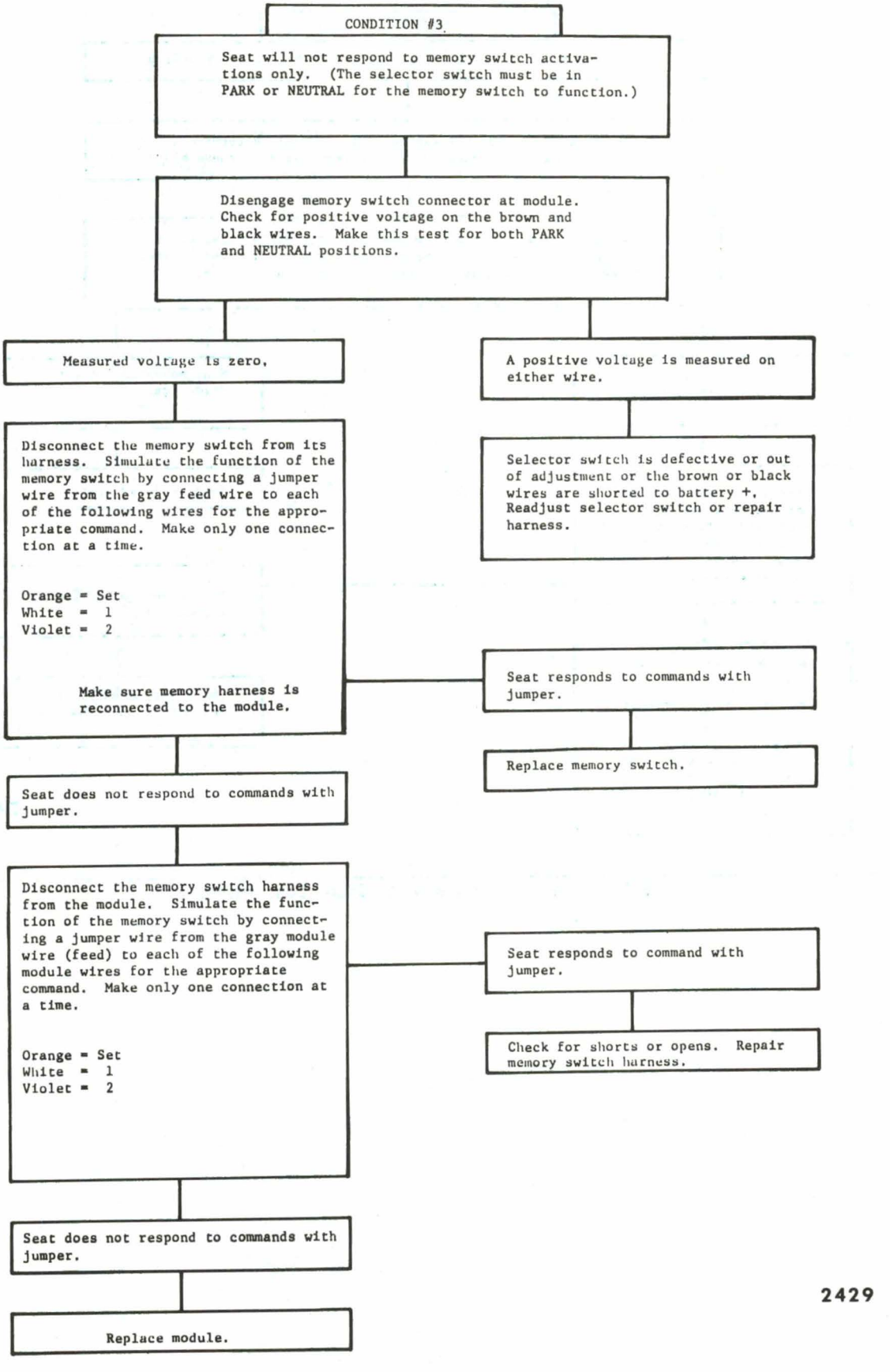


Fig. 10-69-Memory Seat Diagnostic Chart - Condition No. 3

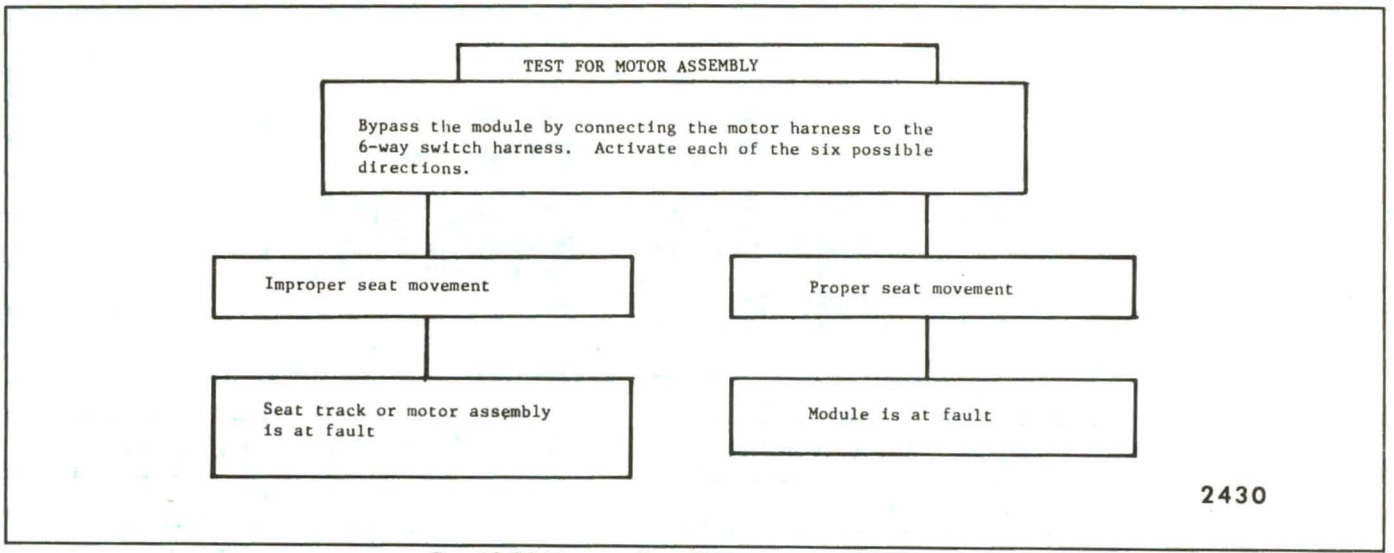


Fig. 10-70-Memory Seat 3 Motor Diagnostic Chart

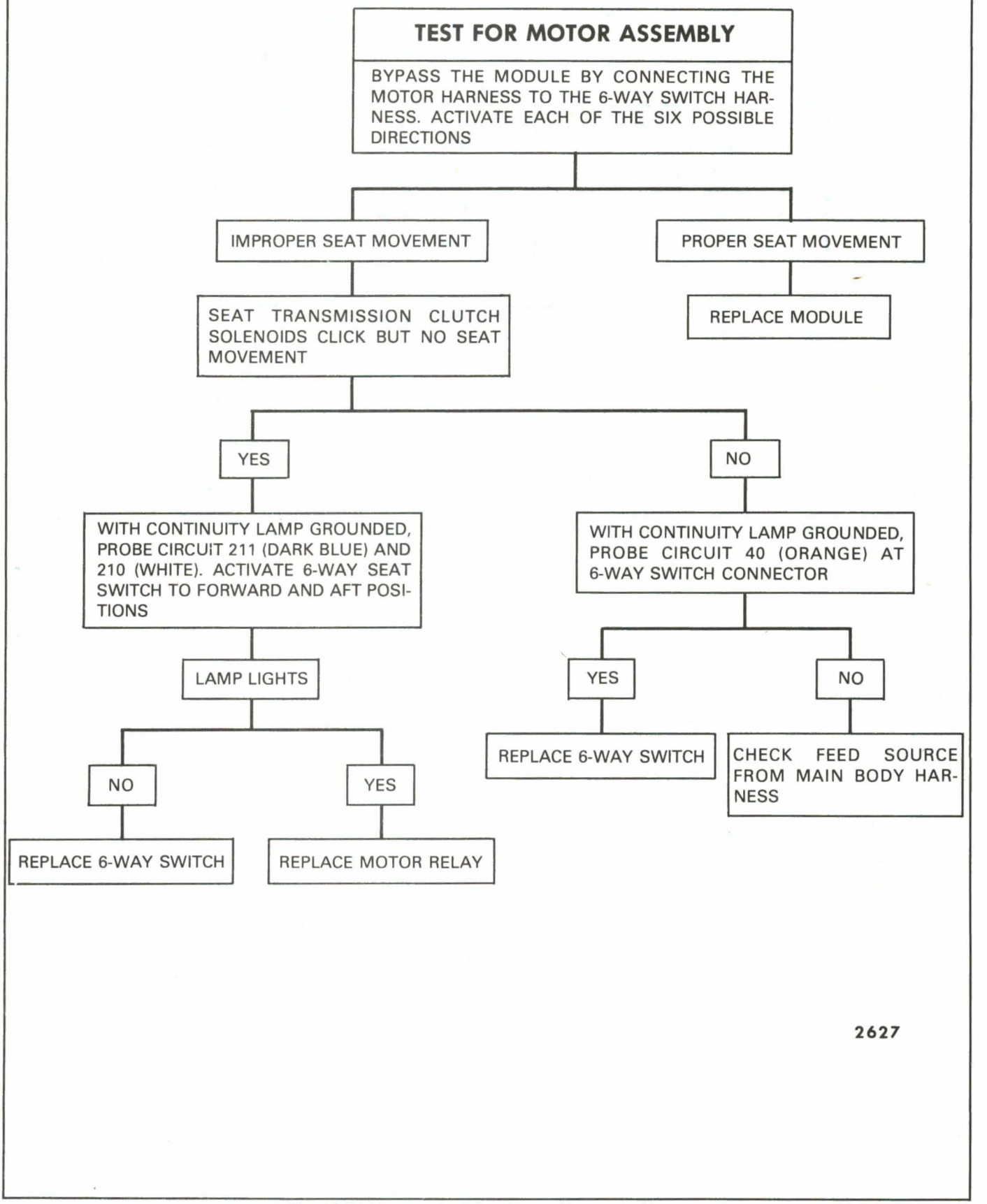


Fig. 10-71-Memory Seat One Motor Diagnostic Chart

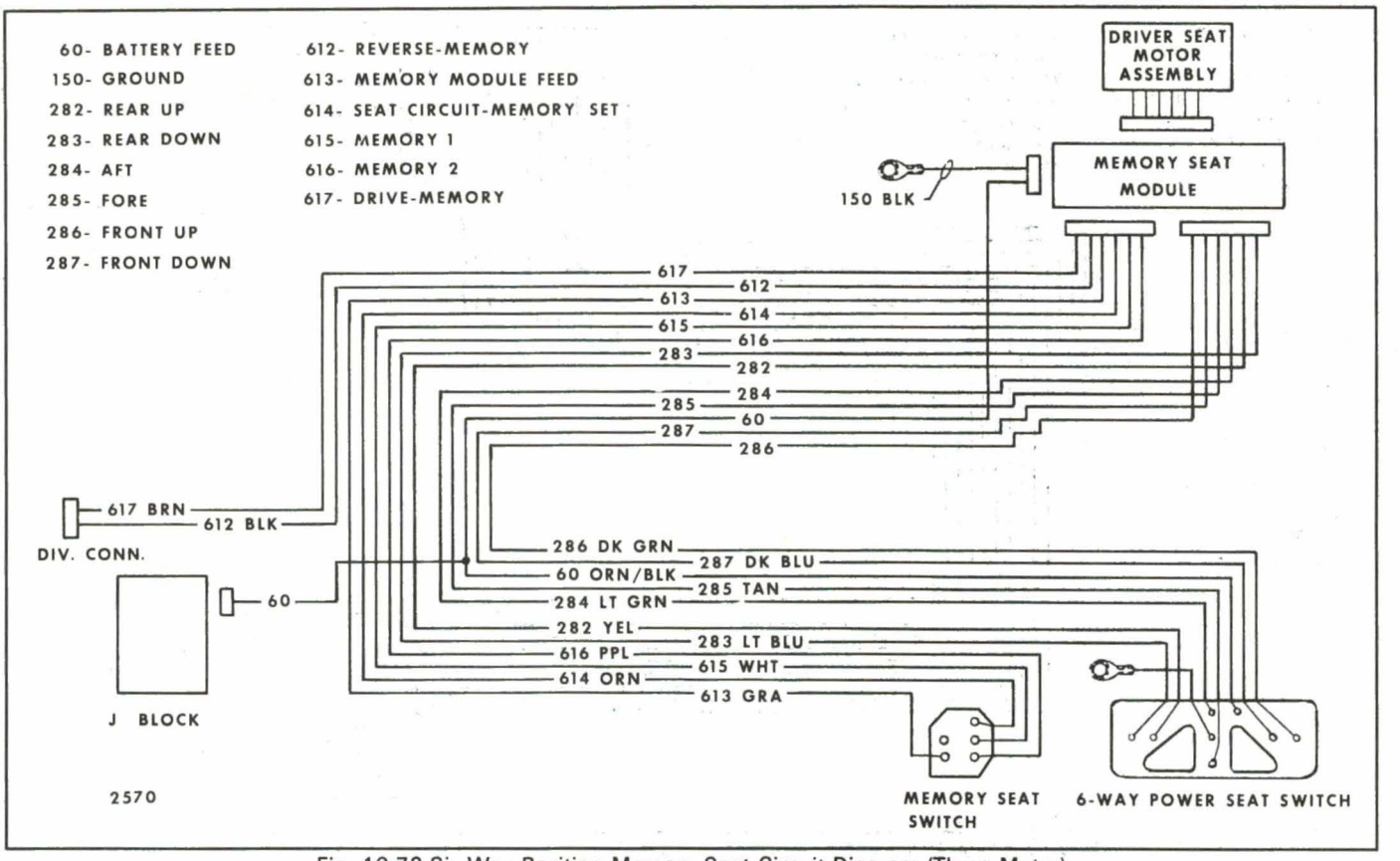


Fig. 10-72-Six-Way Position Memory Seat Circuit Diagram (Three Motor)

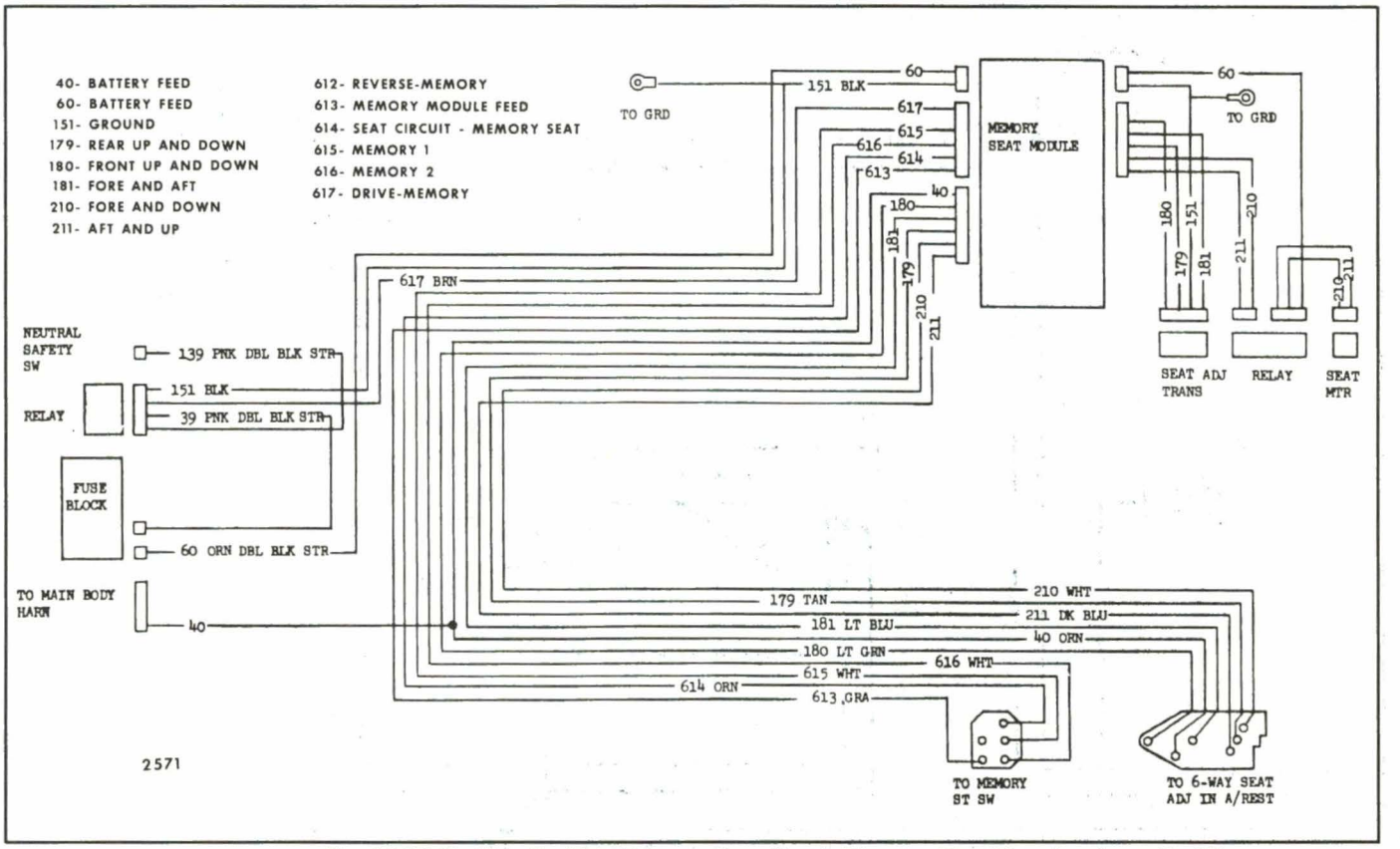


Fig. 10-73-Six-Way Position Memory Seat Circuit Diagram (One Motor) — Less Cadillac

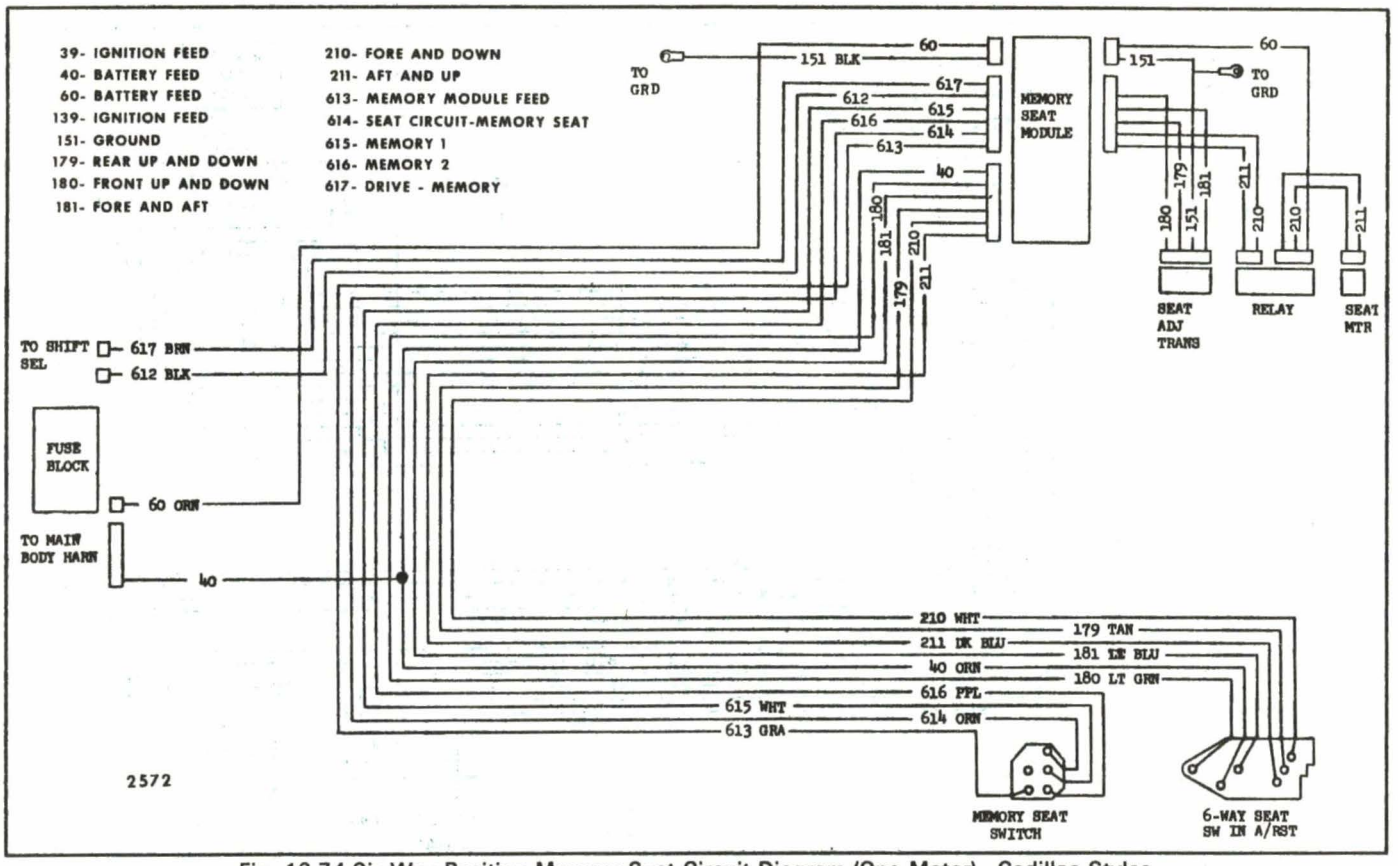


Fig. 10-74-Six-Way Position Memory Seat Circuit Diagram (One Motor) - Cadillac Styles

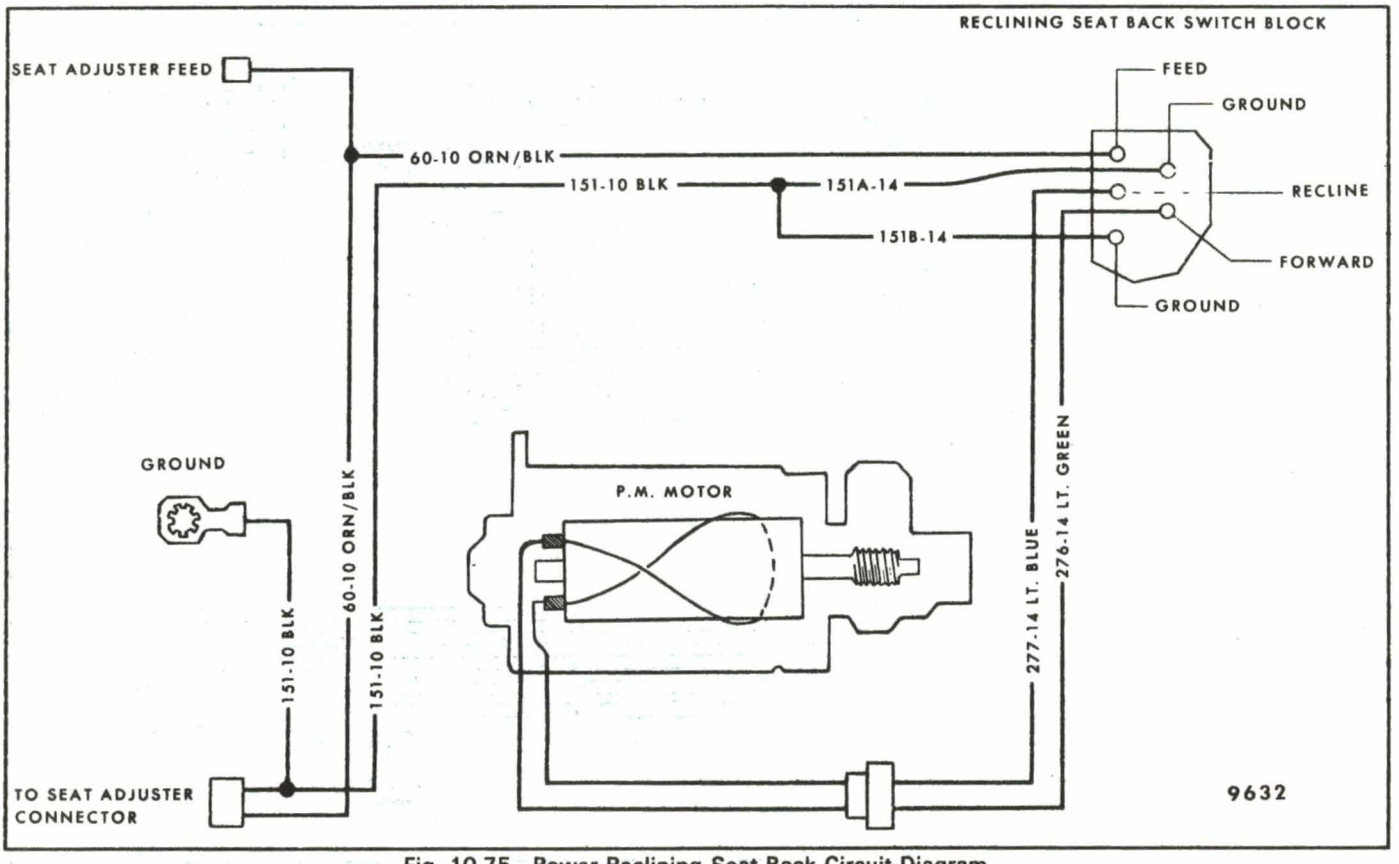


Fig. 10-75 - Power Reclining Seat Back Circuit Diagram

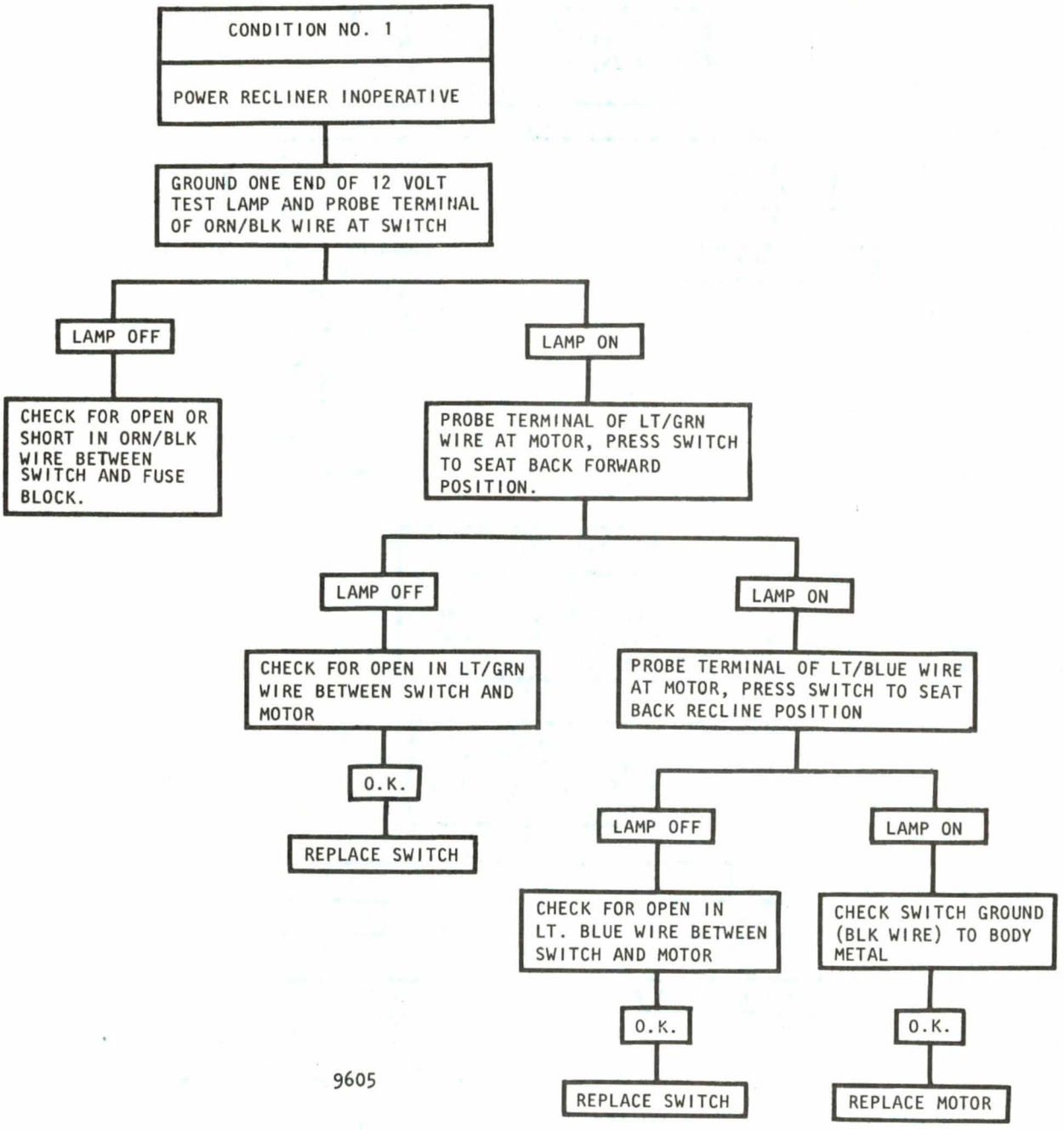


Fig. 10-76-Power Recliner Diagnosis Chart - Condition No. 1

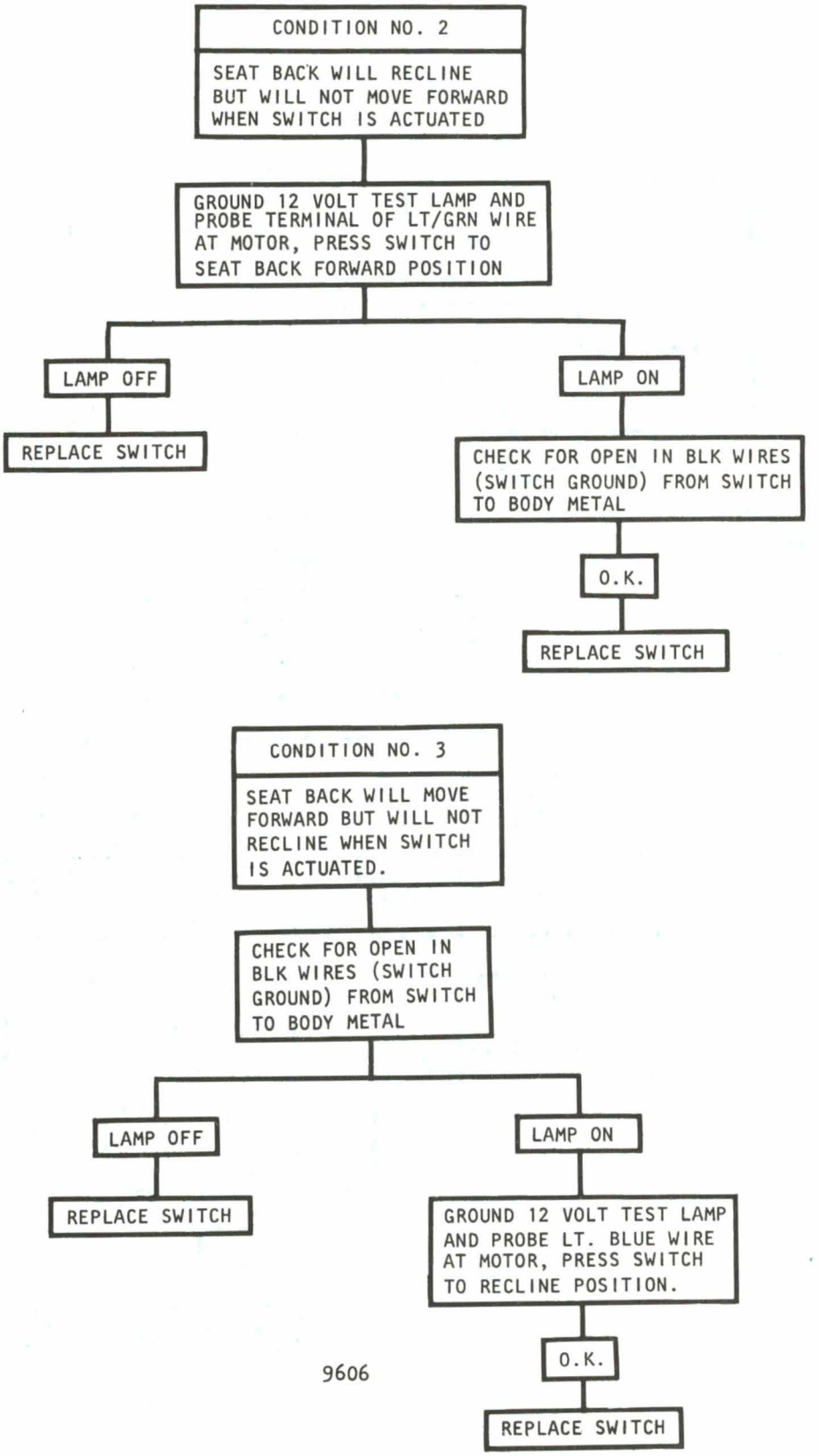


Fig. 10-77-Power Recliner Diagnosis Chart - Condition No. 2 and 3

POWER SUN ROOF

The power sun roof system consists of a rocker type control switch, a permanent magnet motor and drive gear unit and two drive cables. The sun roof can also be opened or closed manually in case of an electrical malfunction.

With the ignition switch on, voltage is present at the two B plus terminals of the switch. When the switch is actuated to the open position, voltage is supplied to the motor through the black/white stripe wire. This circuit is completed to ground from the motor through the light green wire, through the switch and black wire to body metal. The motor is energized and the drive gear turns the cables which pulls the sun roof panel rearward.

Forward operation of the sun roof is accomplished in the same manner, except the polarity to the motor is reversed. When the switch is pressed to the close position, voltage is supplied to the motor through the light green wire. This circuit is completed to ground through the black/white stripe wire, through the switch, then the black wire to body metal. The drive gear turns the cables in the opposite direction which pulls the sun roof panel forward.

The feed circuit (pink wire) is ignition switch controlled and protected by a 30 amp circuit breaker mounted in the fuse block. This circuit also provides the voltage source for the power windows and vents if the car is so equipped.

Components and Location

Control Switch - The control switch is a D.P.D.T. switch which is mounted in the windshield header safety area. The switch must be securely grounded to body metal (black lead) in order for the sun roof to function normally electrically.

Motor and Drive Gear Assembly - The motor is a permanent magnet, 12V, reversible motor which is mounted near the center of the windshield header just forward of the sun roof opening. The motor and gear assembly drives two flexible cables that are attached to the sliding panel and controls its forward and rearward movement.

Diagnostic Procedures

Prior to using the diagnostic procedures, first find how the system is malfunctioning, then match the condition to one described in Figures 10-79 and 10-80.

If intermittent operation of the sun roof occurs, the malfunction could be due to one of the following conditions.

1. Short to ground of a feed circuit.
2. Defective switch - internal contacts not maintaining full contact while switch is actuated.
3. Mechanical binding of components within the sun roof assembly.
4. Loose attachment of ground wire (black) to body metal.

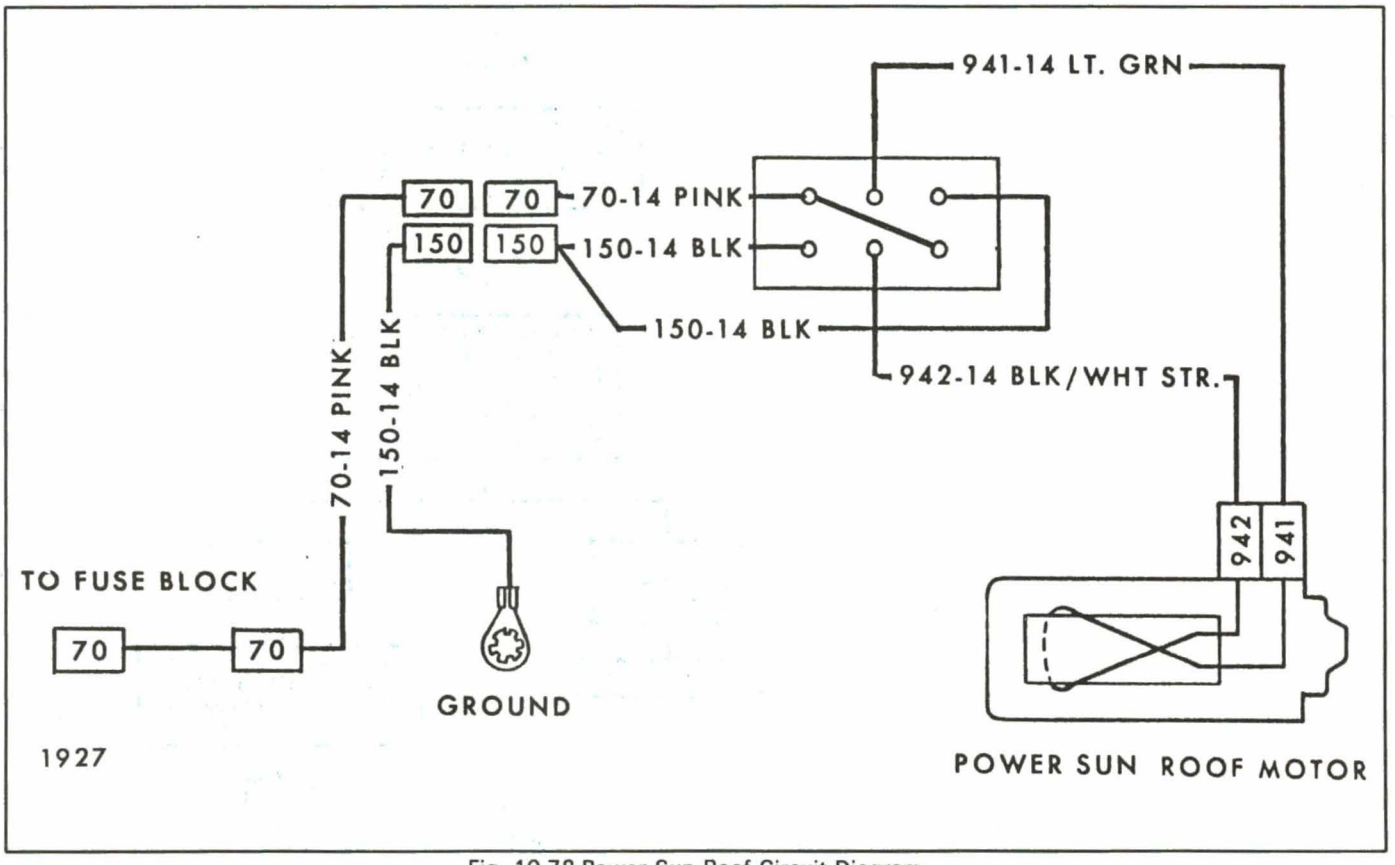


Fig. 10-78-Power Sun Roof Circuit Diagram

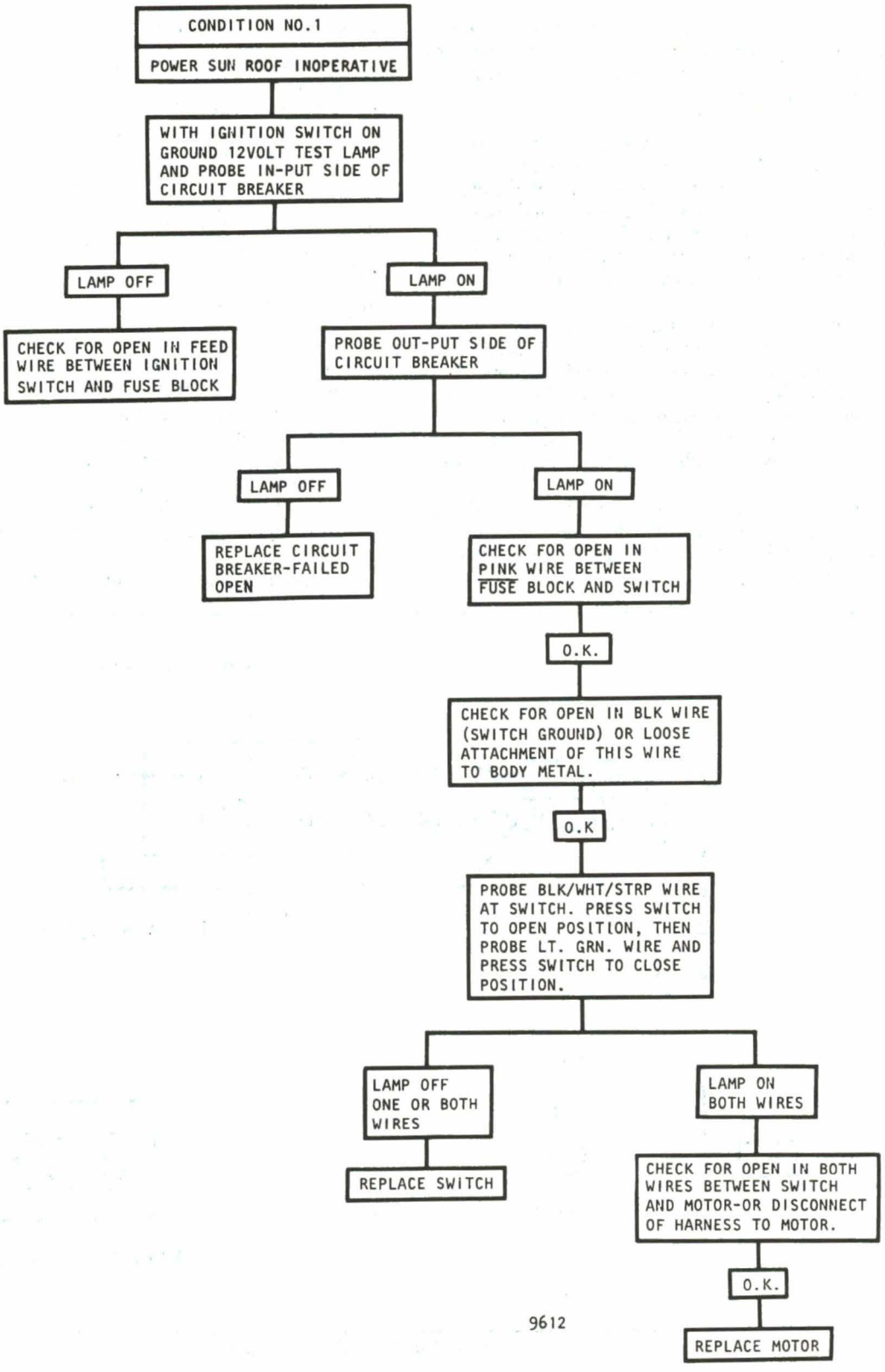


Fig. 10-79-Power Sun Roof Diagnosis Chart - Condition No. 1

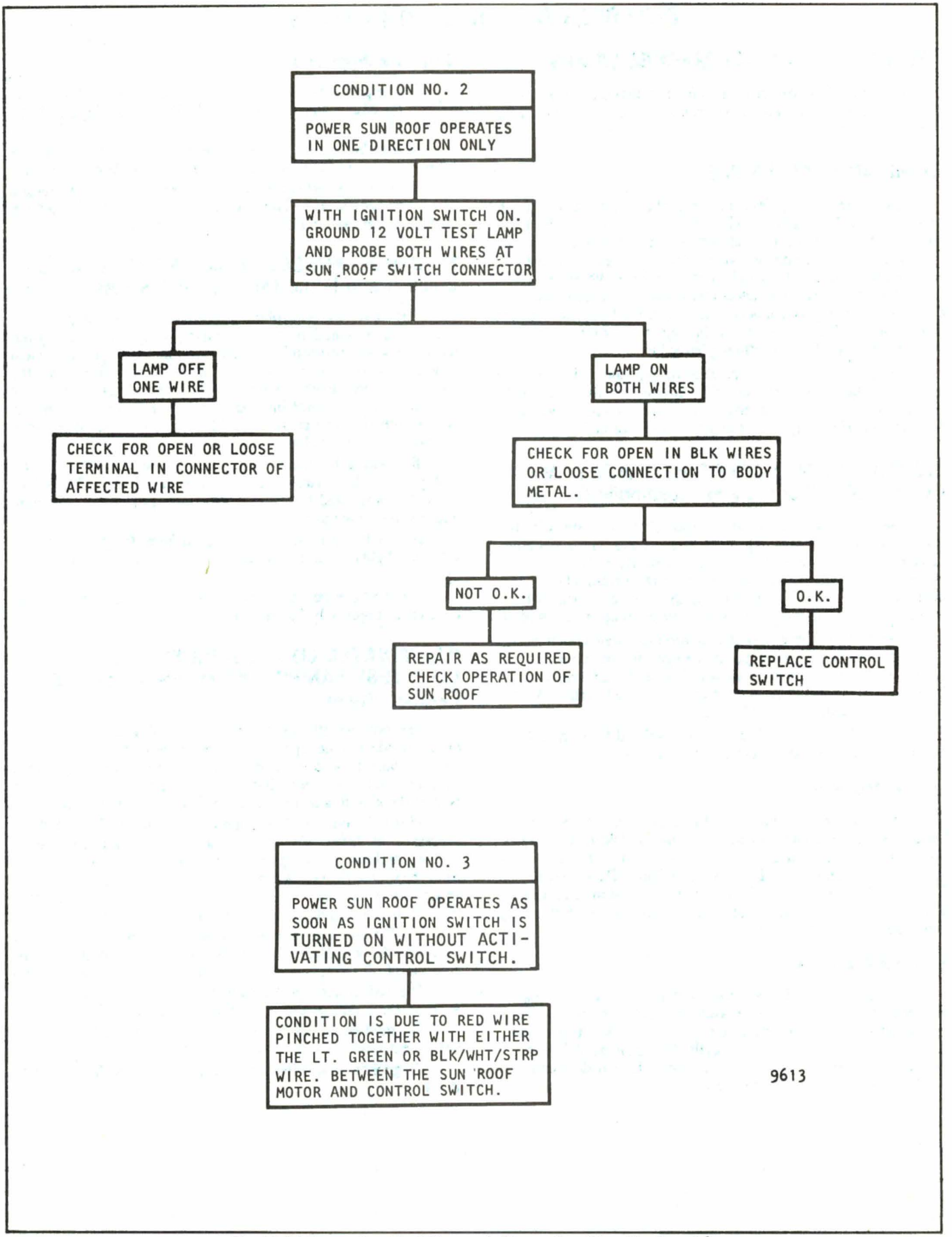


Fig. 10-80-Power Sun Roof Diagnosis Chart - Condition No. 2 and 3

EXTERIOR AND INTERIOR LAMPS

TAIL LAMPS AND SIDE MARKER LAMPS

Refer to chassis service manual for complete circuit diagrams. The rear quarter side marker lamps operate in conjunction with the tail lamp circuit.

DOME AND SAIL LAMPS

The dome lamp operates in conjunction with the door jamb switch and/or the headlamp switch. Voltage 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 B,C and G styles this harness is routed over and taped to the top of the headlining assembly.

The headlamp switch is installed by the motor division. The portion of the dome lamp circuit contained in the main body harness is color coded (orange-feed wire and white-ground wire). A typical interior lamp circuit diagram is shown in Figure 10-81.

ELECTROLUMINESCENT SAIL PANEL LAMPS - Except Buick C and E and Oldsmobile C Styles

The electroluminescent lamp system (E.L.) operates with the exterior lamps, and is energized when the headlamp switch is turned on. The components of the system are a 12 volt direct current (12V DC) to 110 volt alternating current (110V AC) inverter, two electroluminescent lamps and a special wiring harness. These components will be serviced as complete assemblies.

An interlock feature is designed into the system which causes the entire circuit to become inoperative if any connector is disengaged from the inverter or if either of the sail panel lamps is removed. This occurs because an open is created in the 12V feed circuit or the inverter ground circuit.

The 110V AC circuit is completely isolated from the vehicle and restricted to the lamp and inverter system.

Inverter Assembly

The inverter is installed in the rear compartment at the bottom of the rear compartment front panel on Oldsmobile, Buick (less Park Avenue and E) and Cadillac sedan styles and is an integral component of the E.L. lamps on Buick Park Avenue, all E and Cadillac coupe styles. It should be detached in order to gain access to the connectors for removal or when performing diagnostic procedures.

E.L. Lamp Assemblies

E.L. lamp assemblies are constructed of a layer of prepared phosphor sandwiched between two electrodes and encased between two layers of plastic material. One electrode is designed to emit light. Each lamp has four terminals--two provide AC current through the lamp and the other two terminals provide a path for the 12V DC circuit to the inverter.

Diagnostic Procedures

Before performing any diagnostic procedures on this system, refer to the circuit diagram in Figure 10-85 and also Figures 10-82 and 10-83.

It may be necessary to cover each lamp (block-out day or artificial light) in order to determine if the E.L. lamps are on.

Two types of test lamps are used when performing diagnostic procedures on the E.L. lamp system, a 12V DC test lamp (Fig. 10-83, view B) and a 110V AC test lamp (view C)

ELECTROLUMINSCENT SAIL PANEL LAMPS - Buick C and E and Oldsmobile C Styles

The optional electroluminescent sail panel lamp system operates in conjunction with the exterior lamps and is energized when the headlamp switch is turned on. Components of the system consist of two lamp assemblies with integral inverters and the wiring harness. Each component is serviced as a complete assembly. Each integral inverter in the lamp assembly converts twelve volts of direct current (12V DC) to one hundred ten volts alternating current (110V AC).

The wiring harness provides 12V DC source (brown wire) and ground (black wire) separately to each individual lamp. The 110V AC is isolated from the vehicle and restricted to the lamp and inverter assembly.

It may be necessary to cover each lamp (block out day or artificial light) in order to determine if the E.L. lamps are operating.

Diagnostic procedures and a complete circuit diagram are covered in Figures 10-86 and 10-87.

ILLUMINATED LOCK CYLINDER AND COURTESY LAMPS - Oldsmobile, Buick and Cadillac 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 by a light socket in the wiring harness. These sockets are located behind the shroud side finishing panels on each side of the body.

When the outside door handle push button (Fig. 10-90) is depressed or lifted, the interior lamps (including front door courtesy and warning lamps) come on. The light is then transferred from the source through a fiber optic lead to a lens (prism) located around each front door lock cylinder. The light is then directed through the lens and illuminates the lock cylinder face.

Interior and lock cylinder lamps on all styles are controlled by a time delay module 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. A complete circuit diagram is shown in Figure 10-88.

The module assembly is attached beneath the left edge of the instrument panel as shown in Figure 10-89.

Diagnostic procedures are covered in Figures 10-91 through 10-94.

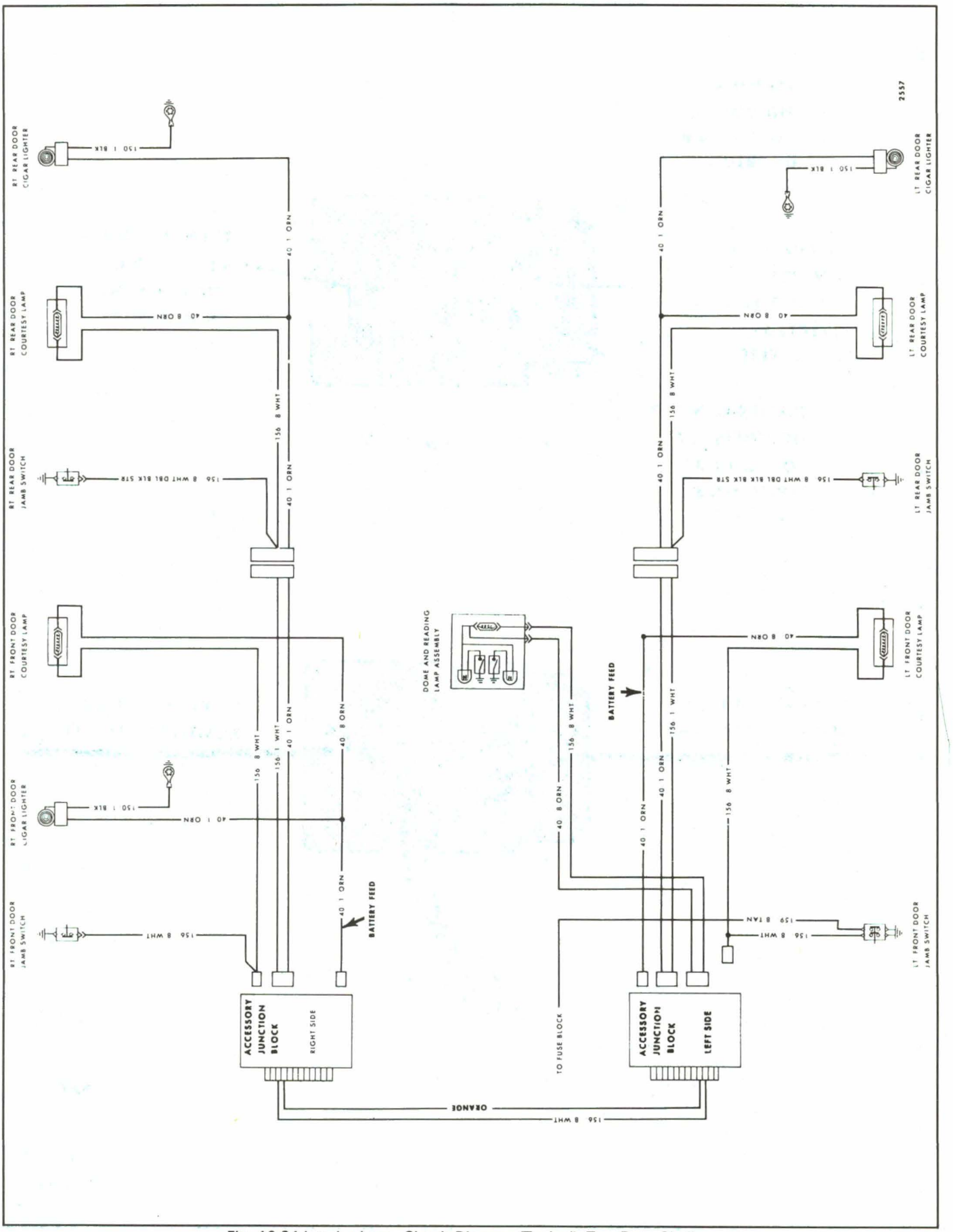


Fig. 10-81-Interior Lamp Circuit Diagram (Typical), Two-Door Similar

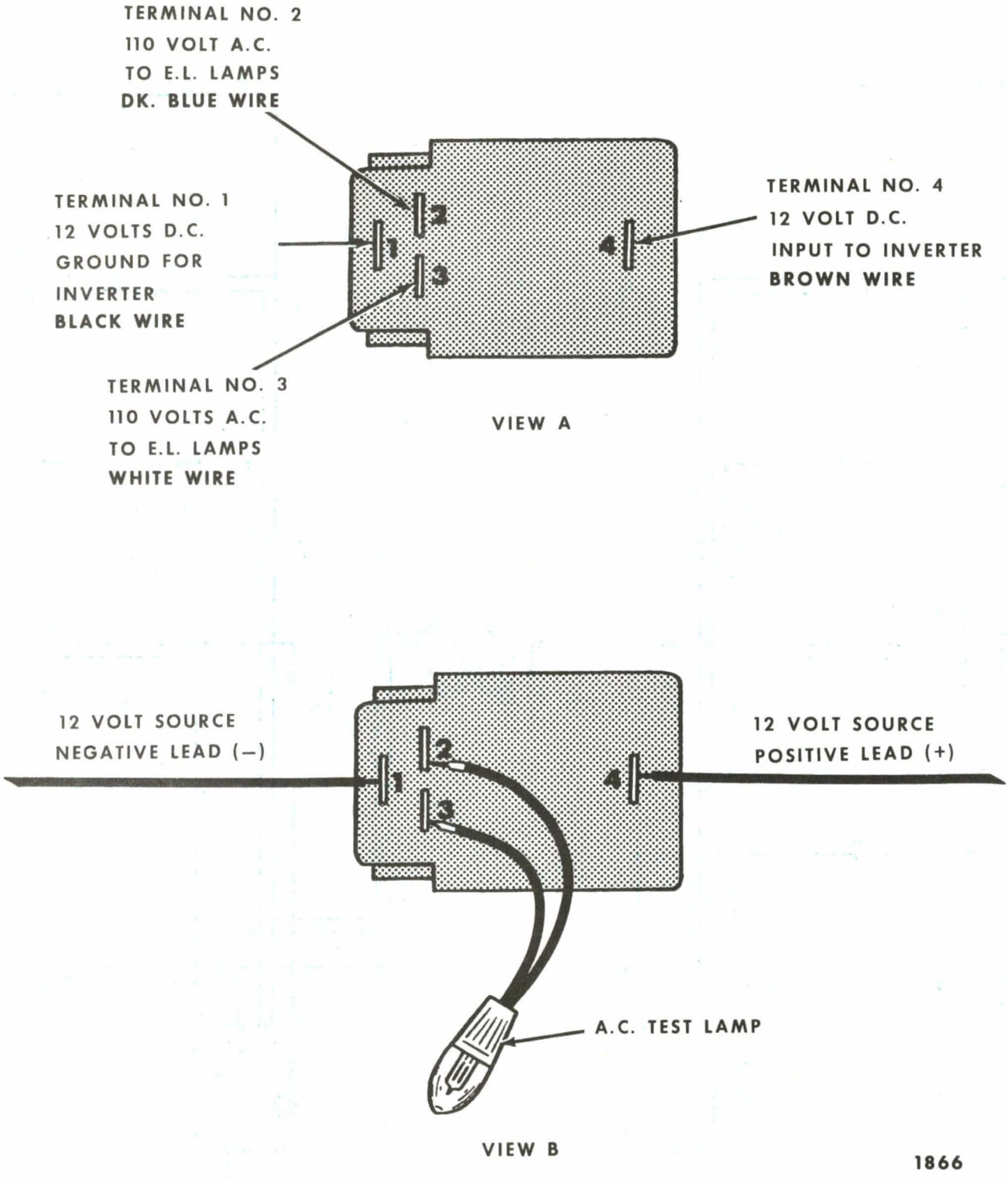
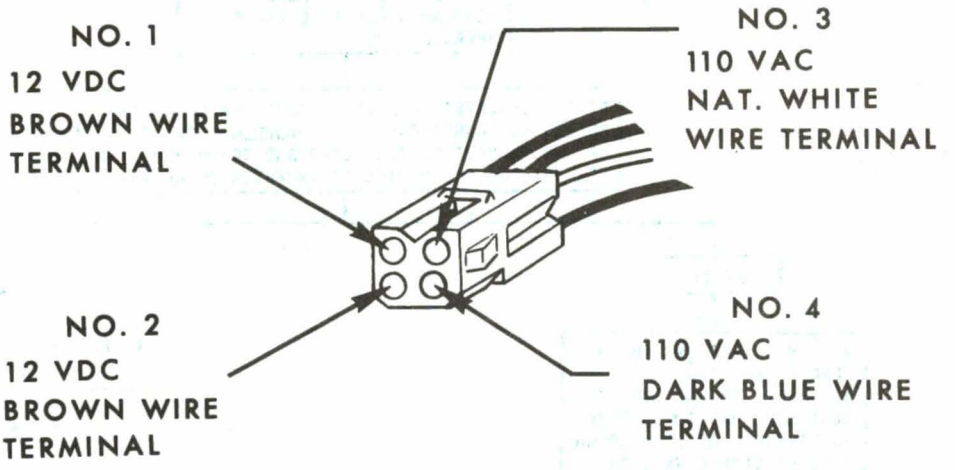
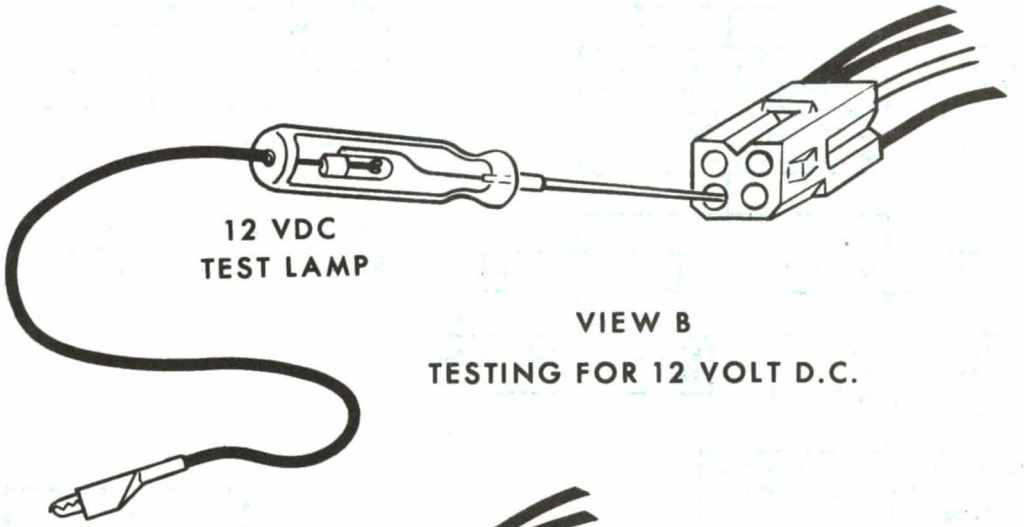


Fig. 10-82-Inverter Bench Checking Procedure

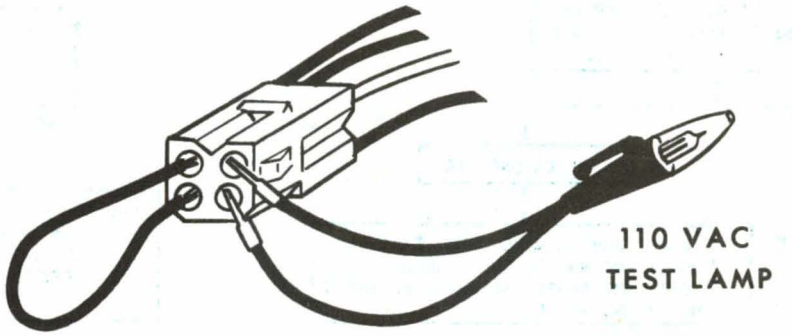


VIEW A



VIEW B

TESTING FOR 12 VOLT D.C.



VIEW C

TESTING FOR 110 VOLT A.C.

1354

Fig. 10-83-E.L. Lamp Circuit Probe Locations and Test Lamps

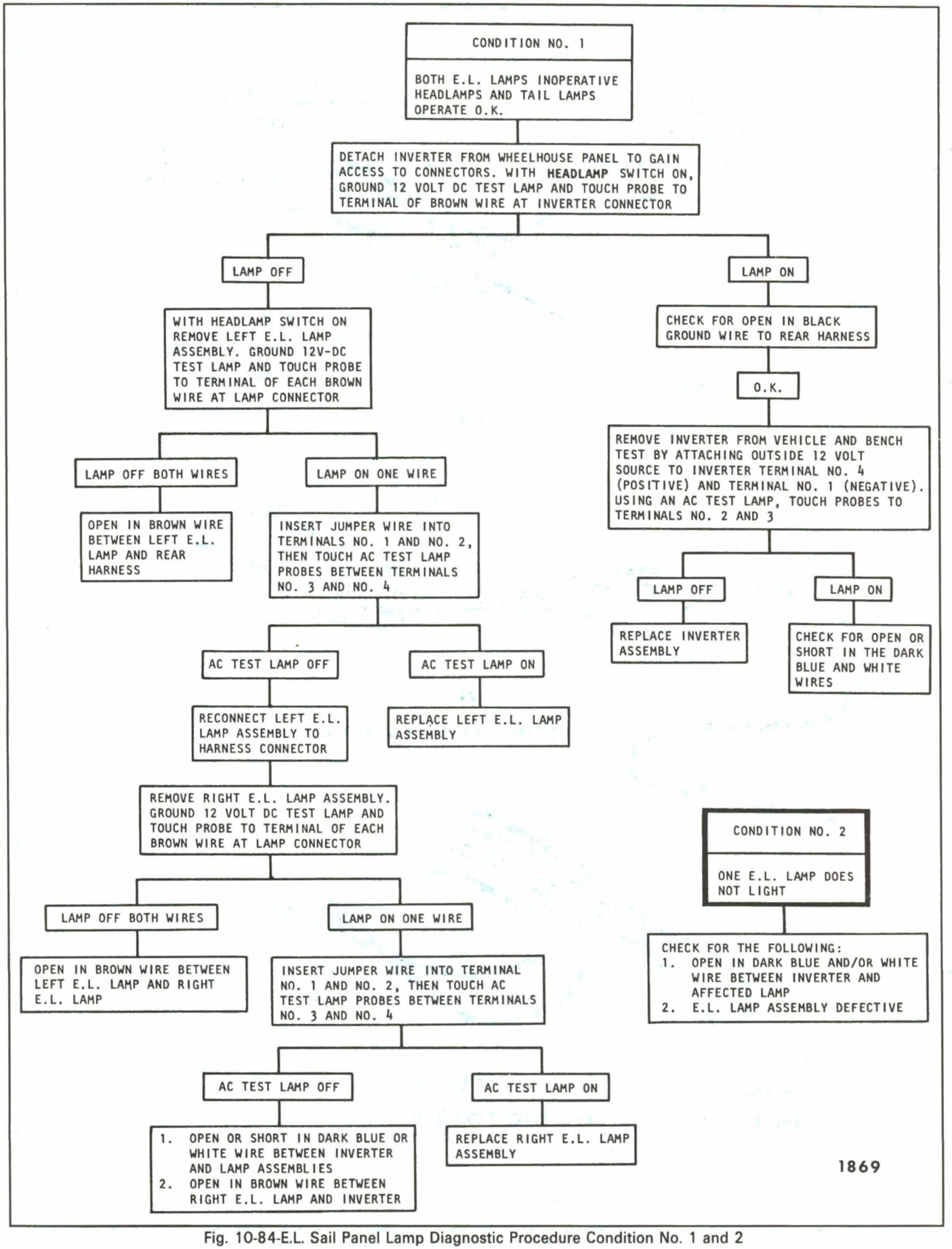


Fig. 10-84-E.L. Sail Panel Lamp Diagnostic Procedure Condition No. 1 and 2

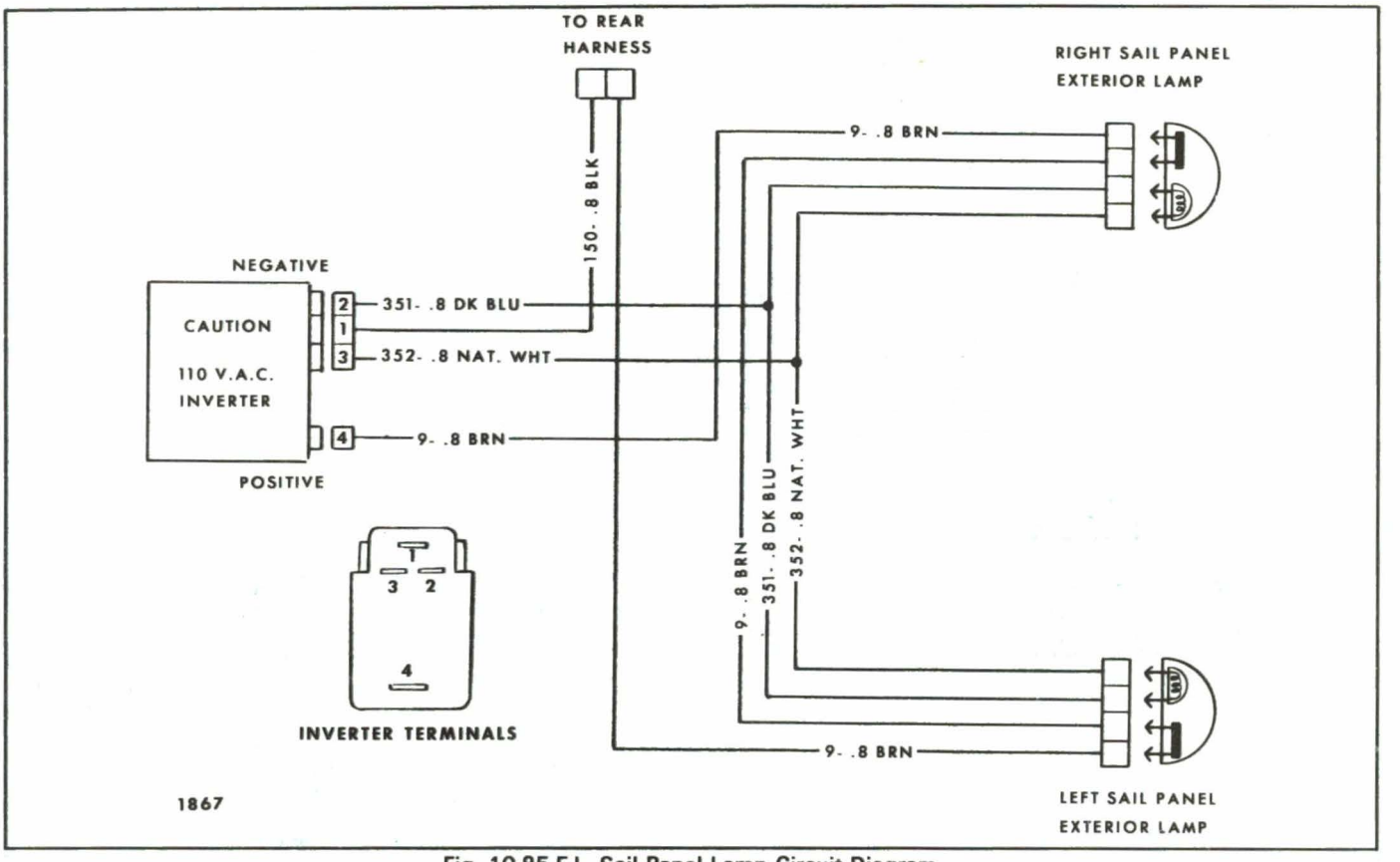


Fig. 10-85-E.L. Sail Panel Lamp Circuit Diagram

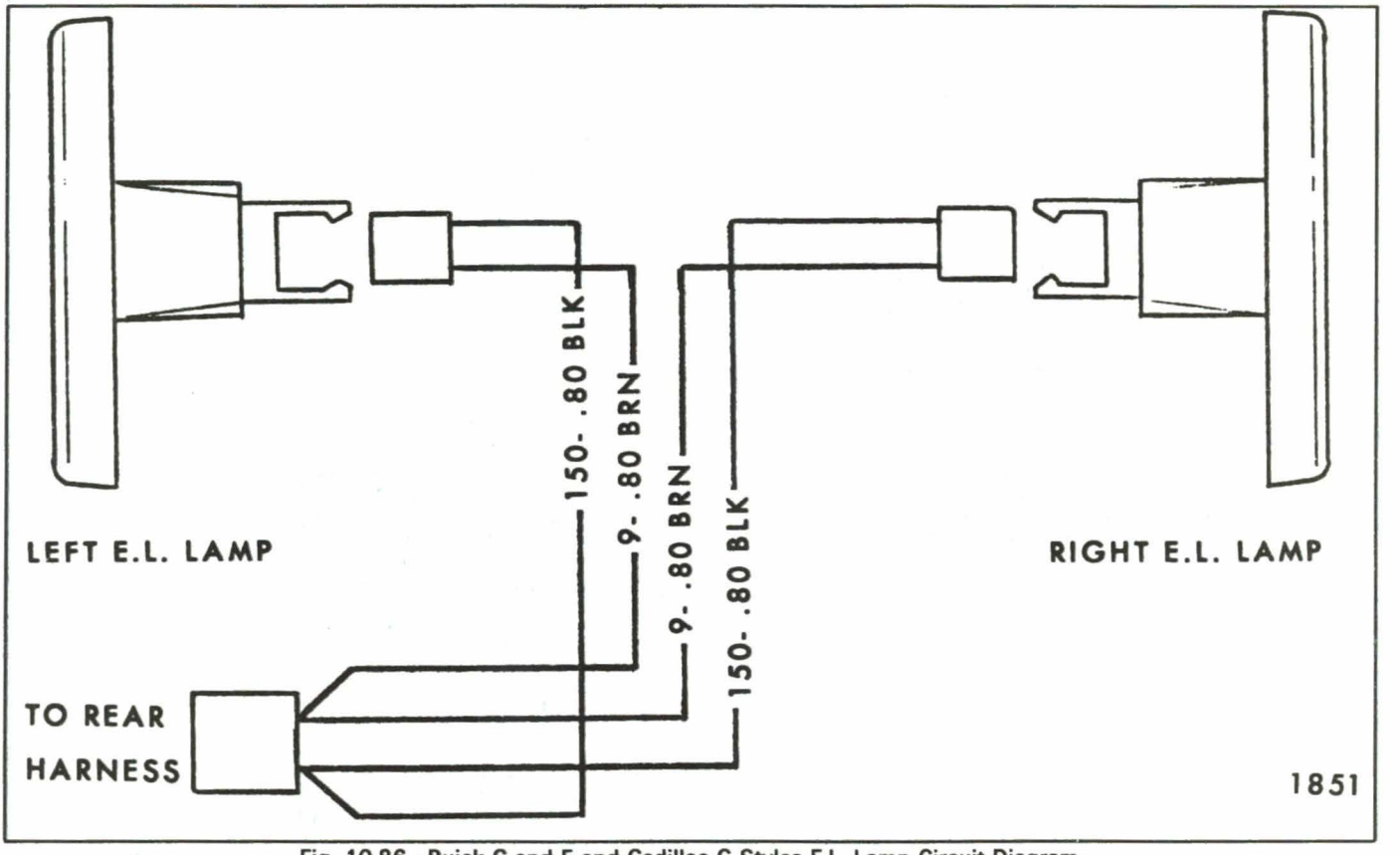


Fig. 10-86 - Buick C and E and Cadillac C Styles E.L. Lamp Circuit Diagram

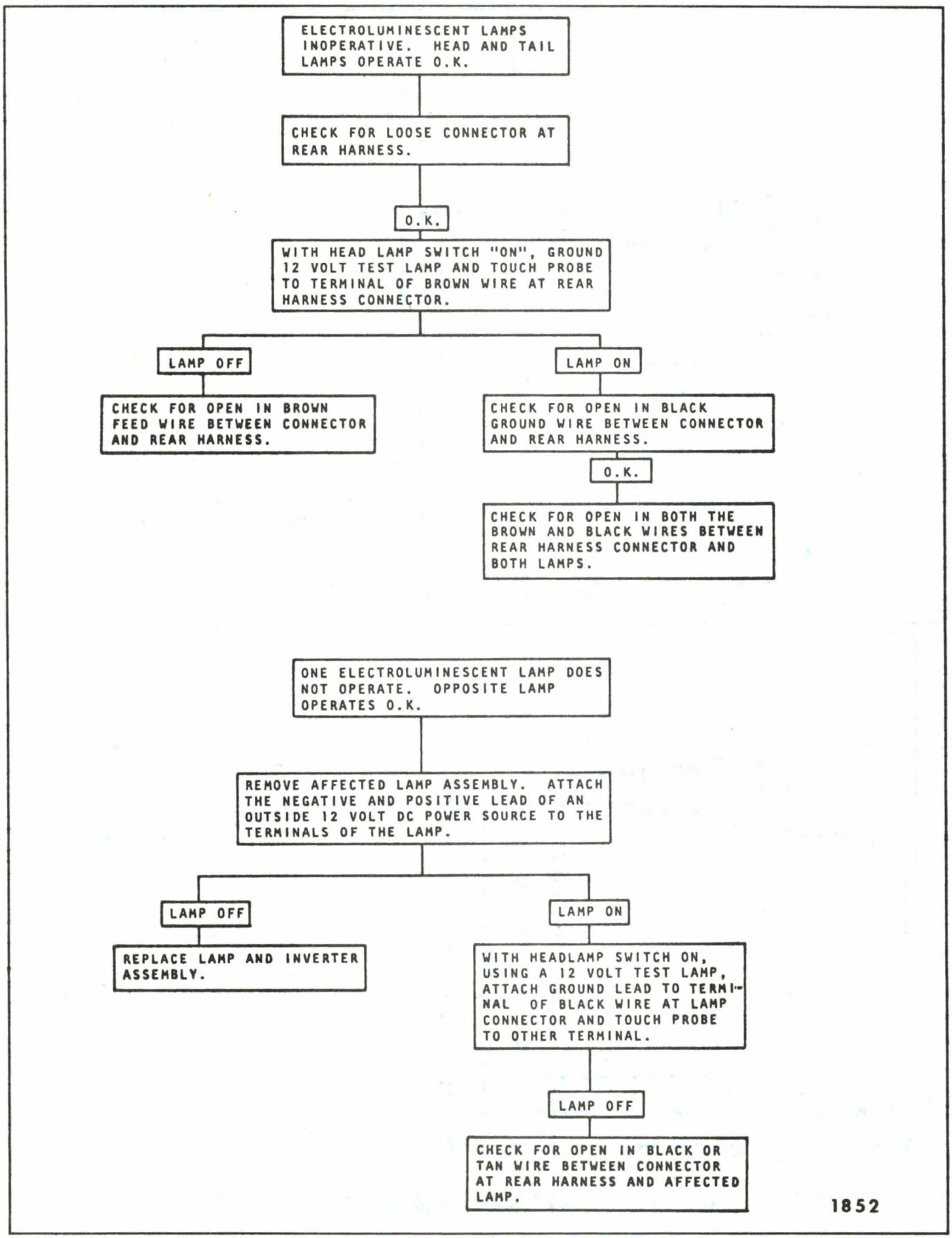


Fig. 10-87 - Buick C and E and Cadillac C Styles E.L. Lamp Diagnosis

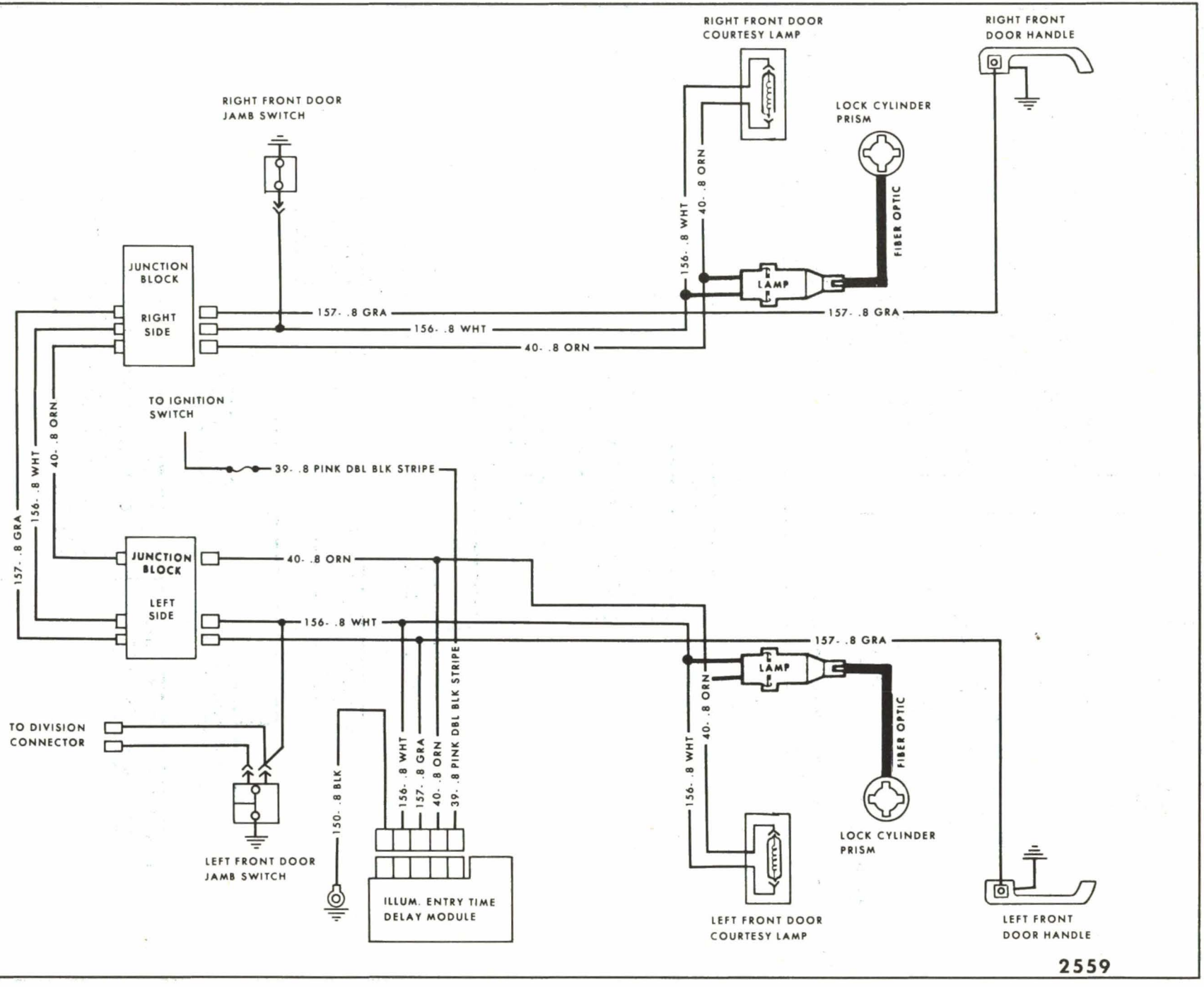


Fig. 10-88 - Illuminated Lock Cylinder and Courtesy Lamp Circuit Diagram

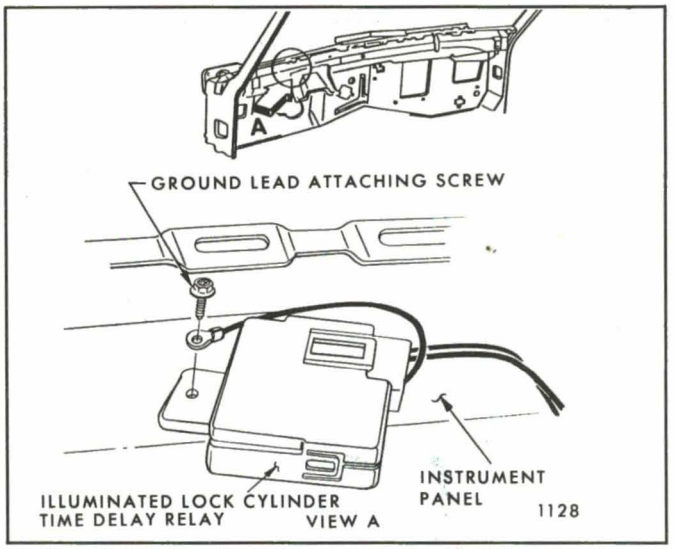


Fig. 10-89 - Illuminated Lock Cylinder Module Assembly Location

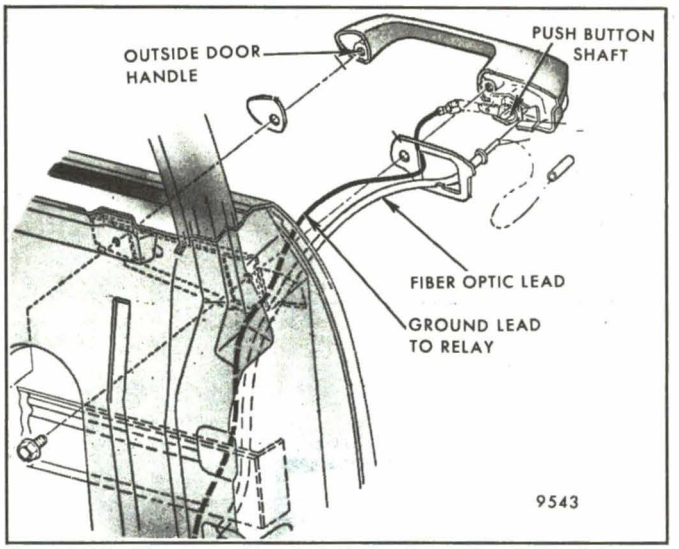


Fig. 10-90 - Illuminated Lock Cylinder Door Handle Push-Button Assembly (Typical)

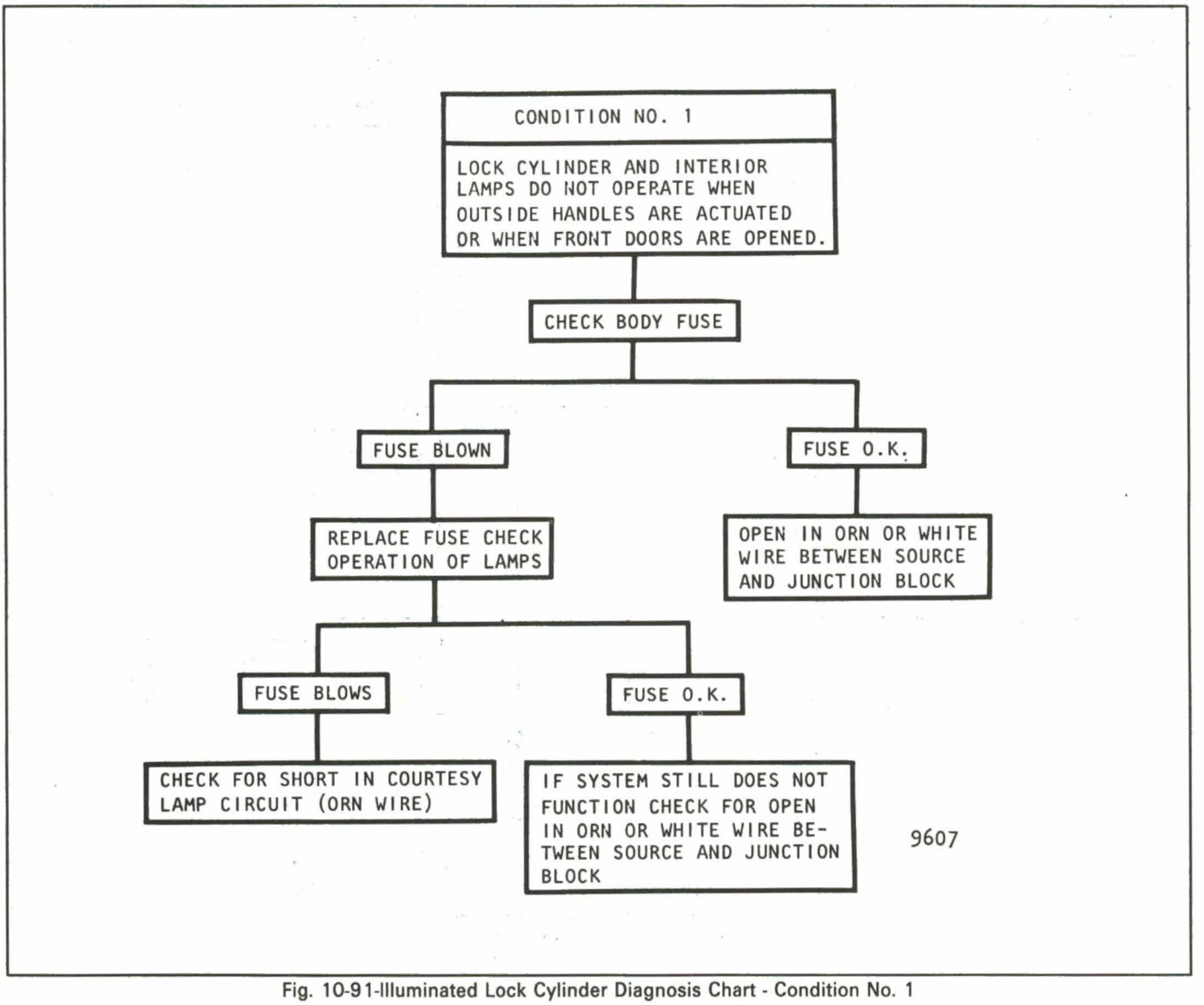


Fig. 10-91-Illuminated Lock Cylinder Diagnosis Chart - Condition No. 1

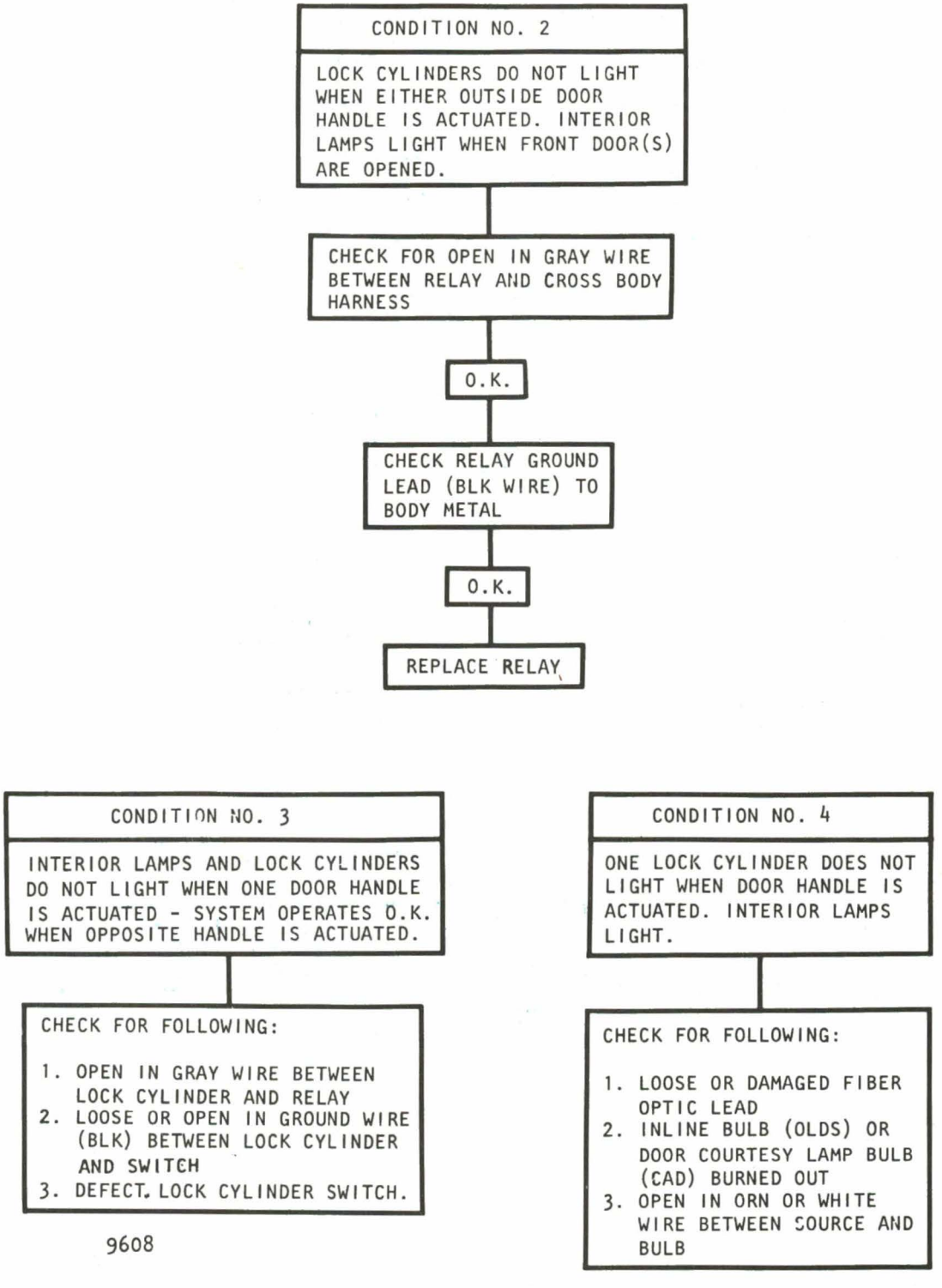


Fig. 10-92-Illuminated Lock Cylinder Diagnosis Chart - Conditions No. 2, 3, 4

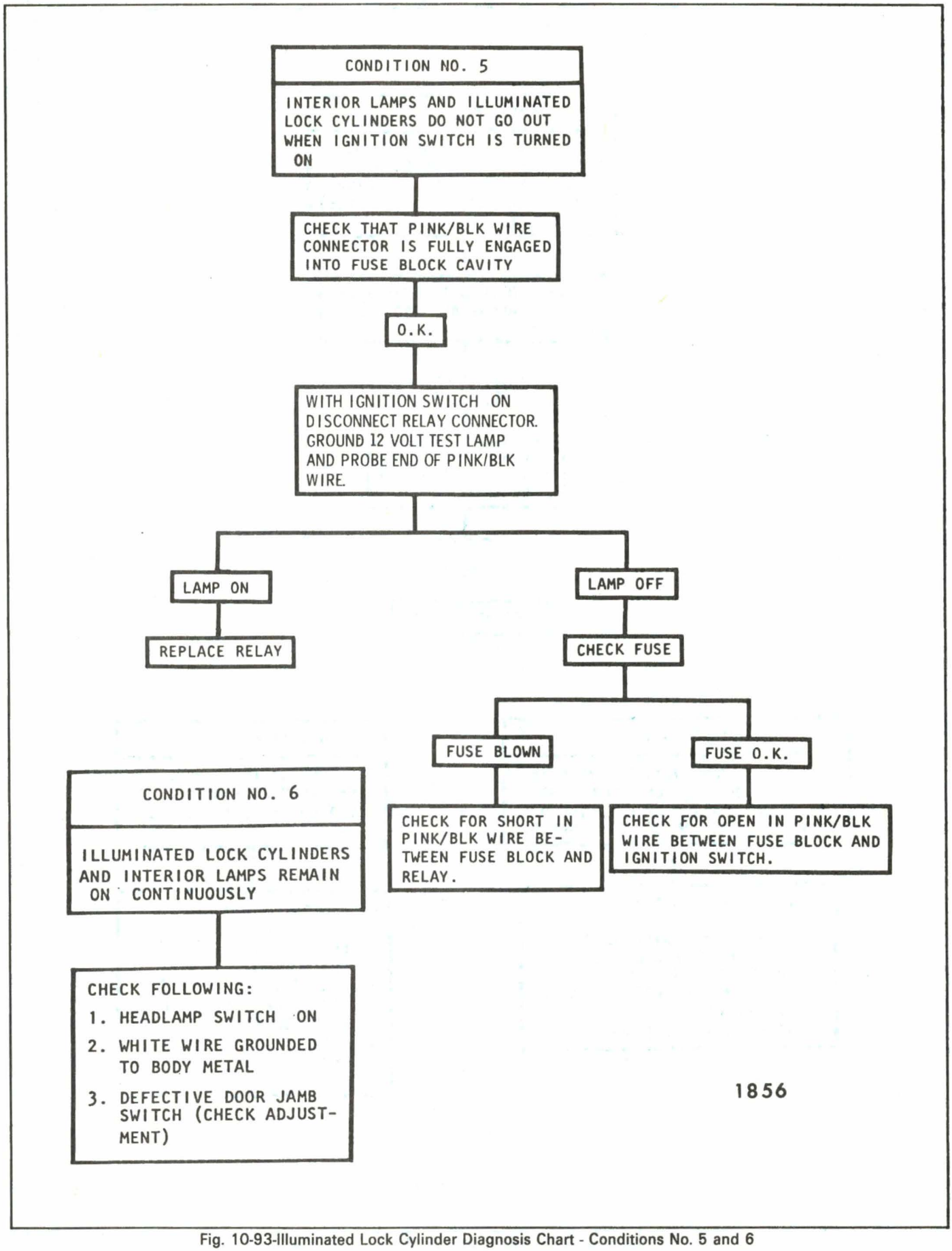


Fig. 10-93-Illuminated Lock Cylinder Diagnosis Chart - Conditions No. 5 and 6

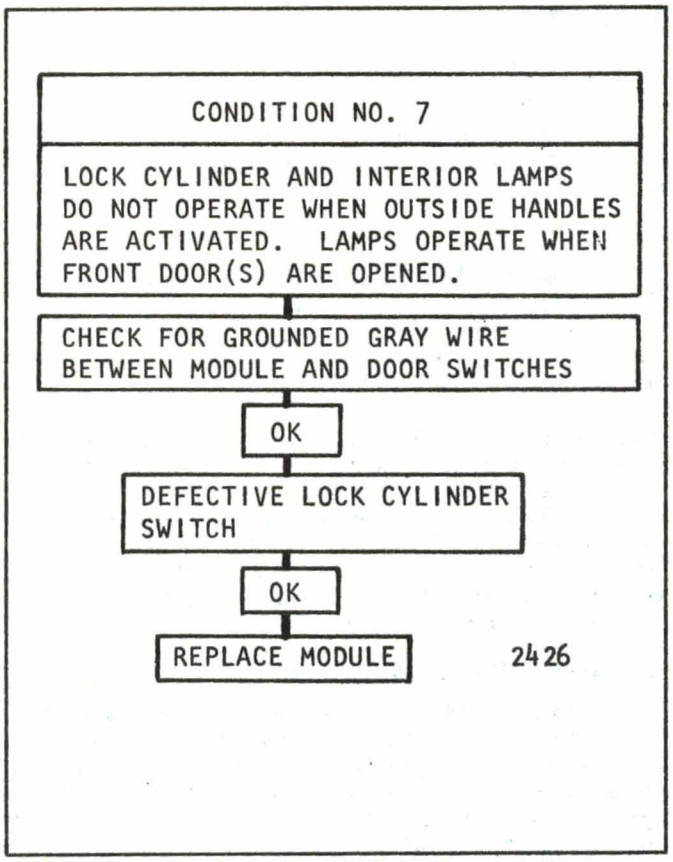


Fig. 10-94-Illuminated Lock Cylinder Diagnosis Chart - Condition No. 7

POWER DOOR LOCKS

The power door locking system consists of a permanent magnet motor lock acutator assembly at each door (Fig. 10-95), 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. 10-95)

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. 10-96 and 10-97).

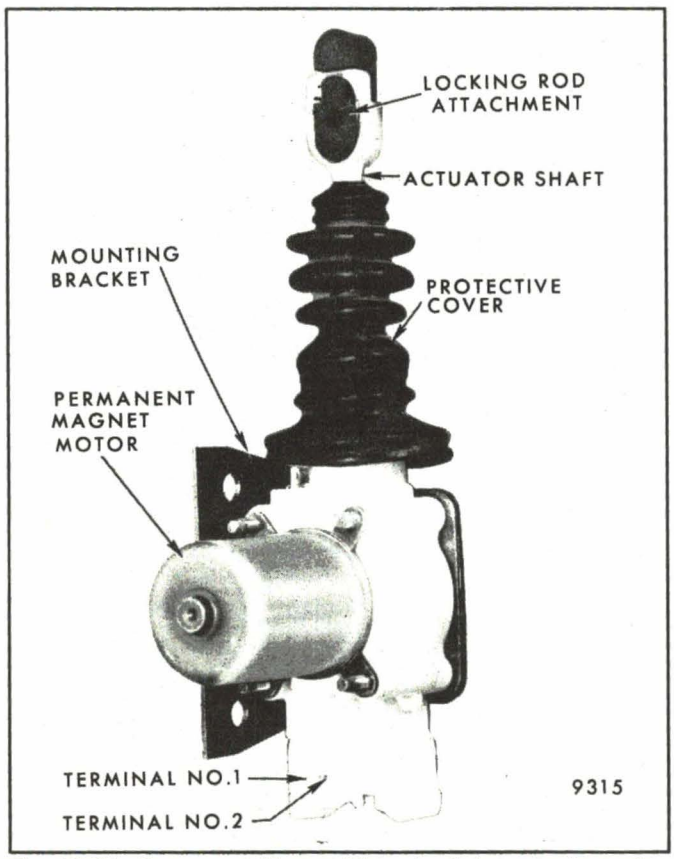


Fig. 10-95 - Permanent Magnet Motor Lock Actuator Assembly

When voltage is applied to terminal 1 and ground to terminal 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. Reversing the polarity is accomplished through the relay.

Relay Assembly (Fig. 10-98)

The relay assembly is a double pole, double throw, double coil relay that is externally grounded to body metal through the mounting bracket and attaching screw. It is installed behind the right shroud side trim panel on B,C,D and G styles. On E and K styles, the relay is installed on the cowl behind the glove compartment. The relay is not used on Chevrolet, Oldsmobile and Pontiac station wagons with optional tailgate lock only.

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.

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

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 power door locks and tailgate lock.
2. Buick station wagon equipped with tailgate lock only, controlled from switch in armrest.
3. Chevrolet, Oldsmobile, Pontiac station wagons equipped with tailgate lock only, controlled from instrument panel switch.

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 proper diagnosis chart. Malfunction could be due to mechanical binds in the affected lock assembly.

The door lock feed circuit to the relay (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.

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. When the selector lever is moved to park, all doors will unlock automatically. Also, if the selector lever is in drive and a passenger unlocks any door manually or all doors from the control switch

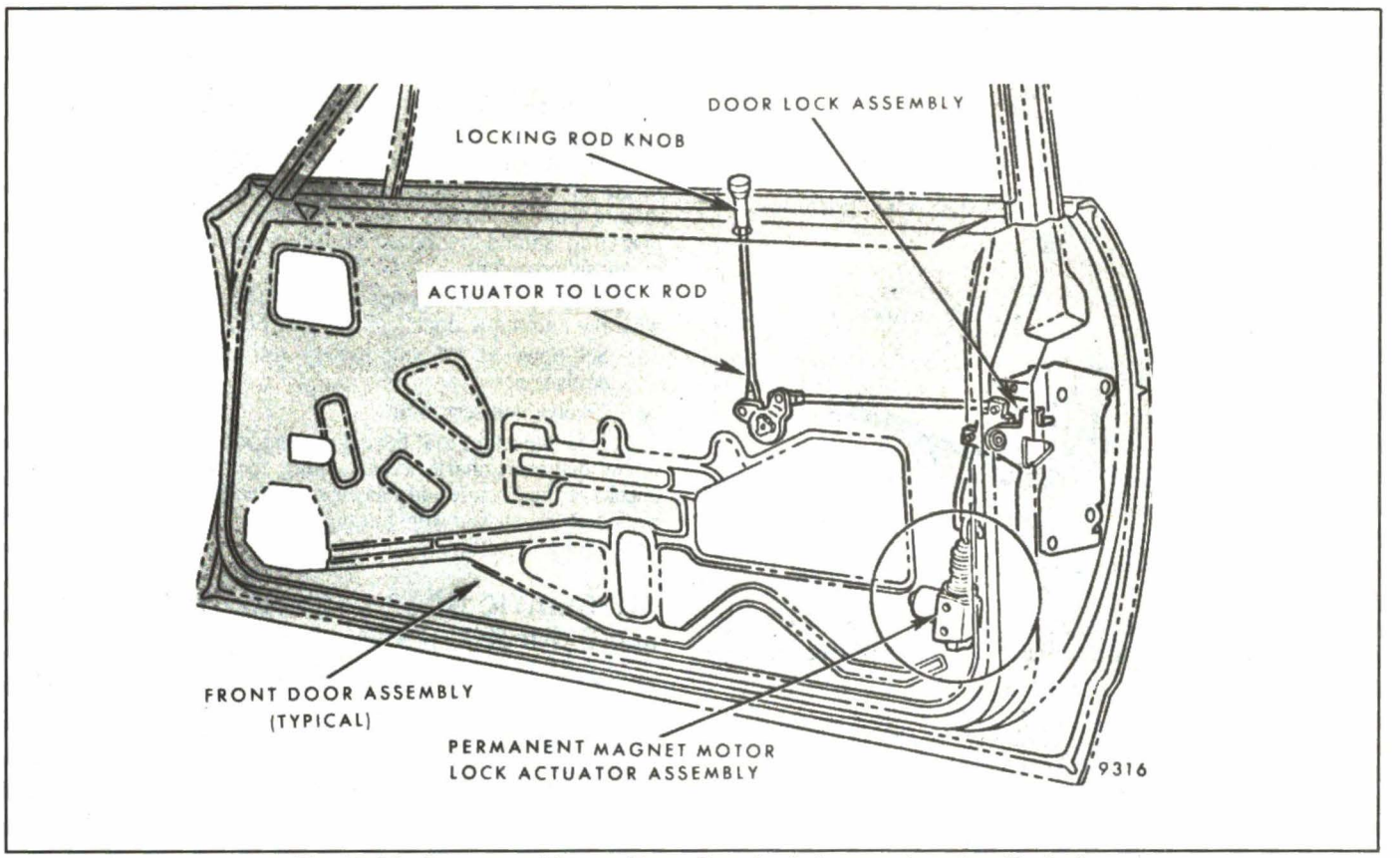


Fig. 10-96 - Permanent Magnet Motor Door Lock Actuator Location (Typical)

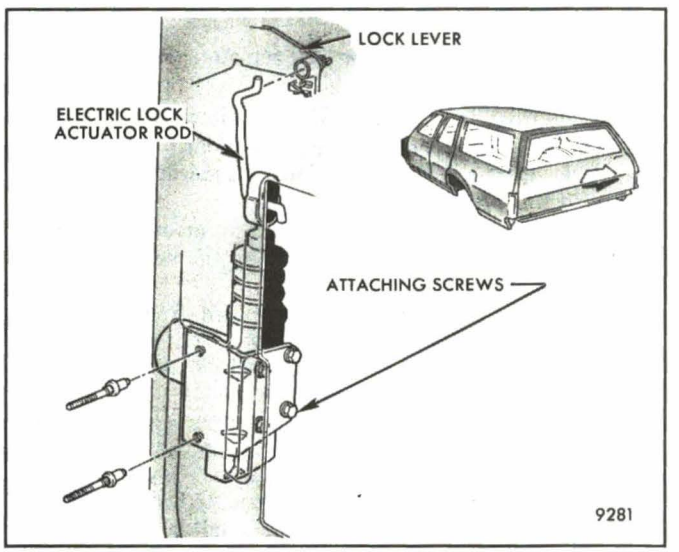


Fig. 10-97 - Permanent Magnet Motor Tailgate Lock Actuator Location (Typical)

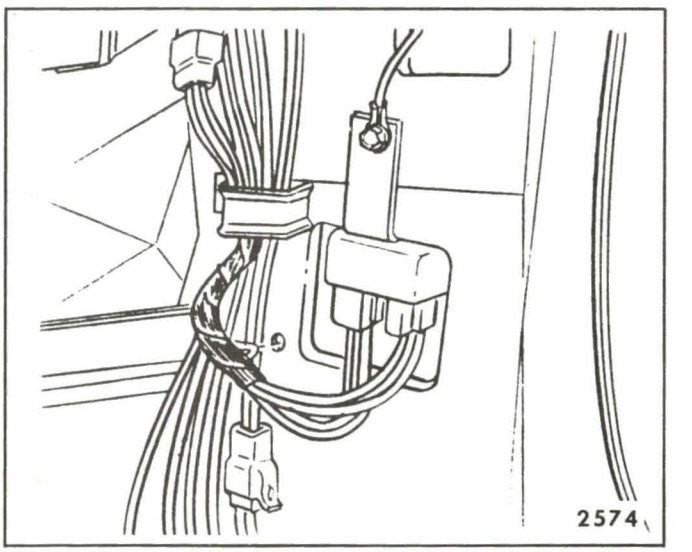


Fig. 10-98-Power Door Lock Relay Assembly, B,C,D,G and K Styles

in the front door armrest, then exits the car, all doors will automatically relock when the door is closed.

A 12V DC signal is sent to the lock relay. The lock relay then completes the ground path to the module. Close attention should be given to the captions under the diagnostic charts.

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 (Figs. 10-112 and 10-113).

- Electronic logic module
- Permanent magnet motor lock actuator relay
- Lock relay
- Drive switch
- Seat sensor switch (driver's side only)

On styles 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 above the right cowl trim panel on C and D styles. The logic module is serviced as two separate assemblies: the module housing with harness and the printed circuit board.

To gain access to the module assembly and permanent magnet motor lock actuator relay on C and D styles, remove side shroud trim panel and deadener. On E and K styles, remove glove compartment assembly. If it becomes necessary to detach the

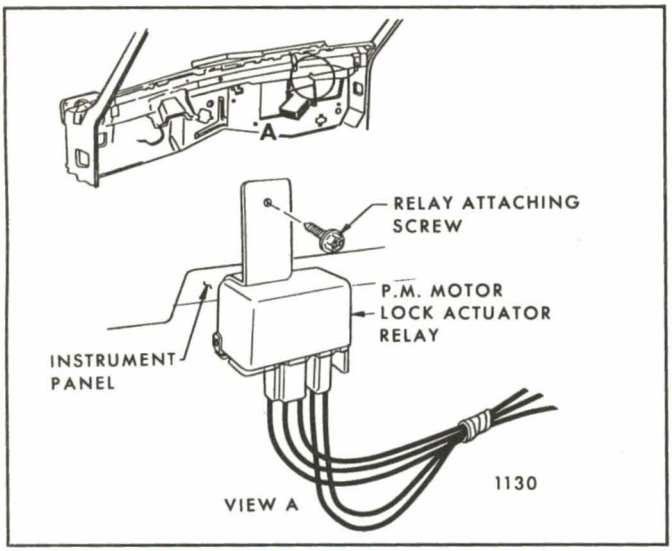


Fig. 10-99-Power Door Lock Relay, E Styles

permanent magnet motor lock actuator relay, be sure to re-establish external ground for the relay before attempting any diagnosis.

NOTICE: Remove body fuse before disengaging printed circuit board from module housing to avoid shorting the printed circuits together.

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.

Permanent Magnet Motor Lock Actuator Relay

The P.M. motor lock actuator relay is attached behind the right cowl trim panel or behind the glove compartment as shown in Figures 10-98 and 10-114 and is serviced as an assembly.

Drive Switch

The drive switch is attached to lower end of steering column. For service information, refer to chassis service manual.

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 10-115.

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 in the system may lead to a combination of conditions, each of which must be checked separately. Also, functional unlock and P.M. motor lock relay tests (Fig. 10-122) 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 proper diagnosis procedure.

Two types of test lamps are used when diagnosing problems with the automatic door lock system (Fig. 10-116).

- Self-powered 1.5 volt battery test lamp (tool J-21008 or equivalent).
- Twelve volt test lamp.

It is important that the proper test lamp be used as indicated in the diagnosis charts when making continuity and operational checks of the module and relay assemblies. Figure 10-117 has been provided as an aid for finding proper probe locations when performing these tests.

AUTOMATIC DOOR LOCKING SYSTEM - Buick and Oldsmobile Styles

With all doors closed, courtesy lamps off and ignition switch on, the automatic door locking system locks all doors when the selector lever is moved to the drive position. When the selector lever is moved to park, all doors will automatically unlock. Also, all doors can be unlocked from outside the car when the key is inserted into the lock cylinder (driver's side only) and turned to the unlock position.

The automatic system consists of the following components.

- Electronic logic module
- Unlock relay
- Permanent magnet motor lock actuator relay
- Back-up lamp switch
- Right front door lock key cylinder switch (driver's side only)

On styles equipped with automatic door locks, the electric door locks operate in the conventional manner from the switches in the door armrests.

The unlock relay is taped to the logic module and installed at the right side of the cowl or taped to the harness below the module behind the glove box.

To remove the printed circuit board from the housing, disengage the locking tab on housing, then insert a small screwdriver into hole at edge of printed circuit board and pry outboard.

Two types of test lamps are used when diagnosing problems with the automatic system, a 12 volt test lamp and a self-powered 1.5 volt test lamp, tool J-21008 or equivalent. The self-powered test lamp is used only to check module ground to body metal. The 12 volt test lamp is used for all other operational checks (Fig. 10-116).

Probe locations and wire color identification are illustrated in Figure 10-123.

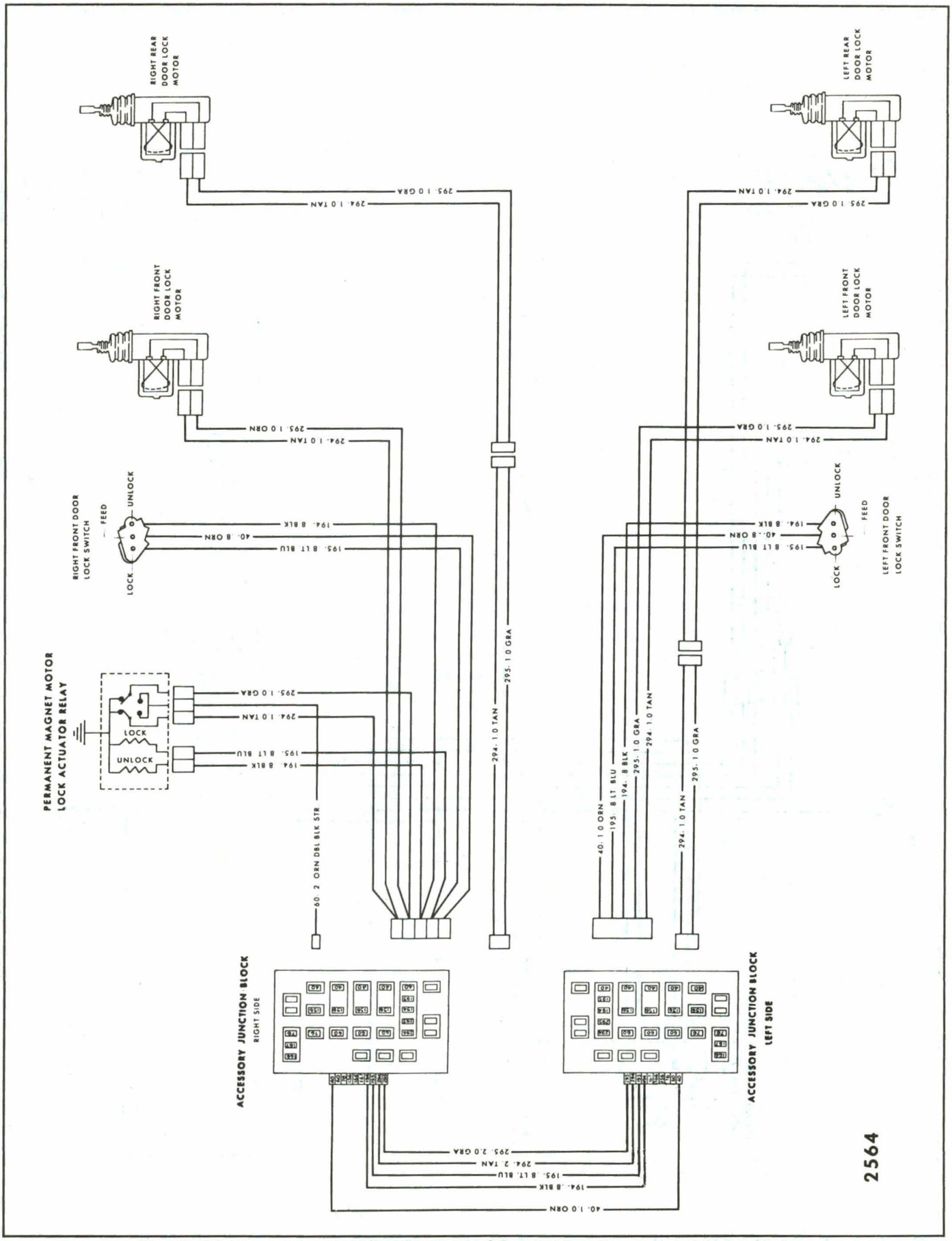


Fig. 10-100 - Power Door Lock Circuit Diagram, C,D and K Four-Door Styles, E Styles Similar

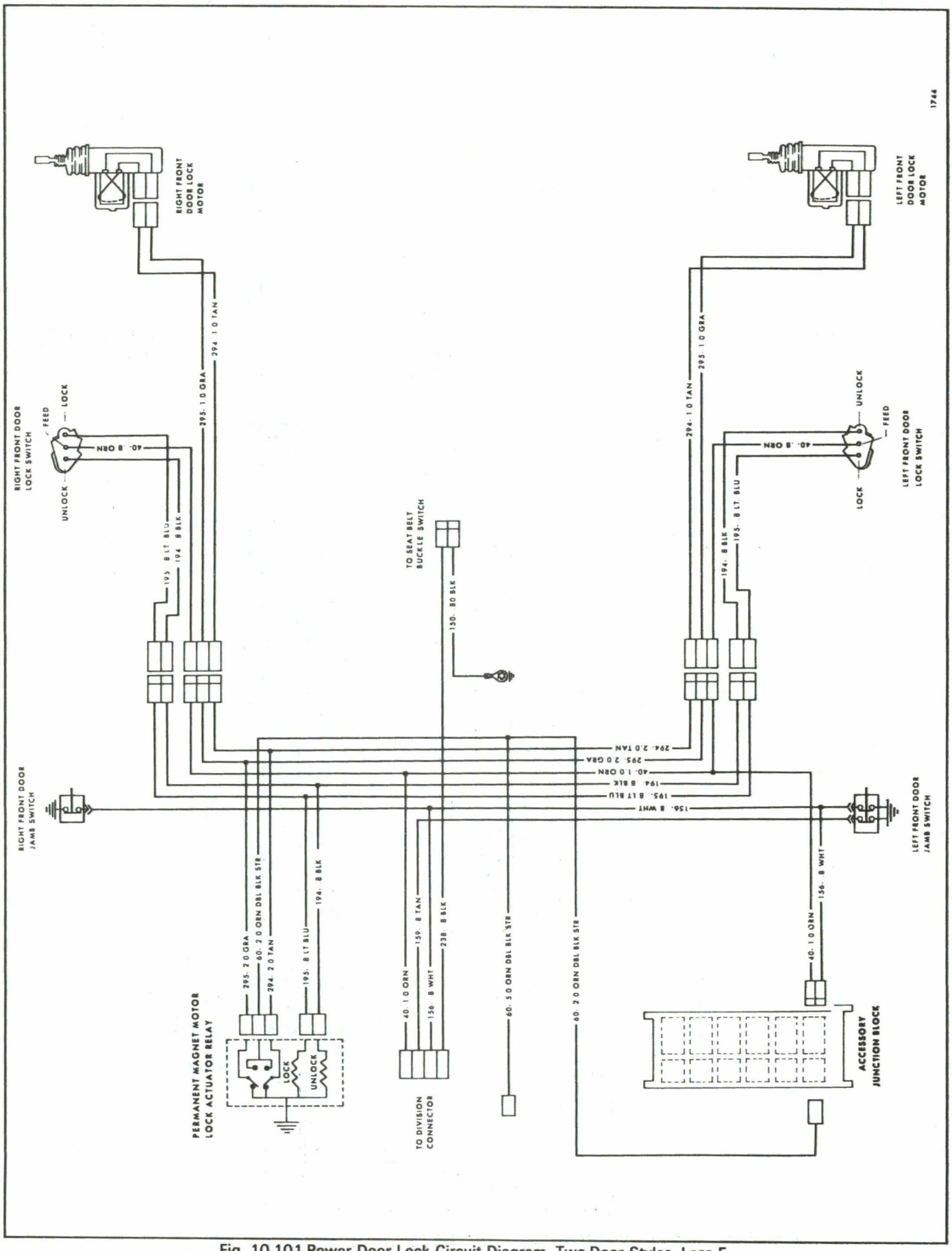


Fig. 10-101-Power Door Lock Circuit Diagram, Two-Door Styles, Less E

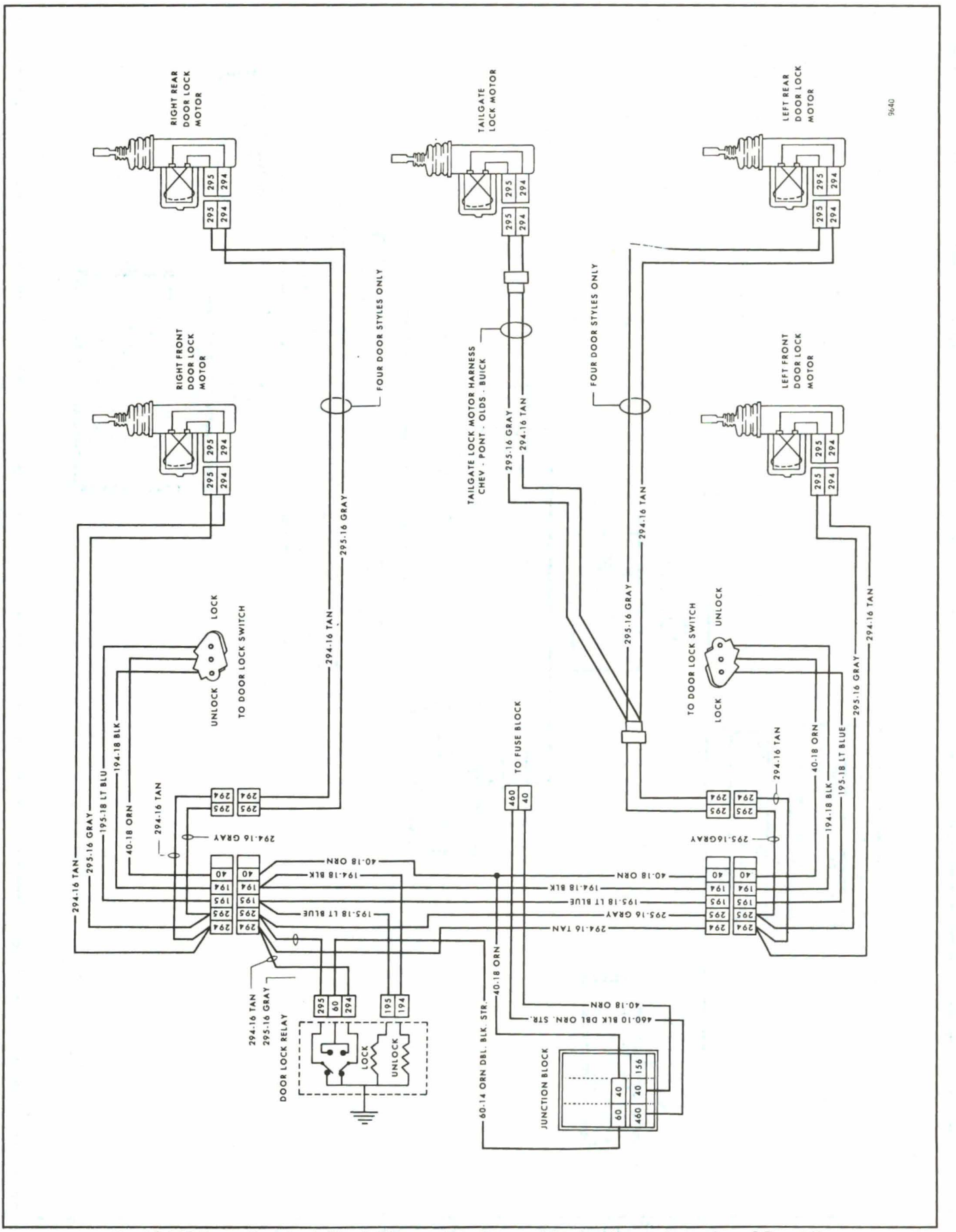


Fig. 10-102-Power Door Lock Circuit Diagram, Four-Door and Station Wagon Styles, Less C,D and K

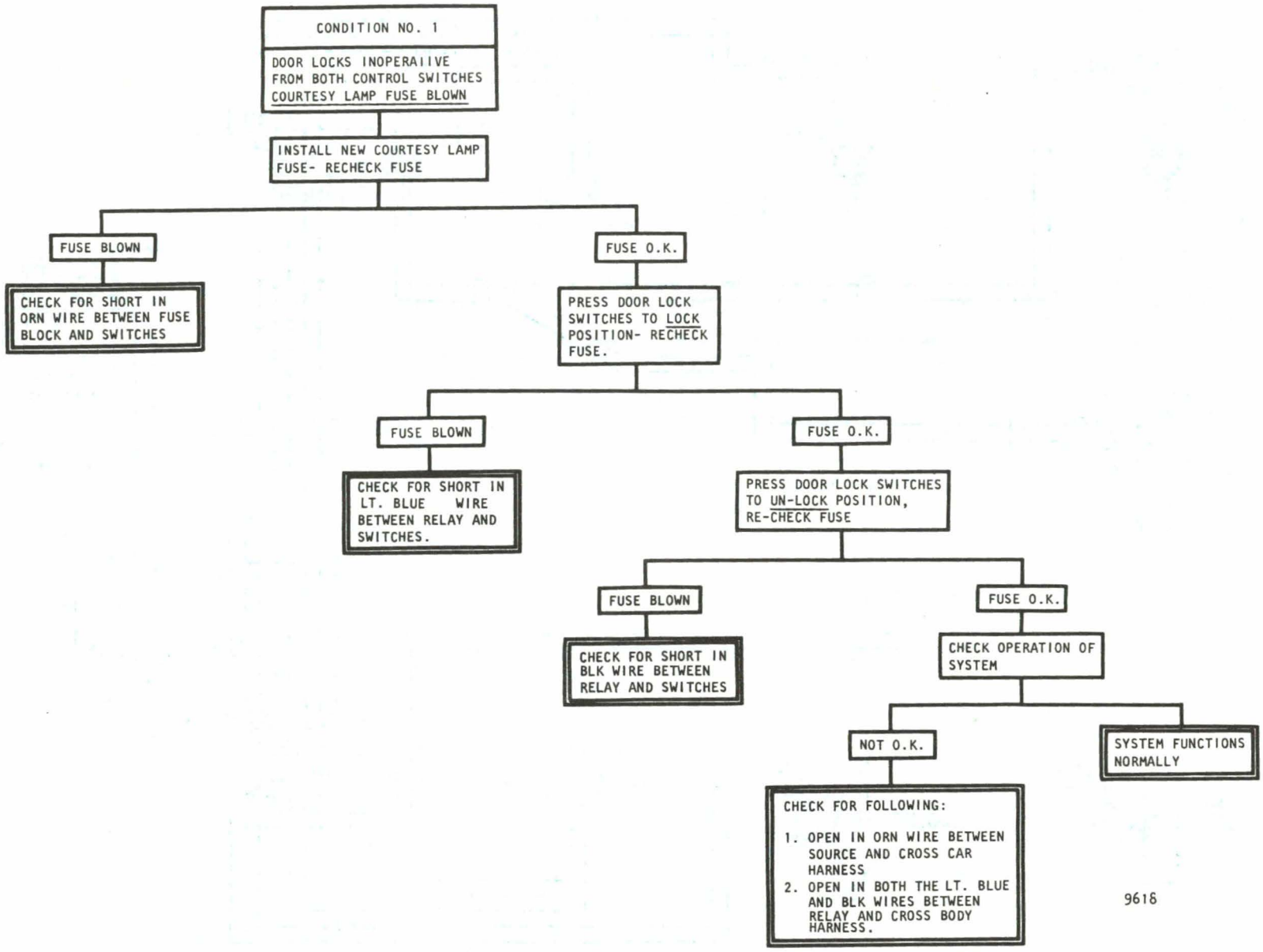


Fig. 10-103 - Power Door Lock Diagnosis Chart - Condition No. 1

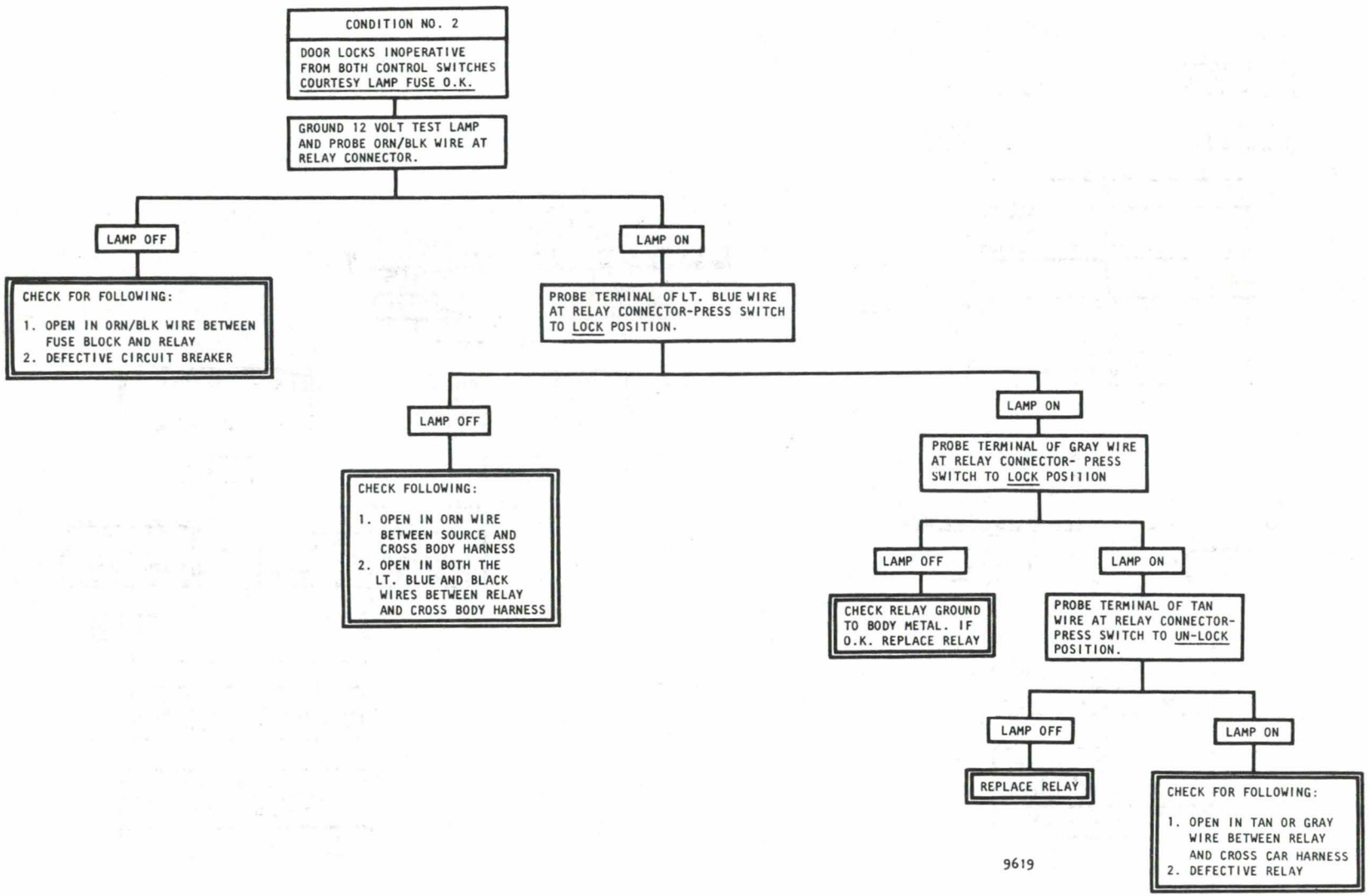
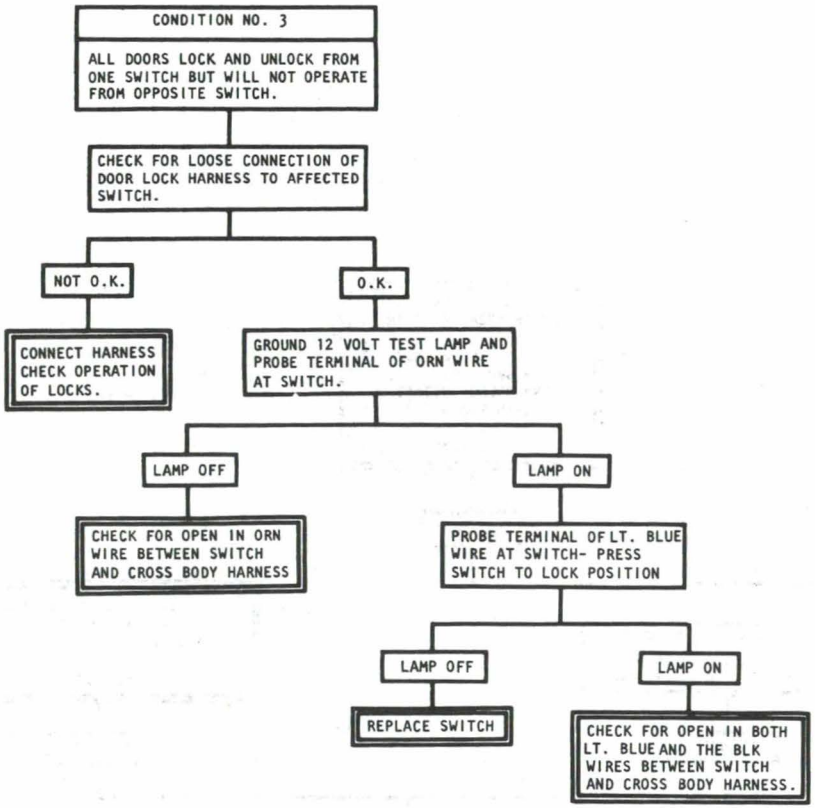


Fig. 10-104 - Power Door Lock Diagnosis Chart - Condition No. 2



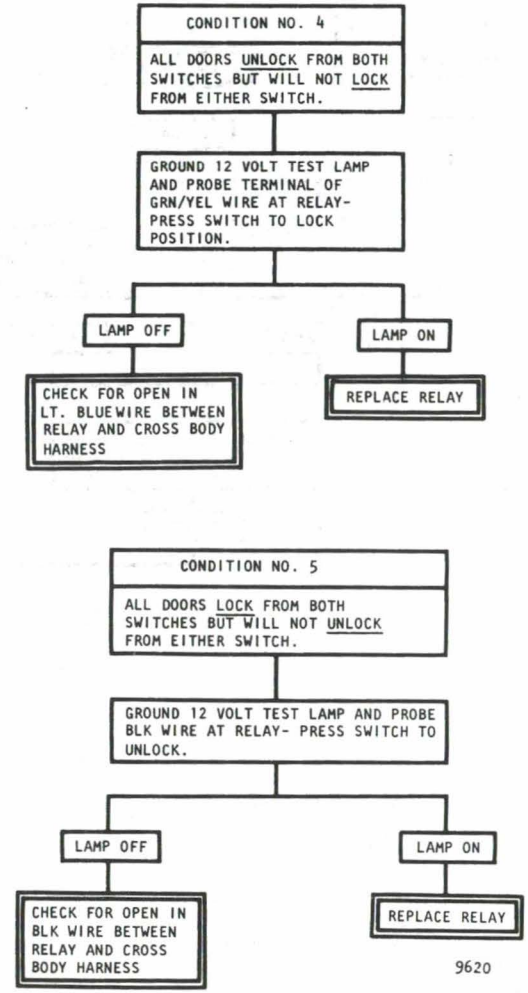


Fig. 10-105 - Power Door Lock Diagnosis Chart - Condition No. 3, 4, 5

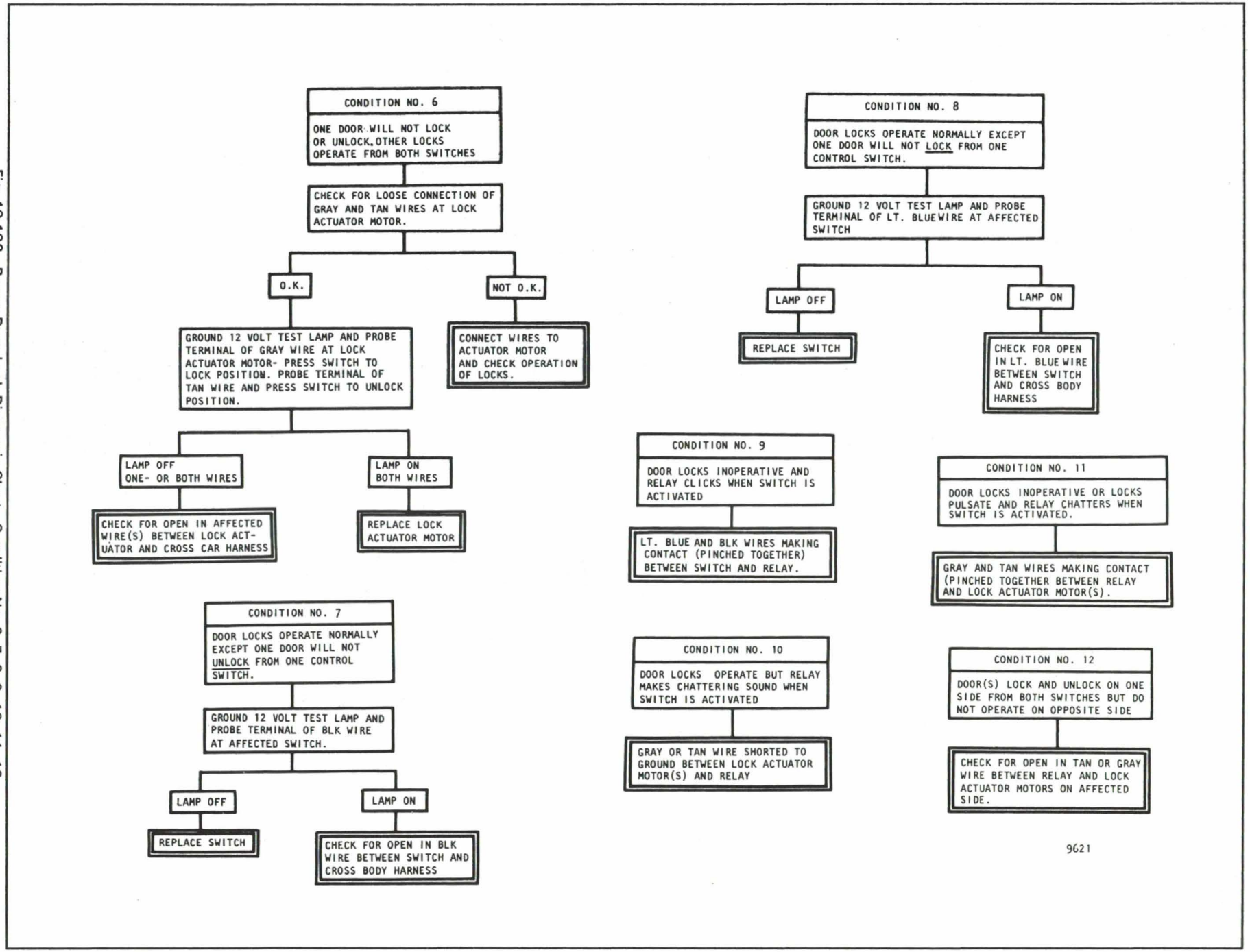


Fig. 10-106 - Power Door Lock Diagnosis Chart - Condition No. 6, 7, 8, 9, 10, 11, 12

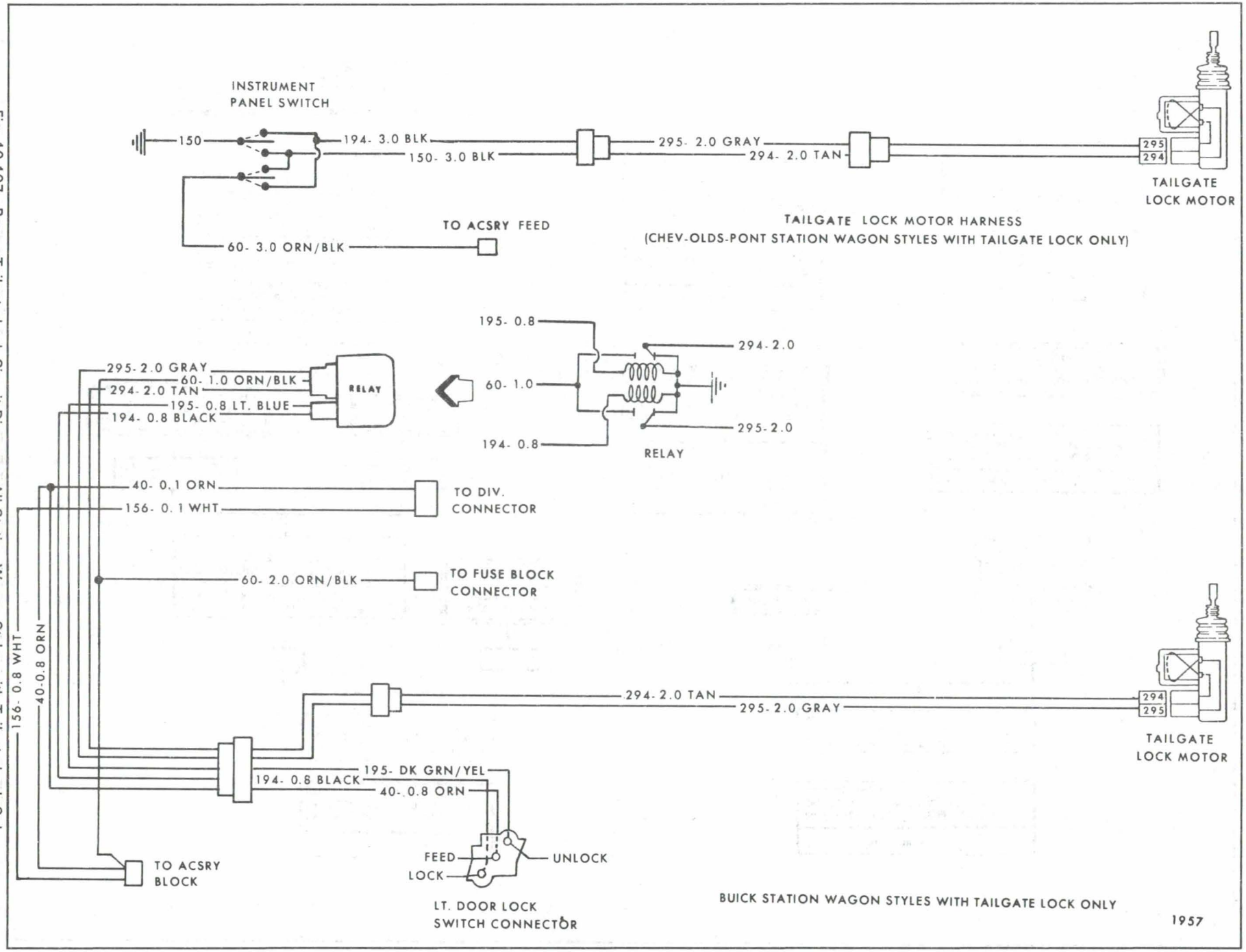


Fig. 10-107 - Power Tailgate Lock Circuit Diagram - All Station Wagon Styles with Tailgate Lock Only

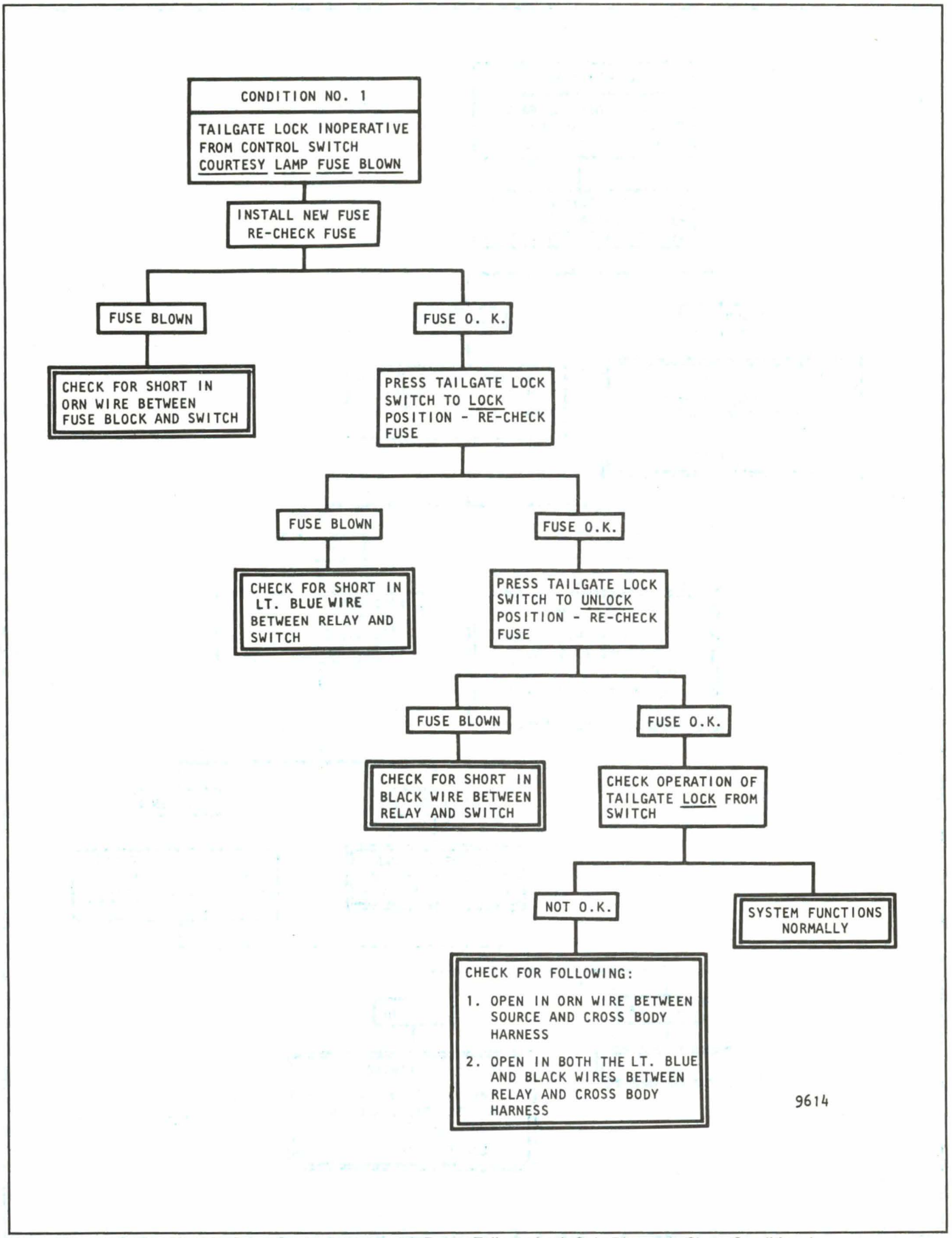


Fig. 10-108 - Buick Station Wagon with Power Tailgate Lock Only Diagnosis Chart, Condition 1

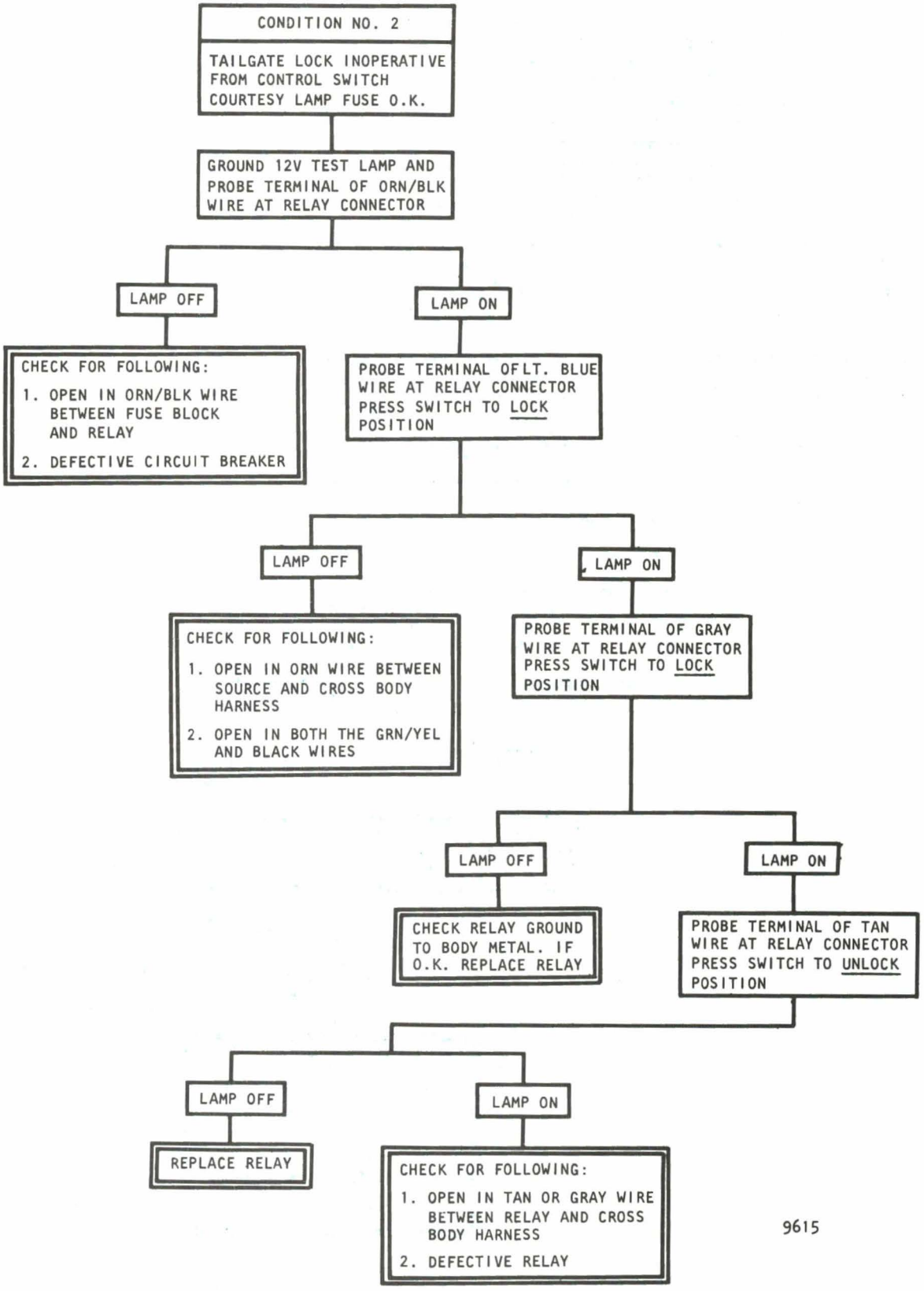


Fig. 10-109 - Buick Station Wagon with Power Tailgate Lock Only Diagnosis Chart, Condition 2

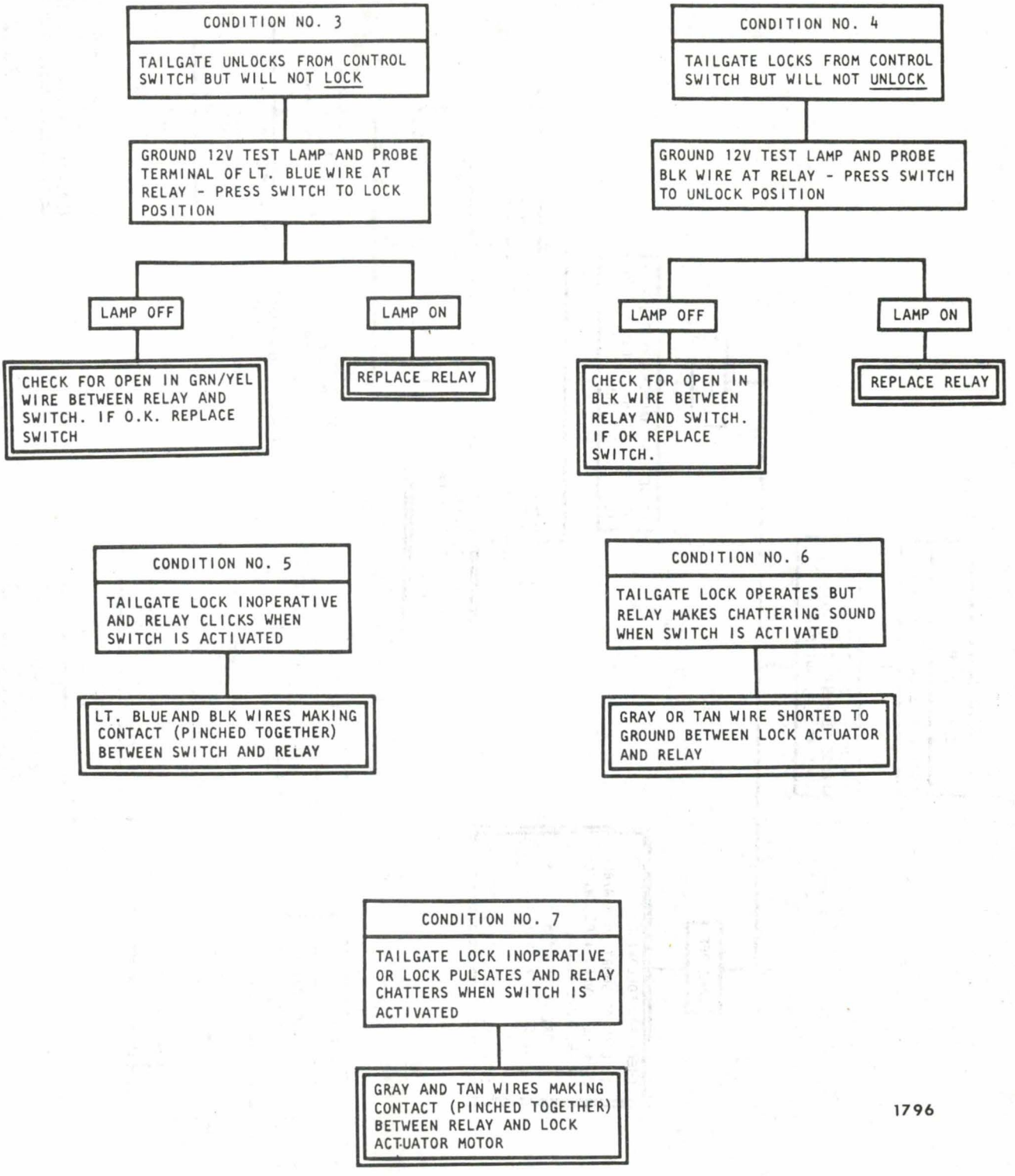


Fig. 10-110 - Buick Station Wagon with Power Tailgate Lock Only Diagnosis Chart, Condition 3,4,5,6,7

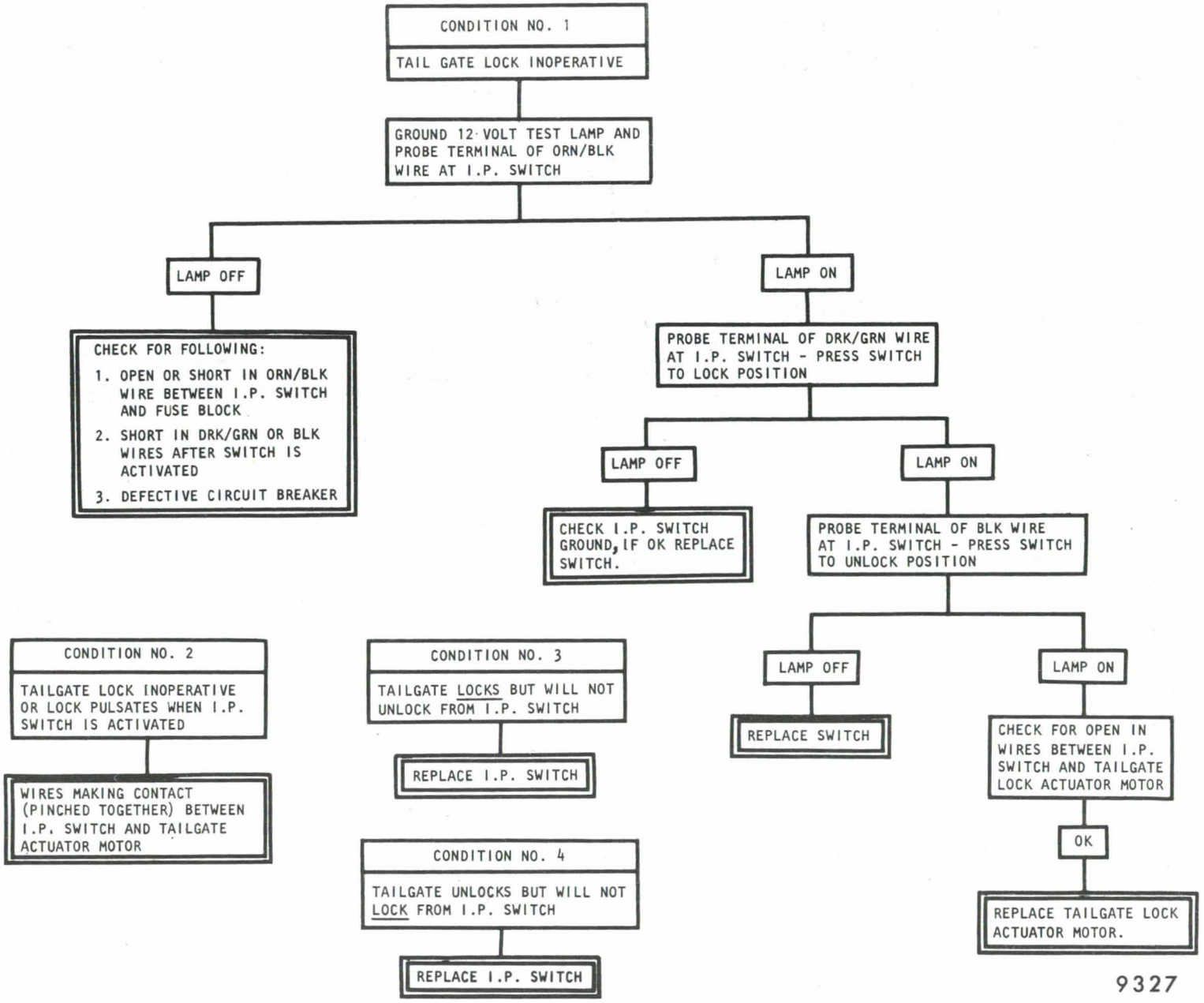


Fig. 10-111 - Chev., Olds., Pontiac Station Wagons with Power Tailgate Lock Only, Condition 1,2,3,4

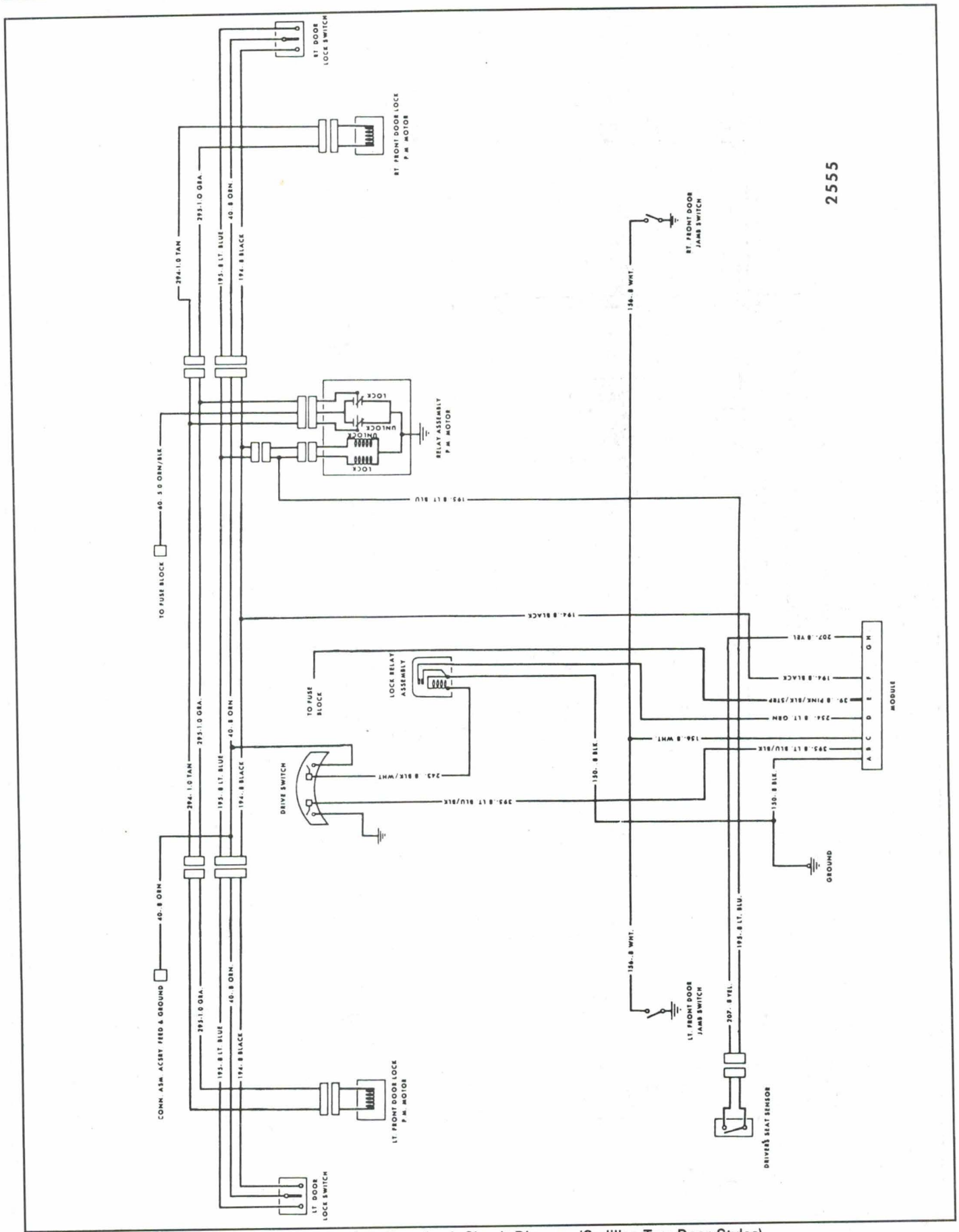


Fig. 10-112 - Automatic Door Lock Circuit Diagram (Cadillac Two-Door Styles)

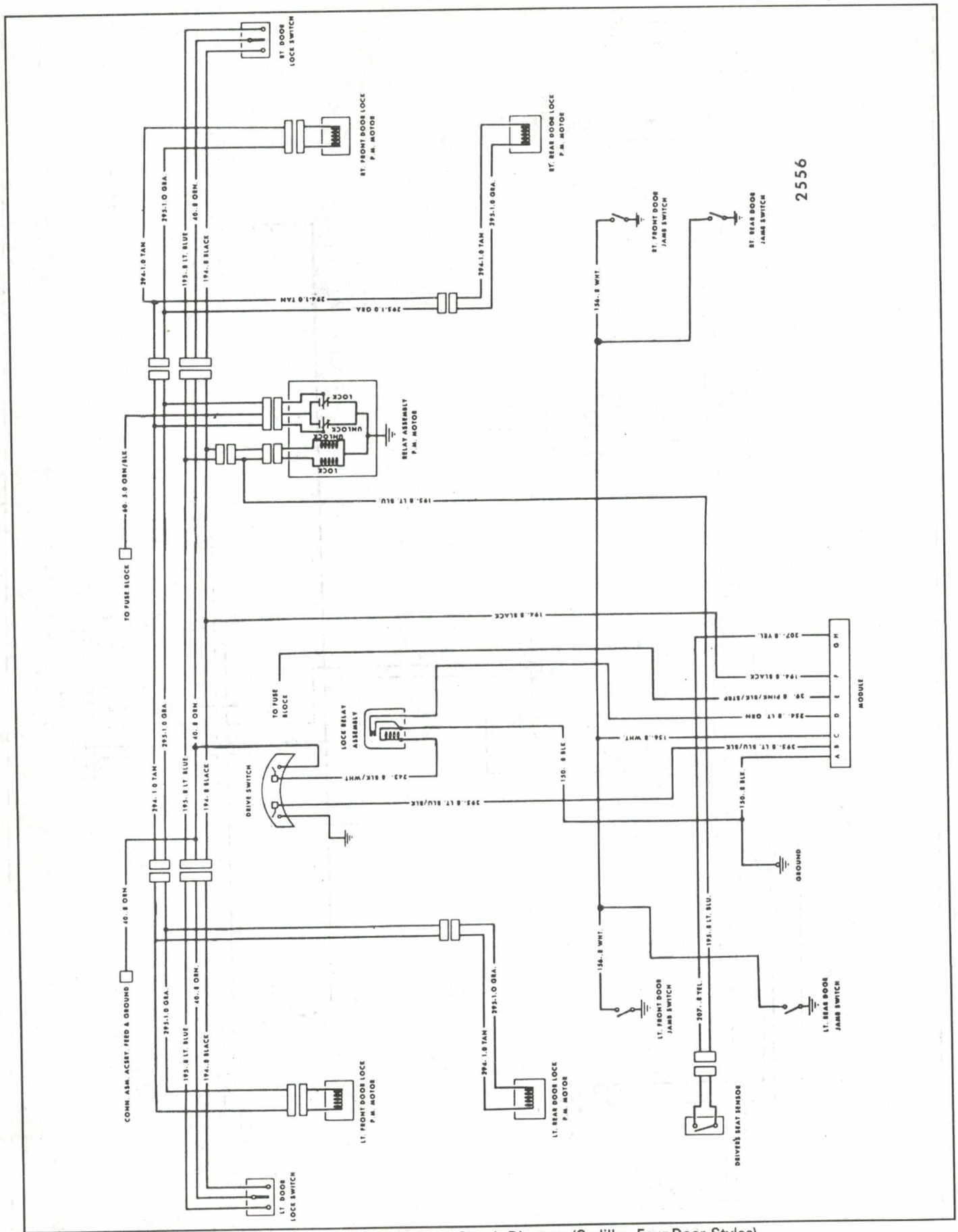


Fig. 10-113-Automatic Door Lock Circuit Diagram (Cadillac Four-Door Styles)

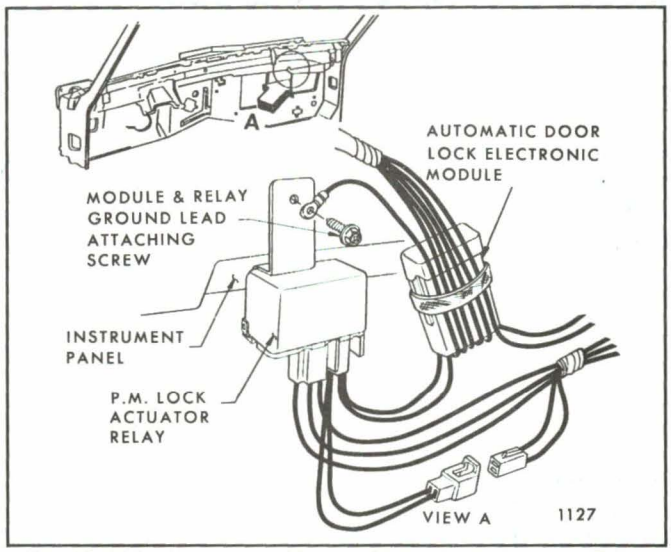


Fig. 10-114 - Permanent Magnet Motor Lock Actuator Relay and Module, E and K Styles

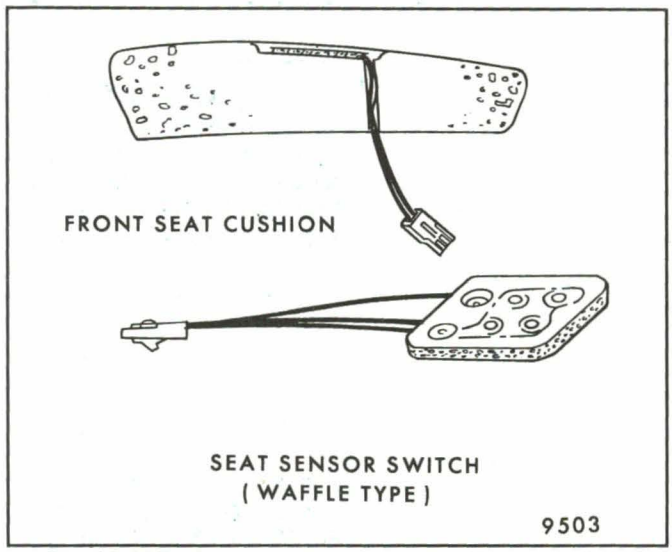


Fig. 10-115 - Automatic Door Lock Seat Sensor Switch (Cadillac Styles)

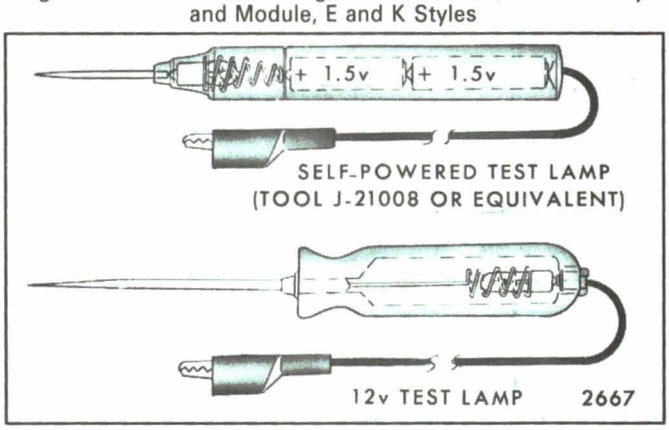


Fig. 10-116 - Test Lamps

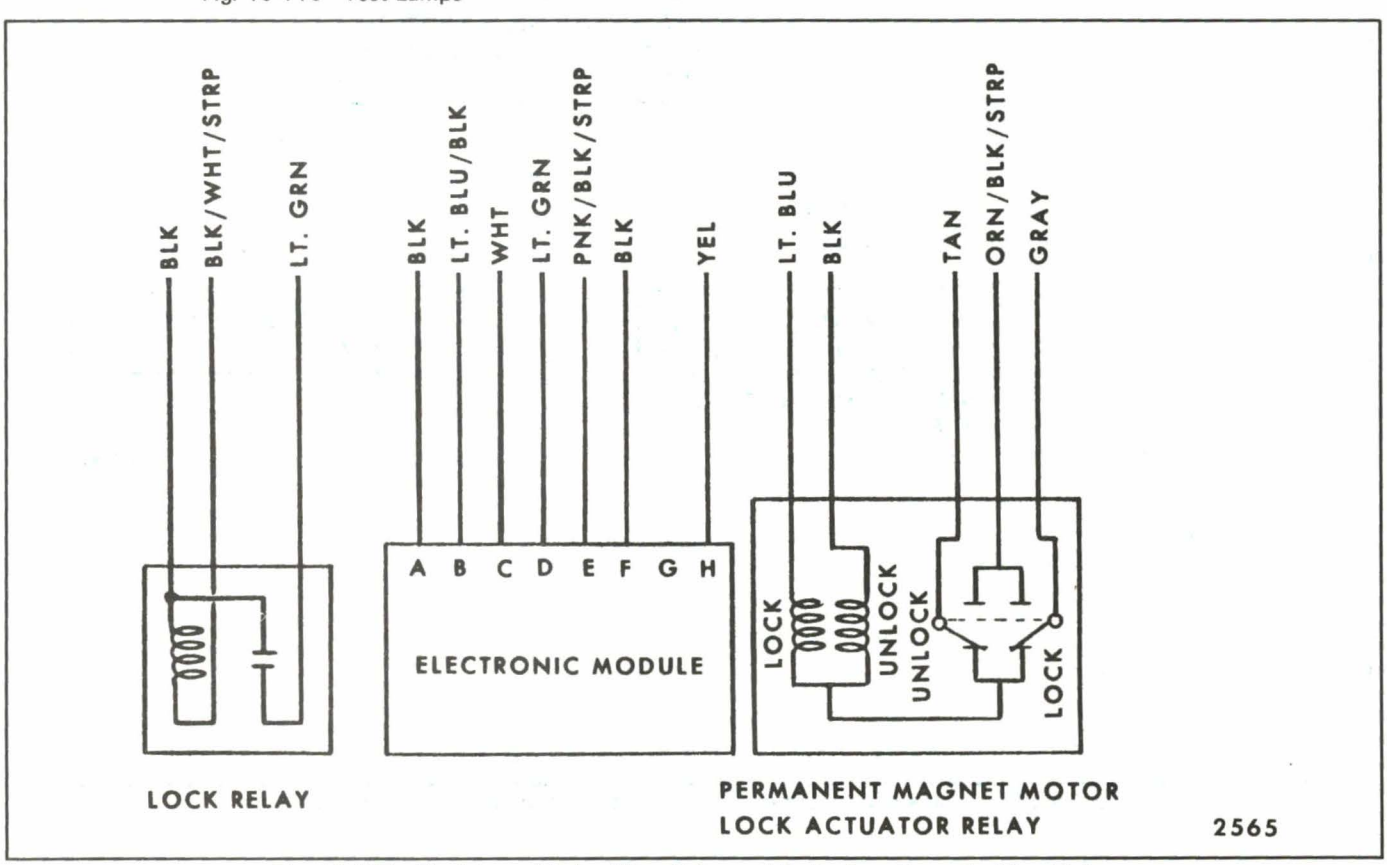


Fig. 10-117 - Module and Relay Wire Color and Probe Locations, Cadillac Styles

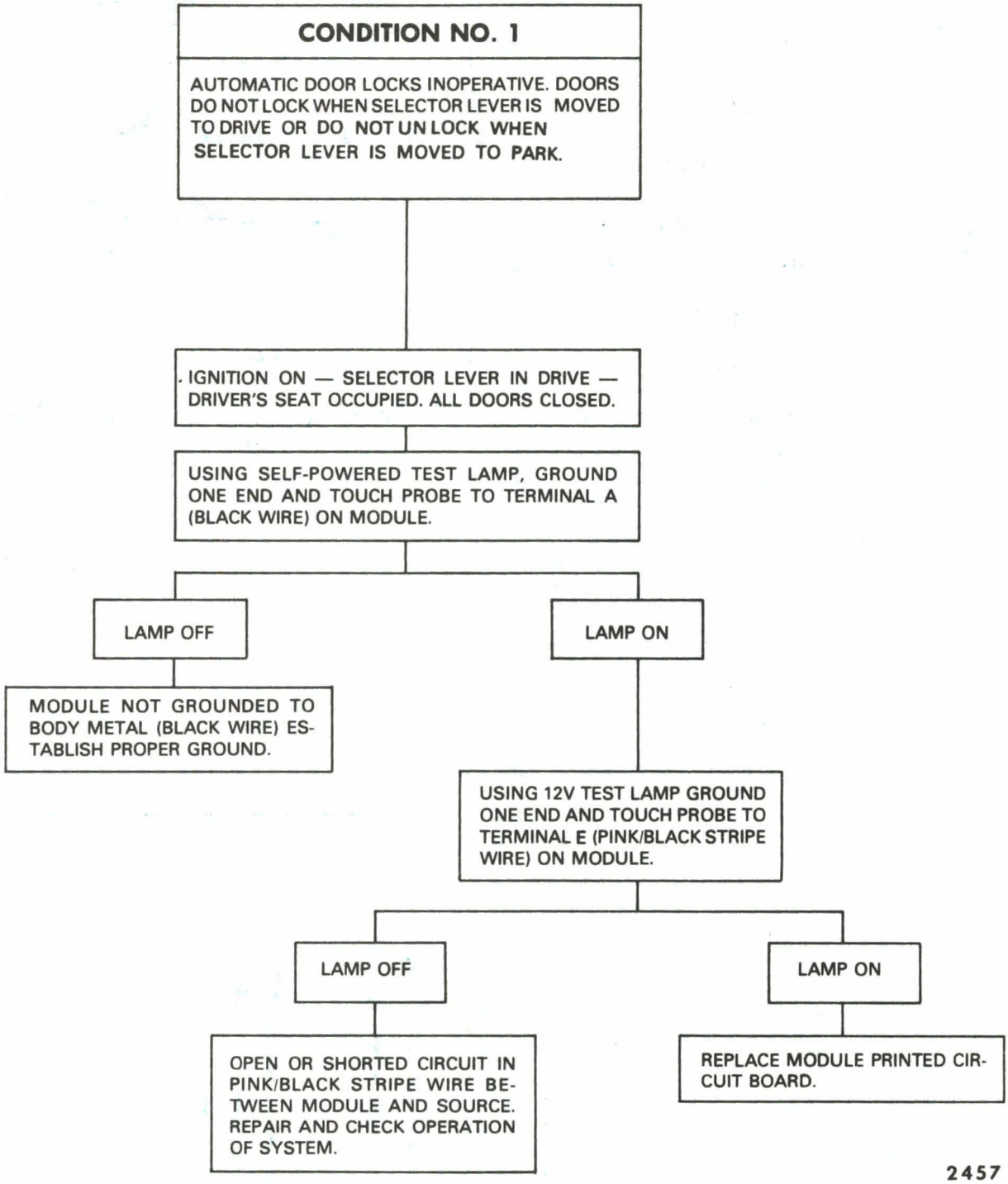


Fig. 10-118 - Automatic Door Lock Diagnosis Chart - Condition No. 1, Cadillac Styles

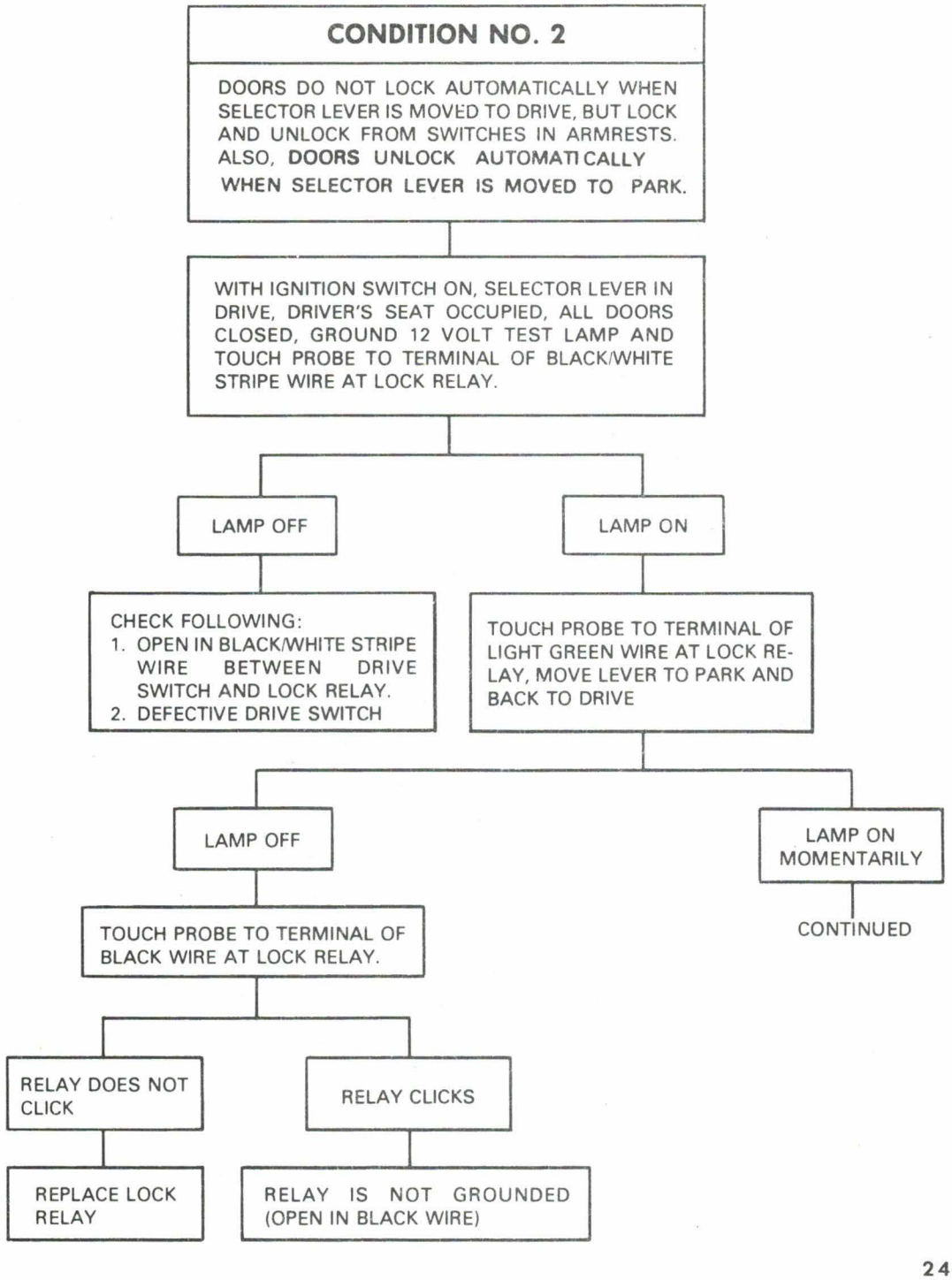


Fig. 10-119 - Automatic Door Lock Diagnosis Chart - Condition No. 2, Cadillac Styles

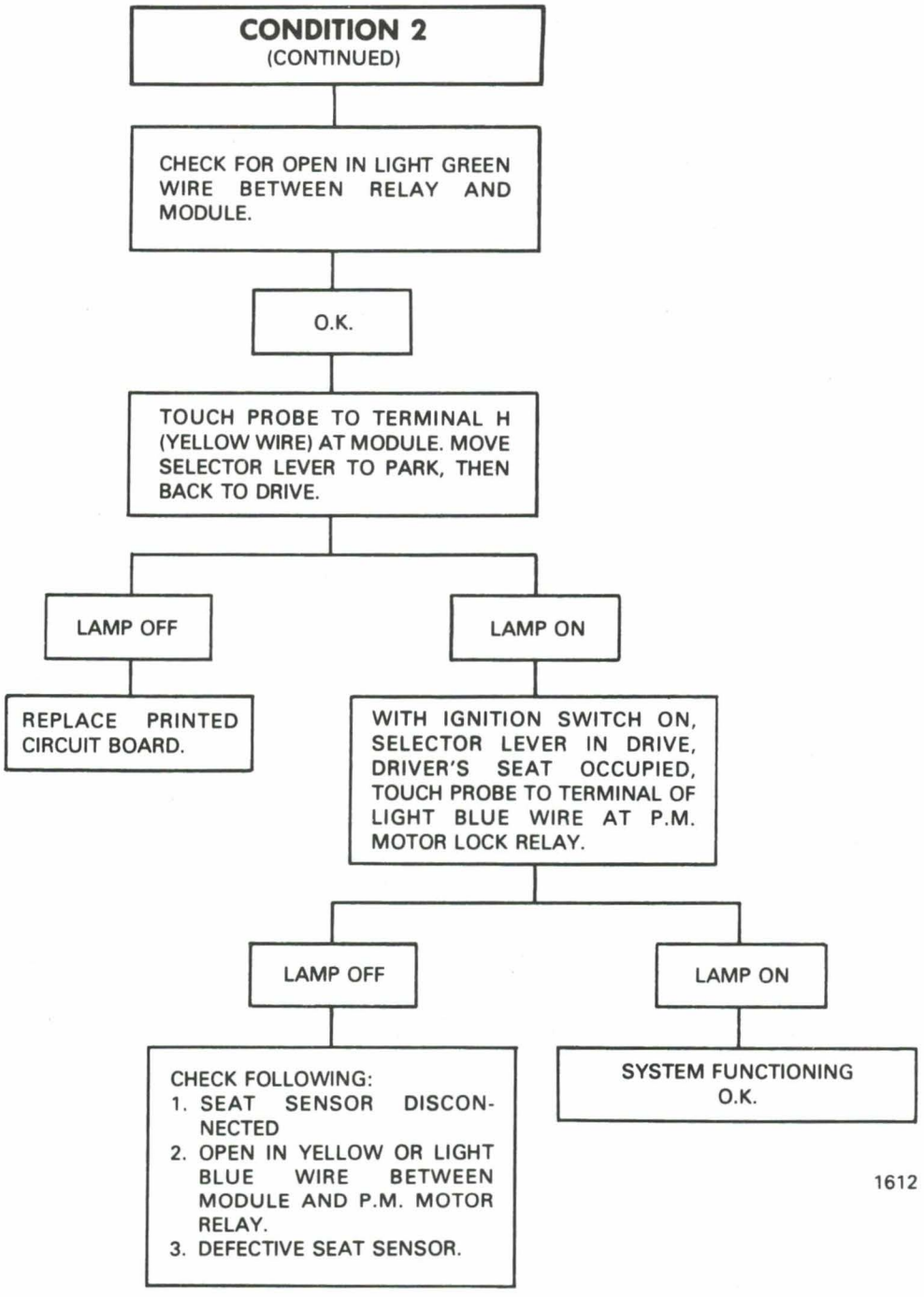


Fig. 10-120 - Automatic Door Lock Diagnostic Chart - Condition No. 2 Continued, Cadillac Styles

CONDITION NO. 3

DOORS LOCK AUTOMATICALLY WHEN DRIVER'S SEAT IS NOT OCCUPIED AND SELECTOR LEVER IS MOVED TO DRIVE.

WITH SELECTOR LEVER IN N. OR R., GROUND 12 VOLT TEST LAMP AND PROBE TERMINAL OF LIGHT BLUE WIRE AT DRIVER'S SEAT SENSOR SWITCH, THEN MOVE SELECTOR LEVER TO DRIVE.

LAMP ON MOMENTARILY (DRIVER'S SEAT NOT OCCUPIED)

DEFECTIVE SEAT SENSOR SWITCH (FAILED CLOSED)

CONDITION NO. 4

LOCKS DO NOT OPERATE AUTOMATICALLY OR FROM CONTROL SWITCHES IN DOOR ARMRESTS.

CHECK FOLLOWING:

1. P.M. LOCK ACTUATOR RELAY GROUND TO BODY METAL.
2. OPEN OR SHORT IN ORANGE/BLACK WIRE IN THE FOLLOWING CIRCUITS:
   - A. AUTOMATIC DOOR LOCK CIRCUIT
   - B. POWER SEAT CIRCUIT
   - C. REAR COMPARTMENT LID CLOSING UNIT CIRCUIT
3. OPEN OR SHORT IN ORANGE WIRE IN AUTOMATIC DOOR LOCK SYSTEM.

CONDITION NO. 5

DOORS LOCK AUTOMATICALLY WITH DOOR(S) OPEN WHEN SELECTOR LEVER IS MOVED TO DRIVE.

CHECK FOR FOLLOWING:

- A. OPEN IN DOOR JAMB SWITCH CIRCUIT (WHITE WIRE)
- B. DEFECTIVE DOOR JAMB SWITCH (FAILED OPEN)
- C. OPEN IN WHITE WIRE BETWEEN MODULE AND COURTESY LAMP CIRCUIT.
- D. IF CONDITION(S) IN A-B-C DO NOT EXIST, REPLACE MODULE PRINTED CIRCUIT BOARD.

2459

Fig. 10-121 - Automatic Door Lock Diagnosis Chart - Condition No. 3, 4 and 5, Cadillac Styles

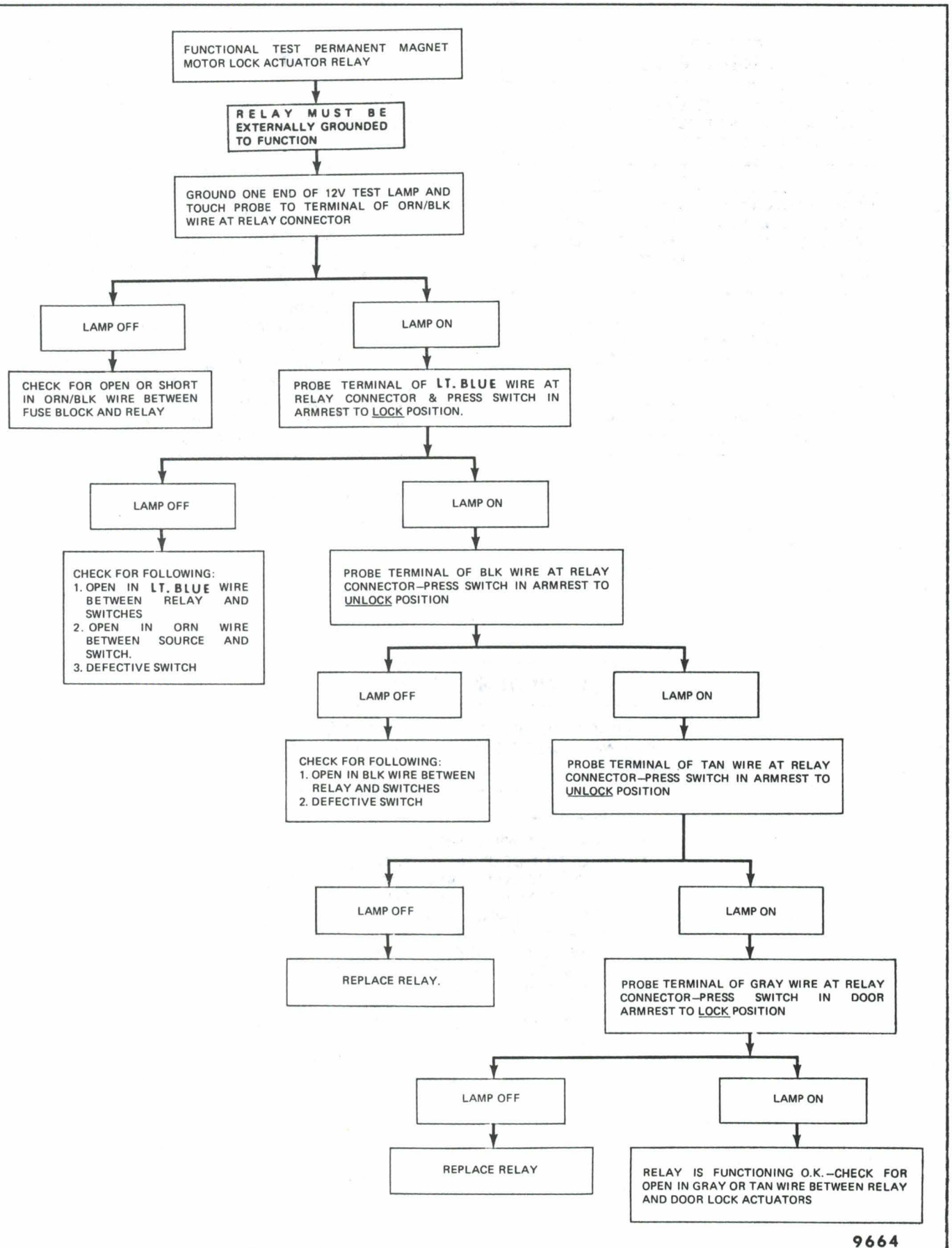


Fig. 10-122 - Automatic Door Lock System P.M. Motor Lock Actuator Relay Test, Cadillac Styles

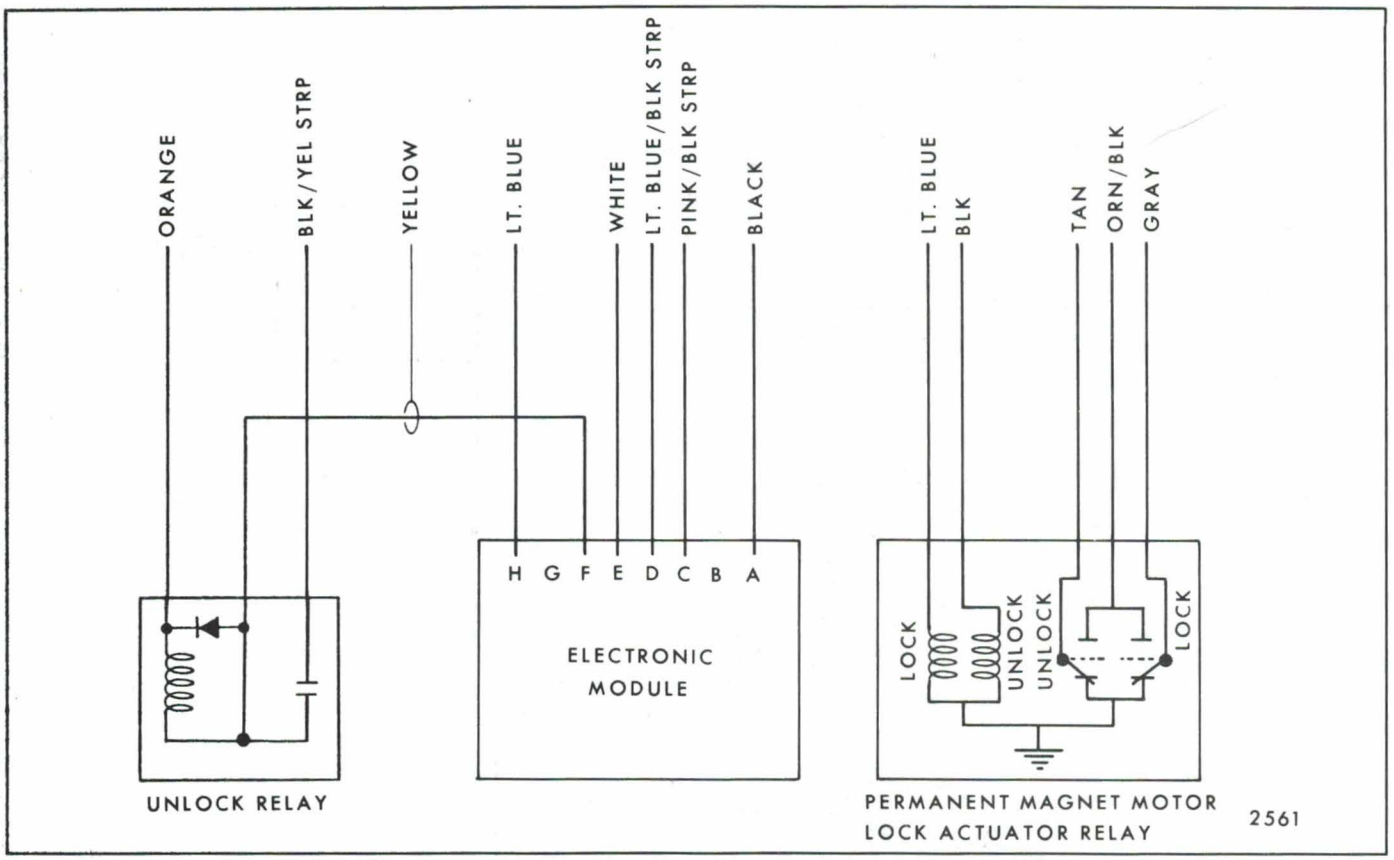


Fig. 10-123-Automatic Door Lock Wire Color Identification and Probe Locations, Buick

Diagnostic Procedures

Diagnostic charts and relay functional tests have been provided to aid in diagnosing problems with the automatic door locking system (Figs. 10-125 through 10-129). A complete circuit diagram is shown in Figure 10-124. Refer to Figure 10-123 for test lamp probe locations at modules and relays.

ELECTRIC FUEL FILLER DOOR LOCK — CADILLAC STYLES (FIG. 10-131, 10-132, 10-133)

The optional fuel filler door lock system consists of a lock motor with a manual override, a filler door lock cable and a lock assembly.

The fuel filler door lock motor system will unlock and lock the filler door when either electric door lock switch is activated to the lock and unlock position. The fuel filler door lock motor retracts the cable lock assembly which in turn unlocks the filler door lock assembly, allowing the filler door to open.

The electric fuel filler door system works in conjunction with the power door lock sytem. The following flow chart applies only if the power door lock system functions properly.

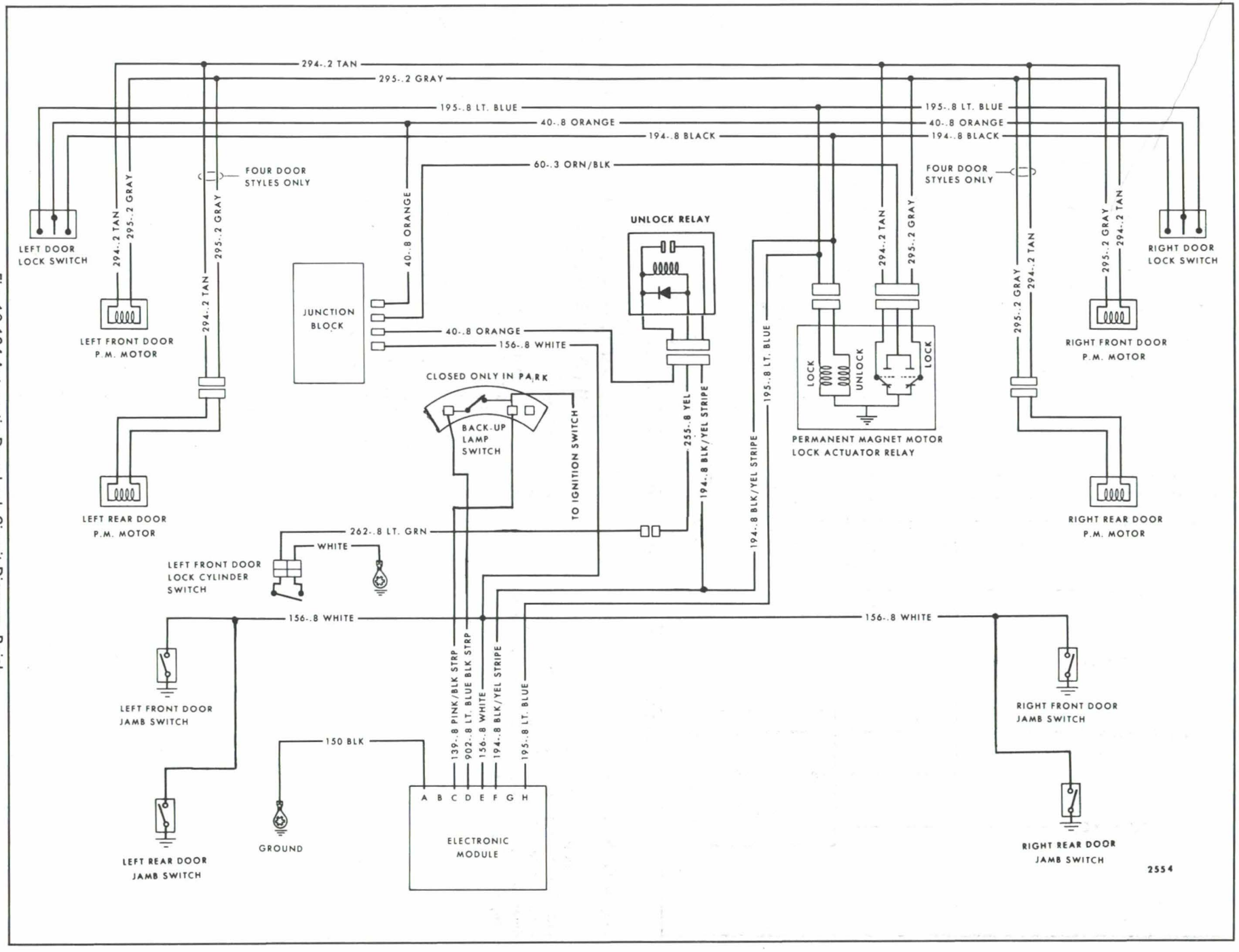


Fig. 10-124-Automatic Door Lock Circuit Diagram, Buick

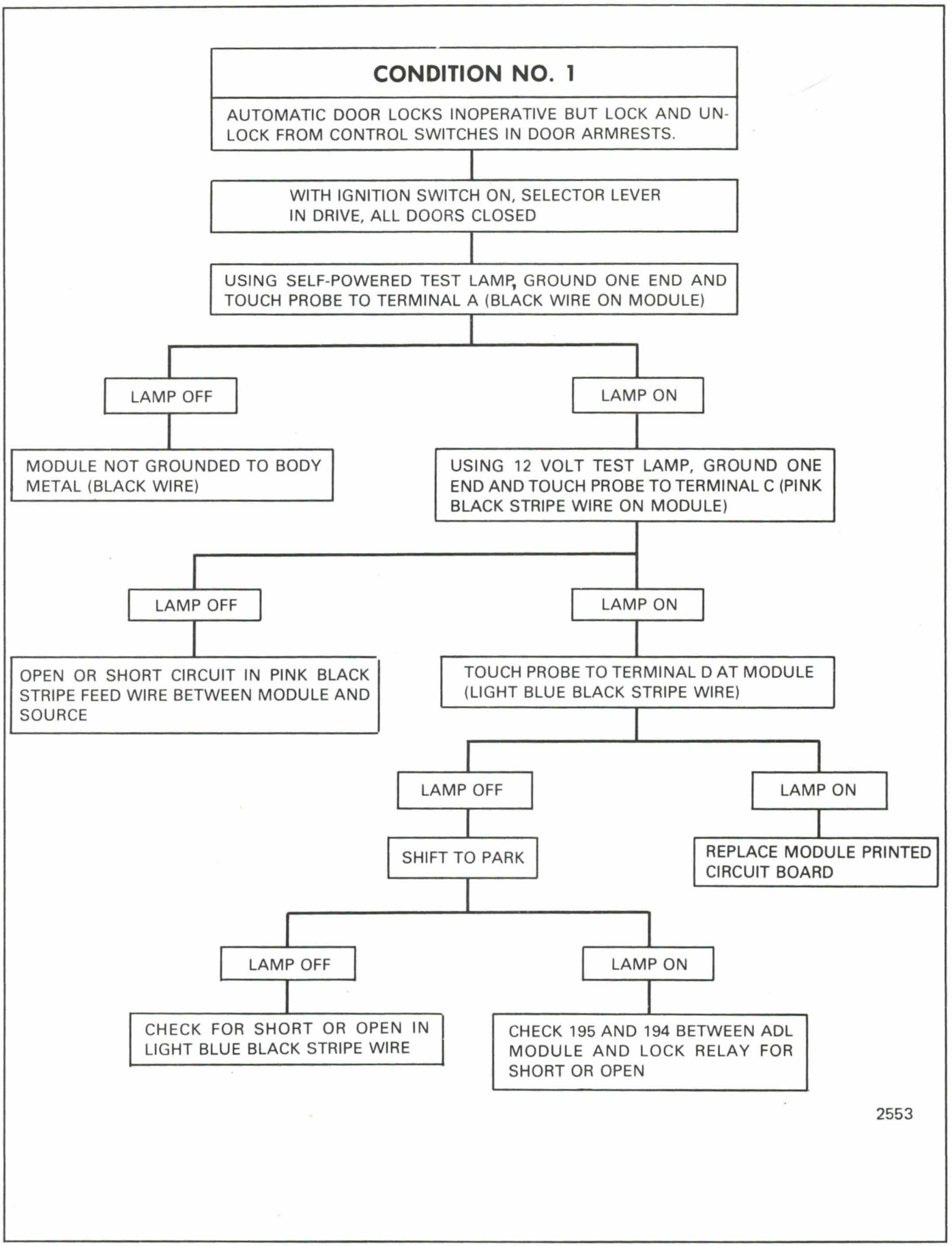


Fig. 10-125-Automatic Door Lock Diagnostic Chart - Condition No. 1, Buick

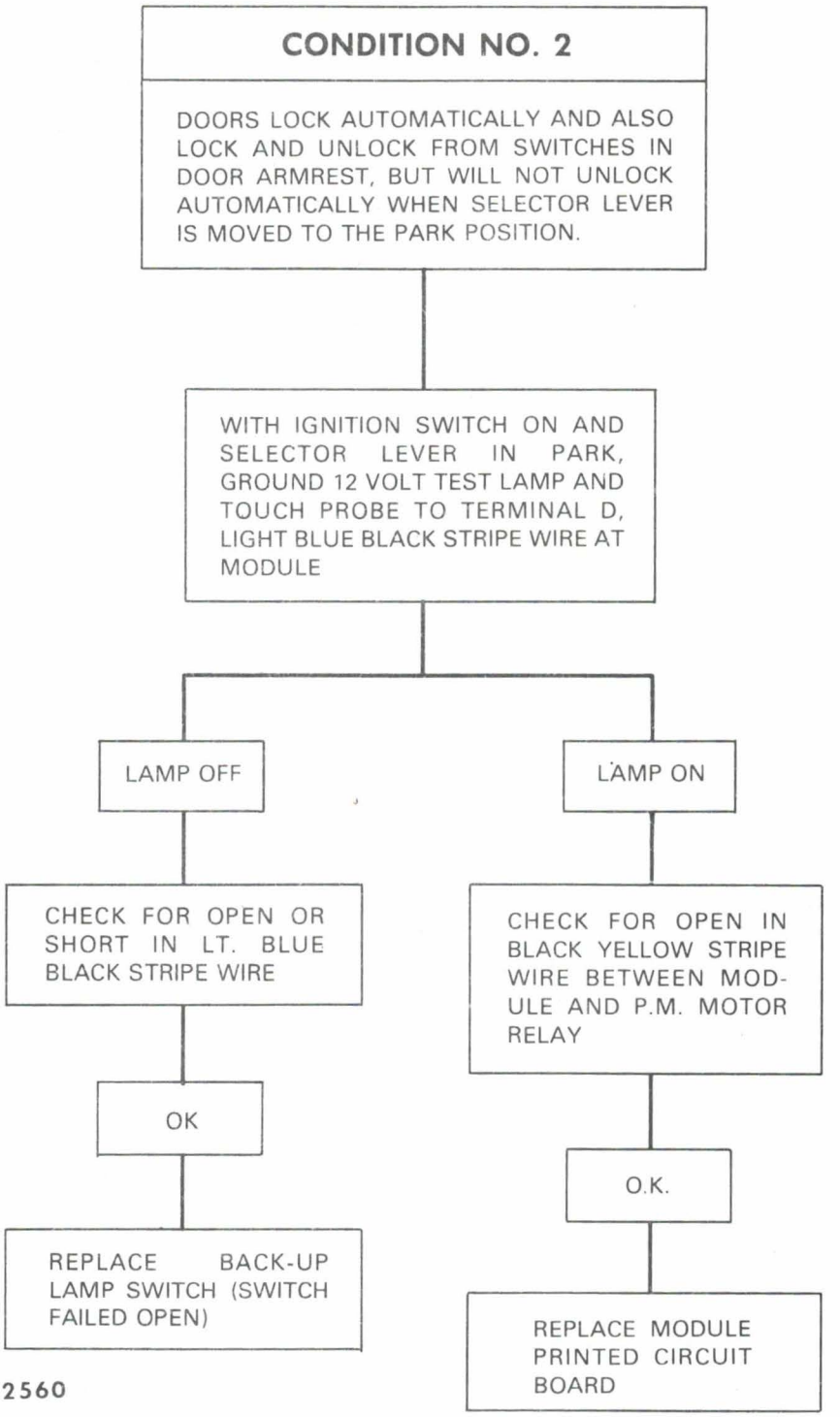


Fig. 10-126-Automatic Door Lock Diagnostic Chart - Condition No. 2, Buick

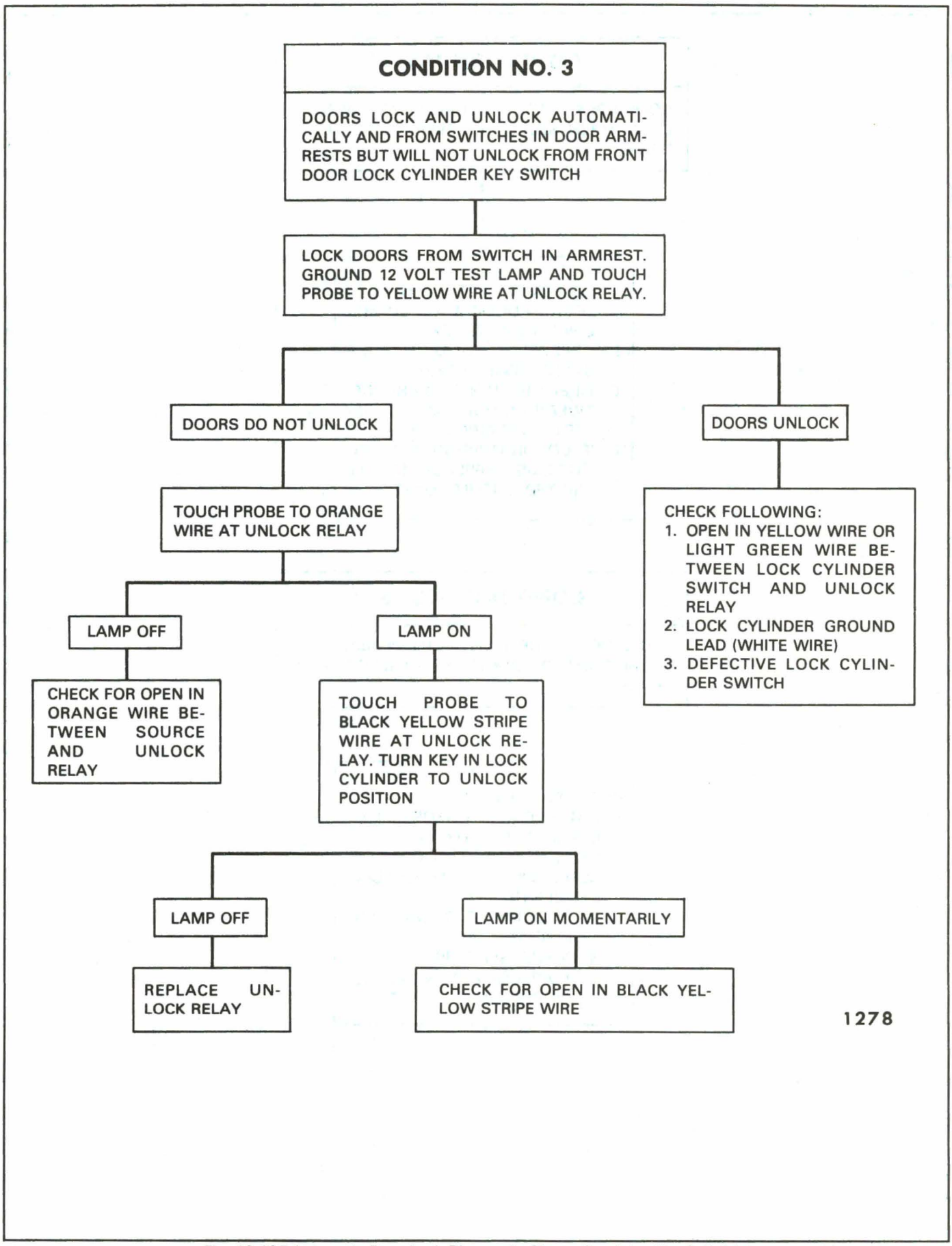


Fig. 10-127-Automatic Door Lock Diagnostic Chart - Condition No. 3, Buick

CONDITION NO. 4

DOOR LOCKS AUTOMATICALLY WITH DOOR(S) OPEN WHEN SELECTOR LEVER IS MOVED TO DRIVE.

CHECK FOR FOLLOWING:

A. OPEN IN DOOR JAMB SWITCH CIRCUIT (WHITE WIRE)
B. DEFECTIVE DOOR JAMB SWITCH (FAILED OPEN)
C. OPEN IN WHITE WIRE BETWEEN MODULE AND COURTESY LAMP CIRCUIT.
D. IF CONDITION(S) IN A-B-C DO NOT EXIST, REPLACE MODULE PRINTED CIRCUIT BOARD.

CONDITION NO. 5

LOCKS DO NOT OPERATE AUTOMATICALLY OR FROM CONTROL SWITCHES IN DOOR ARMRESTS.

CHECK FOLLOWING:

1. P.M. LOCK ACTUATOR RELAY GROUND TO BODY METAL.
2. OPEN OR SHORT IN ORANGE/BLACK WIRE IN THE FOLLOWING CIRCUITS:
   A. AUTOMATIC DOOR LOCK CIRCUIT
   B. POWER SEAT CIRCUIT
   C. REAR COMPARTMENT LID CLOSING UNIT CIRCUIT

2563

Fig. 10-128-Automatic Door Lock Diagnostic Chart - Condition No. 4 and 5, Buick

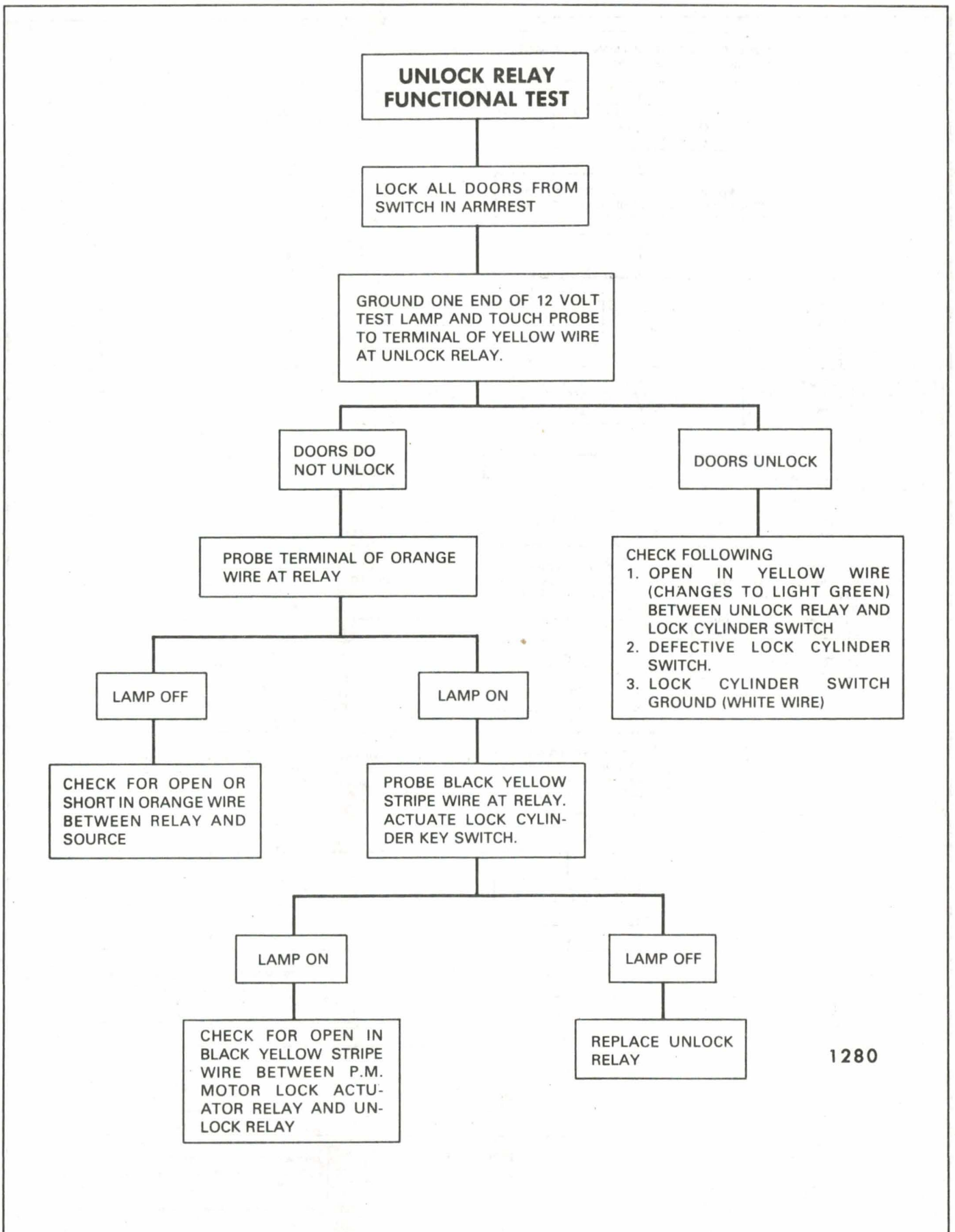


Fig. 10-129-Unlock Relay Functional Test, Buick

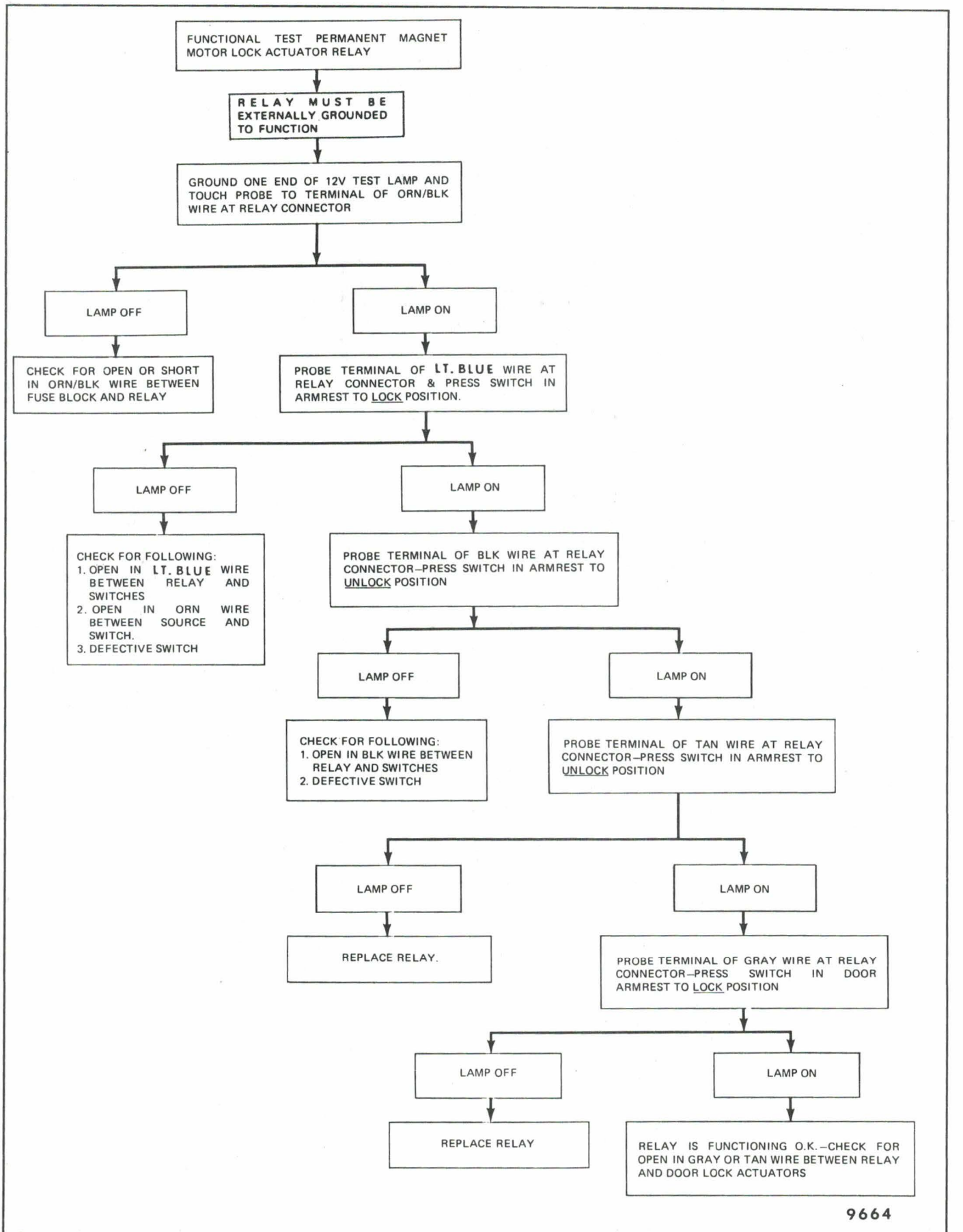


Fig. 10-130-Automatic Door Lock System Permanent Magnet Motor Lock Actuator Relay Test, Buick

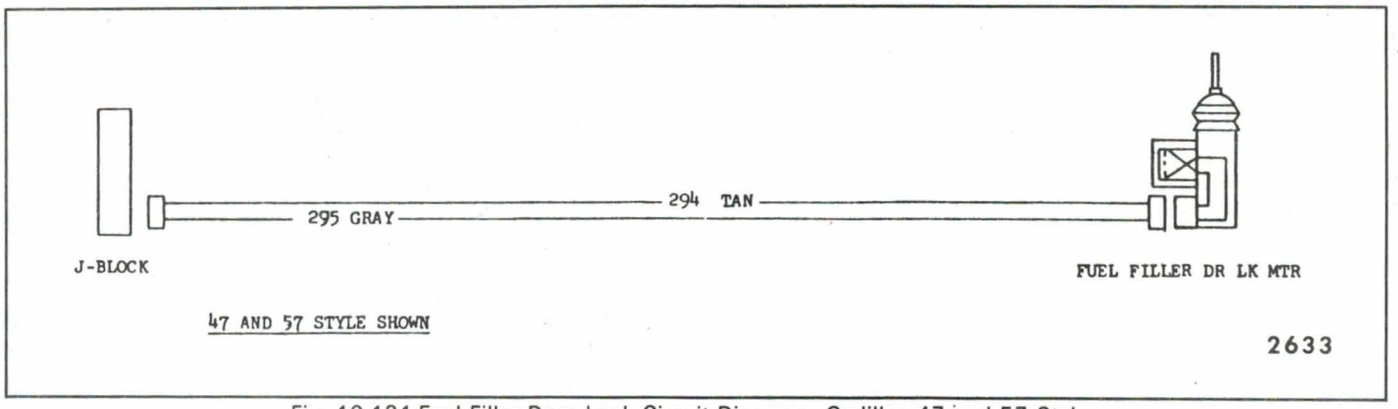


Fig. 10-131-Fuel Filler Door Lock Circuit Diagram - Cadillac 47 and 57 Styles

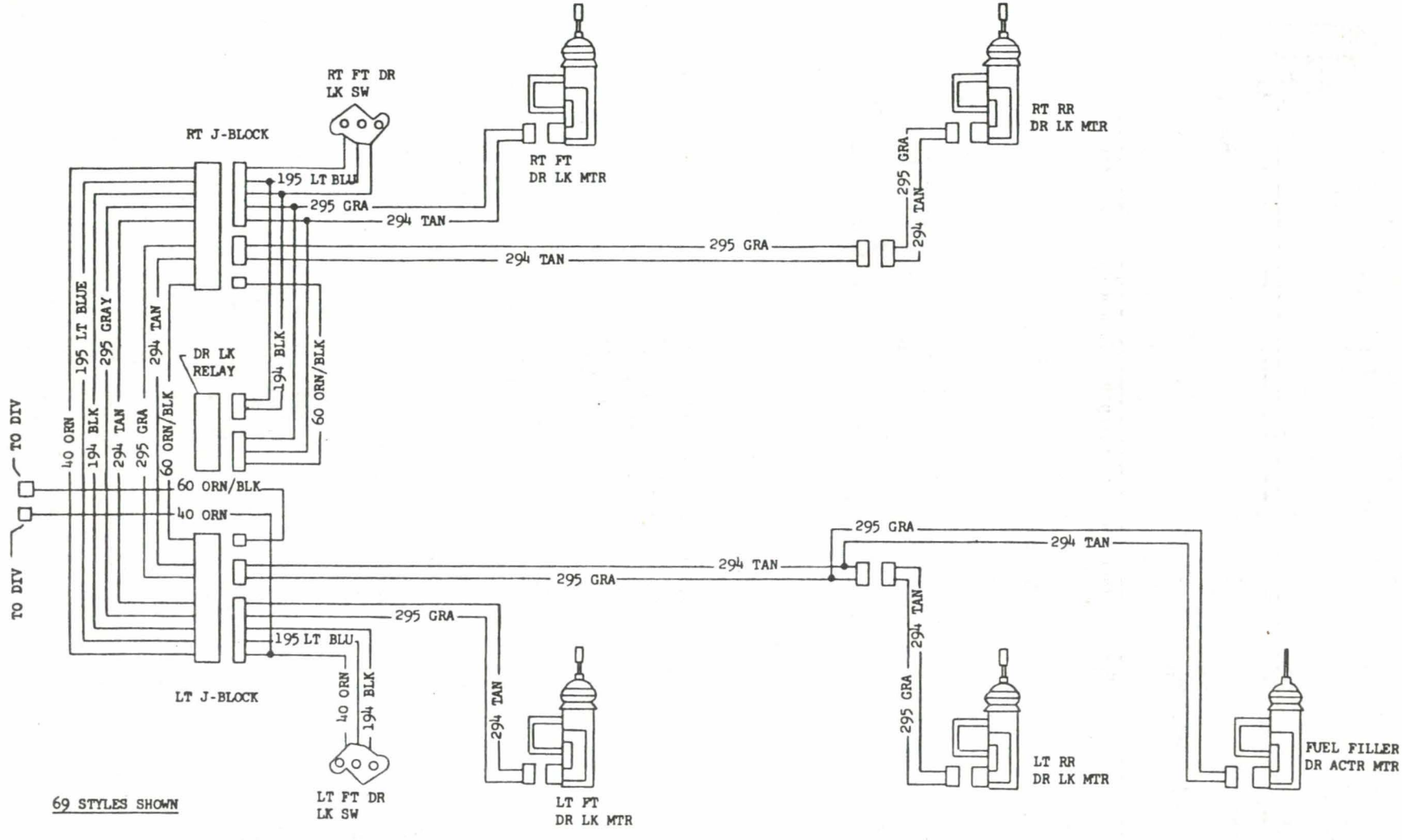


Fig. 10-132-Fuel Filler Door Lock Circuit Diagram - Cadillac 69 Styles

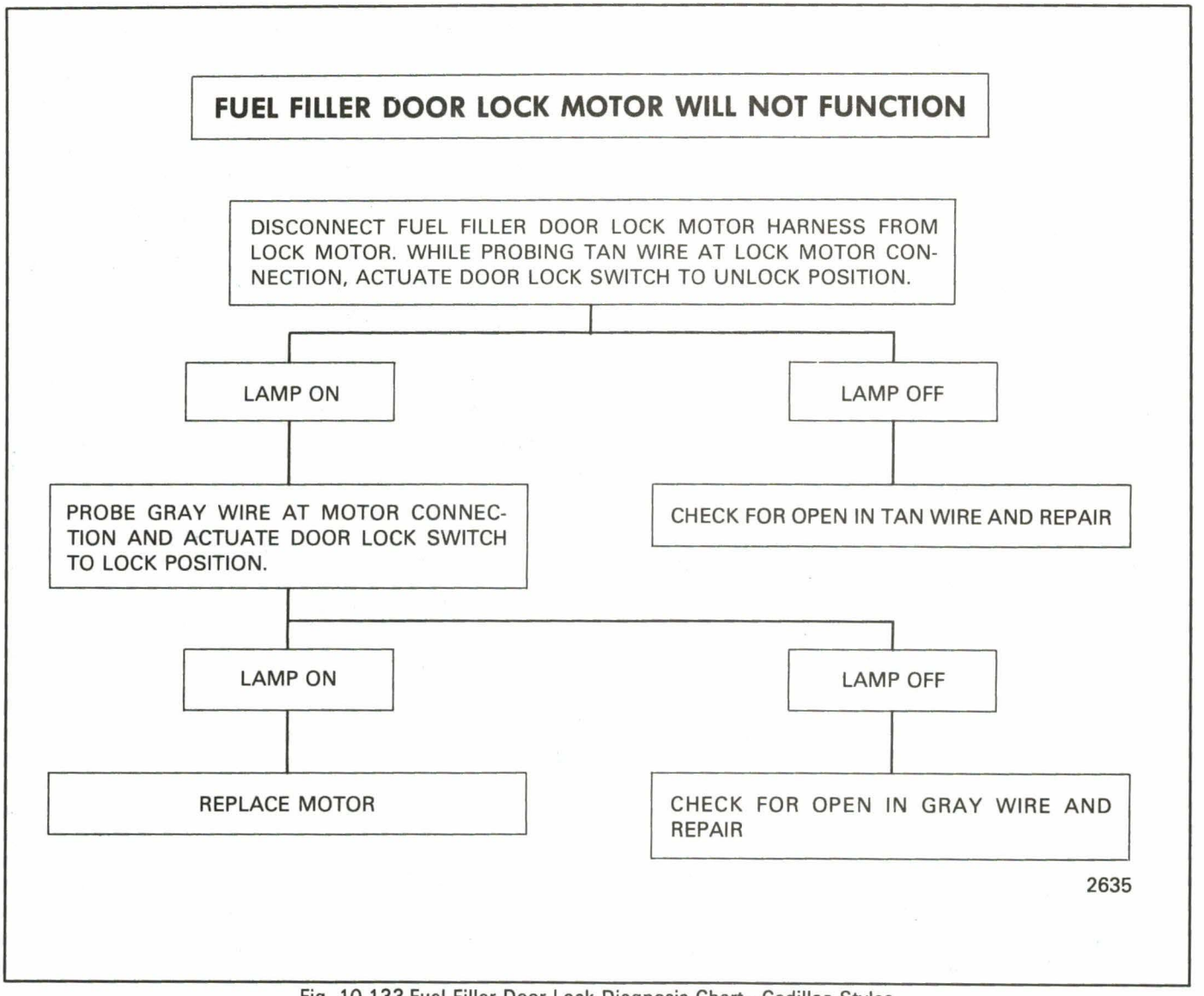


Fig. 10-133-Fuel Filler Door Lock Diagnosis Chart - Cadillac Styles

ELECTRIC BACK WINDOW GRID DEFOGGER

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 5 amps) when glass is at 24°C (75°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 and atmospheric pressure and number of passengers.

This system uses an instrument panel mounted switch with an integral indicator lamp.

The system will operate for about eight 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.

On G-35 styles the tailgate window grid defogger will not operate with the glass in the open position. The feed and ground circuits are not completed through the grid lines until the tailgate window is closed.

Refer to chassis manual for complete circuit diagrams on this system.

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 10-134 illustrates the pattern of test lamp brilliance to be expected with a properly functioning grid.

If test lamp bulb shows full brilliance at both ends of grid lines, check for loose ground wire contact to body metal.

The range of zones in Figure 10-134 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.

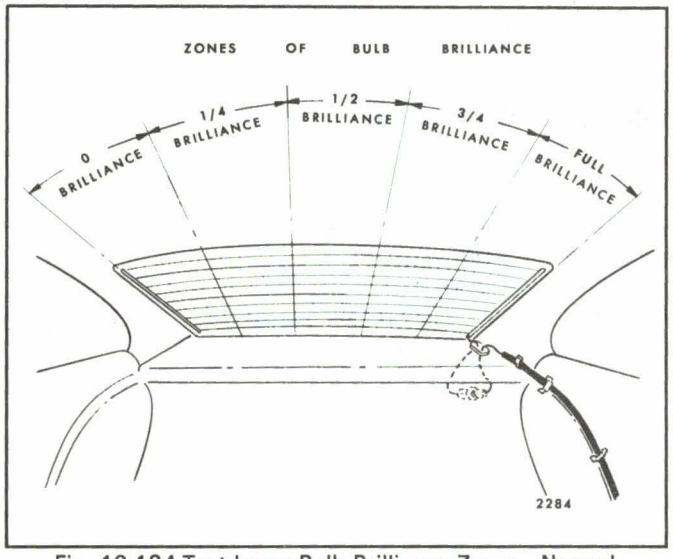


Fig. 10-134-Test Lamp Bulb Brilliance Zones - Normal Operating Electric Grid Defogger

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. 10-135).

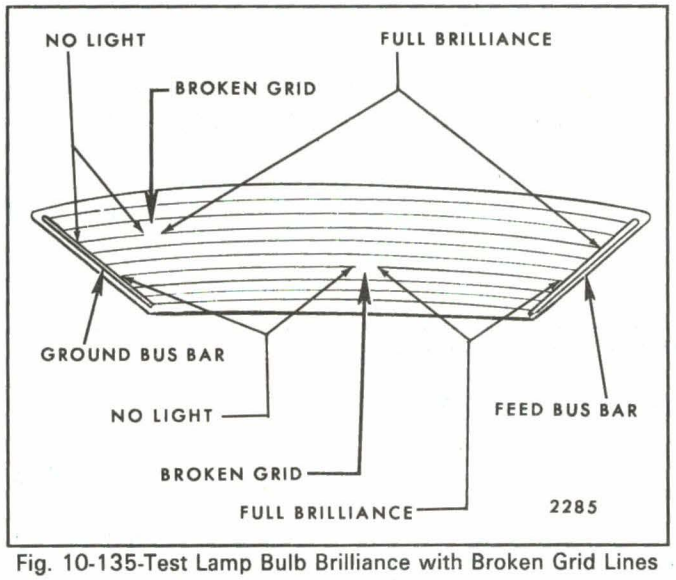


Fig. 10-135-Test Lamp Bulb Brilliance with Broken Grid Lines

Grid Line Repair

A durable repair may be made using the Rear Window Electric Grid Defogger Repair Kit (part no. 1052285 or equivalent) which consists of:

- Decal
- Plastic container of silver plastic and hardener
- Mixing stick
- 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 about 6 mm (1/4″) on both sides of break. Wipe with a clean cloth dampened in alcohol. All contaminants must 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. 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. Remove the clamp (separator) from the plastic container and knead the hardener and silver plastic until thoroughly mixed. If hardener has crystallized, immerse packet in hot water until hardener reliquifies.
5. 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. 10-136).

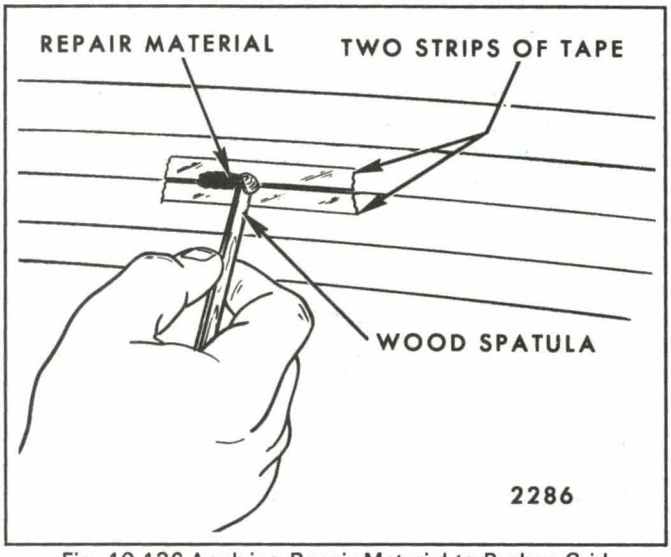


Fig. 10-136-Applying Repair Material to Broken Grid

6. Carefully remove the decal or tape.

NOTICE: In order for the repaired area to reach the desired level of electrical conductivity, the repair material must be cured with heat. To avoid damage to interior trim, it may be necessary to protect the trim that is next to the stream of heat.

7. Apply a constant stream of hot air directly to the repaired area with a heat gun (preferably 260°C to 371°C or 500°F to 700°F range) for 1 to 2 minutes. Heat gun nozzle should be held about 25 mm (1″) from repair (minimum of 149°C or 300°F is essential for establishing conductivity), see Figure 10-137.

   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 about 25 mm (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.

8. Retest grid lines to insure proper operation.

NOTICE: 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.

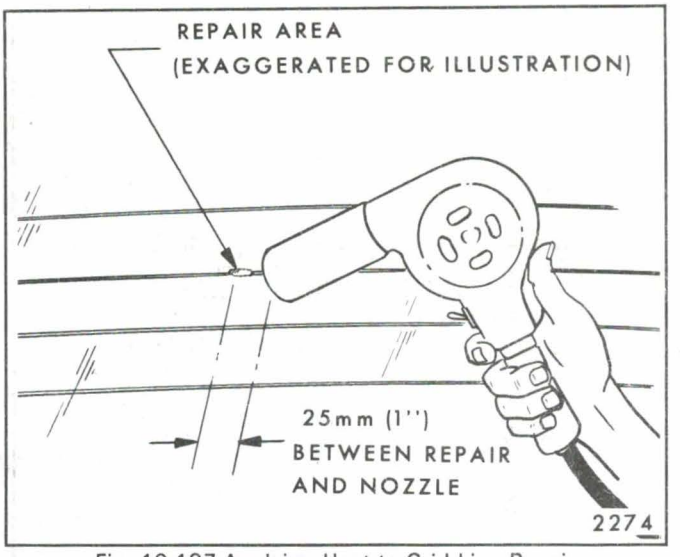


Fig. 10-137-Applying Heat to Grid Line Repair

Braided Lead Wire Repair

A bus bar braided lead wire may be repaired 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. 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.

RADIO SPEAKERS - STEREO AND MONAURAL

Circuit diagrams for rear speakers are shown in Figs. 10-138 and 10-139. For diagnostic procedures on all radio systems, refer to the proper chassis service manual.

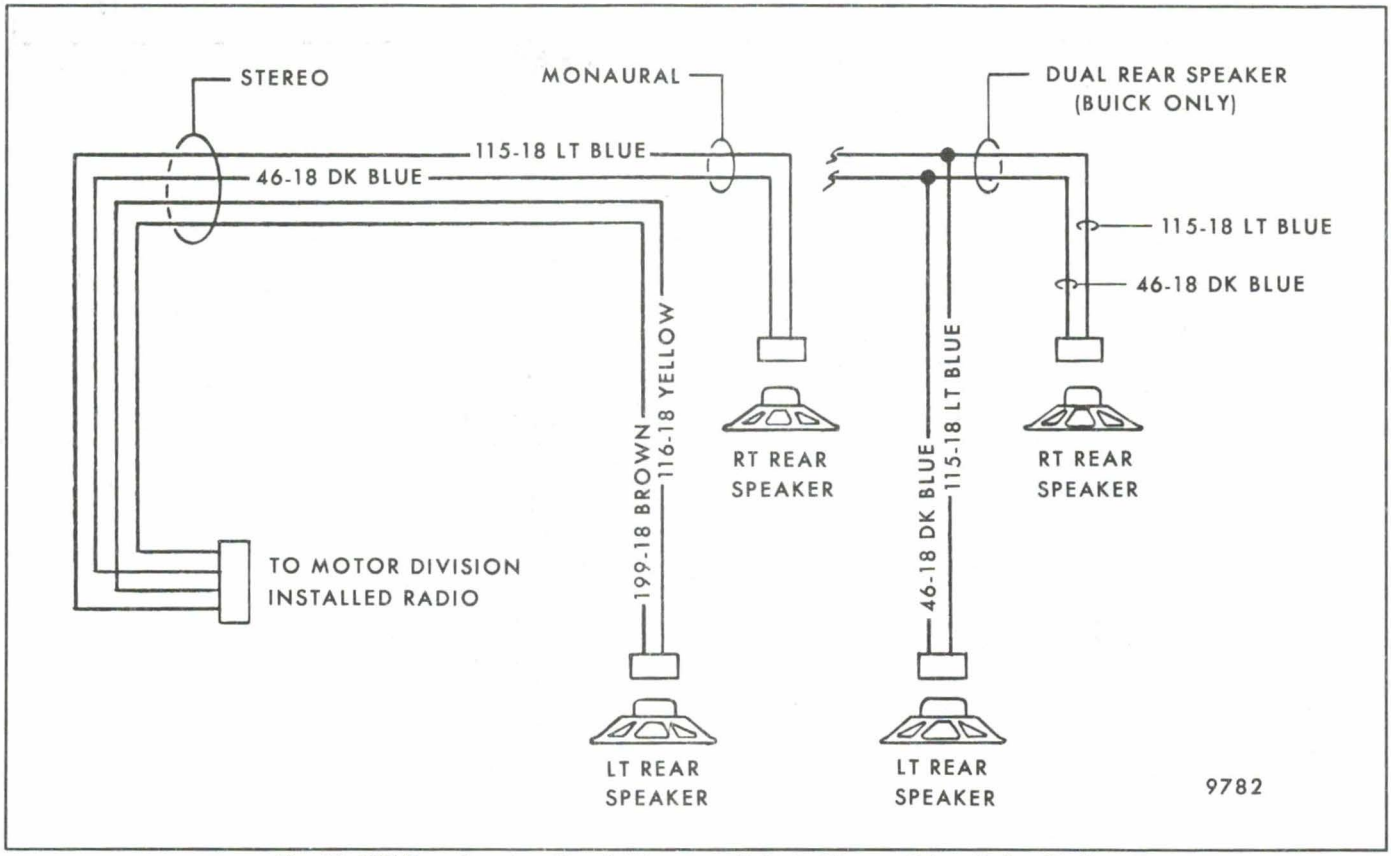


Fig. 10-138-Rear Speaker Circuit Diagram - G Style Shown, Other Styles Similar

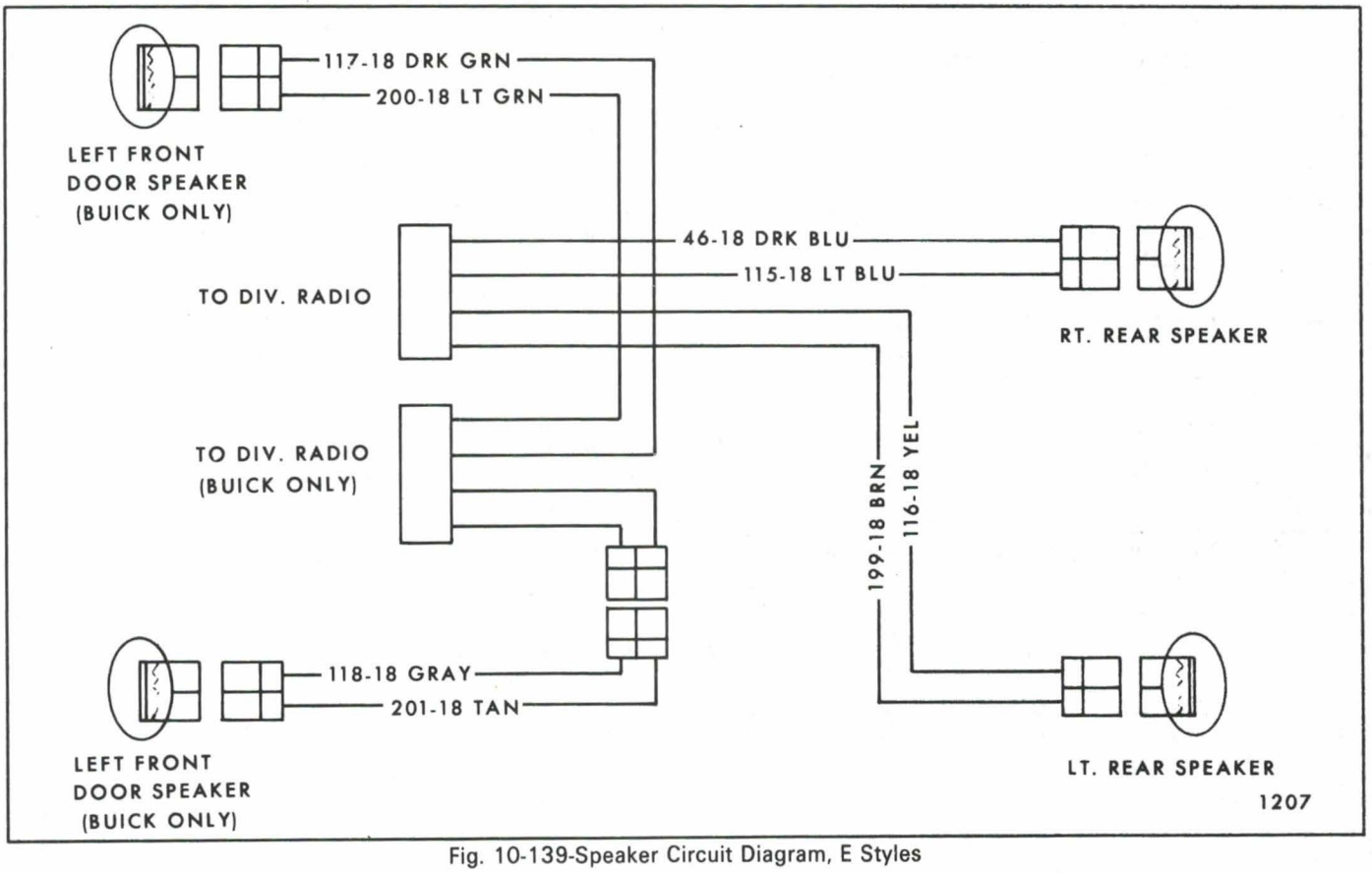


Fig. 10-139-Speaker Circuit Diagram, E Styles

CIRCUIT NUMBER	COLOR	CIRCUIT NAME
2	RED	BATTERY,UNFUSED FEED
9	BRN	TAIL, LICENSE, PARK AND SIDE MARKER LAMP FEED
17	WHT	DIRECTIONAL SIGNAL SWITCH, FEED FROM STOP SWITCH
18	YEL	STOP AND DIRECTIONAL LAMP OR DIRECTIONAL LAMP ONLY - REAR LH
19	DK GRN	STOP AND DIRECTIONAL LAMP OR DIRECTIONAL LAMP ONLY - REAR RH
20	LT BLUE	STOP LAMP (ONLY)
22	WHT	TRAILER - DIRECT GROUND
24	LT GRN	BACK UP LAMP FEED
30	PNK	FUEL GAGE TO TANK UNIT
39	PNK-BLK	IGN SW ON AND CRANK CONTROLLED - FUSED FEED
40	ORG	BATTERY, FUSED FEED
46	DK BLUE	REAR SEAT SPEAKER FEED FROM SINGLE RADIO OR RIGHT STEREO
47	DK BLUE	AUXILIARY CIRCUIT (TRAILER)
60	ORG-BLK	BATTERY, CIRCUIT BREAKER PROTECTED, FEED
75	DK BLUE	IGN SW "ON AND CRANK" CONTROLLED, FUSED FEED
76	PNK	IGN SW ON CONTROLLED, FEED
81	NAT WHT	ELECTRIC REMOTE MIRROR, RIGHT
82	LT BLU	ELECTRIC REMOTE MIRROR, LEFT
88	YEL	ELECTRIC REMOTE MIRROR, UP
89	LT GRN	ELECTRIC REMOTE MIRROR, DOWN
115	LT BLUE	RT RR STEREO SPEAKER RETURN
116	YEL	LT RR STEREO SPEAKER RETURN
117	DK GRN	RT FRONT STEREO SPEAKER RETURN
118	GRAY	LT FRT STEREO SPEAKER RETURN
120	TAN	ELECTRIC FUEL PUMP FEED
139	PNK/BLK	IGN SW "ON AND CRANK" CONTROLLED, FUSED FEED
142	BLK	RR COMPARTMENT LID LOCK RELEASE
146	DK GRN	TRUNK RELEASE TELLTALE GROUND
150	BLK	DIRECT GROUND
151	BLK	DIRECT GROUND
156	WHT	BODY INTERIOR LAMPS - SUCH AS DOME, COURTESY, MAP, WARNING, ETC), SWITCH CONTROLLED GROUND
157	GRAY	BODY INTERIOR LAMPS - DOME, MAP, WARNING, ETC., SW CONTROLLED GROUND
158	BLK/ORG	BODY INTERIOR LAMPS - DOME, MAP, WARNING, ETC., SW CONTROLLED GROUND
159	TAN	KEY WARNING BUZZER GROUND
164	DK BLUE	WINDOW CONTROL LF UP
165	BRN	WINDOW CONTROL LF DOWN
166	DK BLUE-WHT	WINDOW CONTROL RF UP - DR SW
167	TAN	WINDOW CONTROL RF DOWN - DR SW
168	DK GRN	WINDOW CONTROL LR UP
169	PPL	WINDOW CONTROL LR DOWN
170	LT GRN	WINDOW CONTROL RR UP - DR SW
171	PPL-WHT	WINDOW CONTROL RR DOWN -DR SW
176	DK GRN	POWER SEAT FORE
177	YEL	POWER SEAT AFT OR RECLINE
179	TAN	POWER SEAT - SIX-WAY SOLENOID - REAR - UP AND DOWN
180	LT GRN	POWER SEAT - SIX-WAY SOLENOID - FRONT - UP AND DOWN
181	LT BLUE	POWER SEAT - FORE AND AFT
183	LT BLUE	TAILGATE OR CENTER PARTITION WINDOW UP
184	TAN-WHT	TAILGATE OR CENTER PARTITION WINDOW DOWN
185	TAN	VENT CONTROL LR OPEN
186	GRAY	VENT CONTROL LR CLOSE
187	DK BLUE	VENT CONTROL RR OPEN
188	LT BLUE	VENT CONTROL RR CLOSE
192	PPL	DEFOGGER - HI OR SINGLE SPEED
194	BLK	ELECTRIC DOOR LOCK - UNLOCK
195	LT BLUE	ELECTRIC DOOR LOCK - LOCK

2604

Fig. 10-140-Wire Identification Chart

CIRCUIT NUMBER	COLOR	CIRCUIT NAME
199	BRN	REAR SEAT SPEAKER - FEED FROM RADIO LEFT STEREO
200	LGT. GRN	FRT SPEAKER - FEED FROM RADIO - SINGLE OR RT. STEREO
201	TAN	FRT SPEAKER -FEED FROM RADIO - LT. STEREO
207	YEL	SEAT SENSOR TO NEUTRAL START SW LAMP AND BUZZER GROUND
210	WHT	POWER SEAT - SIX-WAY - FORE AND DOWN
211	DK BLUE	POWER SEAT - SIX-WAY - AFT AND UP
238	BLK	SEAT BELT WARNING SYSTEM, BELT ASSY TO BUZZER GROUND
243	BLK-WHT	DRIVE SELECTOR SW CONTROLLED FEED
251	ORN	INFLATABLE RESTRAINT, HIGH LEVEL PASSENGER, INITIATOR FEED
252	YEL	GROUND, ADL MODULE UNLOCK OUTPUT CONTROLLED
254	LT GRN	GROUND, ADL LT UNLOCK RELAY COIL
255	YEL	GROUND, ADL RT UNLOCK RELAY COIL
261	YEL	THEFT DETERRENT - ALARM ARM
262	LT GRN	THEFT DETERRENT - KEY - DOOR UNLOCK AND ALARM DISARM
263	LT BLUE	THEFT DETERRENT - ALARM
266	PNK	THEFT DETERRENT - ALARM ARM ABORT
276	LT GRN	RECL MTR FEED, POWER ST FWD
277	LT BLUE	RECL MTR FEED, POWER ST RECLINER
282	YEL	POWER SEAT, REAR VERT UP - MOTOR
283	LT BLUE	POWER SEAT, REAR VERT DOWN - MOTOR
284	LT GRN	POWER SEAT, AFT MOTOR
285	TAN	POWER SEAT, FORE MOTOR
286	DK GRN	POWER SEAT, FRONT VERT UP - MOTOR
287	DK BLUE	POWER SEAT, FRONT VERT DOWN - MOTOR
294	TAN	DOOR LOCK MOTOR - UNLOCK
295	GRAY	DOOR LOCK MOTOR - LOCK
318	YEL/BLACK	RELAY ACTUATOR LT. DIRECTIONAL LAMP
319	DK GRN/WHT	RELAY ACTUATOR RT. DIRECTIONAL LAMP
351	DK BLUE	FEED, INVERTER TO OPERA LAMP
352	WHT	OPERA LAMP TO INVERTER RETURN
395	LT BLUE	GROUND, RT F/D REMOTE HANDLE SW CONTROLLED
460	BLK/ORN	CIRCUIT BREAKER PROTECTED BATTERY FEED
508	YEL-BLK	SWITCHED GRD FOR WATER-IN-TANK INDICATOR
612	BLK	REVERSE - MEMORY SEAT
613	GRAY	MEMORY SEAT MODULE FEED
614	ORG	SEAT CIRCUIT - MEMORY SEAT
615	WHT	MEMORY I - MEMORY SEAT
616	PPL	MEMORY II - MEMORY SEAT
617	BRN	DRIVE, MEMORY SEAT
618	YEL/BLK	LT SIDE TRAILER AND DIRECTIONAL FEED
619	DK GRN/WHT	RT SIDE TRAILER AND DIRECTIONAL FEED
666	DK BLU	WDO CONTROL RF UP - PASSENGER SW
667	BRN	WDO CONTROL RF DOWN - PASSENGER SW
668	DK BLU	WDO CONTROL LR UP - LR SW
669	BRN	WDO CONTROL LR DOWN - LR SW
670	DK BLU	WDO CONTROL RR UP - RR SW
671	BRN	WDO CONTROL RR DOWN - RR SW
900	TAN	ELECTRIC FUEL PUMP FEED
902	LT BLU-BLK	ADL - NEU SAF SW
922	NAT WHT	SOLENOID COMPRESSOR FEED TO EXHAUST SOLENOID FEED
923	YEL	EXHAUST SOLENOID GROUND
941	LT GRN	CLOSE - SUN ROOF MTR CONT
942	BLK-DBL WHT	OPEN - SUN ROOF MTR CONT

2605

Fig. 10-141-Wire Identification Chart

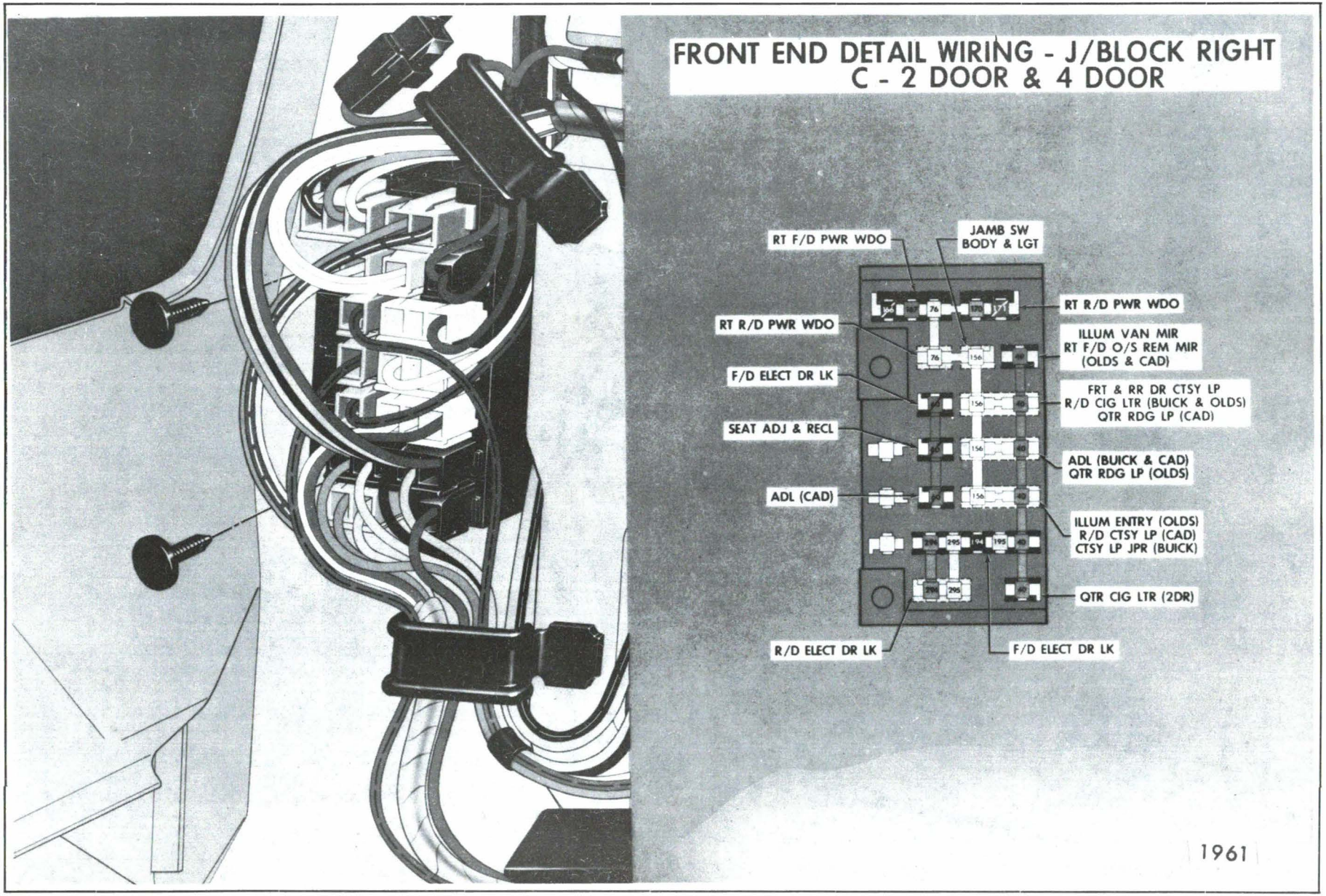


Fig. 10-142-Front End Detail Wiring at Junction Block, Right Side - Typical of All Series, C Body Shown

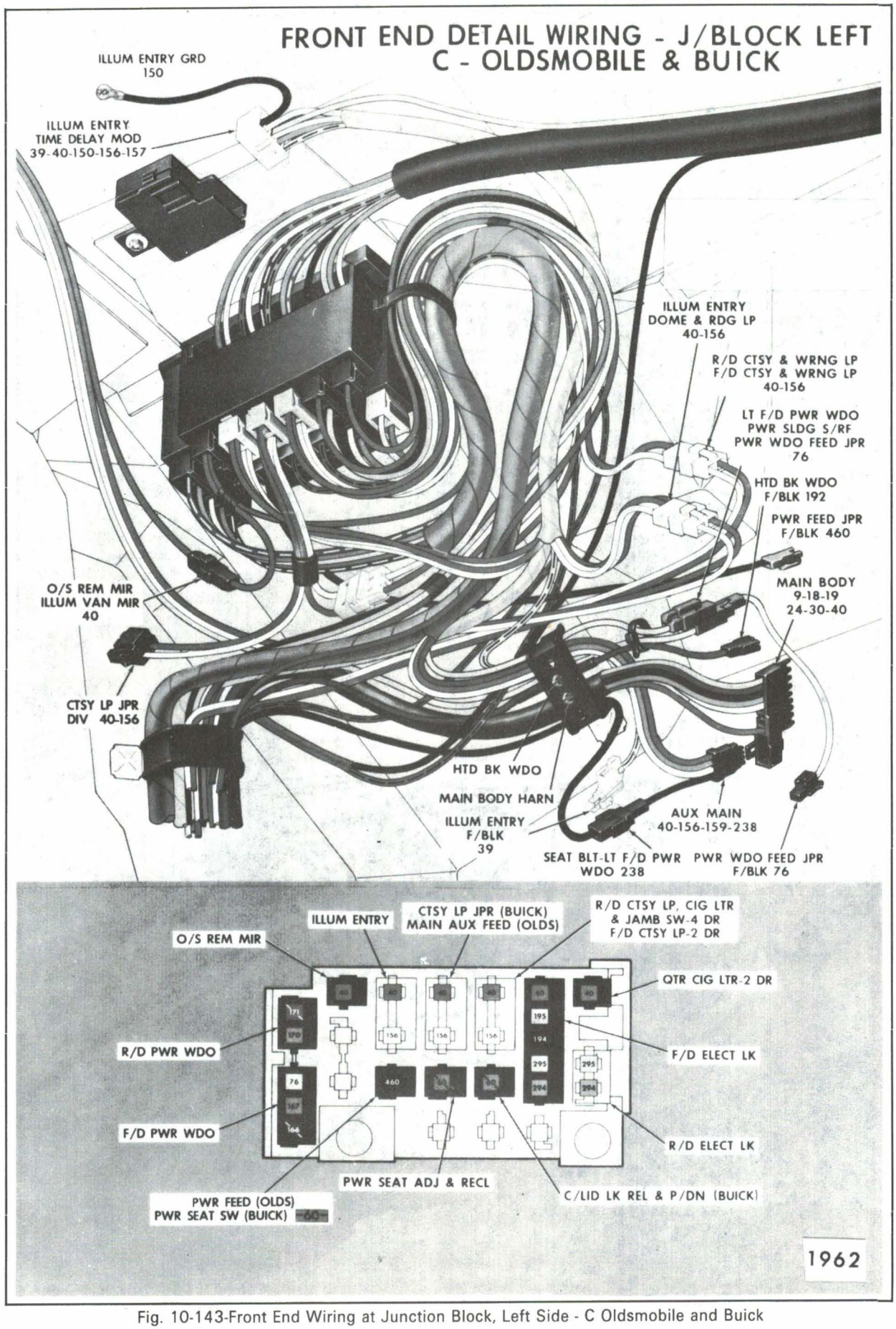


Fig. 10-143-Front End Wiring at Junction Block, Left Side - C Oldsmobile and Buick

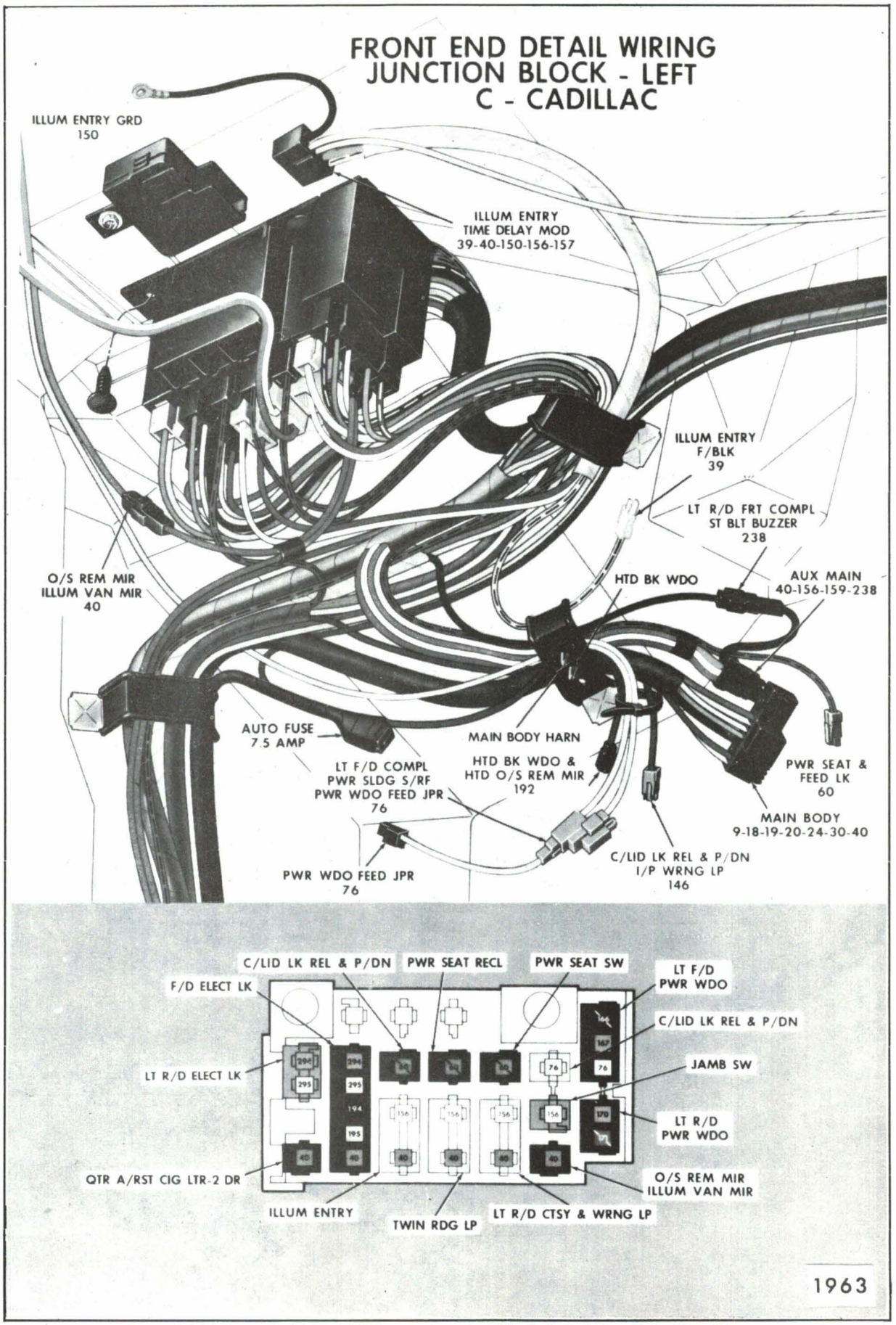


Fig. 10-144-Front End Detail Wiring at Junction Block, Left Side - C Cadillac Shown

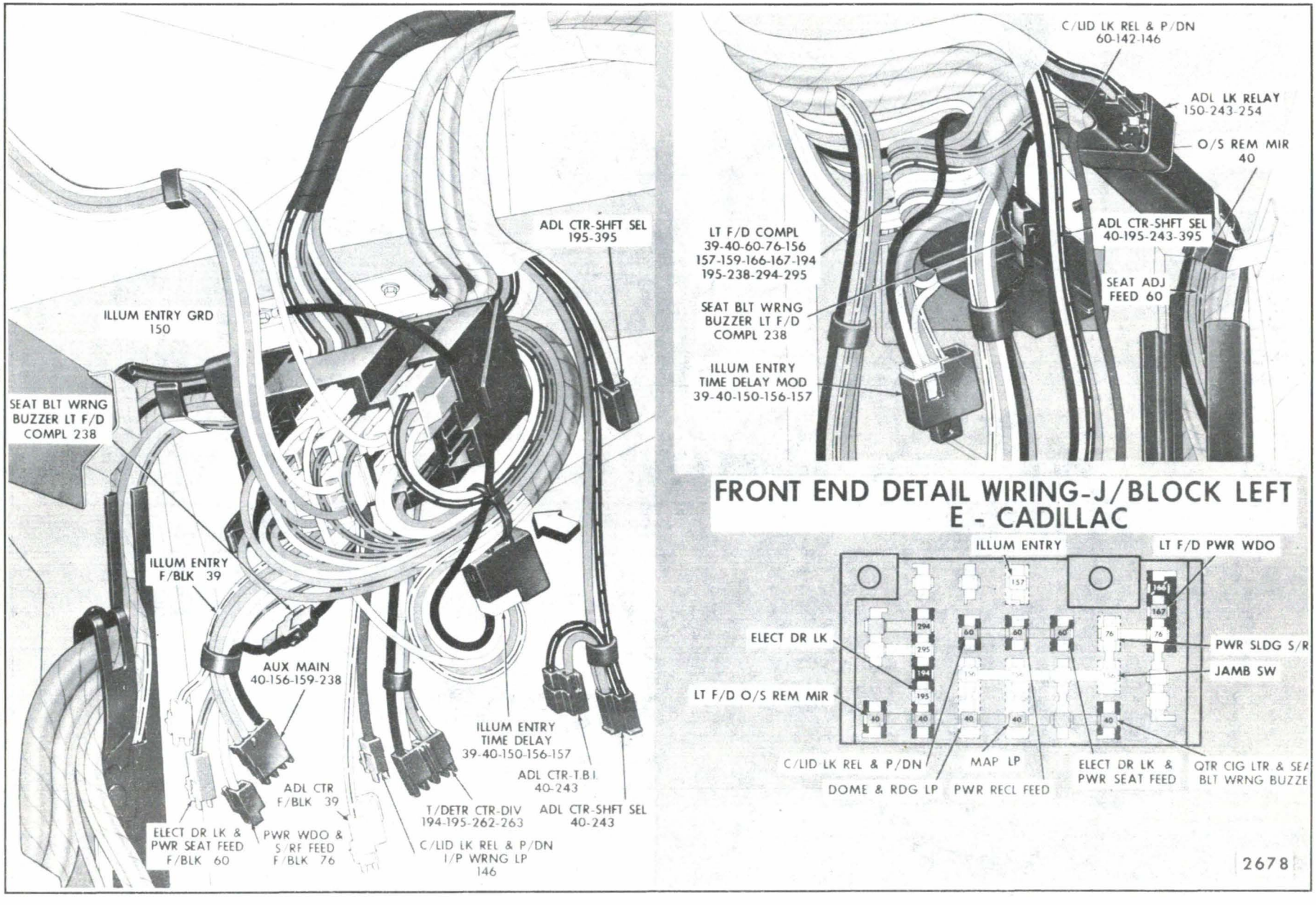


Fig. 10-145-Front End Detail Wiring at Junction Block, Left Side - E Cadillac Shown

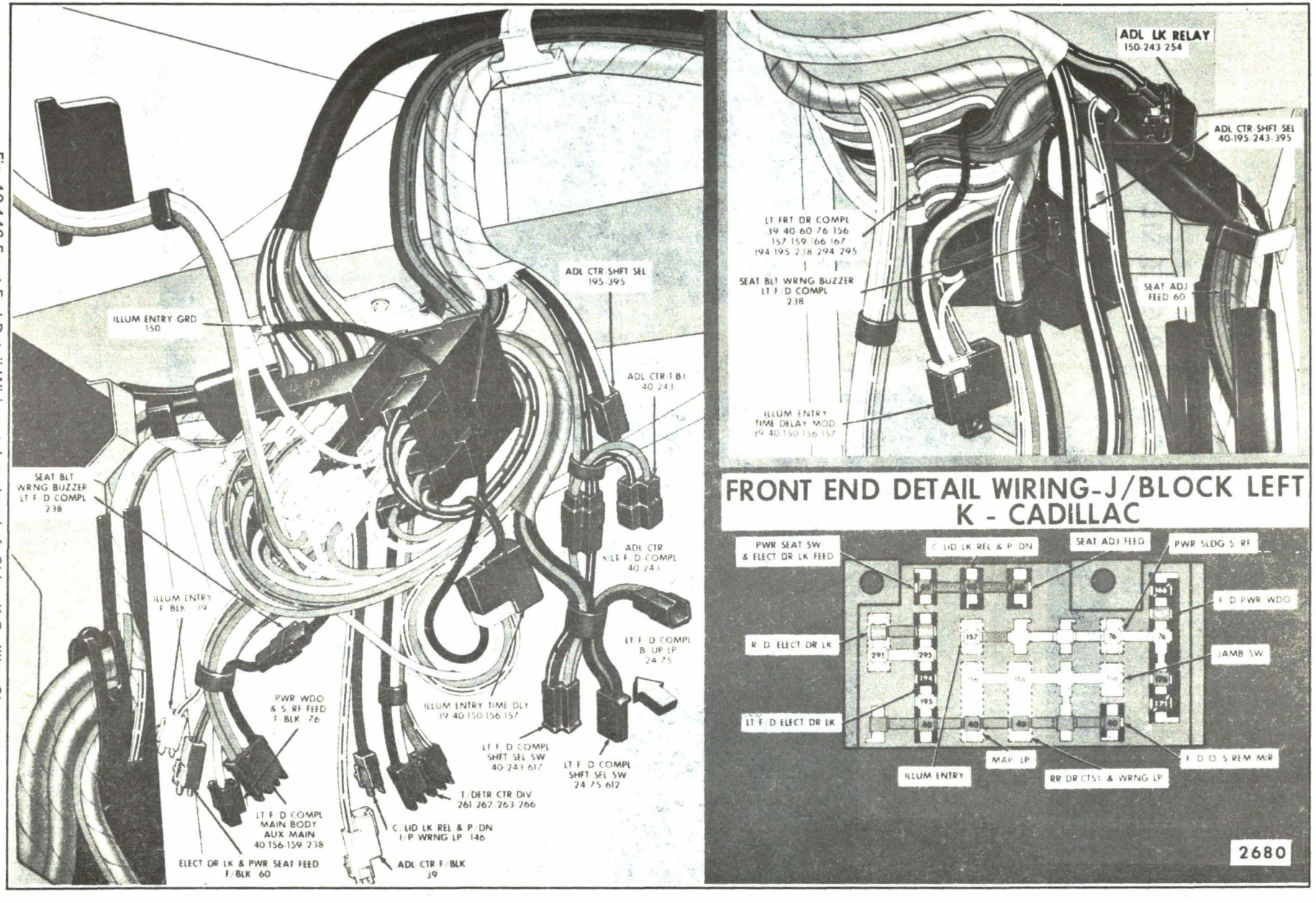


Fig. 10-146 Front End Detail Wiring at Junction, Left Side - K Cadillac Shown

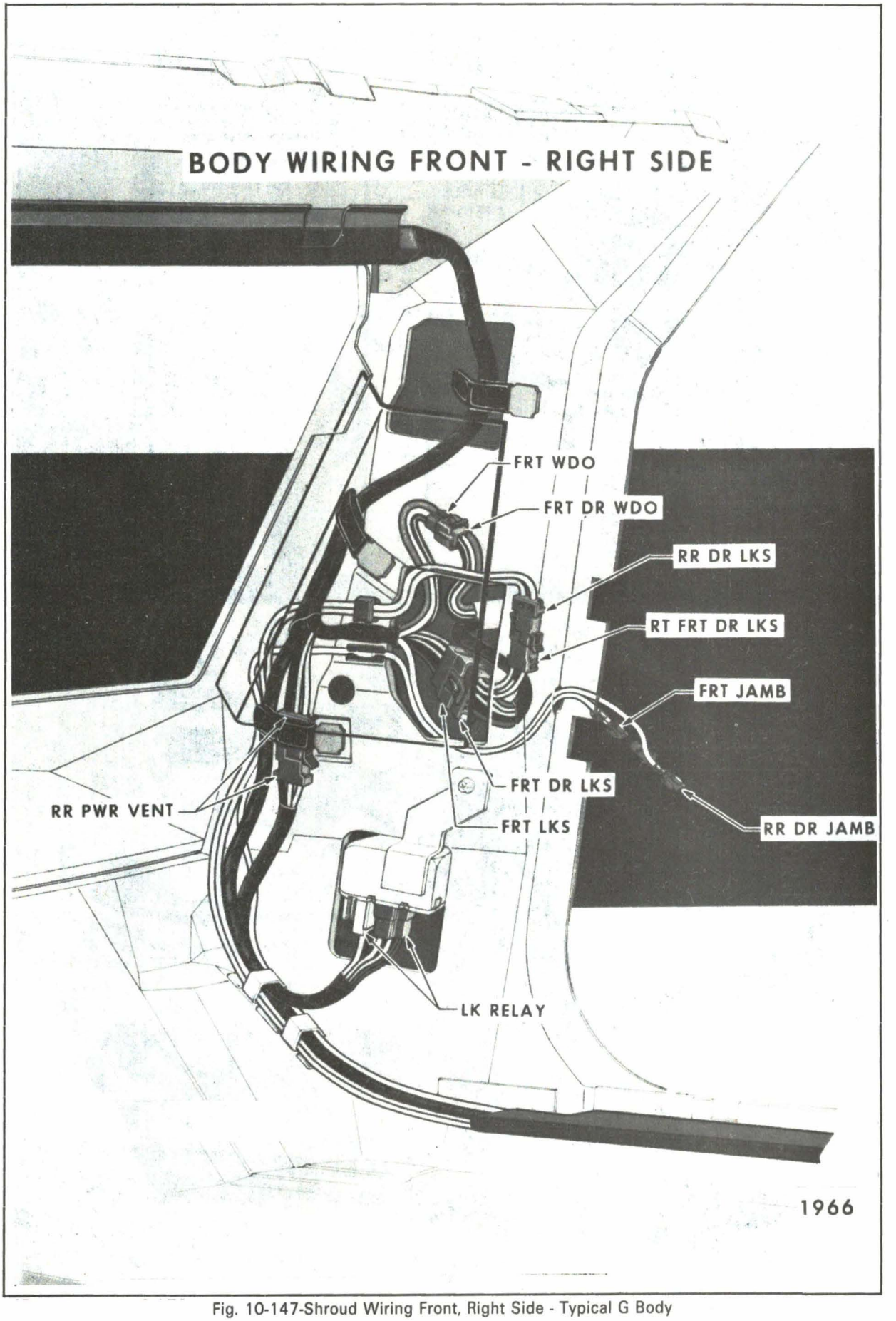


Fig. 10-147-Shroud Wiring Front, Right Side - Typical G Body

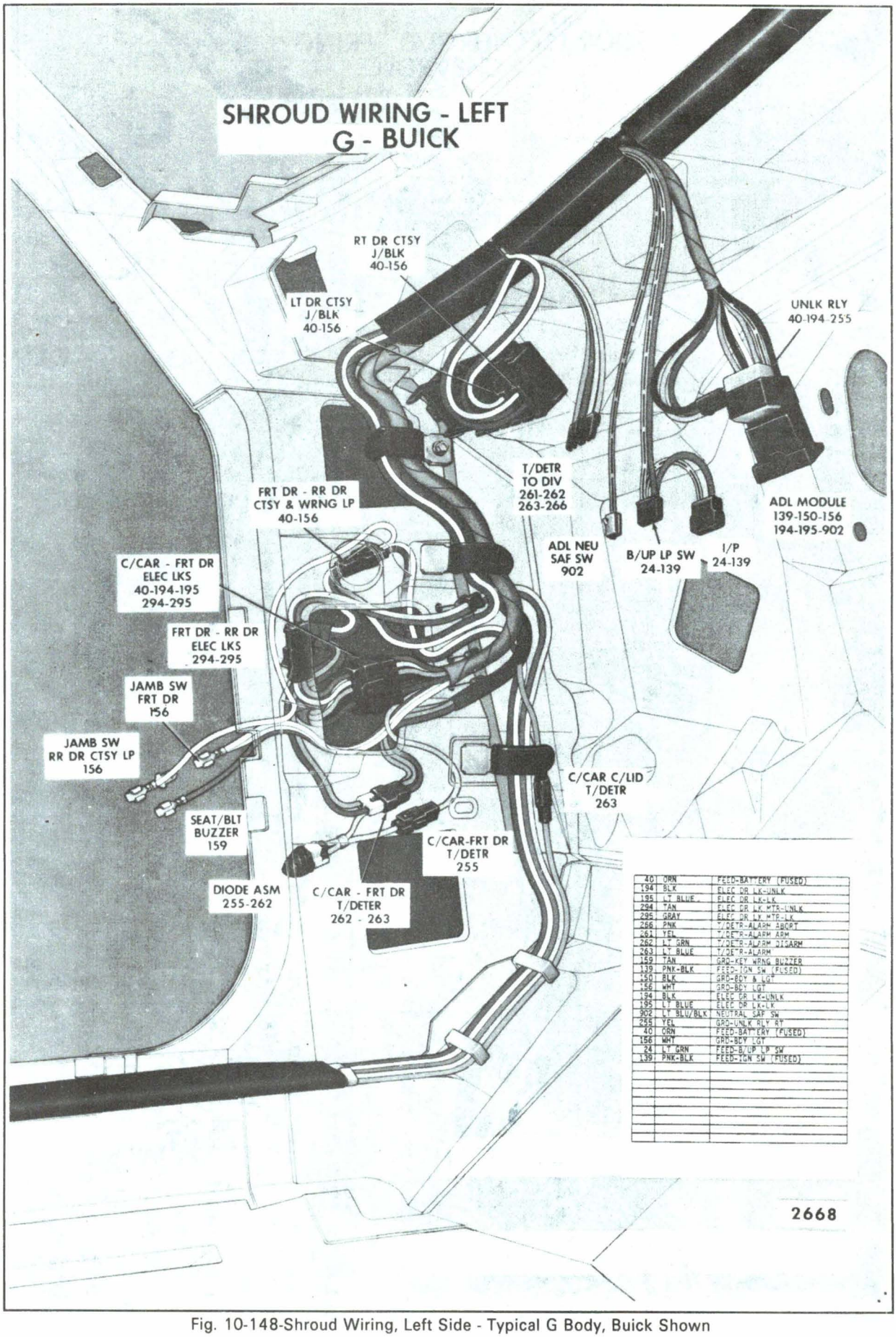
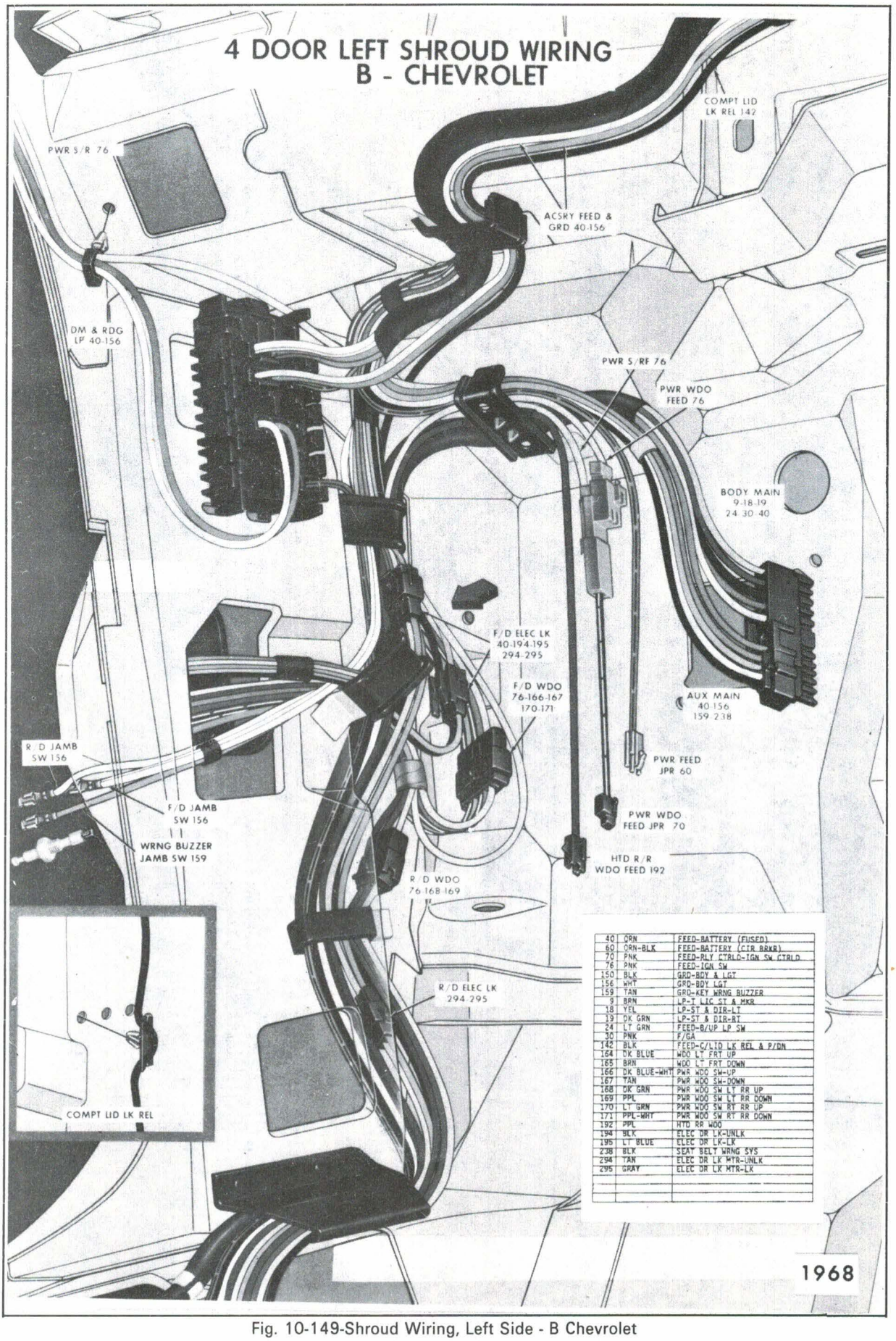
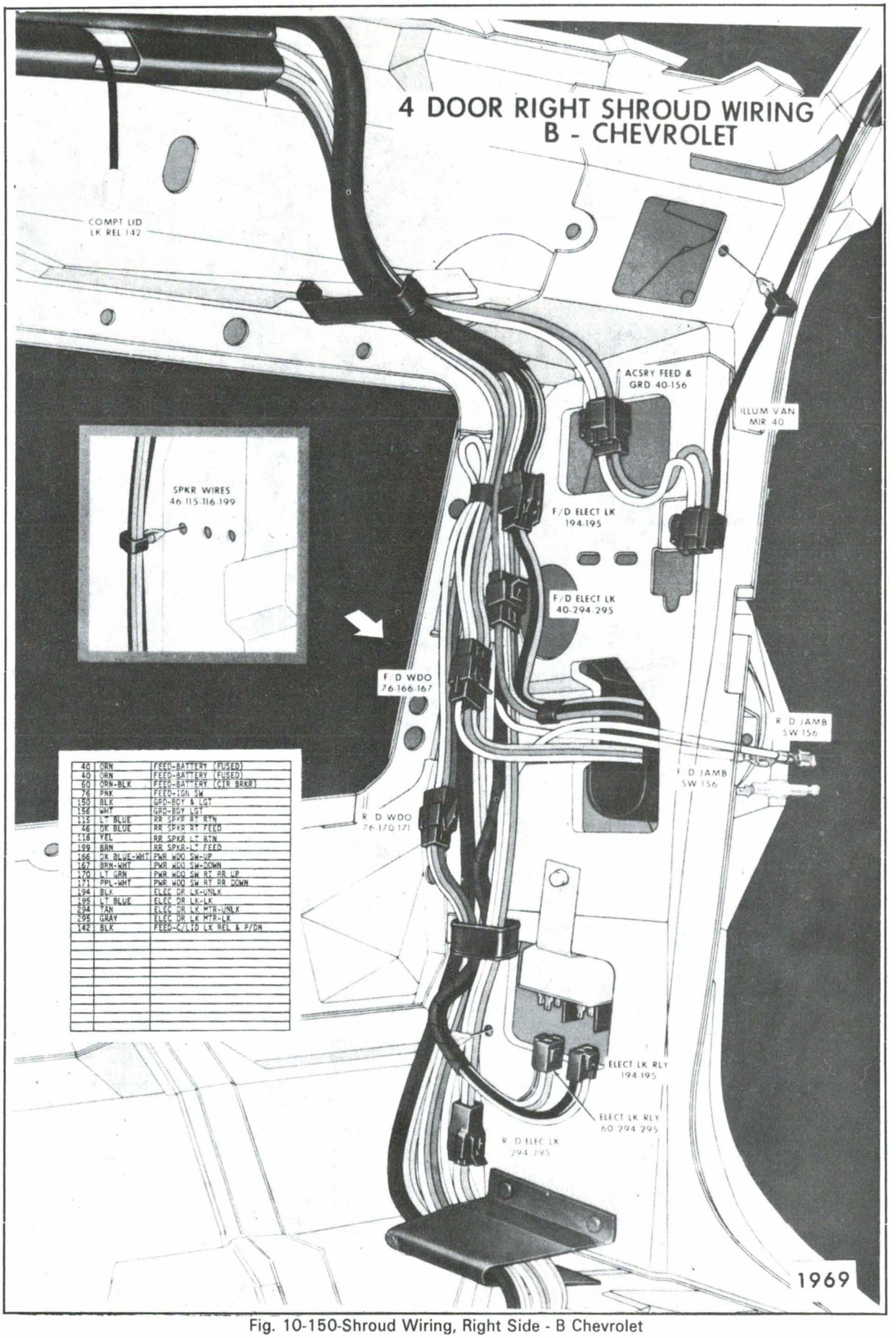


Fig. 10-148-Shroud Wiring, Left Side - Typical G Body, Buick Shown



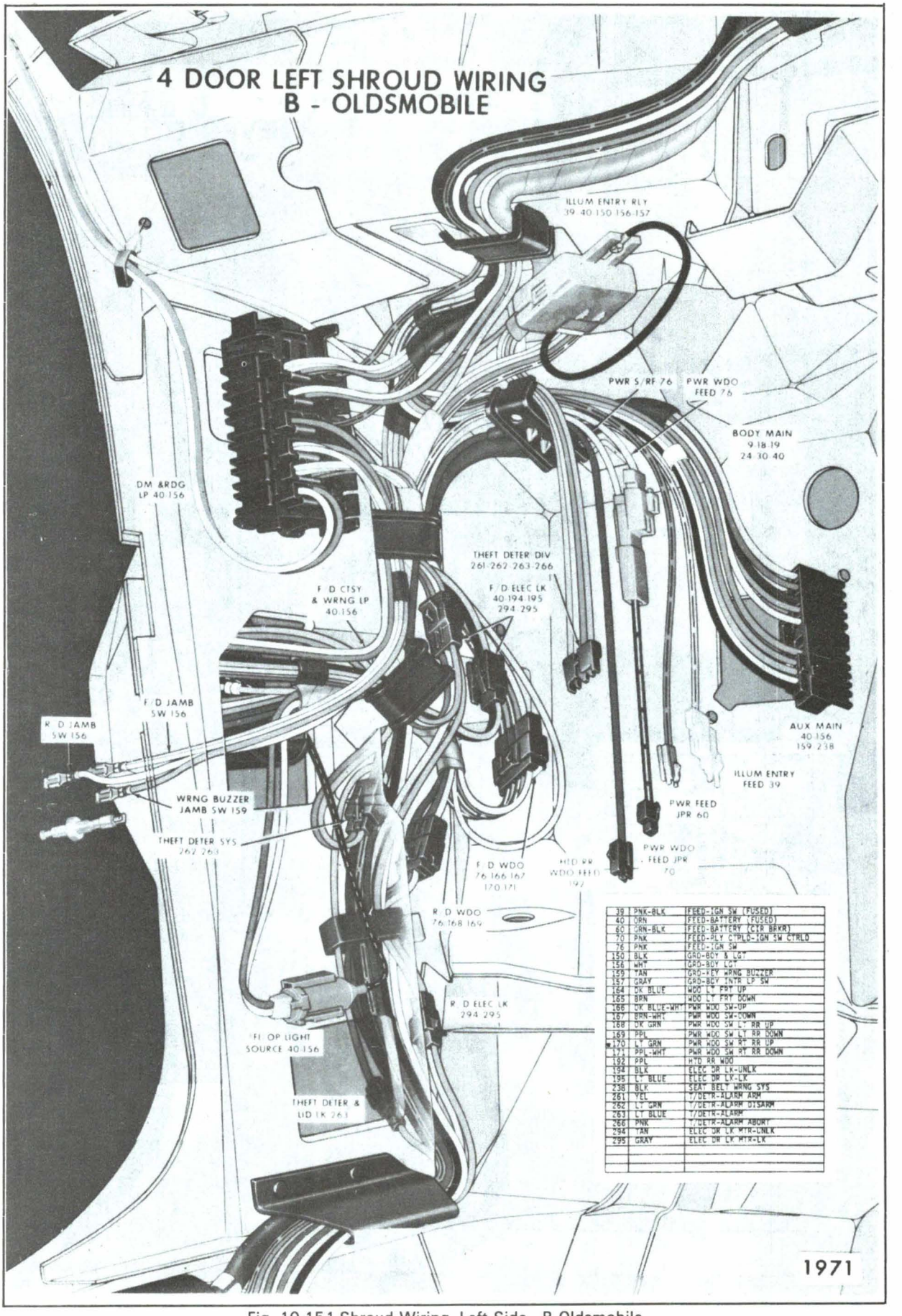
40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
70	PNK	FEED-RLY CTRLD-IGN SW CTRLD
76	PNK	FEED-IGN SW
150	BLK	GRD-BDY & LGT
156	WHT	GRD-BDY LGT
159	TAN	GRD-KEY WRNG BUZZER
9	BRN	LP-T LIC ST & MKR
18	YEL	LP-ST & DIR-LT
19	DK GRN	LP-ST & DIR-RT
54	LT GRN	FEED-B/UP LP SW
30	PNK	F/GA
142	BLK	FEED-C/LID LK REL & P/DN
164	DK BLUE	WDO LT FRT UP
165	BRN	WDO LT FRT DOWN
166	DK BLUE-WHT	PWR WDO SW-UP
167	TAN	PWR WDO SW-DOWN
168	DK GRN	PWR WDO SW LT RR UP
169	PPL	PWR WDO SW LT RR DOWN
170	LT GRN	PWR WDO SW RT RR UP
171	PPL-WHT	PWR WDO SW RT RR DOWN
192	PPL	HTD RR WDO
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
238	BLK	SEAT BELT WRNG SYS
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK

Fig. 10-149-Shroud Wiring, Left Side - B Chevrolet



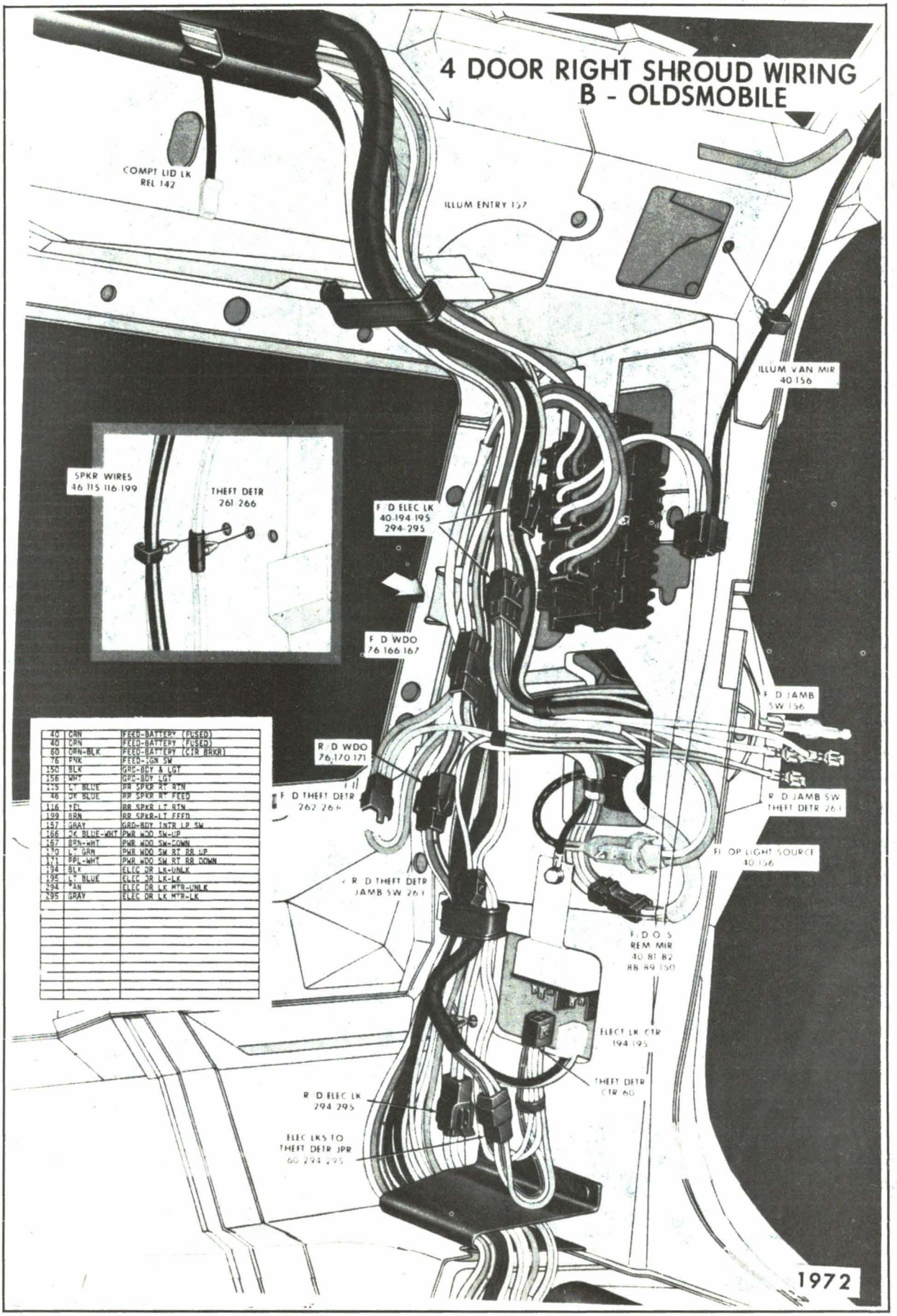
40	ORN	FEED-BATTERY (FUSED)
40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
76	PNK	FEED-IGN SW
150	BLK	GRD-BDY & LGT
156	WHT	GRD-BDY LGT
115	LT BLUE	RR SPKR RT RTN
46	DK BLUE	RR SPKR RT FEED
116	YEL	RR SPKR LT RTN
199	BRN	RR SPKR-LT FEED
166	DK BLUE-WHT	PWR WDO SW-UP
167	BRN-WHT	PWR WDO SW-DOWN
170	LT GRN	PWR WDO SW RT RR UP
171	PPL-WHT	PWR WDO SW RT RR DOWN
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
142	BLK	FEED-C/LID LK REL & P/DN

Fig. 10-150-Shroud Wiring, Right Side - B Chevrolet



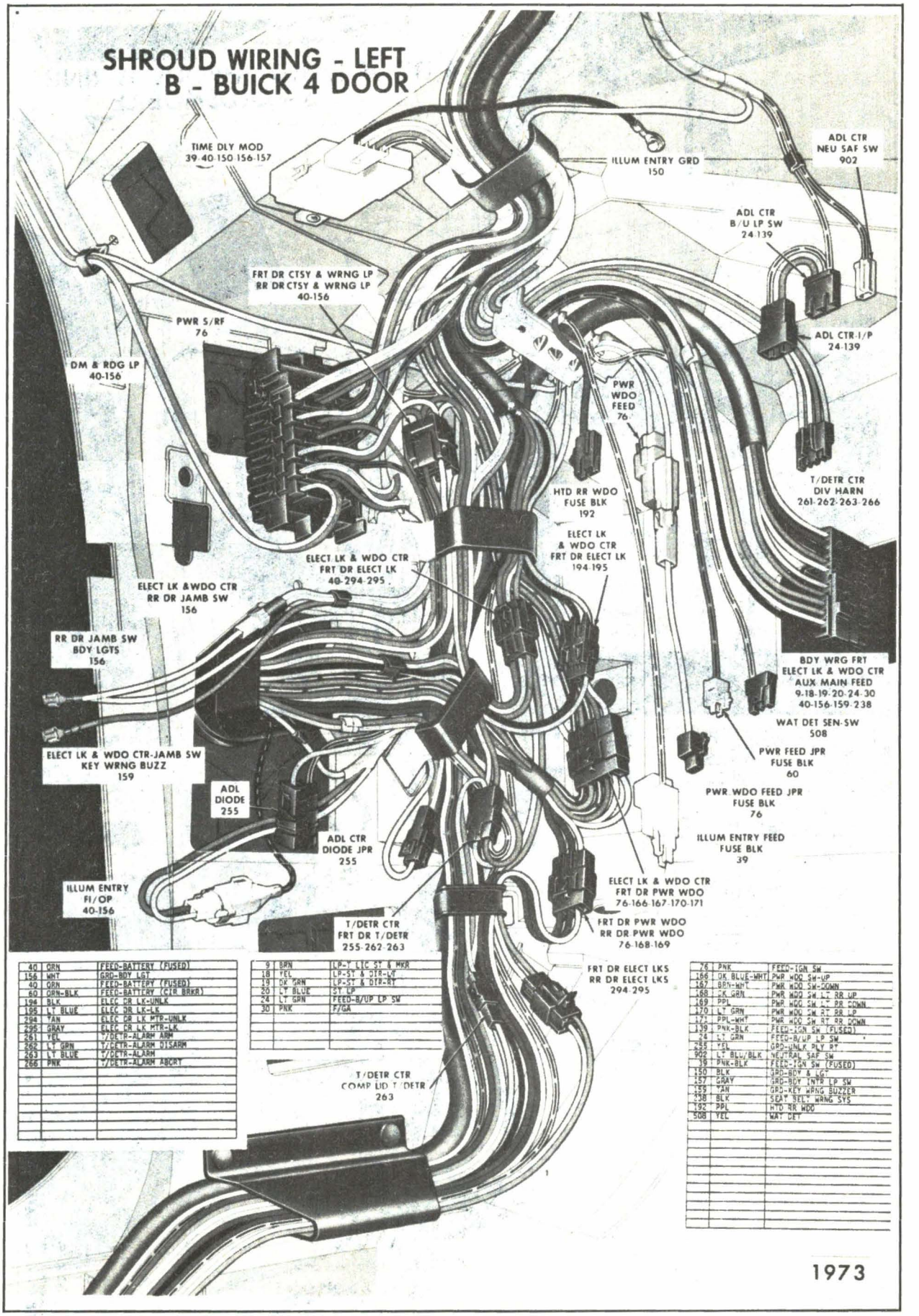
39	PNK-BLK	FEED-IGN SW (FUSED)
40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
70	PNK	FEED-RLY CTRLR-IGN SW CTRLD
76	PNK	FEED-IGN SW
150	BLK	GRD-BDY & LGT
156	WHT	GRD-BDY LGT
159	TAN	GRD-KEY WRNG BUZZER
167	GRAY	GRD-BDY INTR LP SW
164	DK BLUE	WDO LT FRT UP
165	BRN	WDO LT FRT DOWN
166	DK BLUE-WHT	PWR WDO SW-UP
167	BRN-WHT	PWR WDO SW-DOWN
168	DK GRN	PWR WDO SW LT RR UP
169	PPL	PWR WDO SW LT RR DOWN
170	LT GRN	PWR WDO SW RT RR UP
171	PPL-WHT	PWR WDO SW RT RR DOWN
192	PPL	HTD RR WDO
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
238	BLK	SEAT BELT WRNG SYS
261	YEL	T/DETR-ALARM ARM
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ALARM ABORT
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK

Fig. 10-151-Shroud Wiring, Left Side - B Oldsmobile



40	CRN	FEED-BATTERY (FUSED)
40	CRN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
76	PNK	FEED-IGN SW
150	BLK	GRD-BDY & LGT
156	WHT	GRD-BDY LGT
115	LT BLUE	RR SPKR RT RTN
46	DK BLUE	RR SPKR RT FEED
116	YEL	RR SPKR LT RTN
199	BRN	RR SPKR-LT FEED
157	GRAY	GRD-BDY INTR LP SW
166	DK BLUE-WHT	PWR WDO SW-UP
167	BRN-WHT	PWR WDO SW-DOWN
170	LT GRN	PWR WDO SW RT RR UP
171	PPL-WHT	PWR WDO SW RT RR DOWN
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK

Fig. 10-152-Shroud Wiring, Right Side - B Oldsmobile

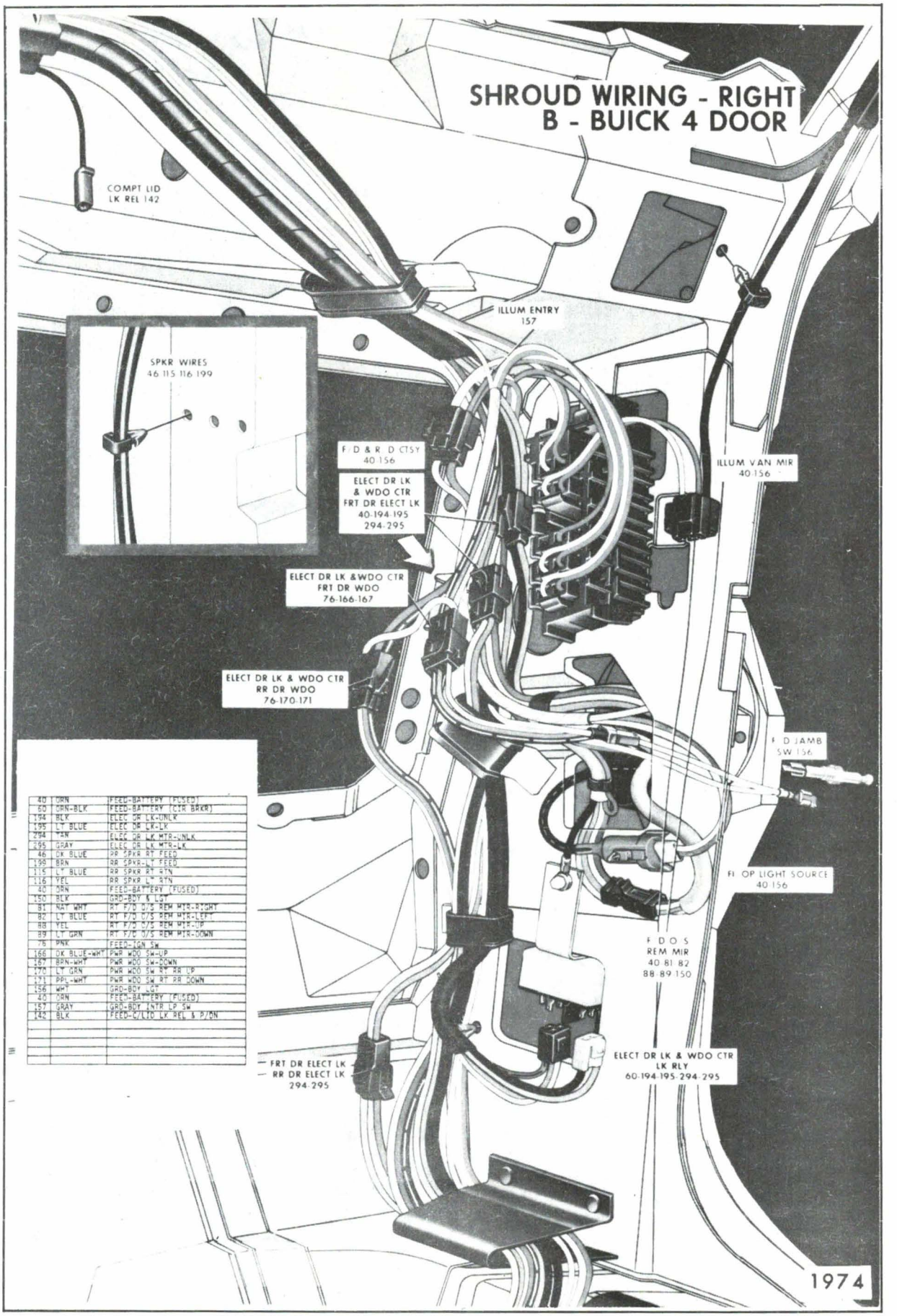


40	GRN	FEED-BATTERY (FUSED)
156	WHT	GRD-BDY LGT
40	GRN	FEED-BATTERY (FUSED)
40	GRN-BLK	FEED-BATTERY (CIR BRKR)
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
251	YEL	T/DETR-ALARM ARM
252	LT GRN	T/DETR-ALARM DISARM
253	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ALARM ABORT

9	GRN	LP-Y LIC ST & MKR
18	YEL	LP-ST & STR-LT
19	DK GRN	LP-ST & STR-RT
20	LT BLUE	ST LP
24	LT GRN	FEED-B/UP LP SW
30	PNK	F/GA

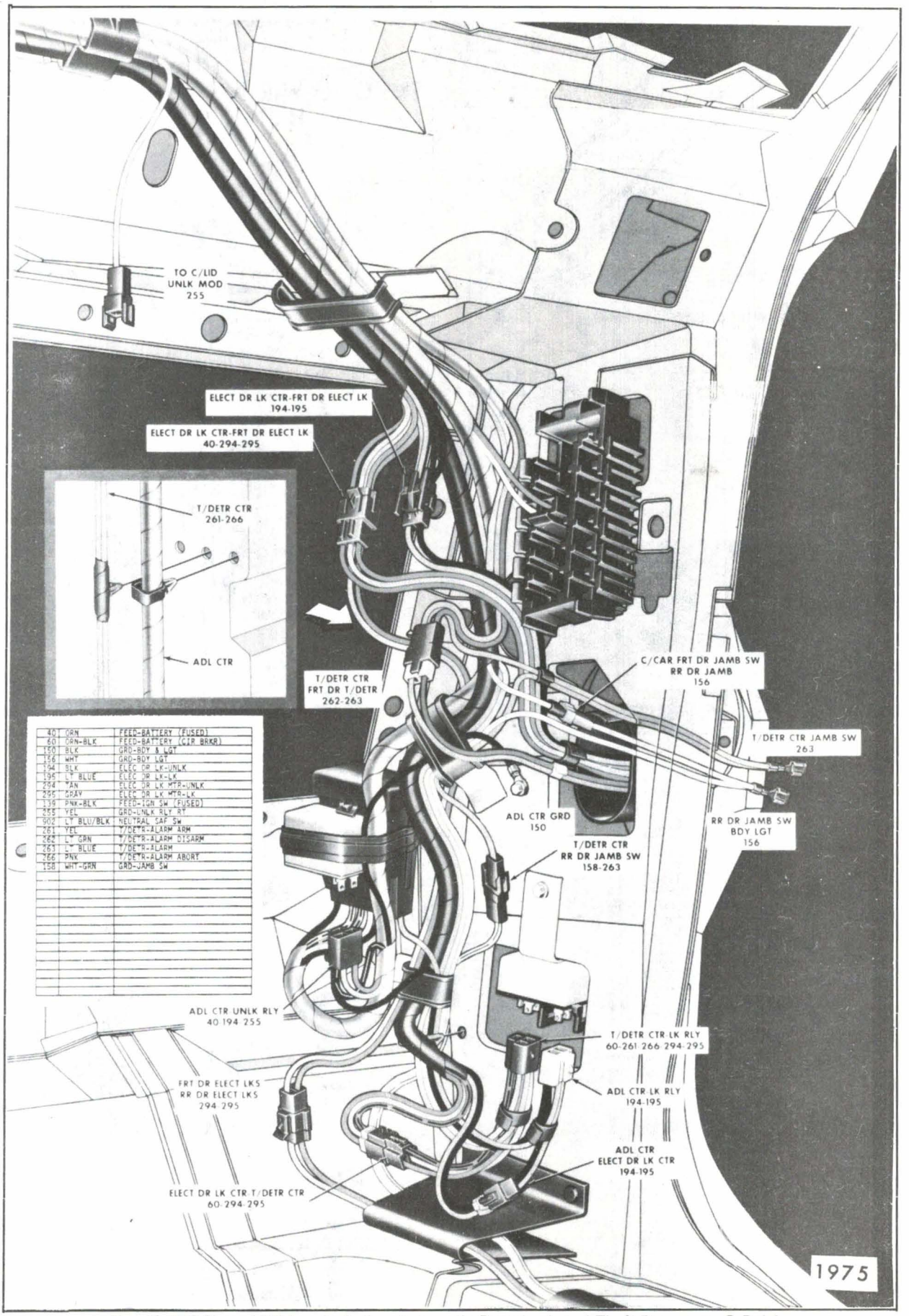
76	PNK	FEED-IGN SW
166	DK BLUE-WHT	PWR WDO SW-UP
167	BRN-WHT	PWR WDO SW-DOWN
168	DK GRN	PWR WDO SW LT RR UP
169	PPL	PWR WDO SW LT RR DOWN
170	LT GRN	PWR WDO SW RT RR UP
171	PPL-WHT	PWR WDO SW RT RR DOWN
139	PNK-BLK	FEED-IGN SW (FUSED)
24	LT GRN	FEED-B/UP LP SW
440	YEL	GRD-UNLK PLY RT
902	LT BLU/BLK	NEUTRAL SAF SW
76	PNK-BLK	FEED-IGN SW (FUSED)
150	BLK	GRD-BDY & LGT
157	GRAY	GRD-BDY INTR LP SW
159	TAN	GRD-KEY WRNG BUZZER
238	BLK	SEAT BELT WRNG SYS
192	PPL	HTD RR WDO
508	YEL	WAT DET

Fig. 10-153-Shroud Wiring, Left Side - B Buick



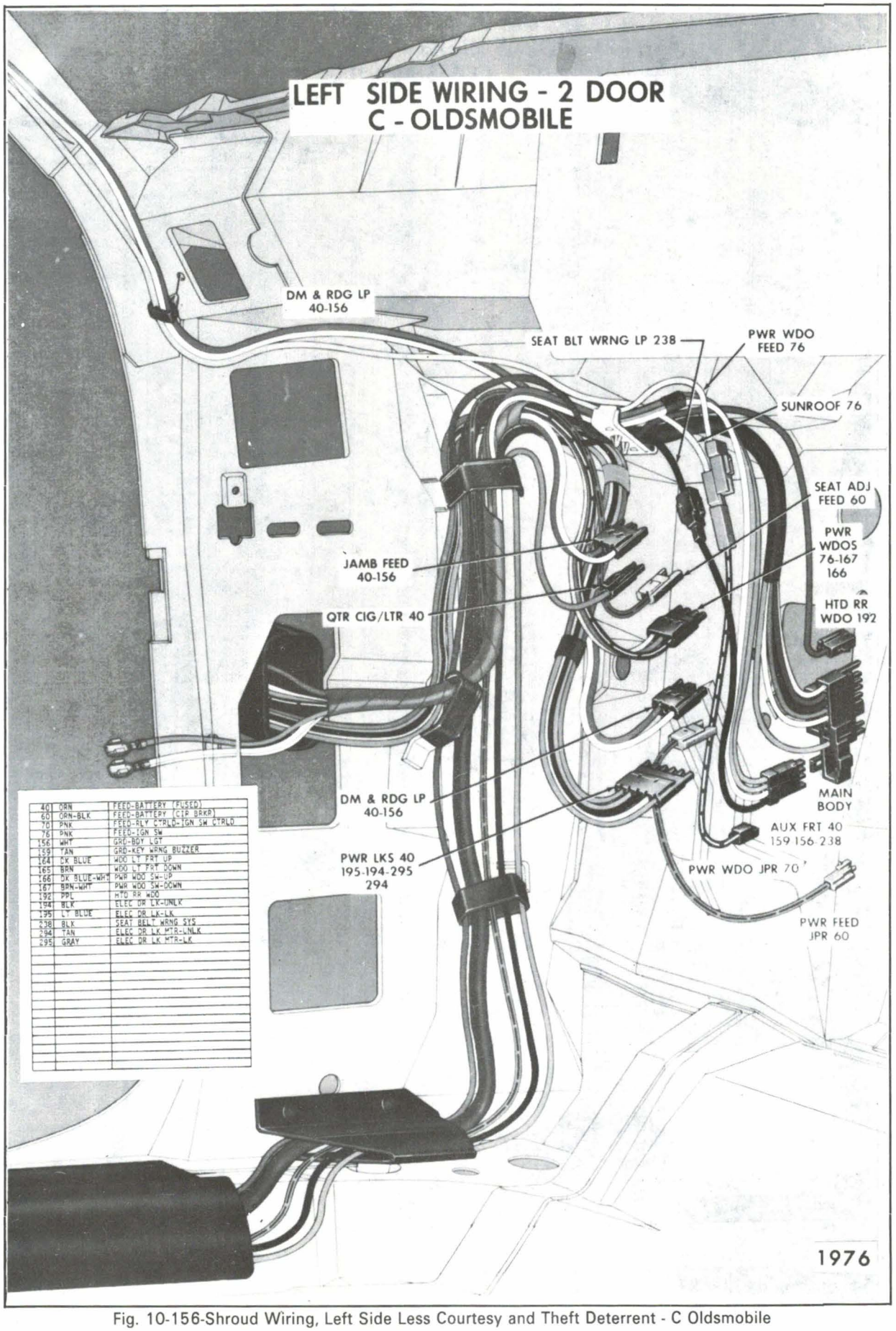
40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CTR BRKR)
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
46	DK BLUE	RR SPKR RT FEED
199	BRN	RR SPKR-LT FEED
115	LT BLUE	RR SPKR RT RTN
116	YEL	RR SPKR LT RTN
40	ORN	FEED-BATTERY (FUSED)
150	BLK	GRD-BDY & LGT
81	NAT WHT	RT F/D D/S REM MTR-RIGHT
82	LT BLUE	RT F/D D/S REM MTR-LEFT
88	YEL	RT F/D D/S REM MTR-UP
89	LT GRN	RT F/D D/S REM MTR-DOWN
76	PNK	FEED-IGN SW
166	DK BLUE-WHT	PWR WDO SW-UP
167	BRN-WHT	PWR WDO SW-DOWN
170	LT GRN	PWR WDO SW RT RR UP
171	PPL-WHT	PWR WDO SW RT RR DOWN
156	WHT	GRD-BDY LGT
40	ORN	FEED-BATTERY (FUSED)
157	GRAY	GRD-BDY INTR LP SW
142	BLK	FEED-C/LID LK REL & P/DN

Fig. 10-154-Shroud Wiring, Right Side - B Buick



40	GRN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
150	BLK	GRD-BDY & LGT
156	WHT	GRD-BDY LGT
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
139	PNK-BLK	FEED-IGN SW (FUSED)
255	YEL	GRD-UNLK RLY RT
902	LT BLU/BLK	NEUTRAL SAF SW
261	YEL	T/DETR-ALARM ARM
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ALARM ABORT
158	WHT-GRN	GRD-JAMB SW

Fig. 10-155-Shroud Wiring, Including Automatic Door Lock and Theft Deterrent - B Buick



40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
70	PNK	FEED-RLY CTRLD-IGN SW CTRLD
76	PNK	FEED-IGN SW
156	WHT	GRD-BDY LGT
159	TAN	GRD-KEY WRNG BUZZER
164	DK BLUE	WDO LT FRT UP
165	BRN	WDO LT FRT DOWN
166	DK BLUE-WHT	PWR WDO SW-UP
167	BRN-WHT	PWR WDO SW-DOWN
192	PPL	HTD RR WDO
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
238	BLK	SEAT BELT WRNG SYS
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK

Fig. 10-156-Shroud Wiring, Left Side Less Courtesy and Theft Deterrent - C Oldsmobile

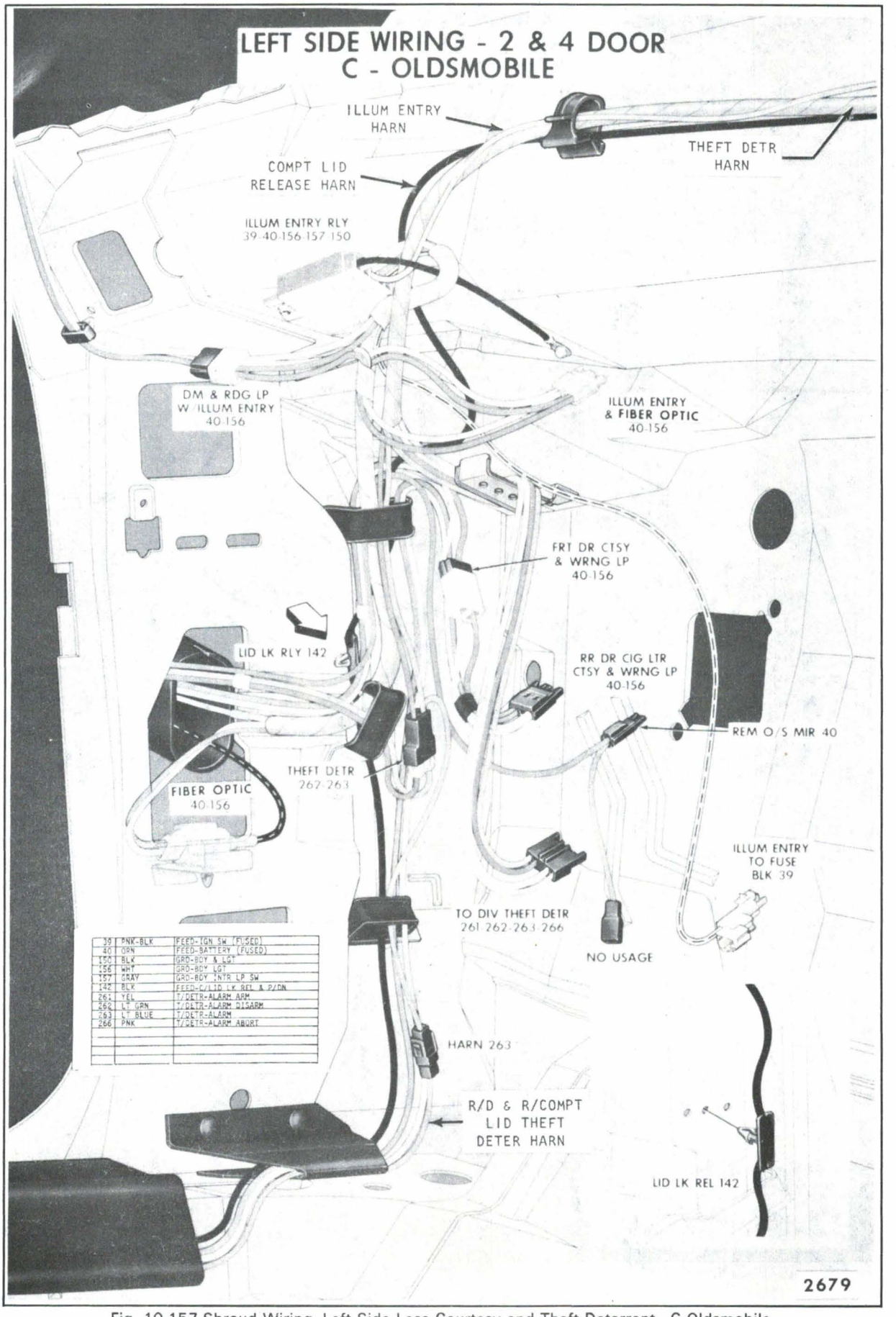


Fig. 10-157-Shroud Wiring, Left Side Less Courtesy and Theft Deterrent - C Oldsmobile

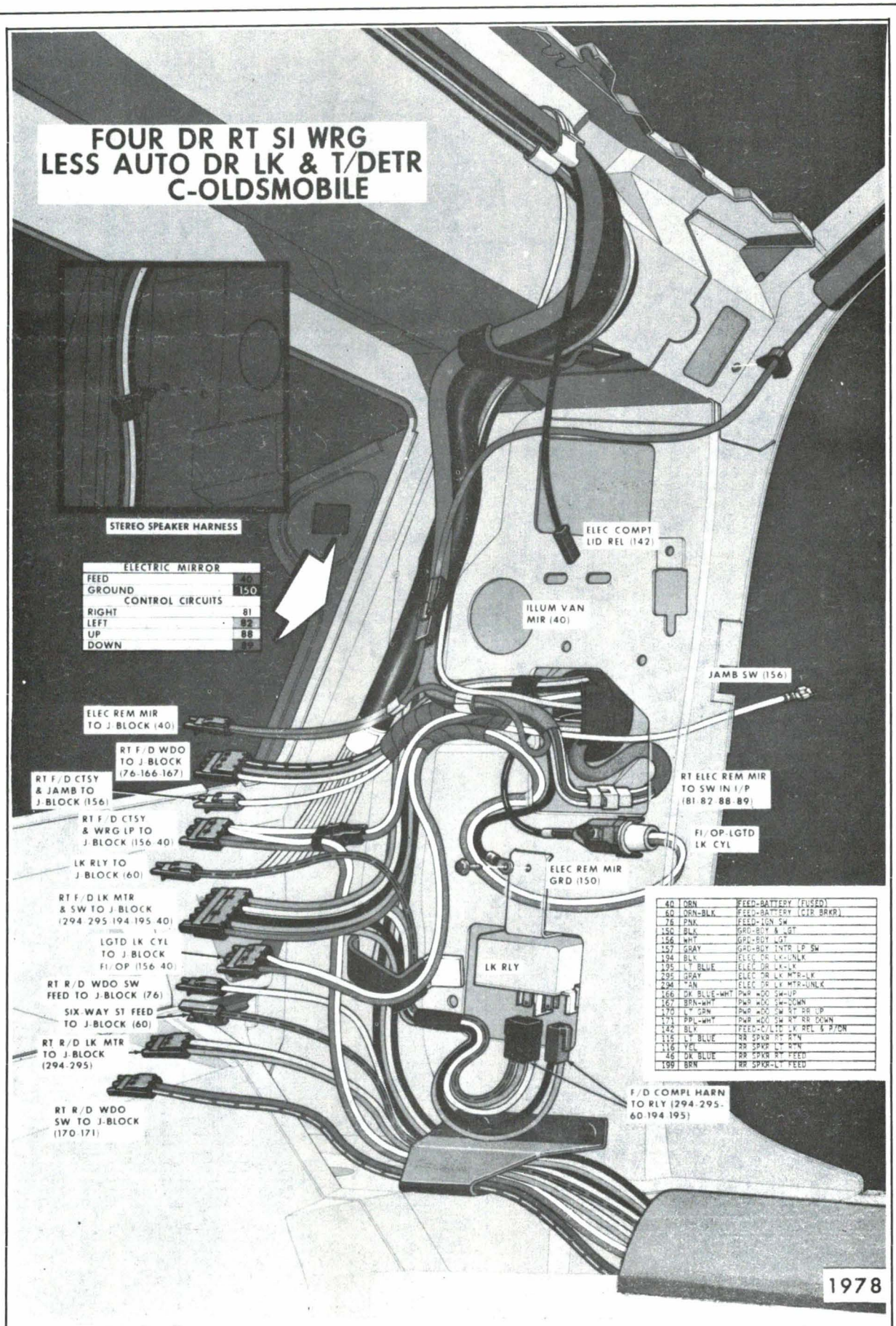
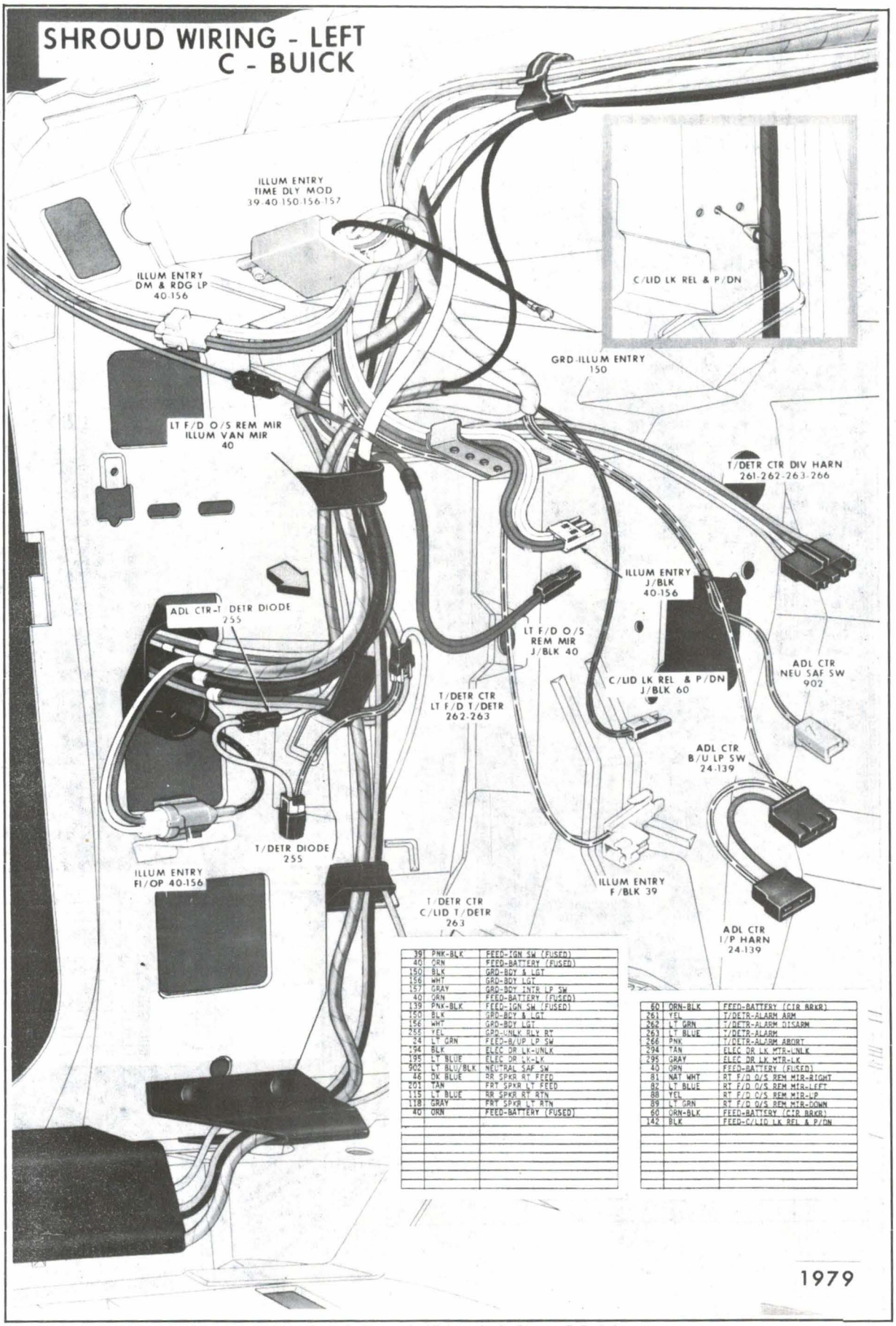


Fig. 10-158-Shroud Wiring, Right Side Less Automatic Door and Theft Deterrent - C Oldsmobile



39	PNK-BLK	FEED-IGN SW (FUSED)
40	ORN	FEED-BATTERY (FUSED)
150	BLK	GRD-BDY & LGT
156	WHT	GRD-BDY LGT
157	GRAY	GRD-BDY INTR LP SW
40	ORN	FEED-BATTERY (FUSED)
139	PNK-BLK	FEED-IGN SW (FUSED)
150	BLK	GRD-BDY & LGT
156	WHT	GRD-BDY LGT
255	YEL	GRD-UNLK RLY RT
24	LT GRN	FEED-B/UP LP SW
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
902	LT BLU/BLK	NEUTRAL SAF SW
46	DK BLUE	RR SPKR RT FEED
201	TAN	FRT SPKR LT FEED
115	LT BLUE	RR SPKR RT RTN
118	GRAY	FRT SPKR LT RTN
40	ORN	FEED-BATTERY (FUSED)

60	ORN-BLK	FEED-BATTERY (CIR BRKR)
261	YEL	T/DETR-ALARM ARM
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ALARM ABORT
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
40	ORN	FEED-BATTERY (FUSED)
81	NAT WHT	RT F/D O/S REM MIR-RIGHT
82	LT BLUE	RT F/D O/S REM MIR-LEFT
88	YEL	RT F/D O/S REM MIR-UP
89	LT GRN	RT F/D O/S REM MIR-DOWN
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
142	BLK	FEED-C/LID LK REL & P/DN

Fig. 10-159-Shroud Wiring, Left Side - C Buick

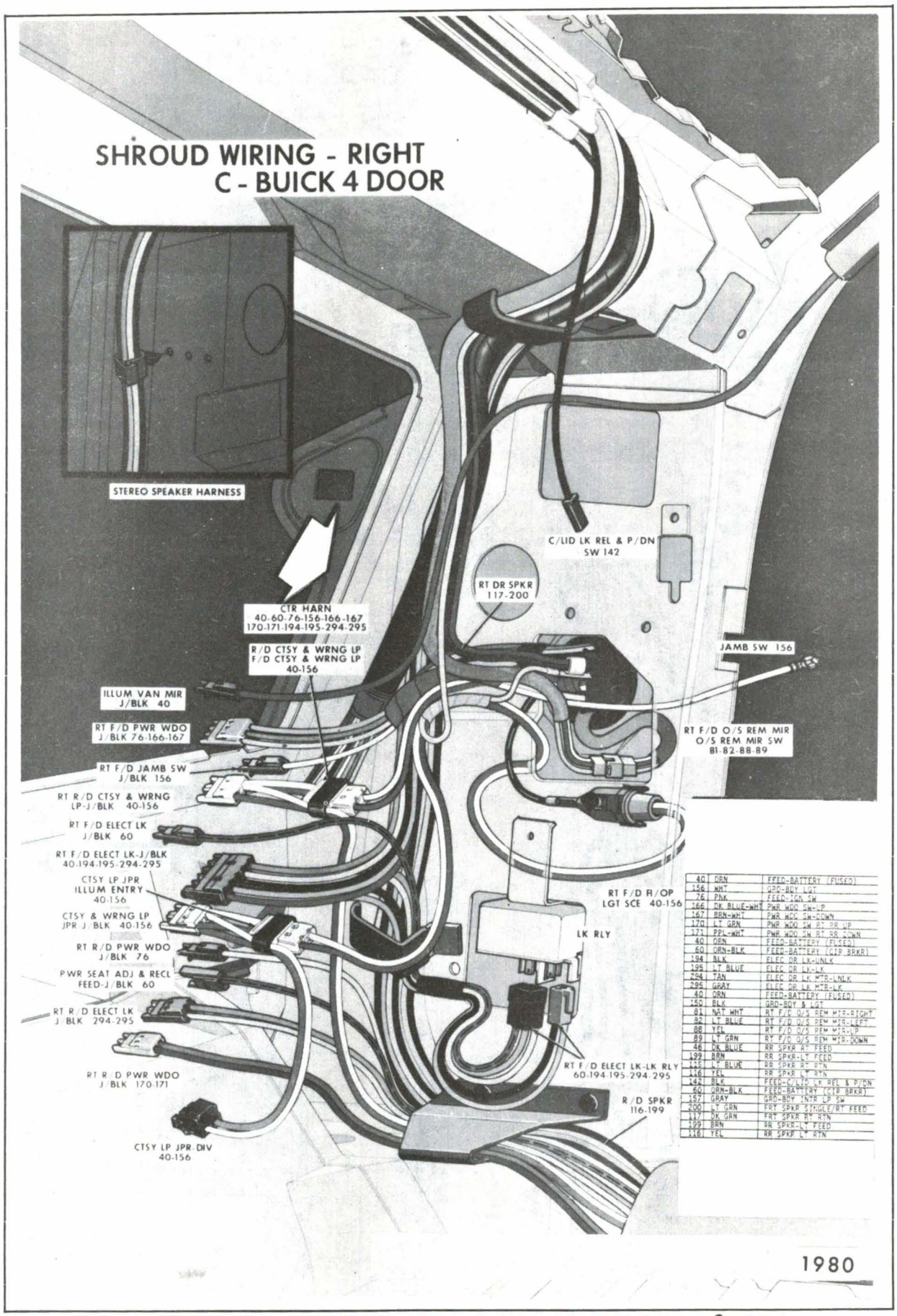
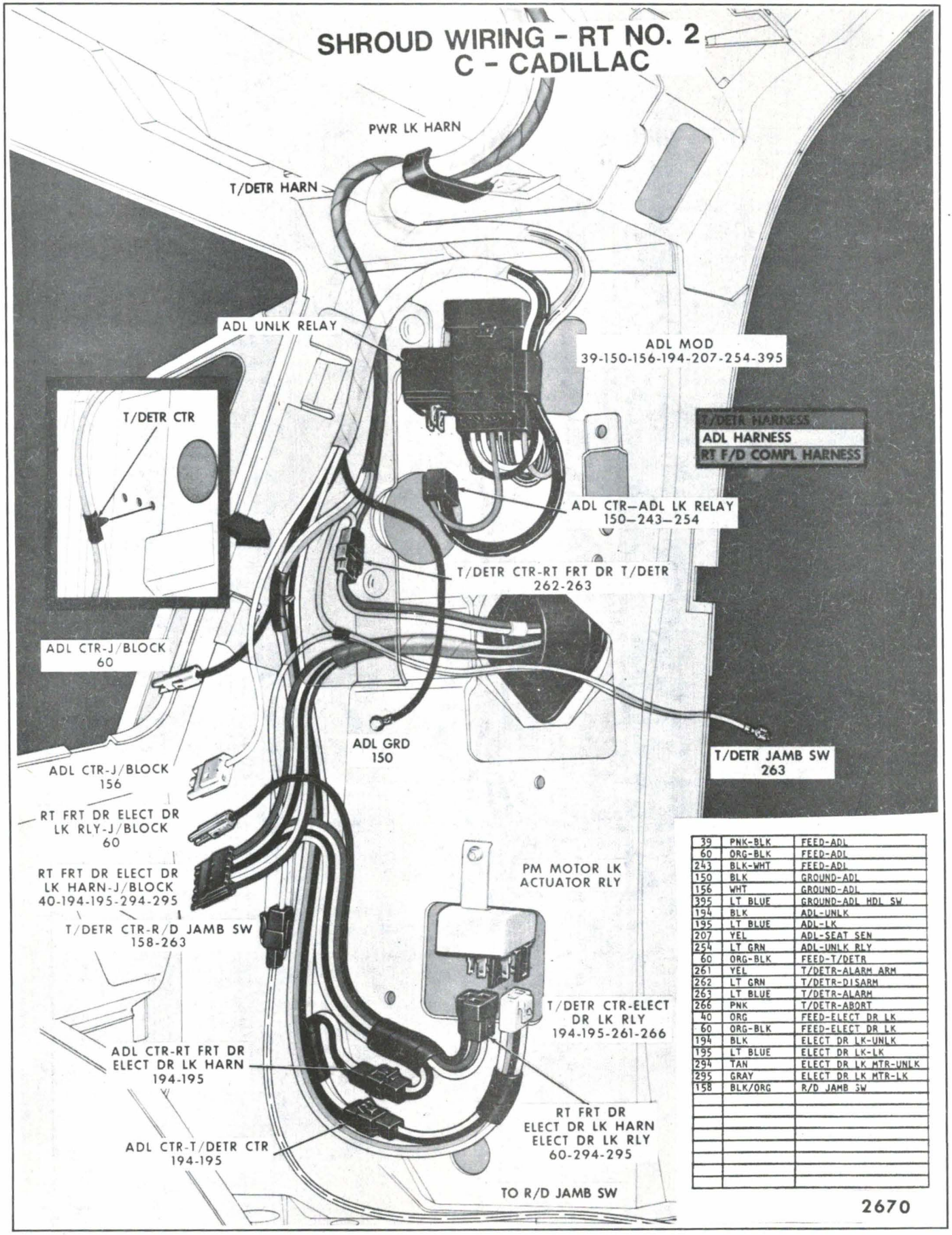
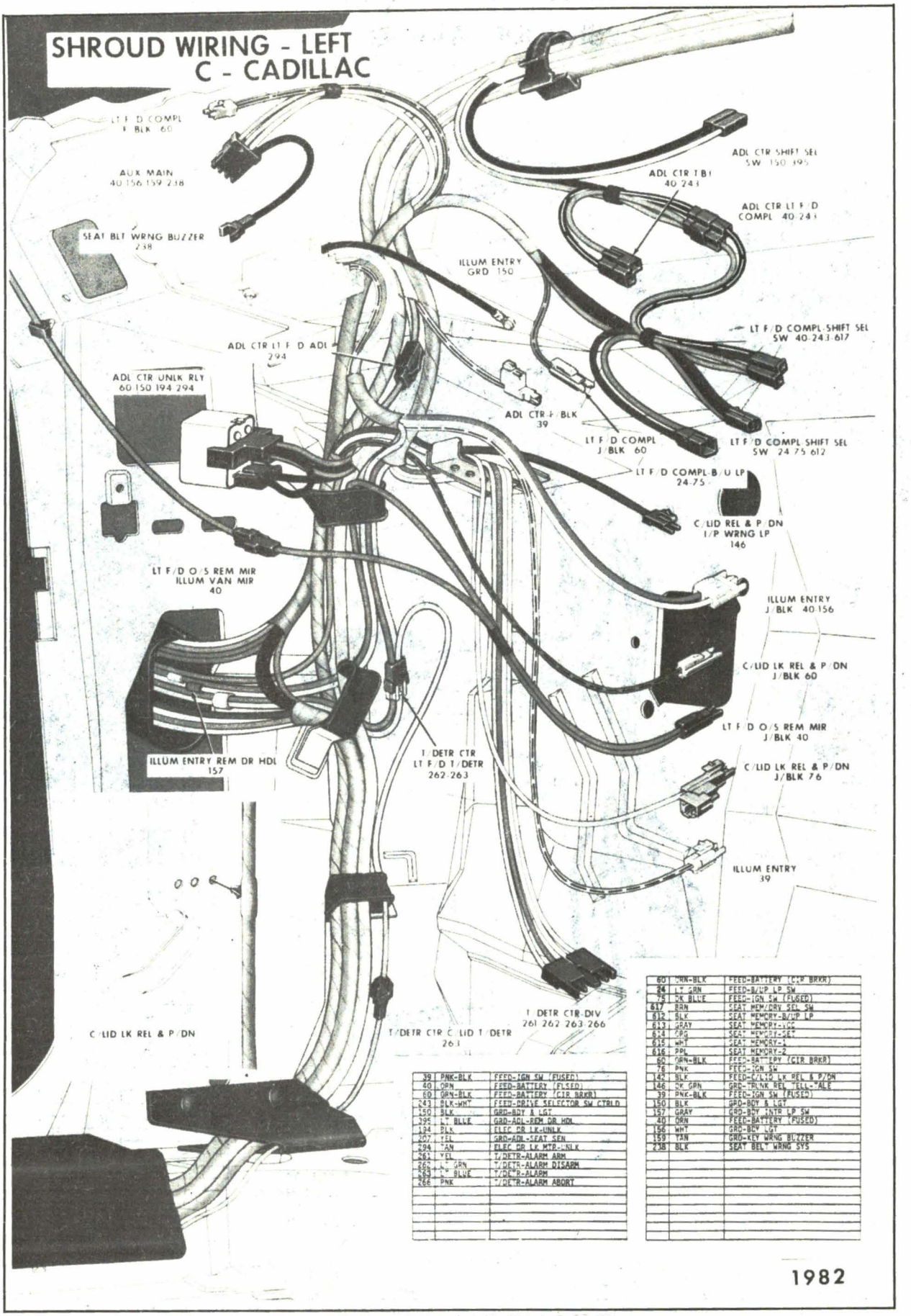


Fig. 10-160-Shroud Wiring, Right Side Less Automatic Door Lock and Theft Deterrent - C Buick



39	PNK-BLK	FEED-ADL
60	ORG-BLK	FEED-ADL
243	BLK-WHT	FEED-ADL
150	BLK	GROUND-ADL
156	WHT	GROUND-ADL
395	LT BLUE	GROUND-ADL HDL SW
194	BLK	ADL-UNLK
195	LT BLUE	ADL-LK
207	YEL	ADL-SEAT SEN
254	LT GRN	ADL-UNLK RLY
60	ORG-BLK	FEED-T/DETR
261	YEL	T/DETR-ALARM ARM
262	LT GRN	T/DETR-DISARM
263	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ABORT
40	ORG	FEED-ELECT DR LK
60	ORG-BLK	FEED-ELECT DR LK
194	BLK	ELECT DR LK-UNLK
195	LT BLUE	ELECT DR LK-LK
294	TAN	ELECT DR LK MTR-UNLK
295	GRAY	ELECT DR LK MTR-LK
158	BLK/ORG	R/D JAMB SW

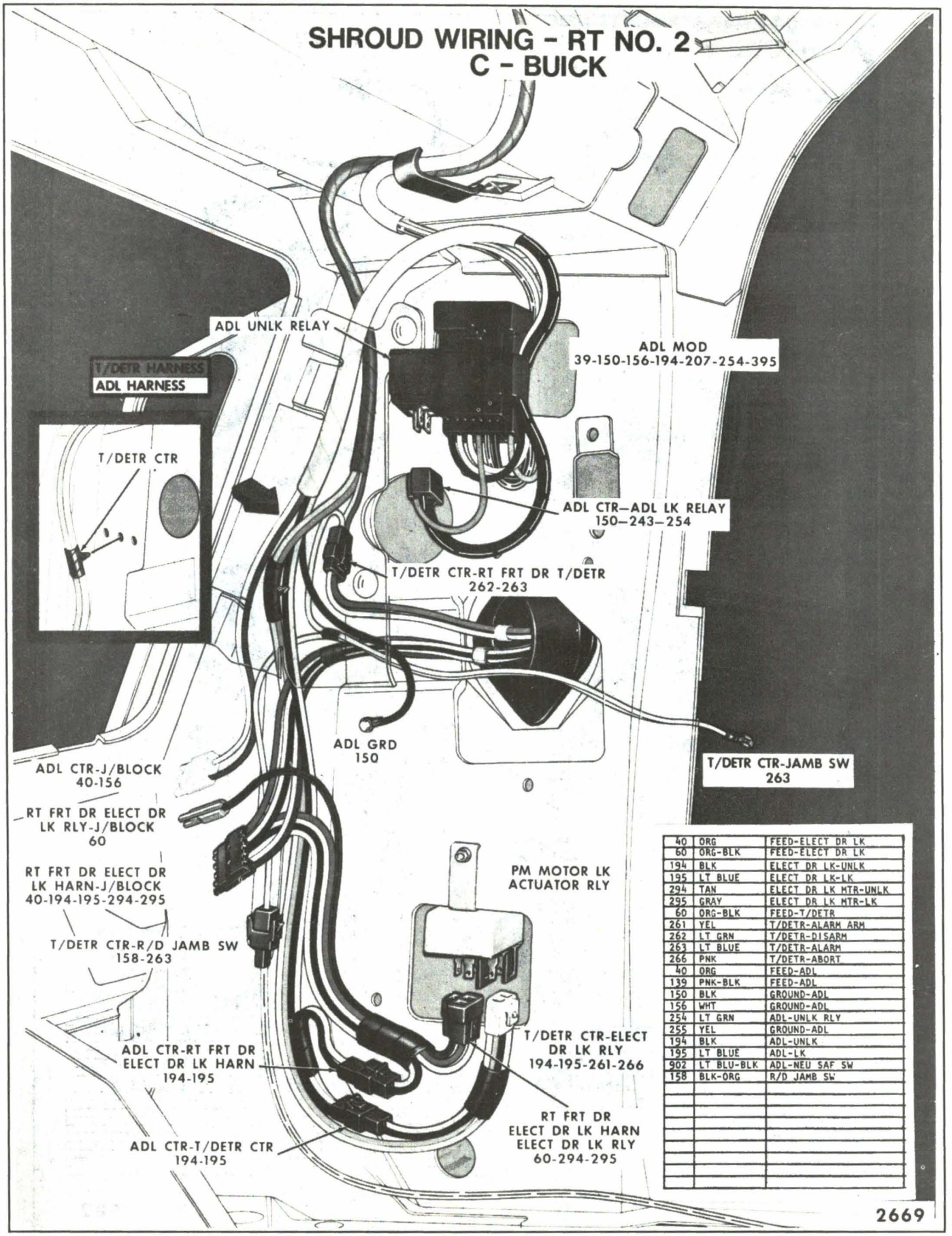
Fig.10-161-Shroud Wiring, Right Side Including Automatic Door Lock and Theft Deterrent - C Cadillac



39	PNK-BLK	FEED-IGN SW (FUSED)
40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
243	BLK-WHT	FEED-DRIVE SELECTOR SW CTRLD
150	BLK	GRD-BDY & LGT
395	LT BLUE	GRD-ADJ-REM DR HDL
194	BLK	ELEC DR LK-UNLK
207	YEL	GRD-ADJ-SEAT SEN
294	TAN	ELEC DR LK MTR-UNLK
261	YEL	T/DETR-ALARM ARM
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ALARM ABORT

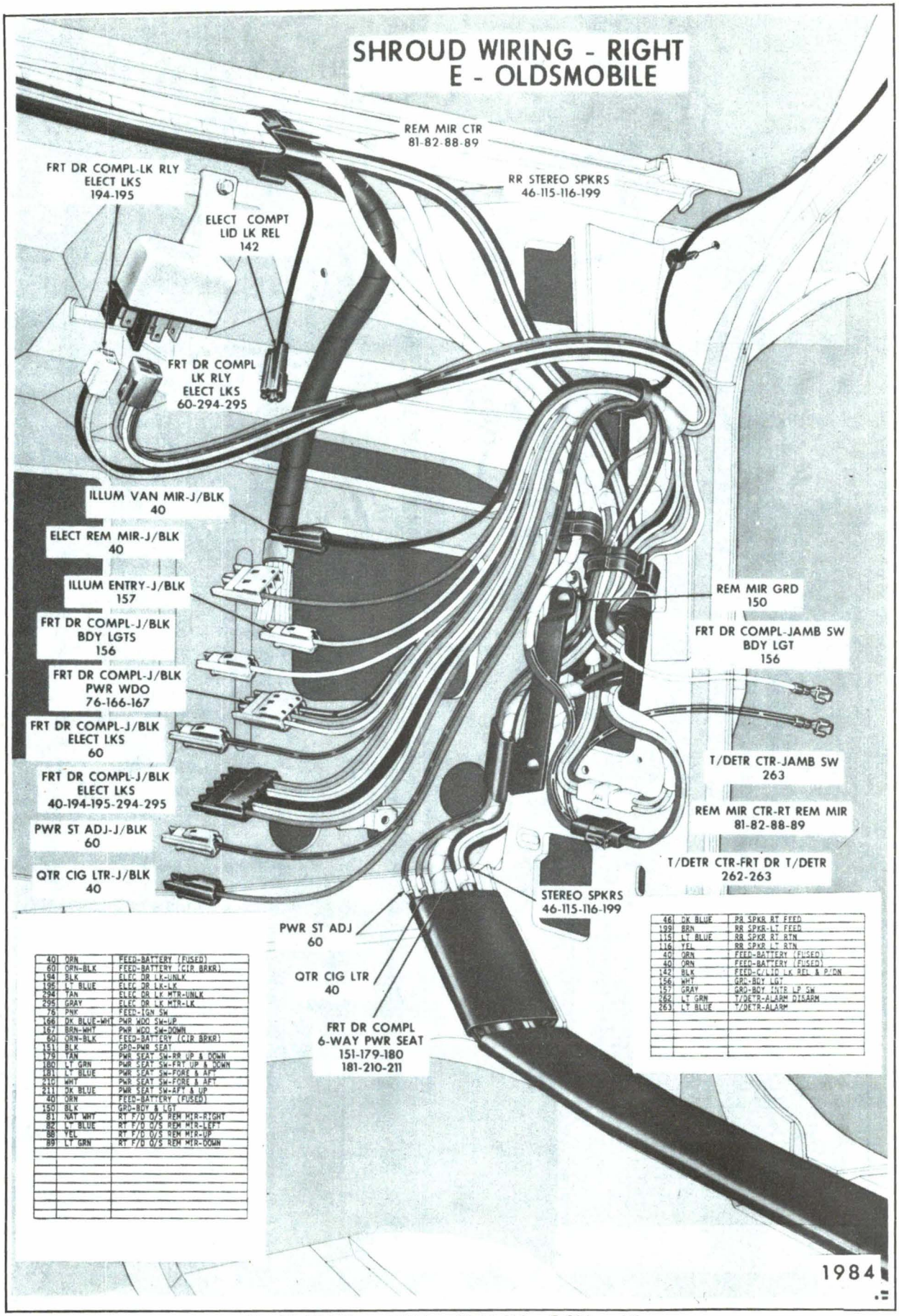
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
24	LT GRN	FEED-B/UP LP SW
76	DK BLUE	FEED-IGN SW (FUSED)
617	BRN	SEAT MEMORY SEL SW
612	BLK	SEAT MEMORY-B/UP LP
613	GRAY	SEAT MEMORY-I/P
614	ORG	SEAT MEMORY-SET
615	WHT	SEAT MEMORY-1
616	PPL	SEAT MEMORY-2
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
76	PNK	FEED-IGN SW
143	BLK	FEED-C/LID LK REL & P/DN
146	DK GRN	GRD-TRUNK REL TELL-TALE
39	PNK-BLK	FEED-IGN SW (FUSED)
150	BLK	GRD-BDY & LGT
157	GRAY	GRD-BDY INTR LP SW
40	ORN	FEED-BATTERY (FUSED)
156	WHT	GRD-BDY LGT
159	TAN	GRD-KEY WRNG BUZZER
238	BLK	SEAT BELT WRNG SYS

Fig. 10-162-Shroud Wiring, Left Side - C Cadillac



40	ORG	FEED-ELECT DR LK
60	ORG-BLK	FEED-ELECT DR LK
194	BLK	ELECT DR LK-UNLK
195	LT BLUE	ELECT DR LK-LK
294	TAN	ELECT DR LK MTR-UNLK
295	GRAY	ELECT DR LK MTR-LK
60	ORG-BLK	FEED-T/DETR
261	YEL	T/DETR-ALARM ARM
262	LT GRN	T/DETR-DISARM
263	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ABORT
40	ORG	FEED-ADL
139	PNK-BLK	FEED-ADL
150	BLK	GROUND-ADL
156	WHT	GROUND-ADL
254	LT GRN	ADL-UNLK RLY
255	YEL	GROUND-ADL
194	BLK	ADL-UNLK
195	LT BLUE	ADL-LK
902	LT BLU-BLK	ADL-NEU SAF SW
158	BLK-ORG	R/D JAMB SW

Fig. 10-163-Shroud Wiring, Right Side Including Automatic Door Lock and Theft Deterrent - C Buick



40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
76	PNK	FEED-IGN SW
166	DK BLUE-WHT	PWR WDO SW-UP
167	BRN-WHT	PWR WDO SW-DOWN
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
151	BLK	GRD-PWR SEAT
179	TAN	PWR SEAT SW-RR UP & DOWN
180	LT GRN	PWR SEAT SW-FRT UP & DOWN
181	LT BLUE	PWR SEAT SW-FORE & AFT
210	WHT	PWR SEAT SW-FORE & AFT
211	DK BLUE	PWR SEAT SW-AFT & UP
40	ORN	FEED-BATTERY (FUSED)
150	BLK	GRD-BDY & LGT
81	WHT WHT	RT F/D O/S REM MIR-RIGHT
82	LT BLUE	RT F/D O/S REM MIR-LEFT
88	YEL	RT F/D O/S REM MIR-UP
89	LT GRN	RT F/D O/S REM MIR-DOWN

46	DK BLUE	RR SPKR RT FEED
199	BRN	RR SPKR-LT FEED
115	LT BLUE	RR SPKR RT RTN
116	YEL	RR SPKR LT RTN
40	ORN	FEED-BATTERY (FUSED)
40	ORN	FEED-BATTERY (FUSED)
142	BLK	FEED-C/LID LK REL & PTON
156	WHT	GRD-BDY LGT
157	GRAY	GRD-BDY INTR LP SW
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM

Fig. 10-164-Shroud Wiring, Right Side - E Oldsmobile

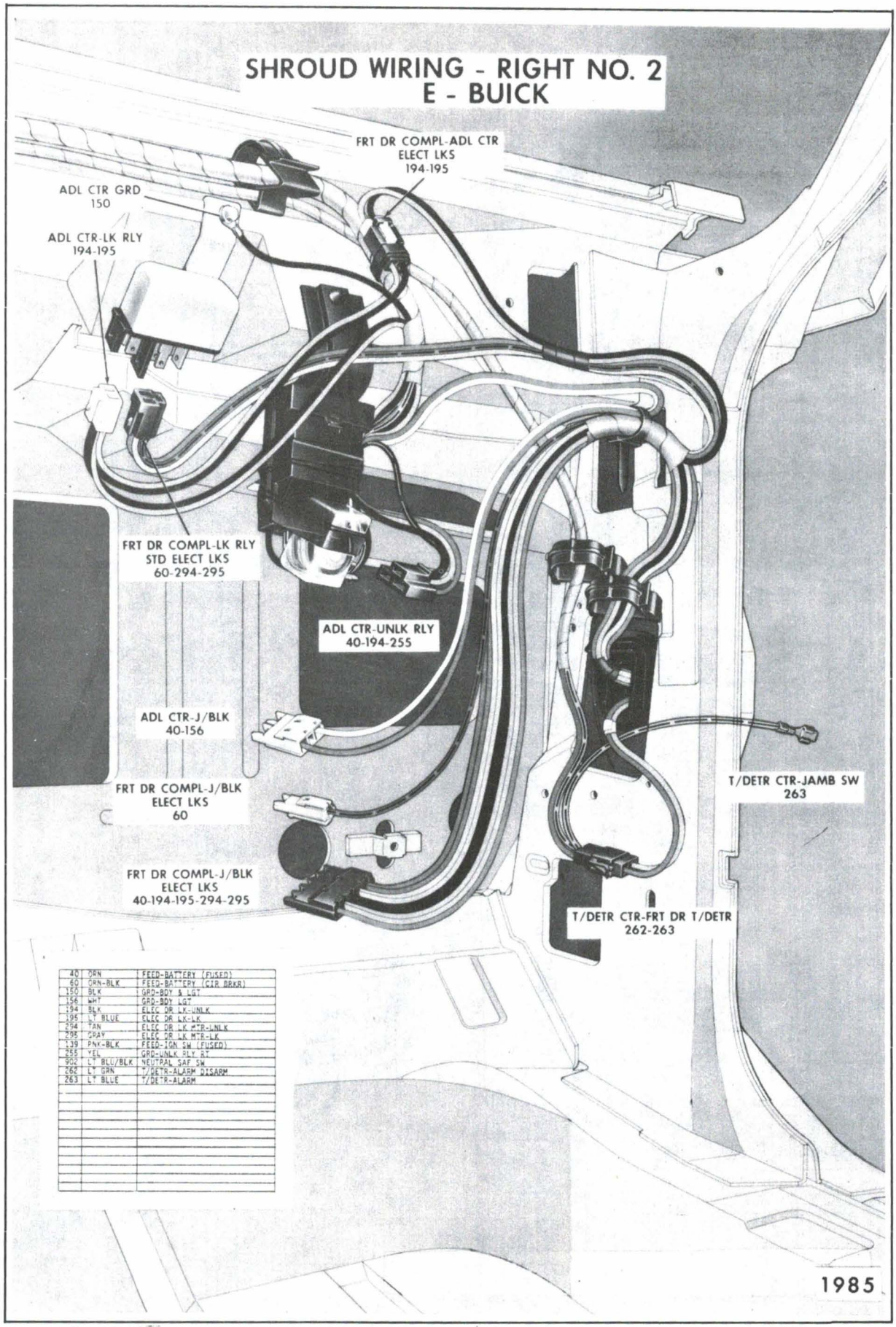
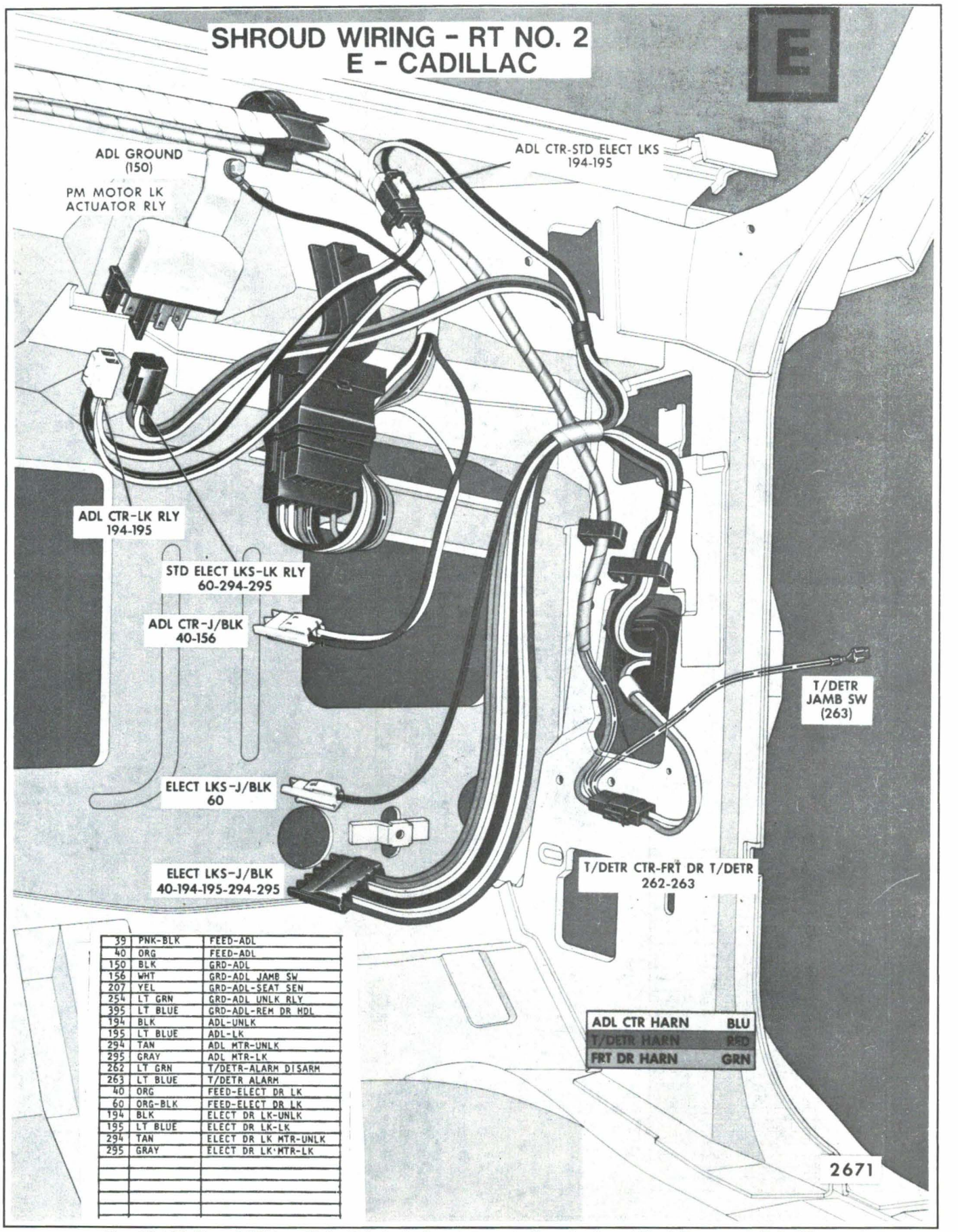
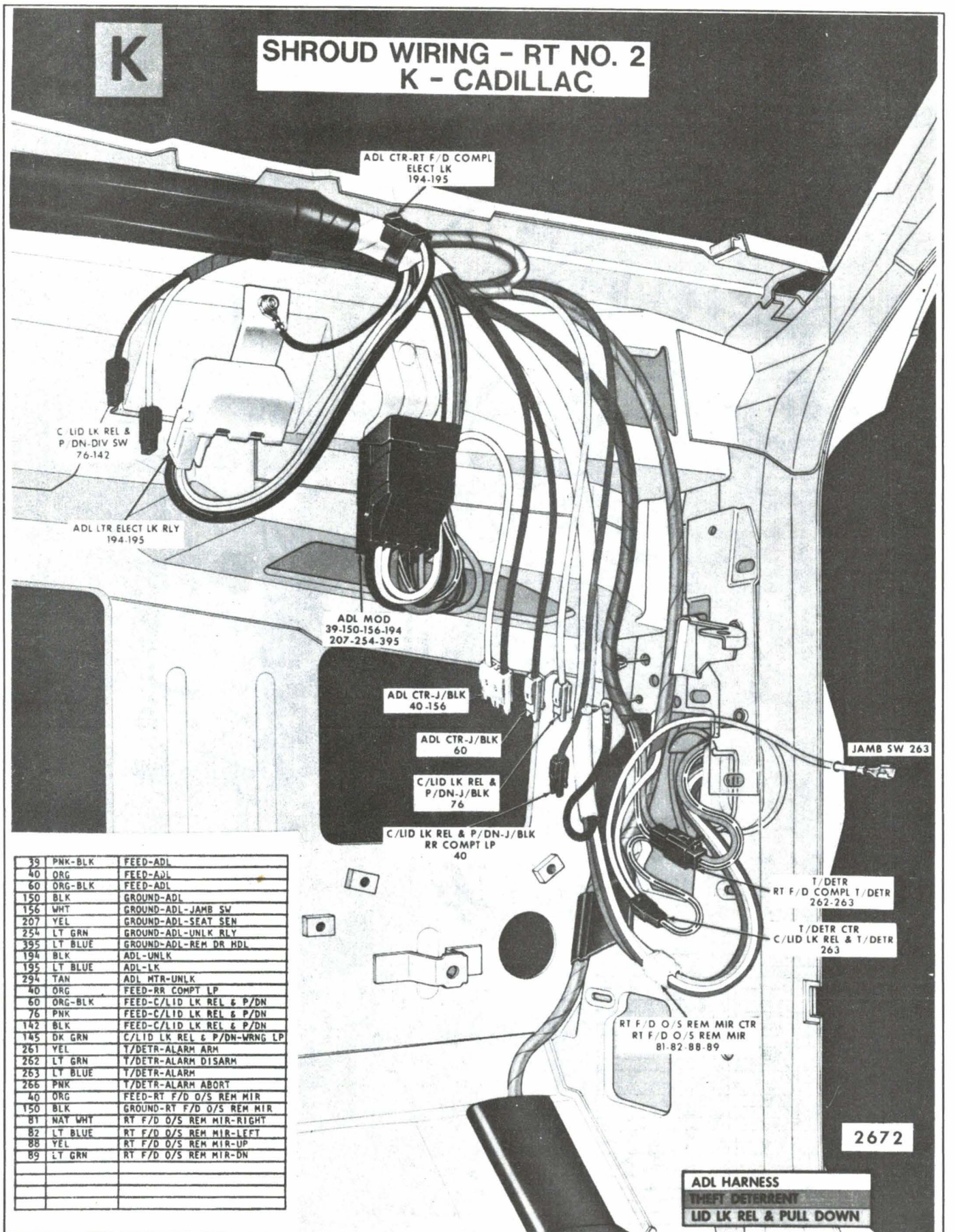


Fig. 10-165-Shroud Wiring, Right Side Including Automatic Door Lock and Theft Deterrent - E Buick



39	PNK-BLK	FEED-ADL
40	ORG	FEED-ADL
150	BLK	GRD-ADL
156	WHT	GRD-ADL JAMB SW
207	YEL	GRD-ADL-SEAT SEN
254	LT GRN	GRD-ADL UNLK RLY
395	LT BLUE	GRD-ADL-REM DR HDL
194	BLK	ADL-UNLK
195	LT BLUE	ADL-LK
294	TAN	ADL MTR-UNLK
295	GRAY	ADL MTR-LK
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR ALARM
40	ORG	FEED-ELECT DR LK
60	ORG-BLK	FEED-ELECT DR LK
194	BLK	ELECT DR LK-UNLK
195	LT BLUE	ELECT DR LK-LK
294	TAN	ELECT DR LK MTR-UNLK
295	GRAY	ELECT DR LK MTR-LK

Fig. 10-166-Shroud Wiring, Right Side Including Automatic Door Lock and Theft Deterrent - E Cadillac



39	PNK-BLK	FEED-ADL
40	ORG	FEED-ADL
60	ORG-BLK	FEED-ADL
150	BLK	GROUND-ADL
156	WHT	GROUND-ADL-JAMB SW
207	YEL	GROUND-ADL-SEAT SEN
254	LT GRN	GROUND-ADL-UNLK RLY
395	LT BLUE	GROUND-ADL-REM DR HDL
194	BLK	ADL-UNLK
195	LT BLUE	ADL-LK
294	TAN	ADL MTR-UNLK
40	ORG	FEED-RR COMPT LP
60	ORG-BLK	FEED-C/LID LK REL & P/DN
76	PNK	FEED-C/LID LK REL & P/DN
142	BLK	FEED-C/LID LK REL & P/DN
145	DK GRN	C/LID LK REL & P/DN-WRNG LP
261	YEL	T/DETR-ALARM ARM
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ALARM ABORT
40	ORG	FEED-RT F/D O/S REM MIR
150	BLK	GROUND-RT F/D O/S REM MIR
81	NAT WHT	RT F/D O/S REM MIR-RIGHT
82	LT BLUE	RT F/D O/S REM MIR-LEFT
88	YEL	RT F/D O/S REM MIR-UP
89	LT GRN	RT F/D O/S REM MIR-DN

Fig. 10-167-Shroud Wiring, Right Side Including Automatic Door Lock and Theft Deterrent - K Cadillac

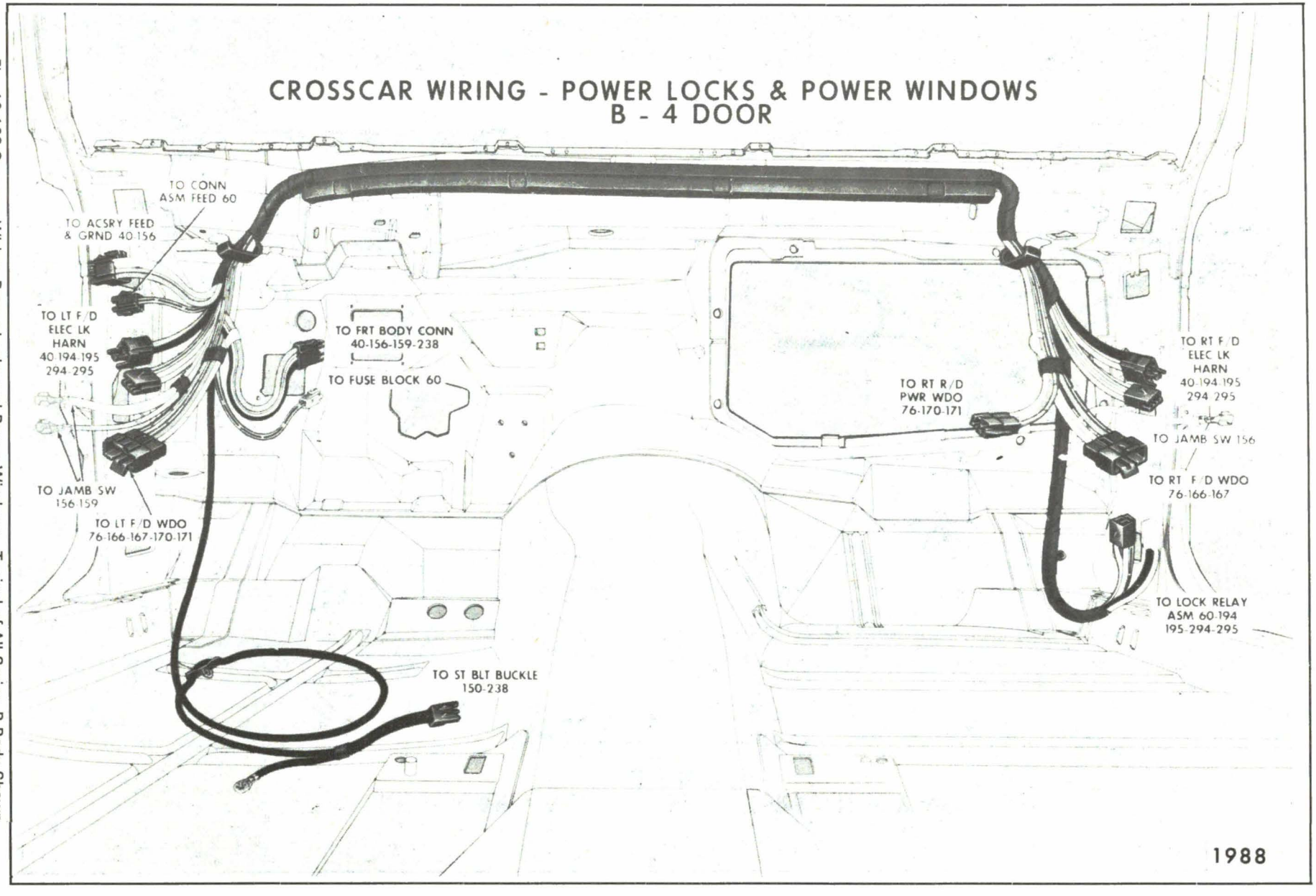


Fig. 10-168-Crosscar Wiring, Power Locks and Power Windows - Typical of All Series, B Body Shown

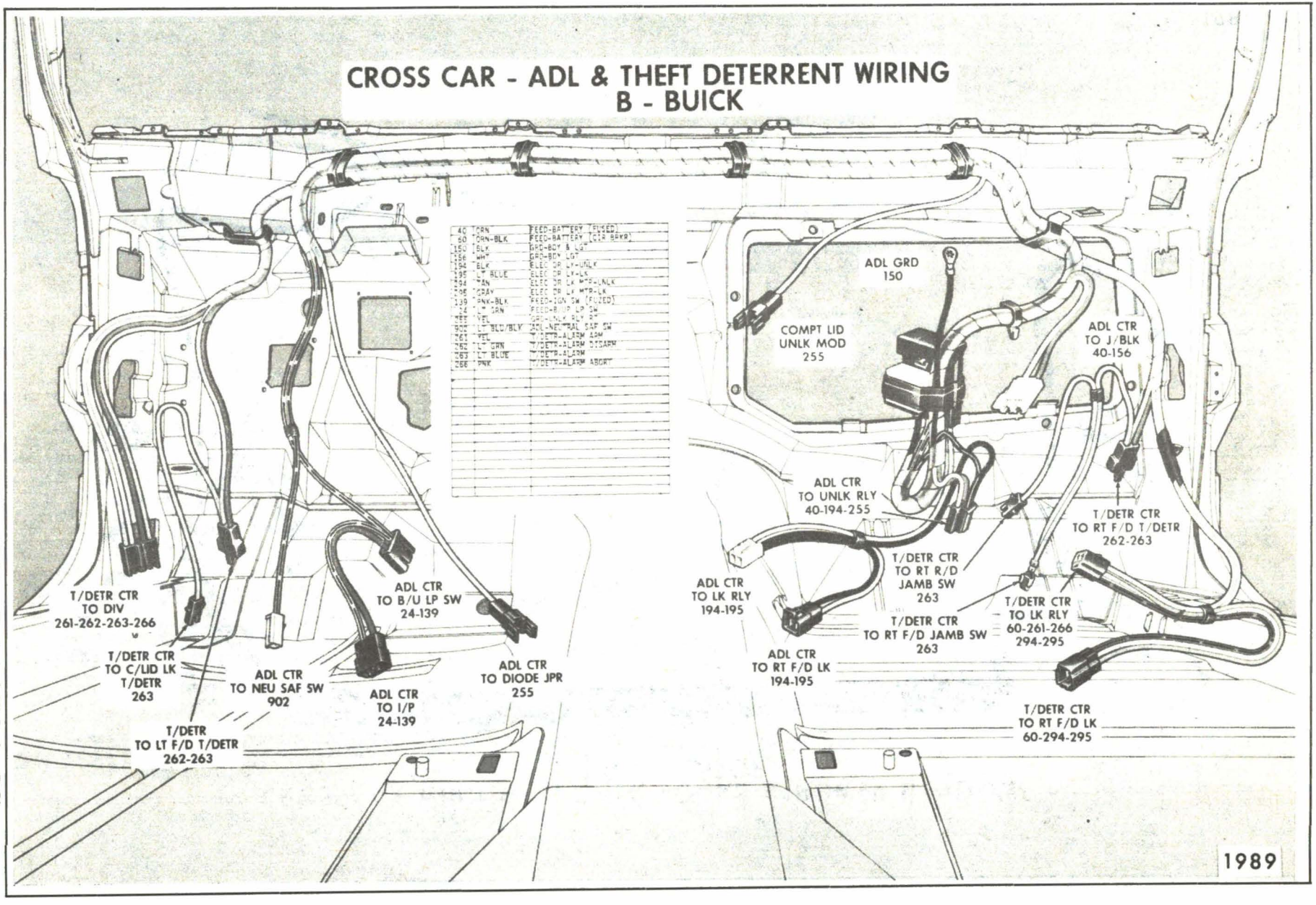


Fig. 10-169-Crosscar, Automatic Door Lock and Theft Deterrent Wiring - Typical of All Series, B Shown

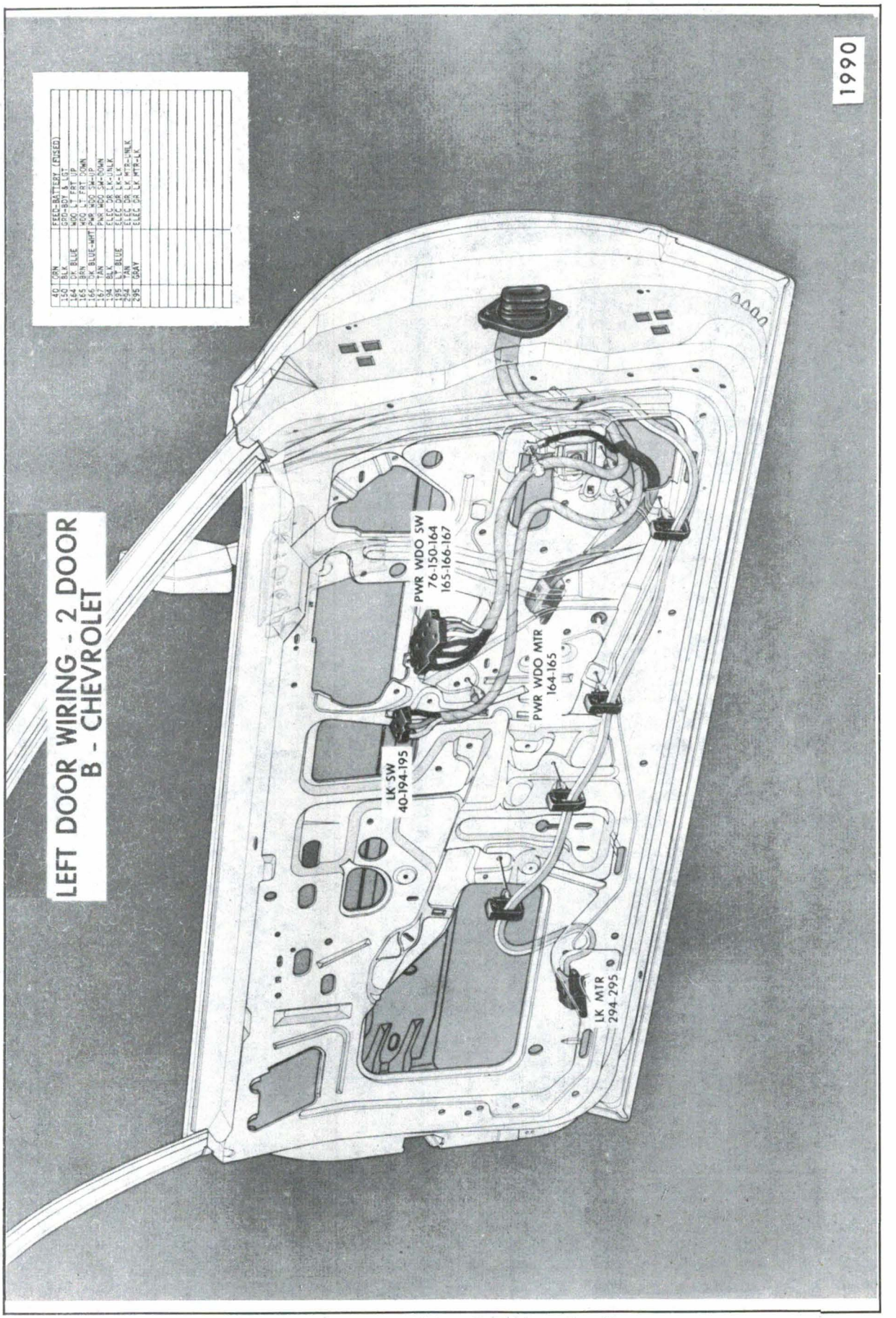


Fig. 10-170-Left Door Wiring - B Chevrolet Two-Door

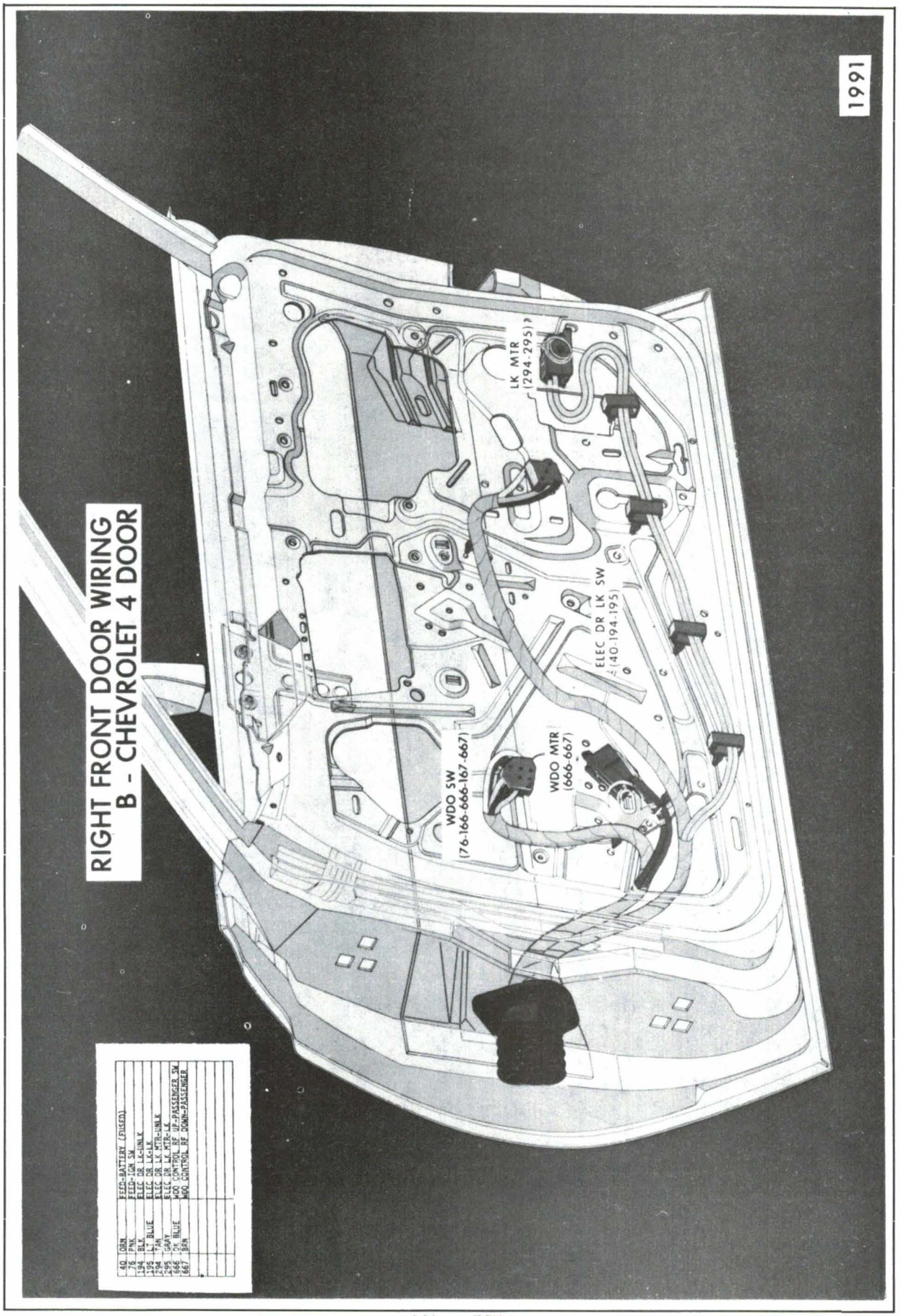
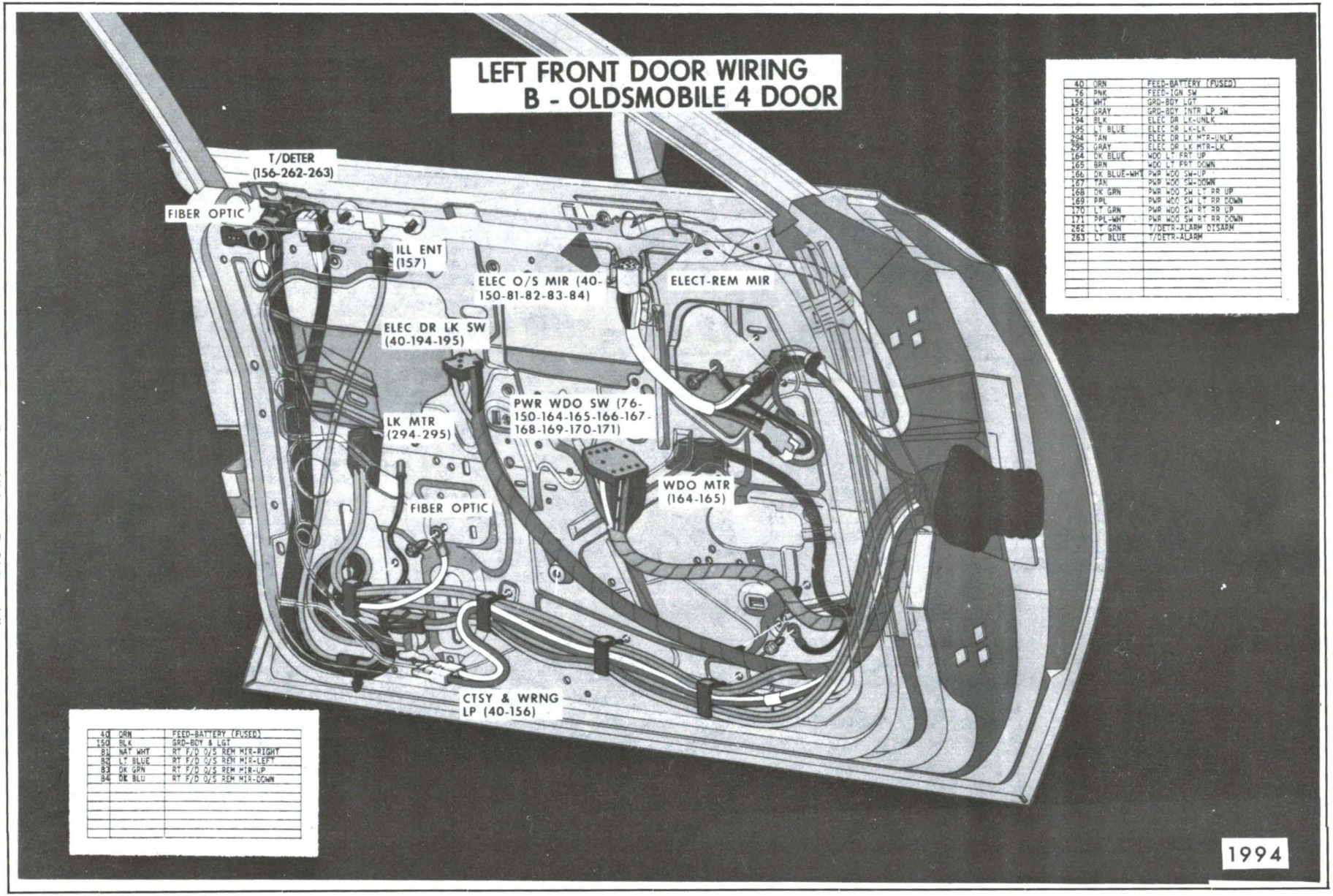


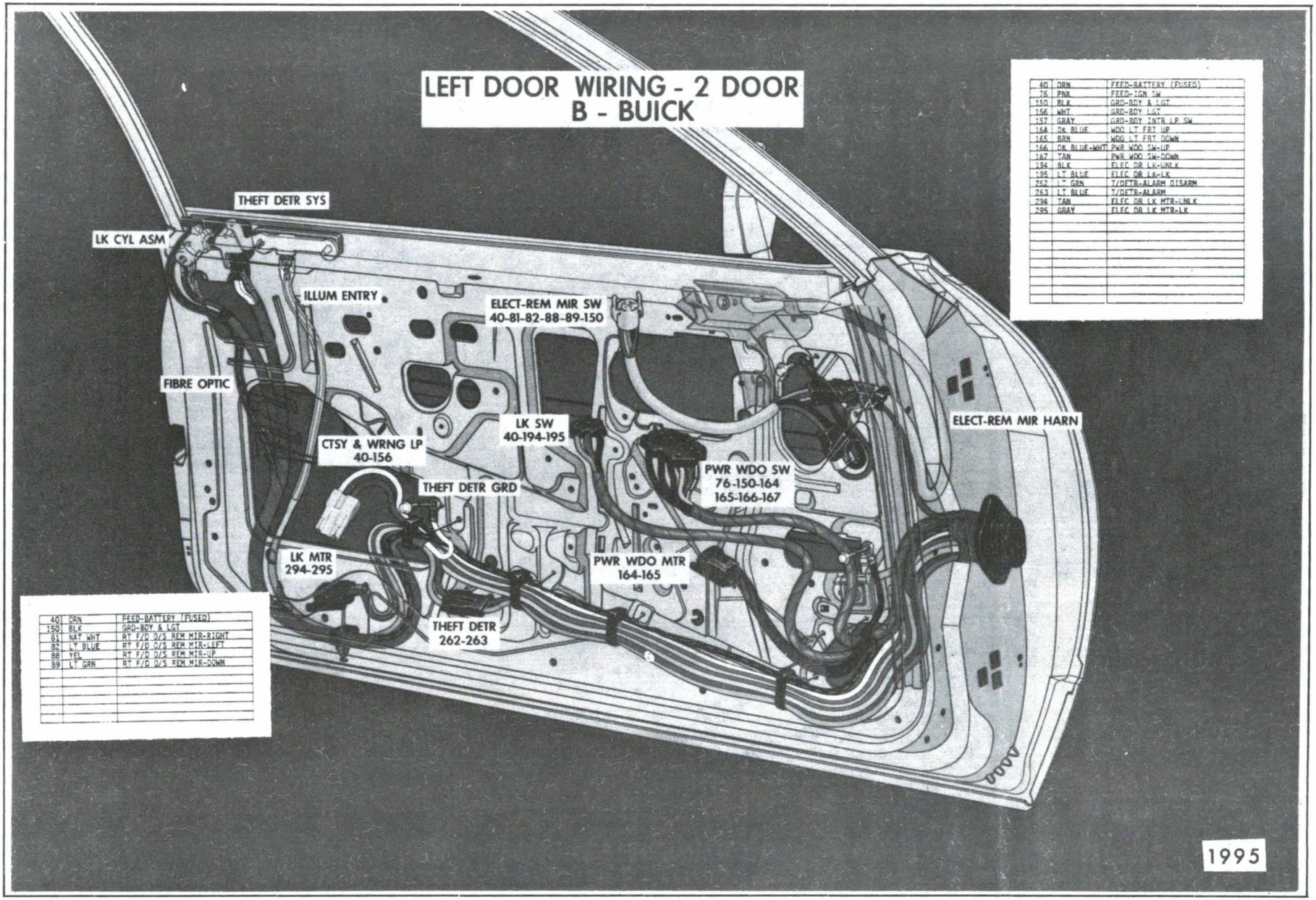
Fig. 10-171-Right Front Door Wiring - B Chevrolet



40	ORN	FEED-BATTERY (FUSED)
76	PNK	FEED-IGN SW
156	WHT	GRD-BDY LGT
157	GRAY	GRD-BDY INTR LP SW
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
164	DK BLUE	WDO LT FRT UP
165	BRN	WDO LT FRT DOWN
166	DK BLUE-WHT	PWR WDO SW-UP
167	TAN	PWR WDO SW-DOWN
168	DK GRN	PWR WDO SW LT RR UP
169	PPL	PWR WDO SW LT RR DOWN
170	LT GRN	PWR WDO SW RT RR UP
171	PPL-WHT	PWR WDO SW RT RR DOWN
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM

40	ORN	FEED-BATTERY (FUSED)
150	BLK	GRD-BDY & LGT
81	NAT WHT	RT F/D O/S REM MIR-RIGHT
82	LT BLUE	RT F/D O/S REM MIR-LEFT
83	DK GRN	RT F/D O/S REM MIR-UP
84	DK BLU	RT F/D O/S REM MIR-DOWN

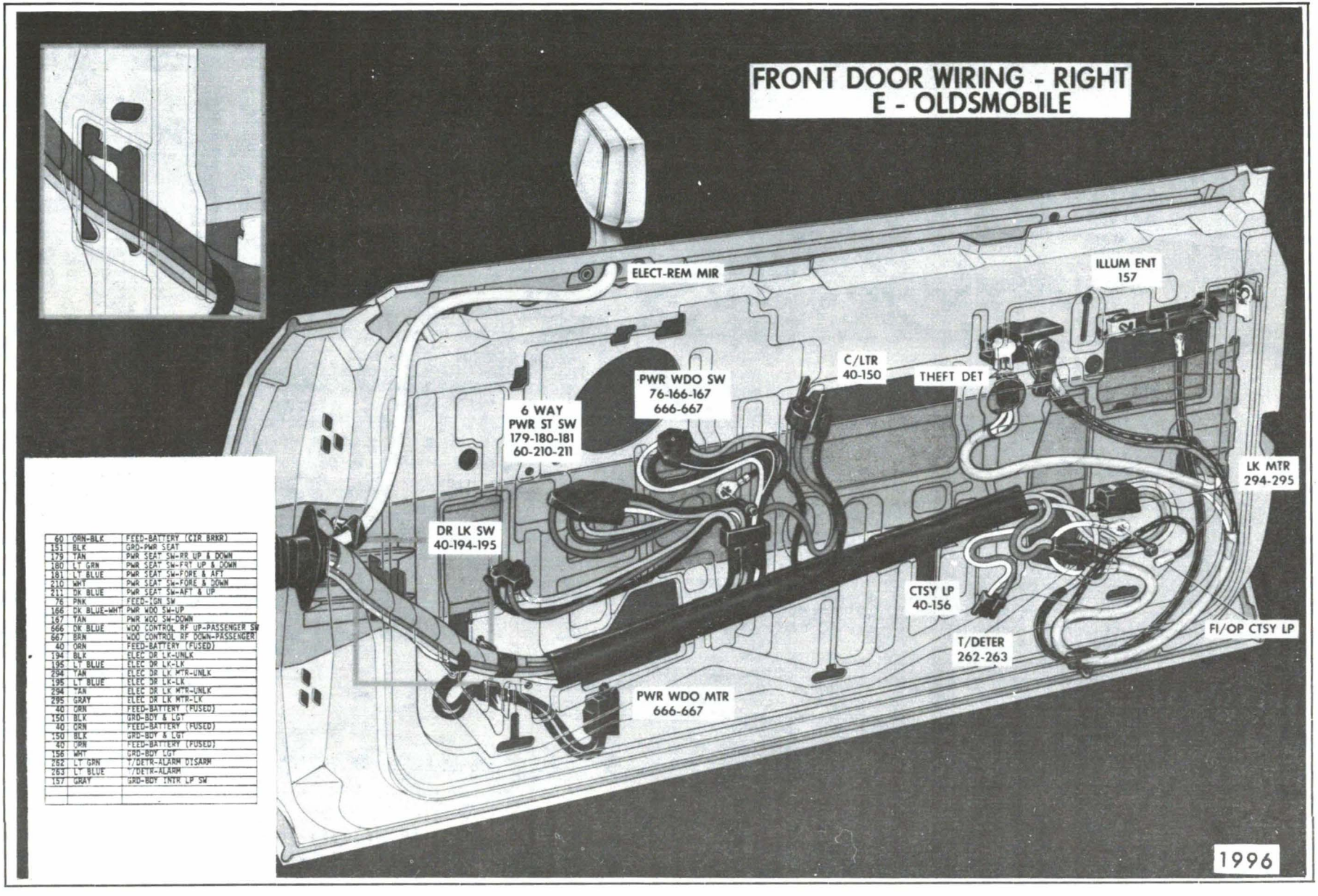
Fig. 10-172-Left Front Door Wiring - B Oldsmobile



40	ORN	FEED-BATTERY (FUSED)
150	BLK	GRD-BDY & LGT
81	NAT WHT	RT F/D D/S REM MIR-RIGHT
82	LT BLUE	RT F/D D/S REM MIR-LEFT
88	YEL	RT F/D D/S REM MIR-UP
89	LT GRN	RT F/D D/S REM MIR-DOWN

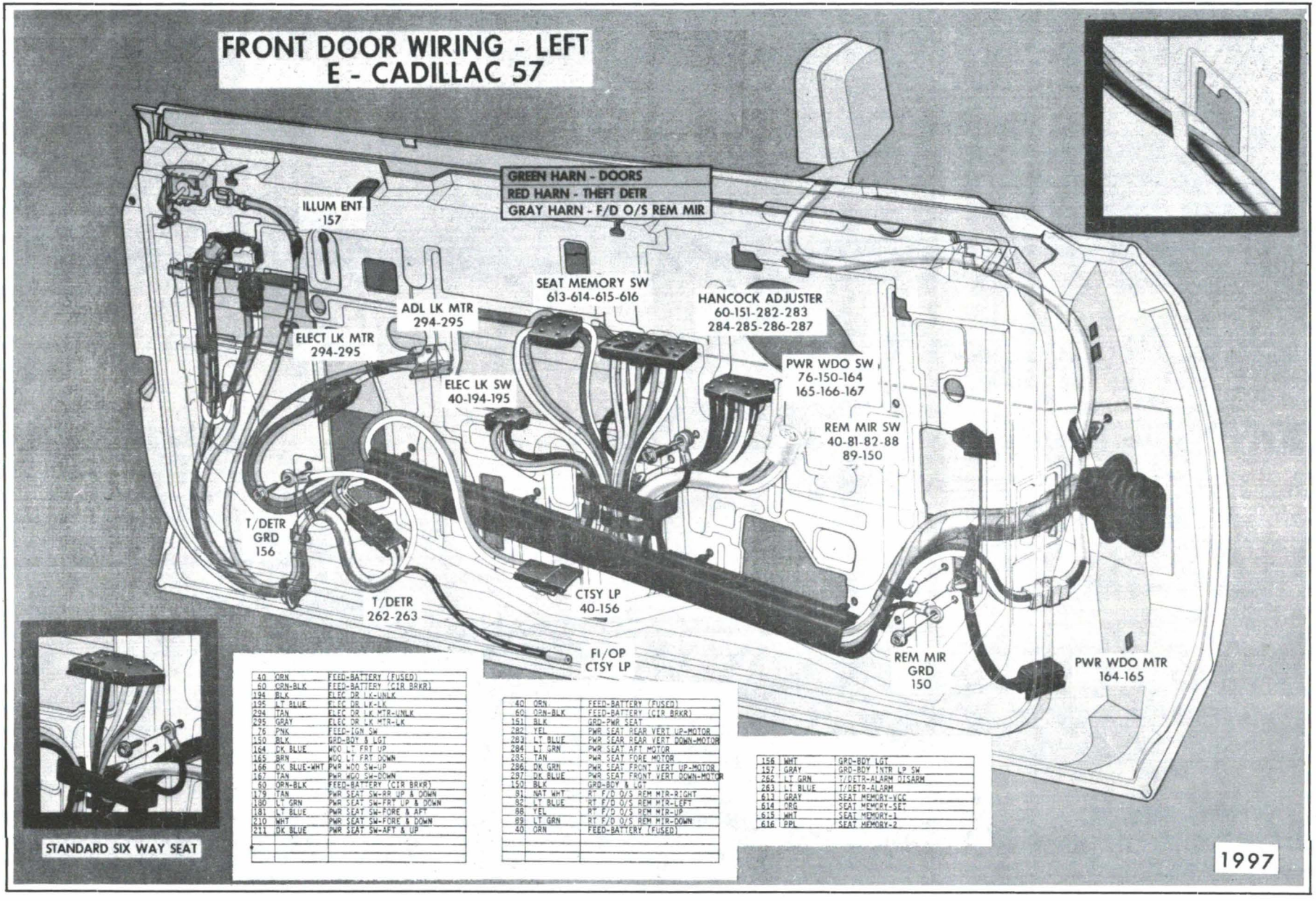
40	ORN	FEED-BATTERY (FUSED)
76	PNK	FEED-IGN SW
150	BLK	GRD-BDY & LGT
156	WHT	GRD-BDY LGT
157	GRAY	GRD-BDY INTR LP SW
164	DK BLUE	WDO LT FRT UP
165	BRN	WDO LT FRT DOWN
166	DK BLUE-WHT	PWR WDO SW-UP
167	TAN	PWR WDO SW-DOWN
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK

Fig. 10-173-Left Door Wiring - B Buick Two-Door



60	ORN-BLK	FEED-BATTERY (CIR BRKR)
151	BLK	GRD-PWR SEAT
179	TAN	PWR SEAT SW-RR UP & DOWN
180	LT GRN	PWR SEAT SW-FRT UP & DOWN
181	LT BLUE	PWR SEAT SW-FORE & AFT
210	WHT	PWR SEAT SW-FORE & DOWN
211	DK BLUE	PWR SEAT SW-AFT & UP
76	PNK	FEED-IGN SW
166	DK BLUE-WHT	PWR WDO SW-UP
167	TAN	PWR WDO SW-DOWN
666	DK BLUE	WDO CONTROL RF UP-PASSENGER SW
667	BRN	WDO CONTROL RF DOWN-PASSENGER
40	ORN	FEED-BATTERY (FUSED)
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
40	ORN	FEED-BATTERY (FUSED)
150	BLK	GRD-BDY & LGT
40	ORN	FEED-BATTERY (FUSED)
150	BLK	GRD-BDY & LGT
40	ORN	FEED-BATTERY (FUSED)
156	WHT	GRD-BDY LGT
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
157	GRAY	GRD-BDY INTR LP SW

Fig. 10-174-Right Door Wiring - E Oldsmobile



40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
76	PNK	FEED-IGN SW
150	BLK	GRD-BDY & LGT
164	DK BLUE	WDO LT FRT UP
165	BRN	WDO LT FRT DOWN
166	DK BLUE-WHT	PWR WDO SW-UP
167	TAN	PWR WDO SW-DOWN
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
179	TAN	PWR SEAT SW-RR UP & DOWN
180	LT GRN	PWR SEAT SW-FRT UP & DOWN
181	LT BLUE	PWR SEAT SW-FORE & AFT
210	WHT	PWR SEAT SW-FORE & DOWN
211	DK BLUE	PWR SEAT SW-AFT & UP

40	ORN	FEED-BATTERY (FUSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
151	BLK	GRD-PWR SEAT
282	YEL	PWR SEAT REAR VERT UP-MOTOR
283	LT BLUE	PWR SEAR REAR VERT DOWN-MOTOR
284	LT GRN	PWR SEAT AFT MOTOR
285	TAN	PWR SEAT FORE MOTOR
286	DK GRN	PWR SEAT FRONT VERT UP-MOTOR
287	DK BLUE	PWR SEAT FRONT VERT DOWN-MOTOR
150	BLK	GRD-BDY & LGT
81	NAT WHT	RT F/D O/S REM MIR-RIGHT
82	LT BLUE	RT F/D O/S REM MIR-LEFT
88	YEL	RT F/D O/S REM MIR-UP
89	LT GRN	RT F/D O/S REM MIR-DOWN
40	ORN	FEED-BATTERY (FUSED)

156	WHT	GRD-BDY LGT
157	GRAY	GRD-BDY INTR LP SW
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
613	GRAY	SEAT MEMORY-VCC
614	ORG	SEAT MEMORY-SET
615	WHT	SEAT MEMORY-1
616	PPL	SEAT MEMORY-2

Fig. 10-175-Left Door Wiring - E Cadillac

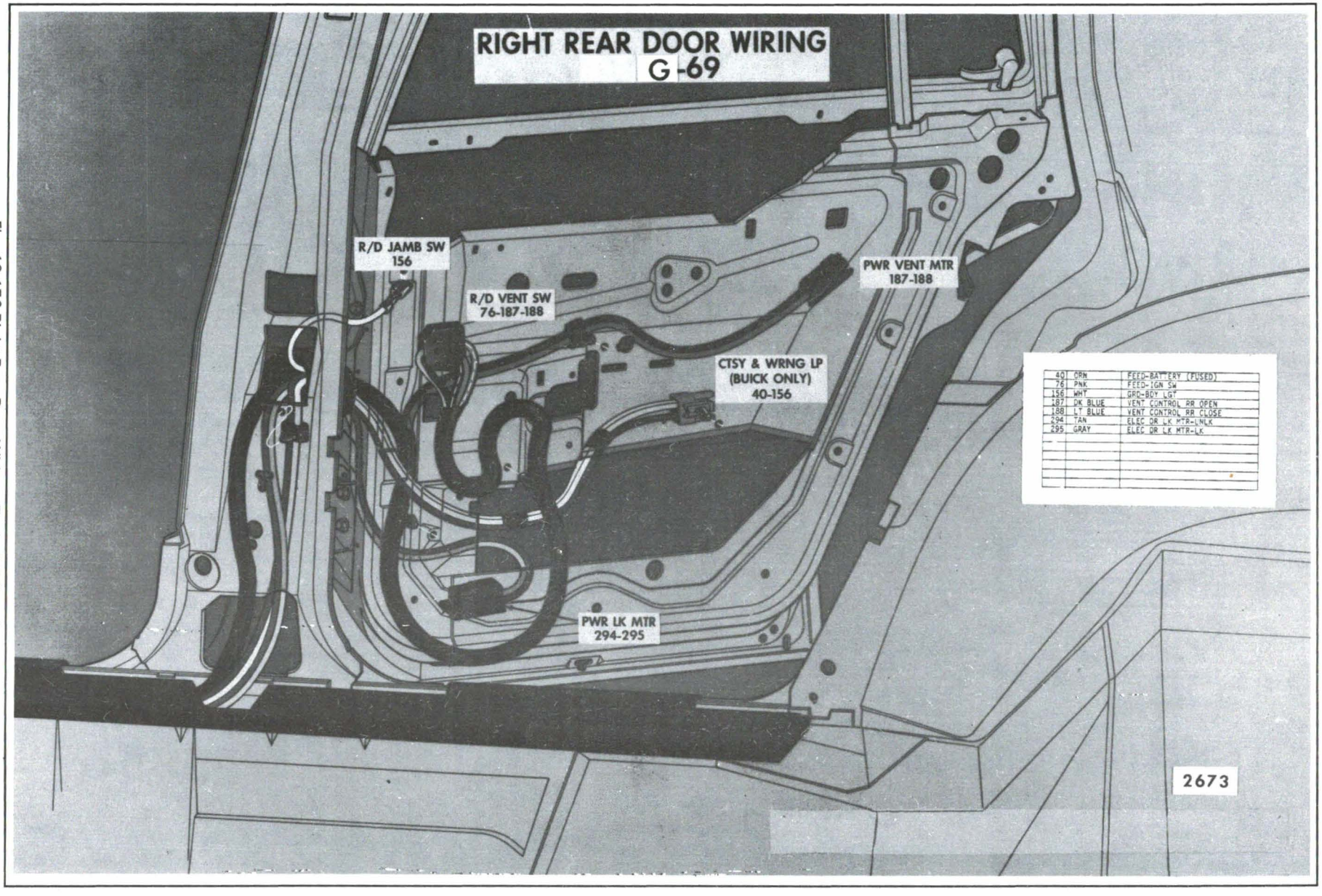


Fig. 10-176-Right Rear Door Wiring - Typical G Four-Door

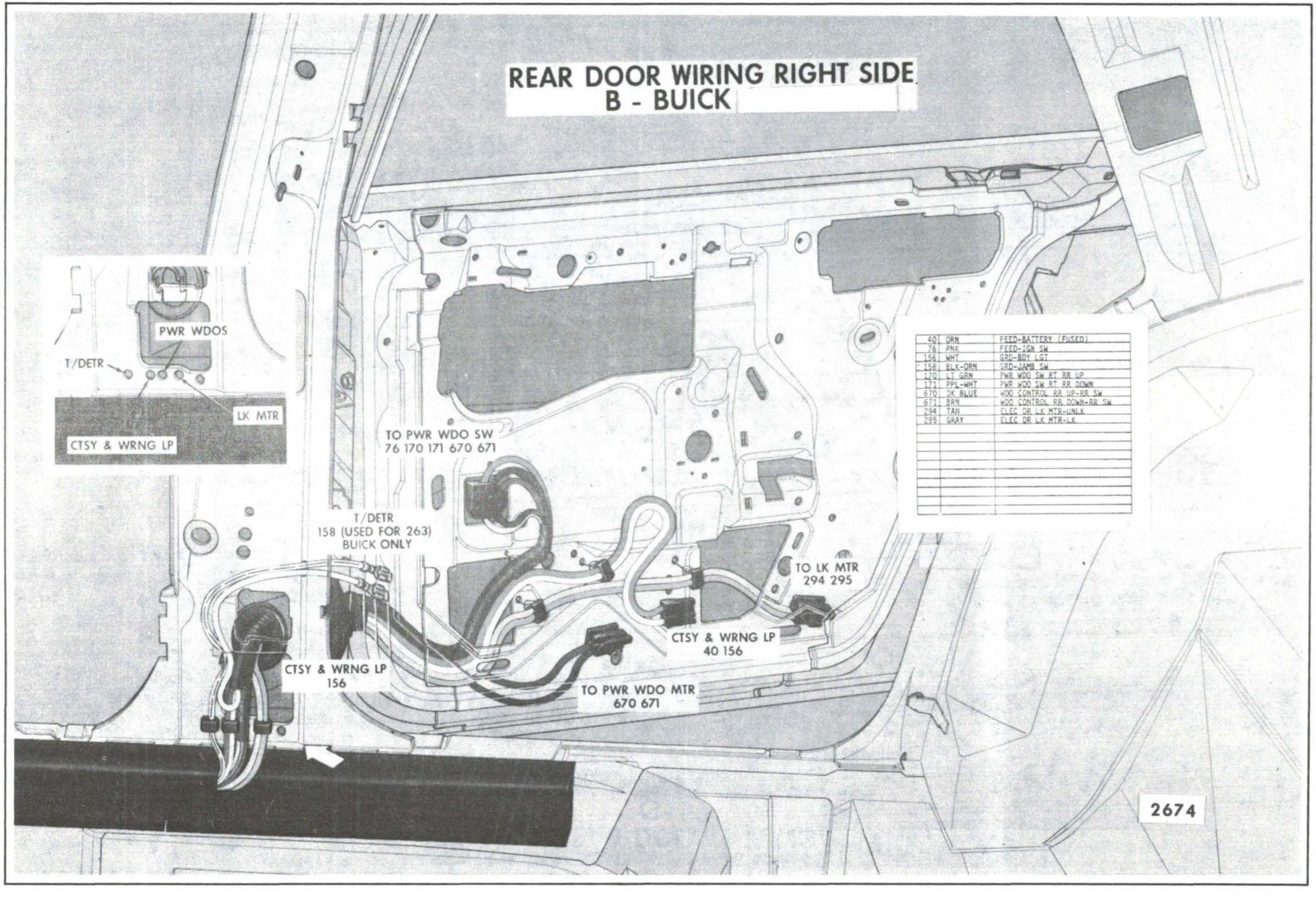


Fig. 10-177-Rear Door Wiring Right Side - Typical B Four-Door

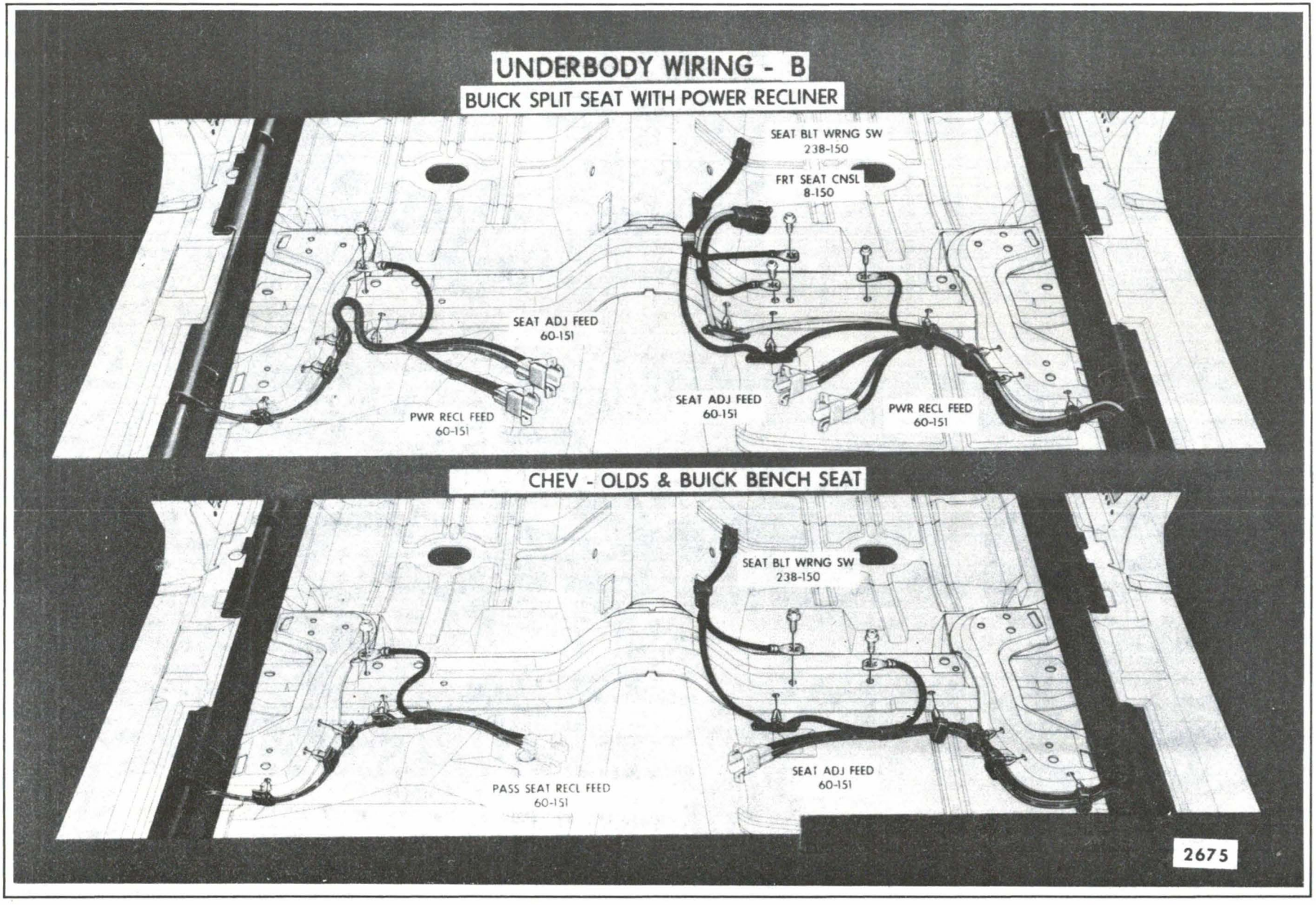


Fig. 10-178-Underbody Wiring - B Bodies

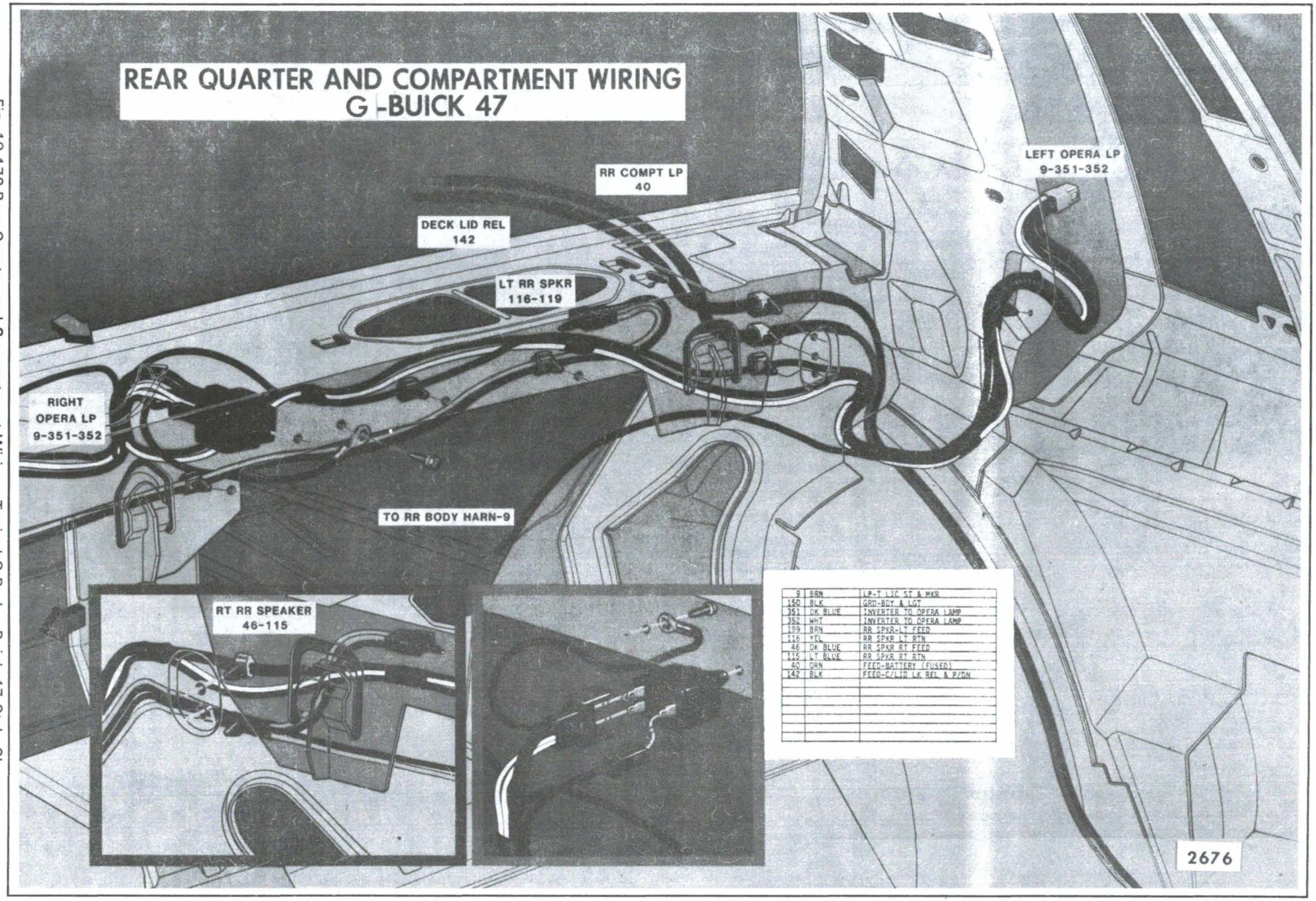


Fig. 10-179-Rear Quarter and Compartment Wiring - Typical G Body - Buick 47 Style Shown

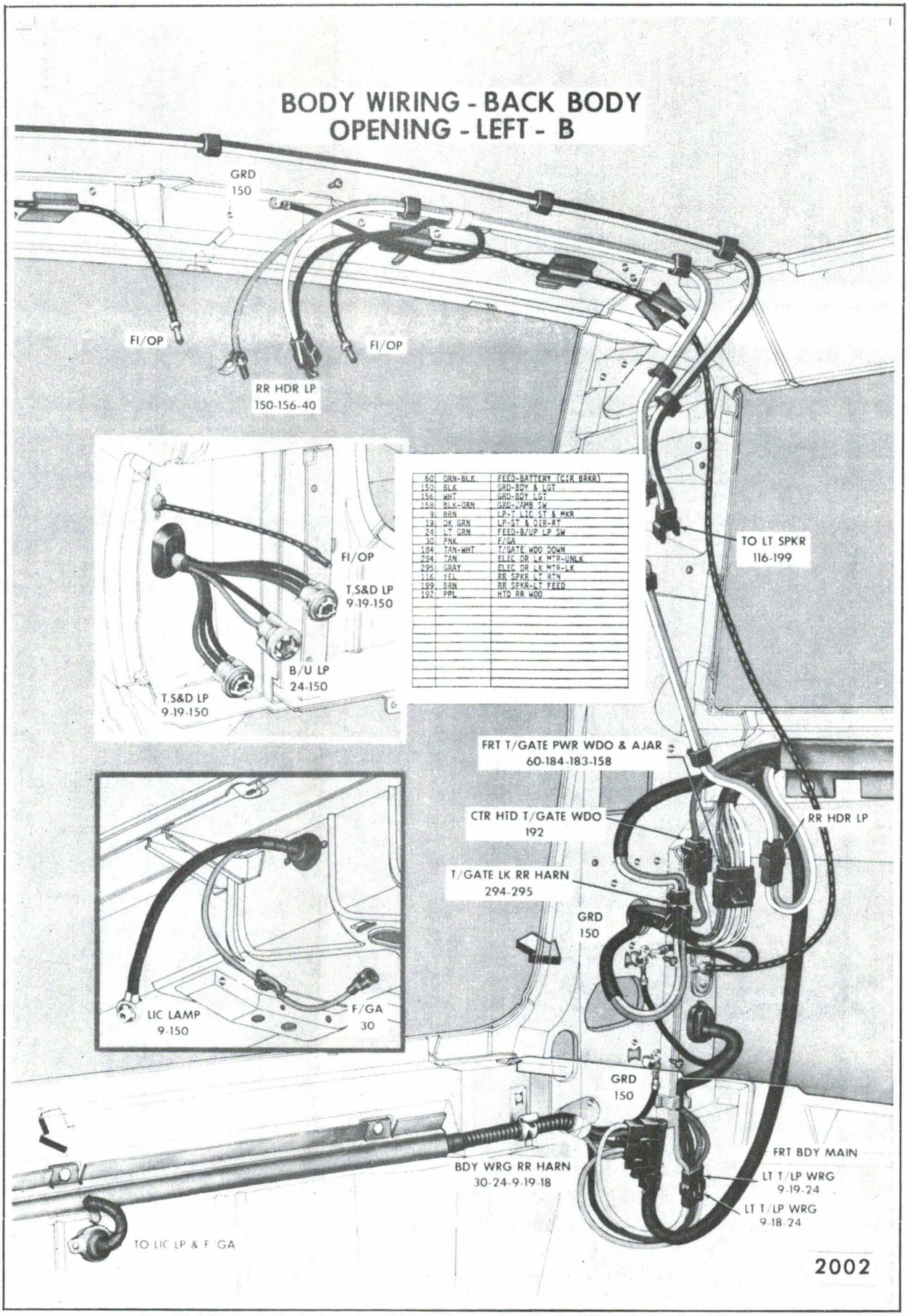


Fig. 10-180-Back Body Opening Wiring, Left Side - Typical B Body Station Wagon

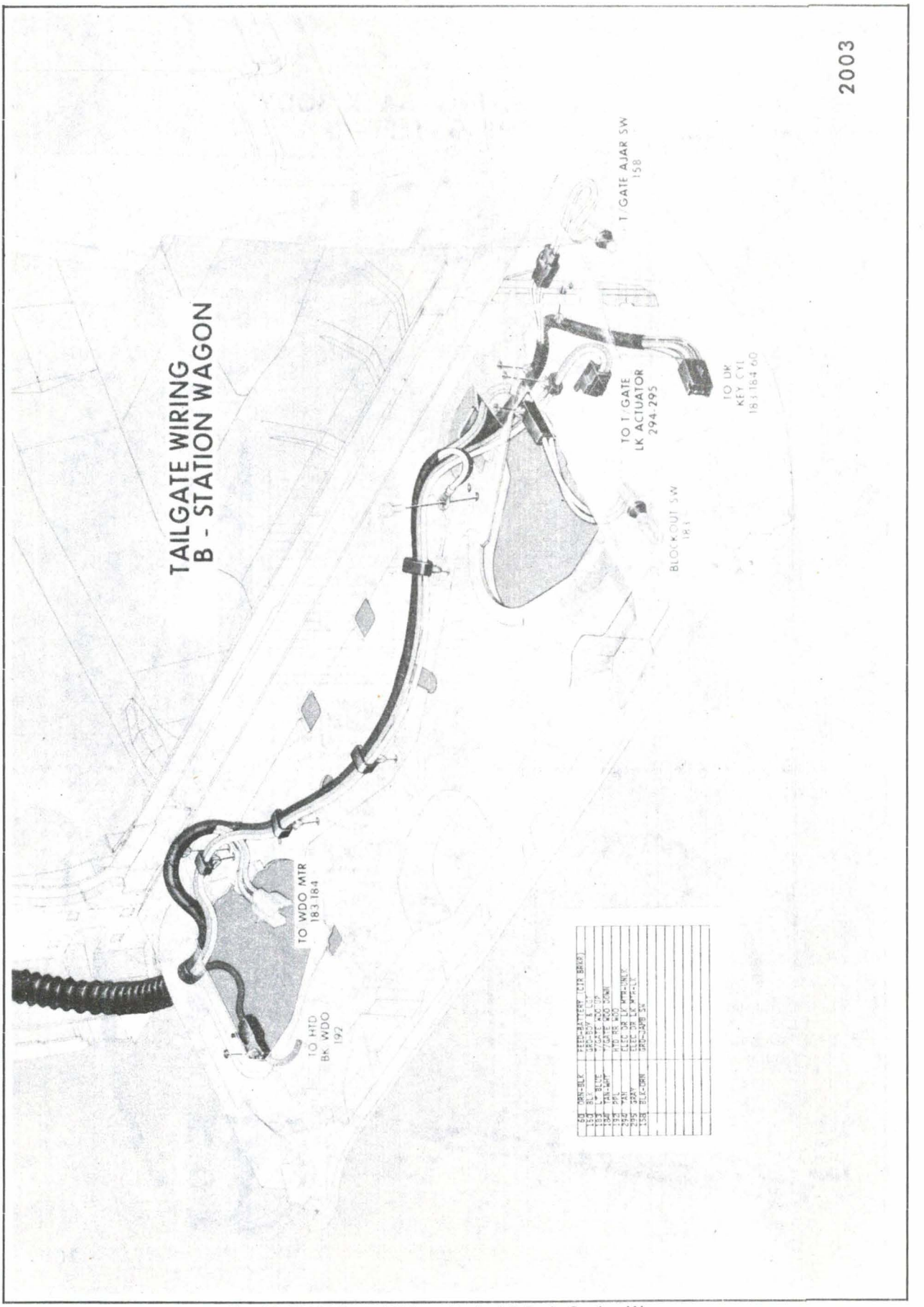


Fig. 10-181-Tailgate Wiring - Typical B Body Station Wagon

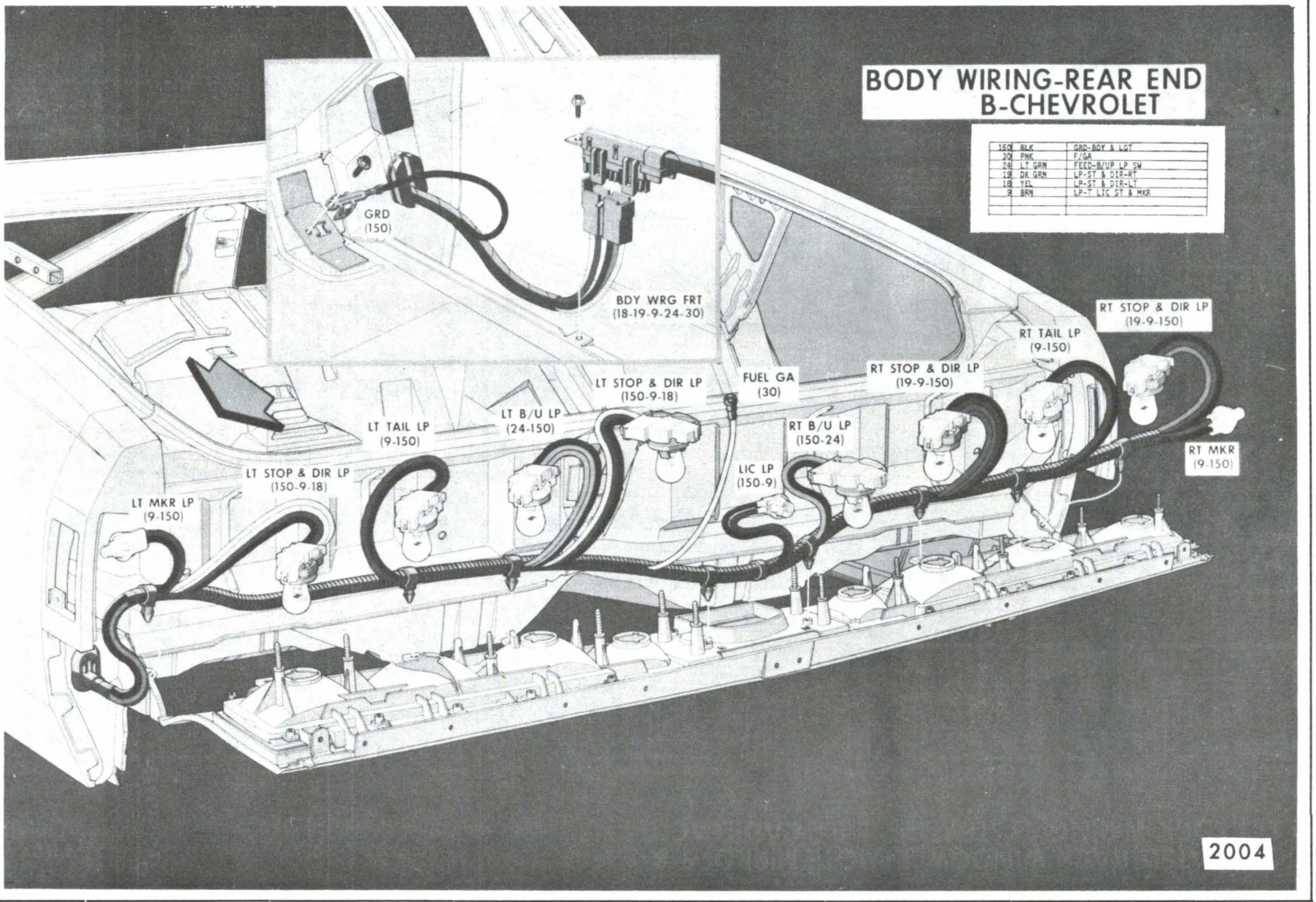


Fig. 10-182-Body Wiring, Rear End - Typical B Body, Chevrolet Shown

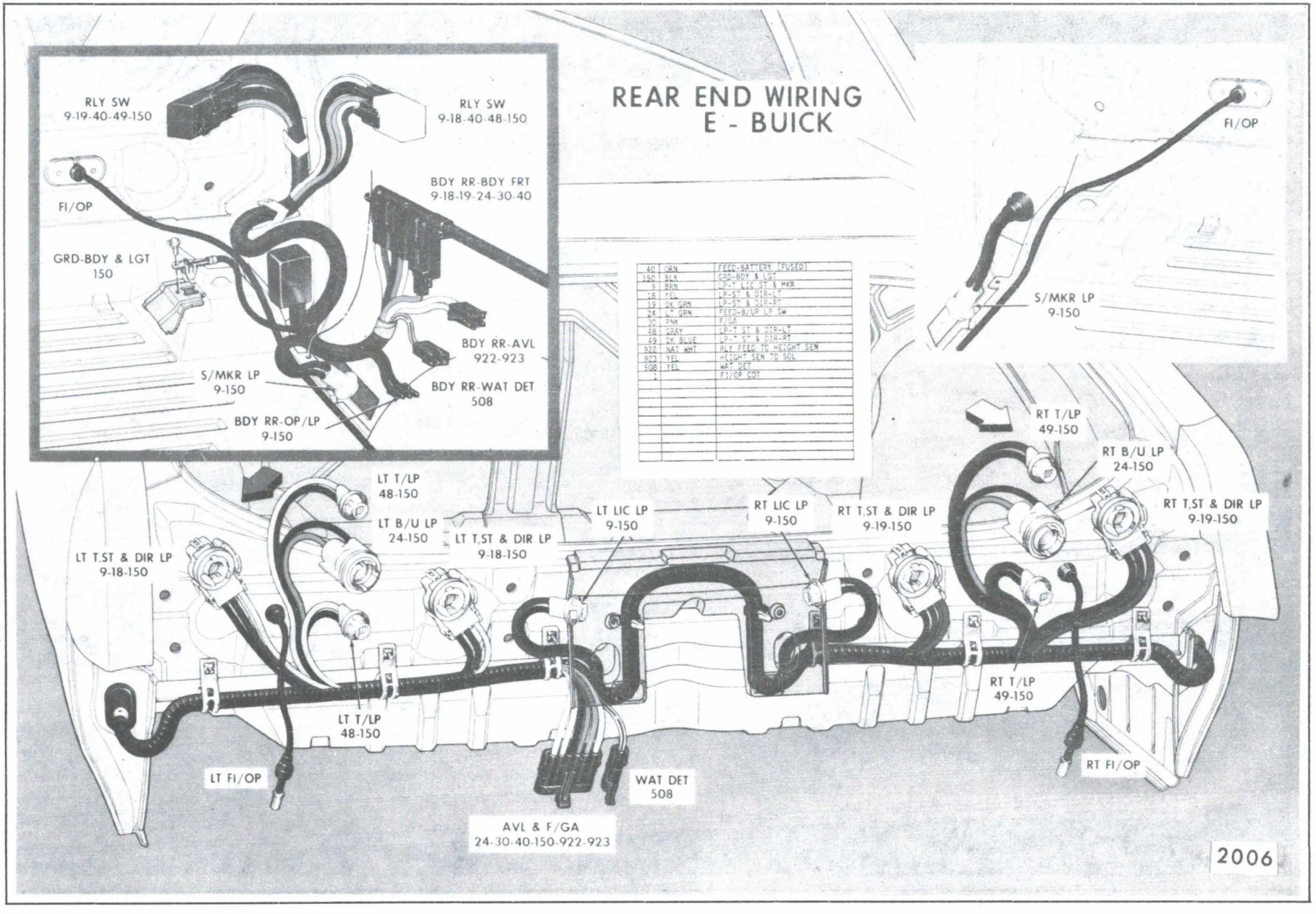


Fig. 10-183-Body Wiring, Rear End - Typical B Body, E Buick

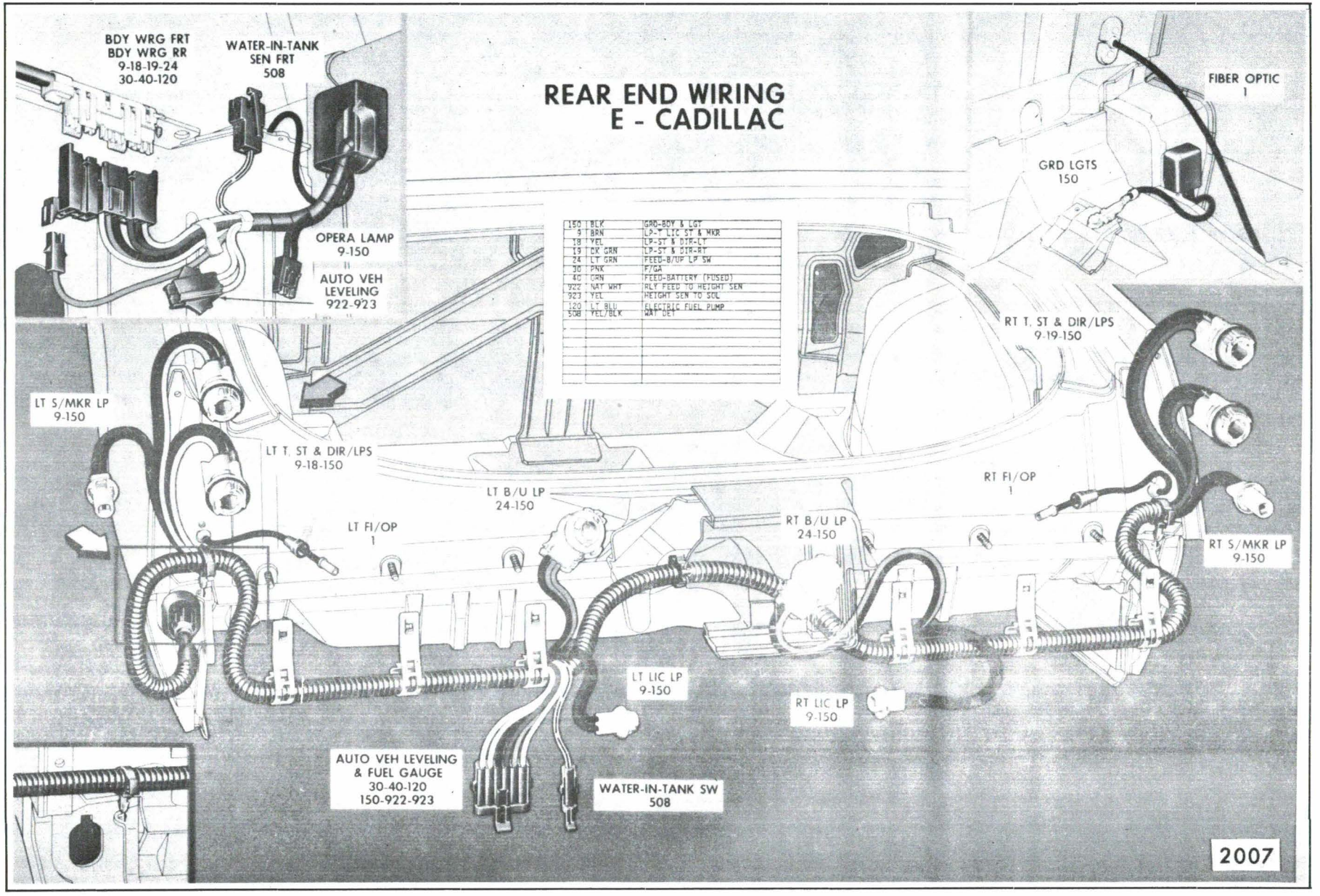


Fig. 10-184-Body Wiring, Rear End - Typical B Body, E Cadillac

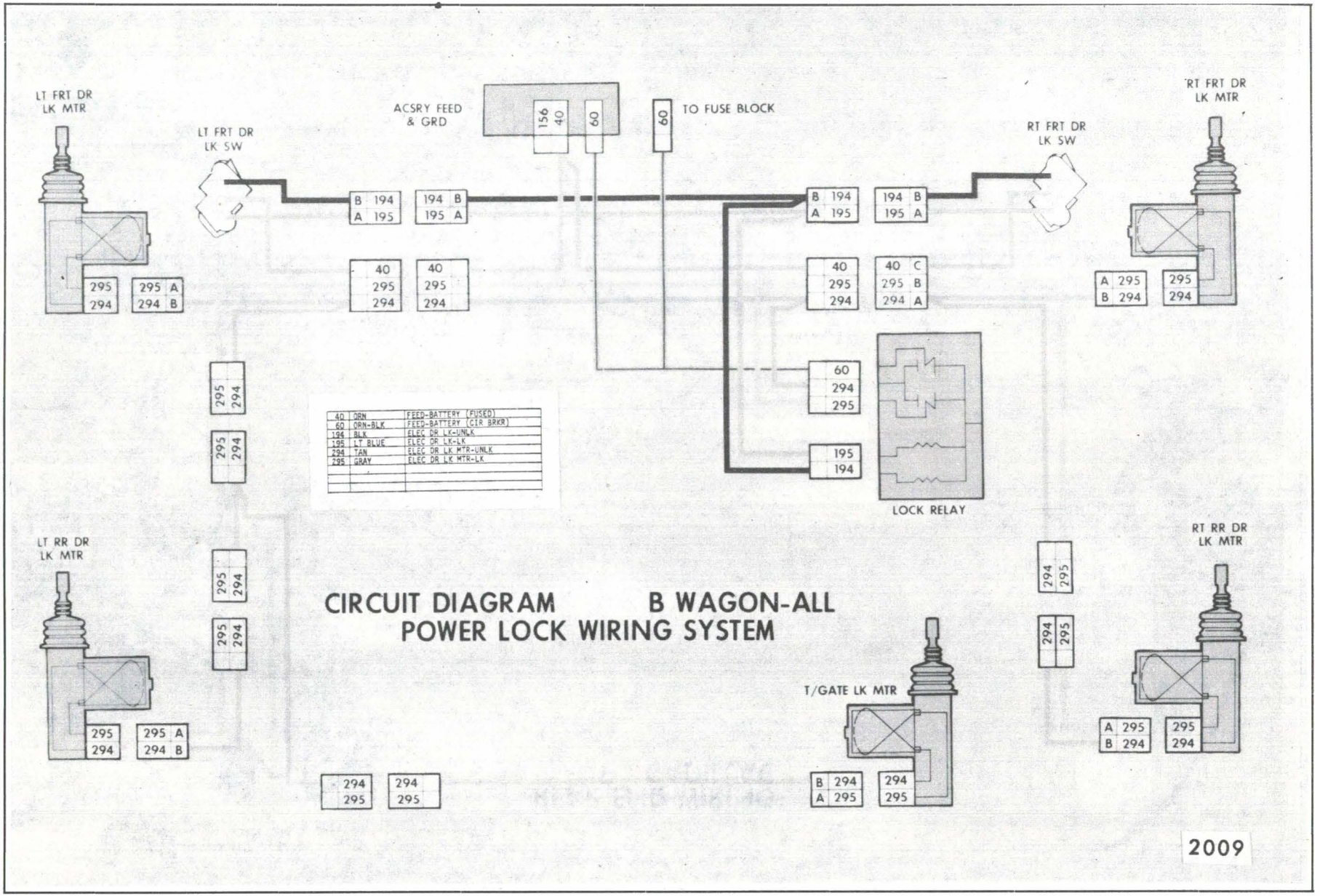


Fig. 10-185-Circuit Diagram, Power Lock Wiring - B Station Wagon

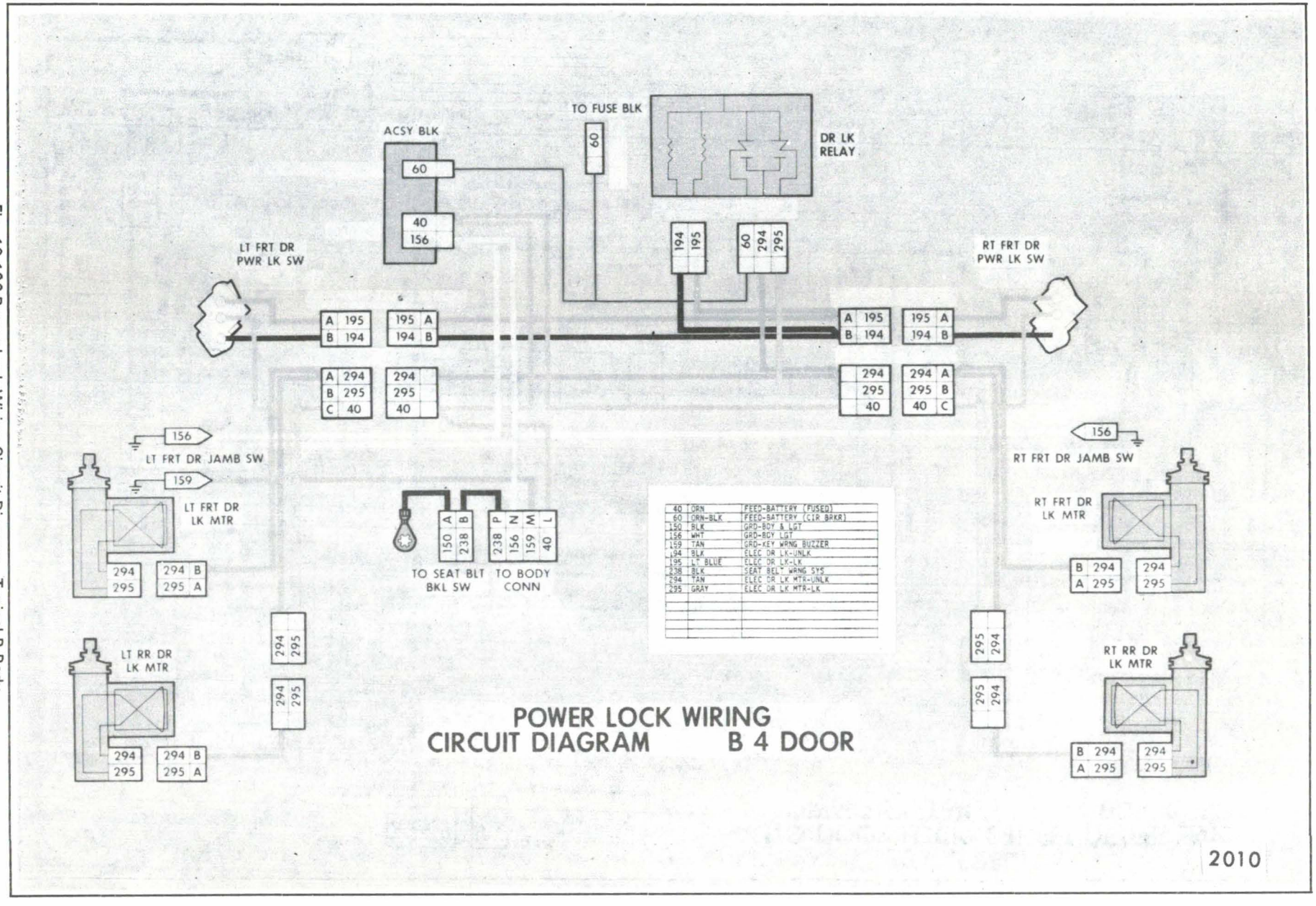
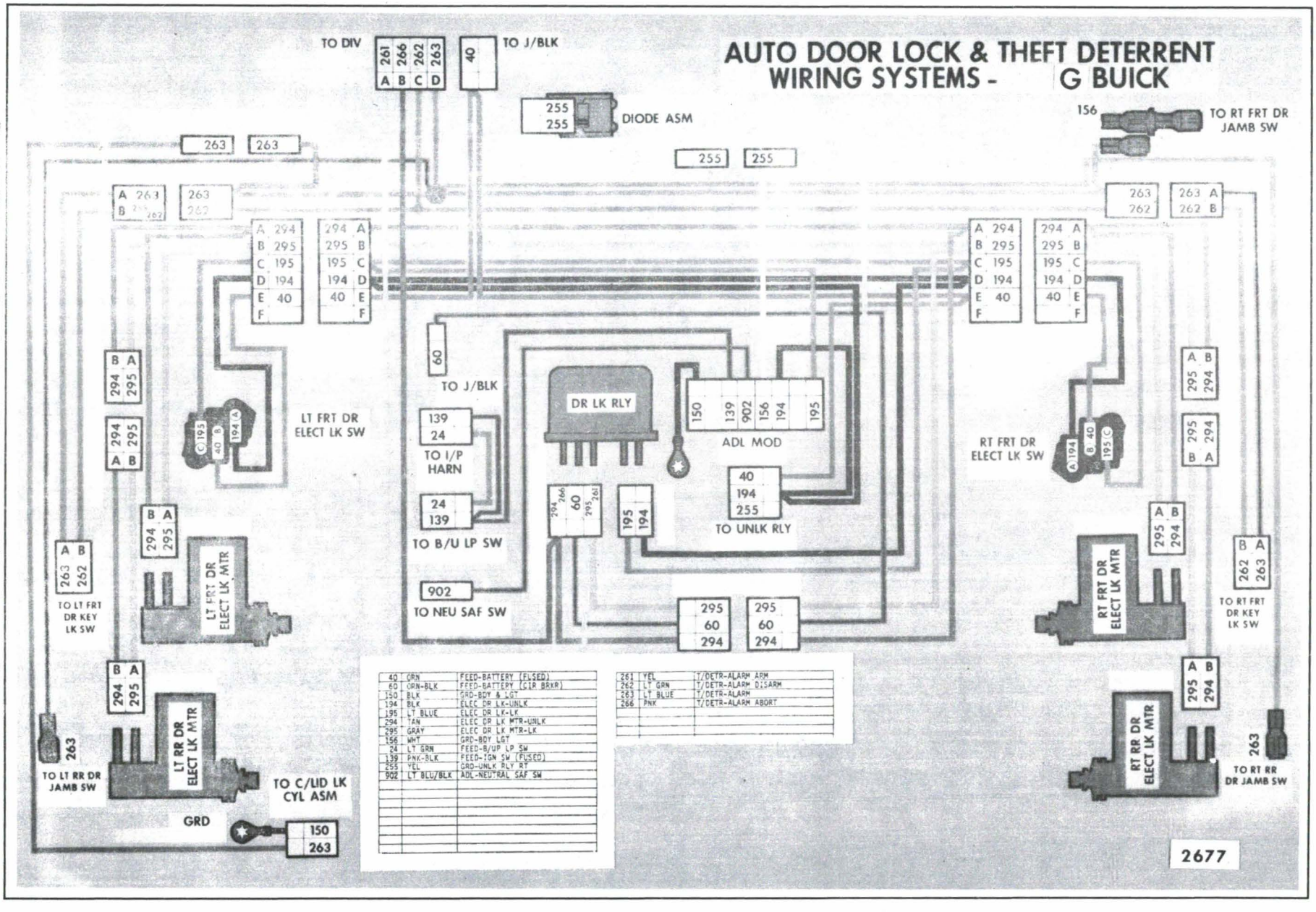


Fig. 10-186-Power Lock Wiring Circuit Diagram - Typical B Body



40	ORN	FEED-BATTERY (ELSED)
60	ORN-BLK	FEED-BATTERY (CIR BRKR)
150	BLK	GRD-BDY & LGT
194	BLK	ELEC DR LK-UNLK
195	LT BLUE	ELEC DR LK-LK
294	TAN	ELEC DR LK MTR-UNLK
295	GRAY	ELEC DR LK MTR-LK
156	WHT	GRD-BDY LGT
24	LT GRN	FEED-B/UP LP SW
139	PNK-BLK	FEED-IGN SW (FUSED)
255	YEL	GRD-UNLK RLY RT
902	LT BLU/BLK	ADL-NEUTRAL SAF SW

261	YEL	T/DETR-ALARM ARM
262	LT GRN	T/DETR-ALARM DISARM
263	LT BLUE	T/DETR-ALARM
266	PNK	T/DETR-ALARM ABORT

Fig. 10-187-Automatic Door Lock and Theft Deterrent Wiring System - G Buick Shown

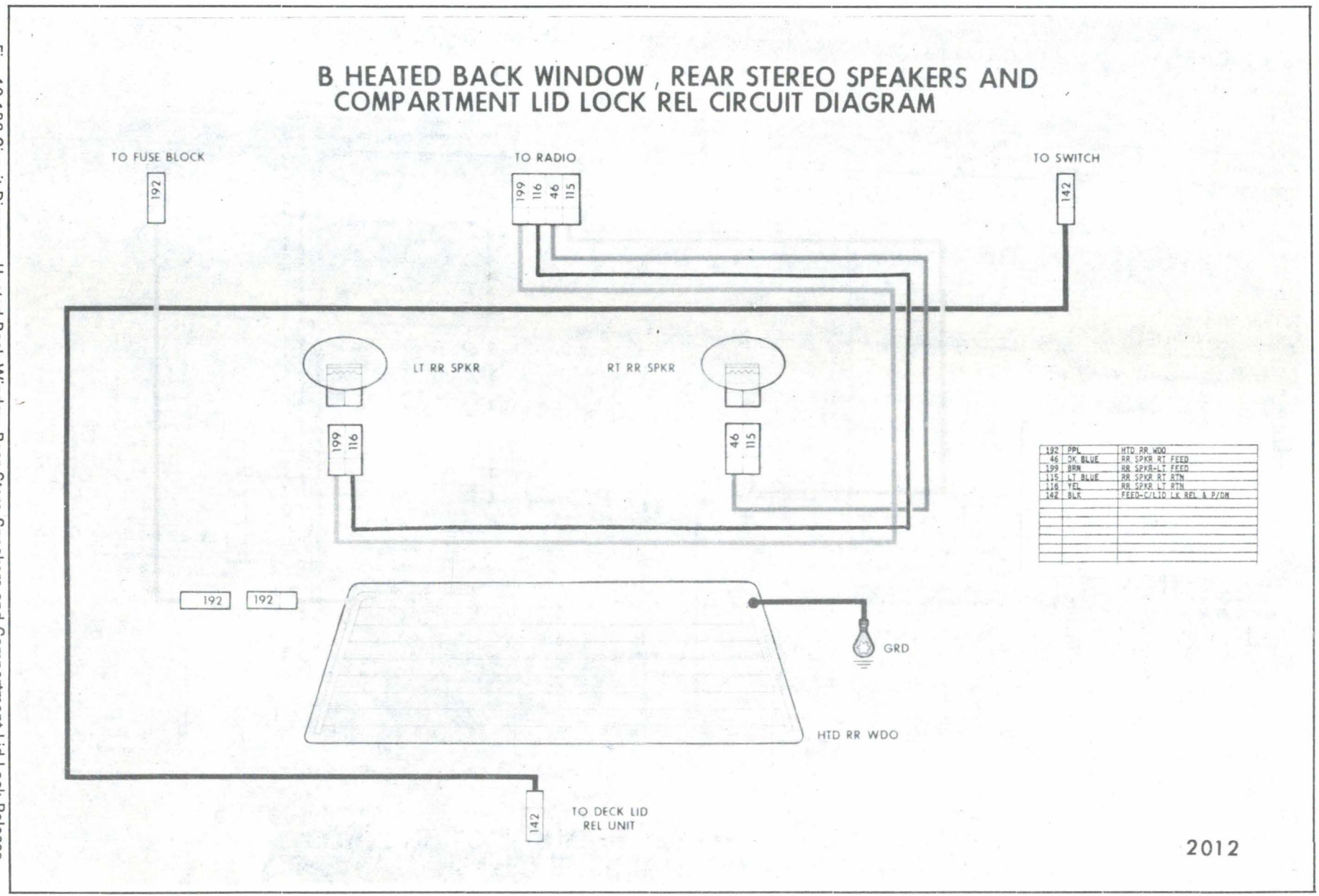


Fig. 10-188-Circuit Diagram, Heated Back Window Rear Stero Speakers and Compartment Lid Lock Release

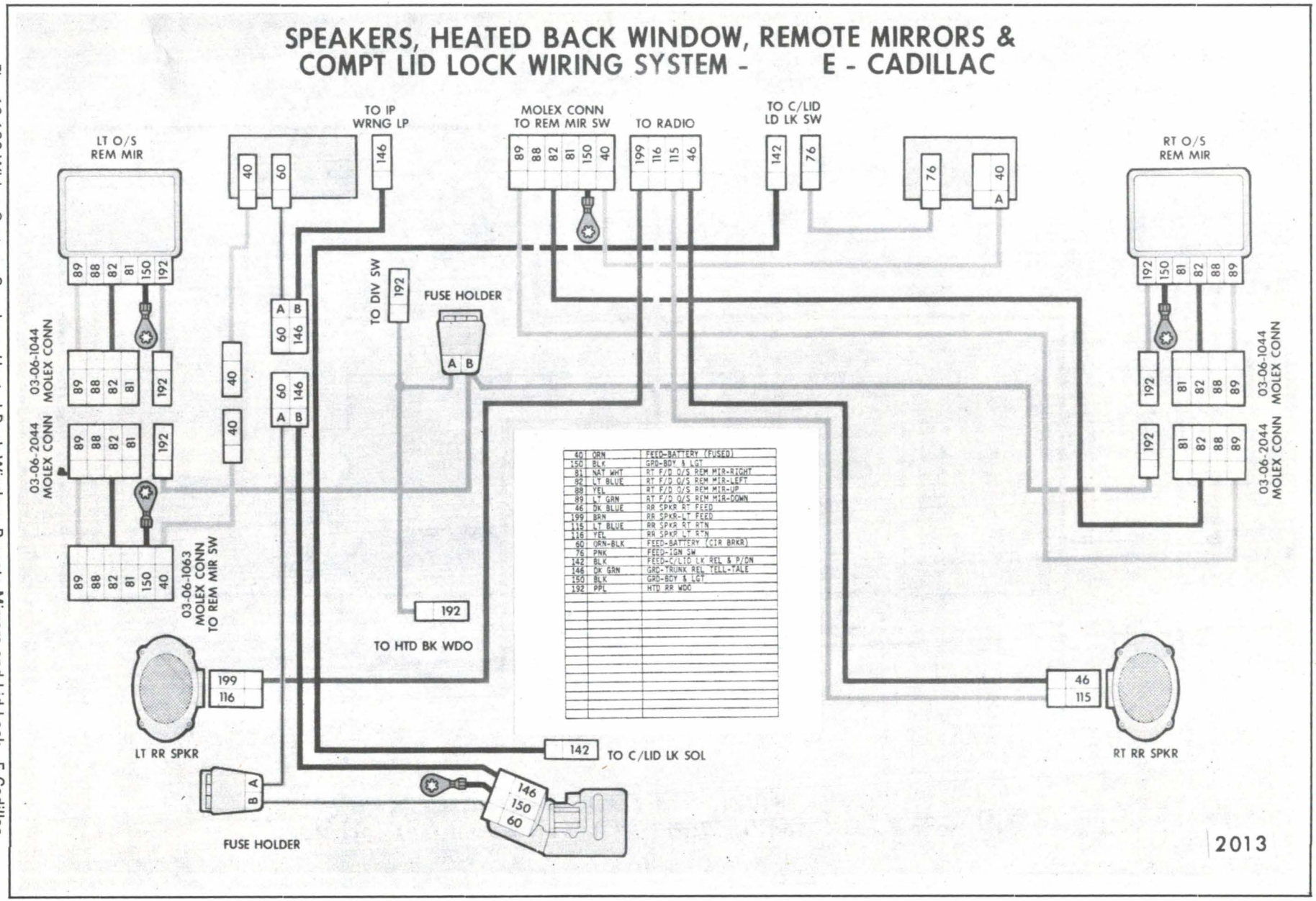


Fig. 10-189-Wiring System, Speakers, Heated Back Window, Remote Mirrors and Lid Lock - E Cadillac

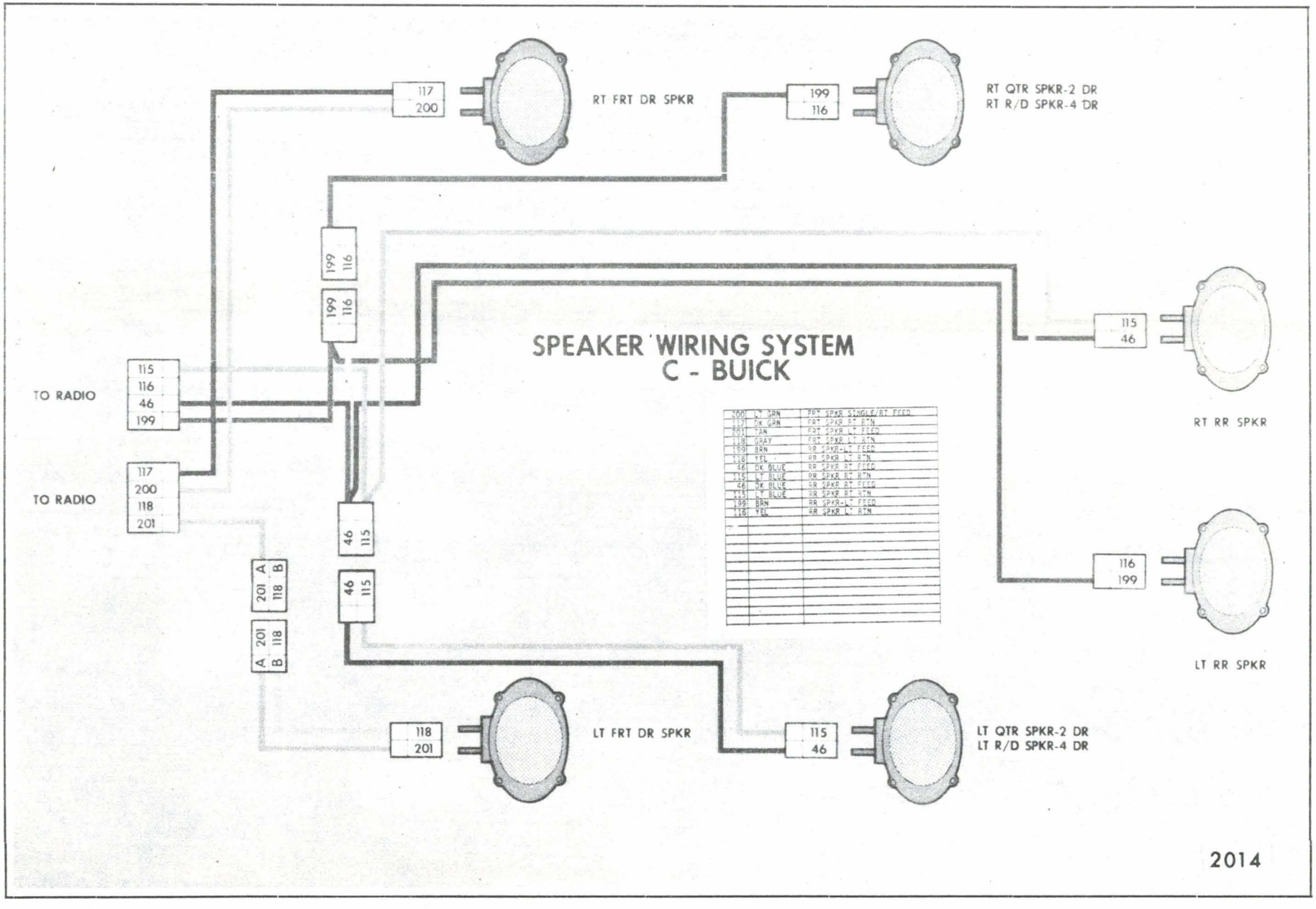


Fig. 10-190-Speaker Wiring System - C Buick

SECTION 11

STATIONARY GLASS

CONTENTS

Glass Polishing 11-1
Reveal Moldings - Stationary Glass 11-2
Stationary Glass 11-4
Adhesive Service Kit 11-4
Glass Removal and Installation 11-4
Short Method 11-4
Extended Method 11-6
Waterleak Correction 11-7
Quarter Window 11-8
Back Window Trim Ring 11-10
Back Window - E and G Styles
Removal 11-10
Installation 11-10
Bonded Rearview Mirror Support 11-12

GLASS POLISHING

REMOVAL OF MINOR SCRATCHES AND ABRASIONS

Minor glass scratches and abrasions on the outside surface of glass can be removed or reduced by using the methods described in this section.

There are two basic types of auto glass: laminated safety plate (used in all windshields) and solid tempered plate (used in side and back windows).

A major concern in glass polishing is the chance of causing double vision in areas of occupant vision. For this reason, polishing of a windshield in occupant's line of vision is more limited than in other areas. Distortion is most apt to result when trying to remove deep scratches. Glass polishing must be performed with care. The items listed below are needed for glass polishing:

1. Low speed (600-1300 RPM) rotary polisher (Skil Model No. 570 or equivalent).
2. Wool felt rotary-type polishing pad, about 76 mm (3″) in diameter and 51 mm (2″) thick.
3. Powdered cerium oxide (No. 14 Rareox or equivalent) mixed with water as the abrasive compound. Follow manufacturer's directions when using any type of polishing compound.
4. Wide mouth container to hold the polish.

Glass Polishing

NOTICE: This operation must not be used on the inside of rear window glass which has heating elements in the glass because the heating elements will be damaged.

1. Mix two parts of polishing compound (No. 14 Rareox or equivalent) with one part water to obtain a creamy mixture.
2. Stir mixture now and then to maintain a creamy texture. Powdered cerium oxide is hard to mix with water and tends to separate.
3. Draw circle around scratches on opposite side of glass with wax marking pencil or crayon. Draw other lines directly behind scratches to serve as guides in finding 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 a few times to insure that pad is well saturated.

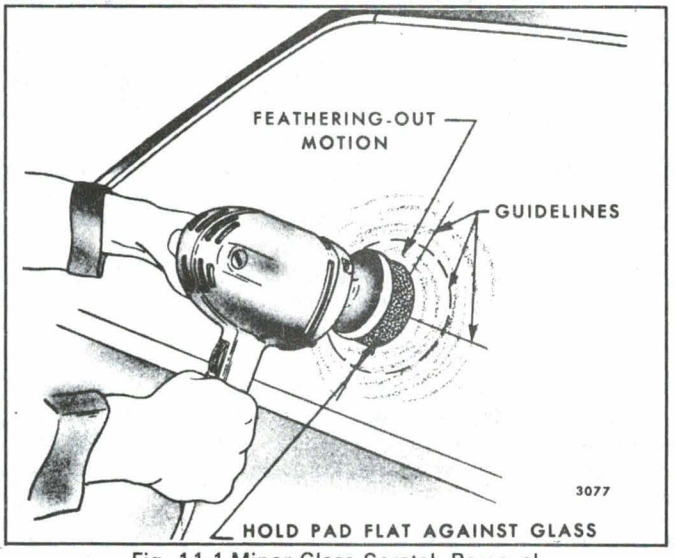


Fig. 11-1-Minor Glass Scratch Removal

Do not 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.
   Avoid heavy pressure. It does not speed-up operation and may cause overheating of glass.
7. Cover enough area around scratch with a feathering-out motion as shown in Figure 11-1, to remove any chance of a bull's-eye.
   Do not hold tool in one spot or use 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 going any 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. A dry pad causes too much heat to build up.
9. After scratch or abrasion is removed, wash glass with water and wipe body clean of any polish.
10. Clean polishing pad.
    Care should be taken during polishing and storage to keep pad free of foreign objects such as dirt, metal filings, etc.

REVEAL MOLDINGS - STATIONARY GLASS

Metal reveal moldings around adhesive caulked 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 proper tool shown in Section 1 of this manual.

The quarter window reveal moldings on all B and C styles are either all vinyl or a combination of vinyl and metal. In order to remove these adhesive retained moldings, the quarter glass must be removed. To gain access to quarter glass, removal of the quarter trim is required. Refer to Section 6 of this manual for removal of quarter trim.

The quarter window reveal moldings on G-37, 47 styles are an integral part of the quarter glass assembly. Therefore, to replace moldings requires replacement of the glass assembly with a service glass which will have the moldings as part of the glass assembly. Refer to the stationary quarter glass area of this section for procedure to service quarter glass.

G-35 styles use vinyl quarter window reveal moldings which are bonded directly to the glass. Refer to the stationary quarter glass area of this section for procedure to service moldings.

Windshield side reveal moldings on D styles are retained by barbed clips (view C, Fig. 11-2). To remove the windshield side reveal moldings on D styles, a thin flat-bladed tool (putty knife) must be inserted from opposite windshield side of molding to disengage barbed clips while lifting molding.

The E and K style windshield reveal molding is made of vinyl and is retained to the body by urethane adhesive.

Removal - E and K Styles

To remove vinyl windshield reveal molding, pry lower edge of molding away from body with a flat-bladed tool. Once molding is removed about 75 mm (3″), grasp molding by hand and slowly pull molding away from body until entire molding has been removed.

Installation - E and K Styles

1. Discard original molding and replace with a new service molding. The service molding has a shorter shank and will not bottom-out when installed.
2. Prefit service molding to body and remove.
3. Apply enough urethane adhesive (part no. 9636067 or equivalent) in cavity between windshield pillar and glass to retain molding.
4. Using a container filled with lukewarm water, flood the cavity filled with urethane. Moisture is the catalyst for the adhesive and will speedup the cure of the material.
5. Using hand pressure, press molding into original location. Then apply a second application of water on top of the molding. If needed, tape can be applied over molding to keep molding flush to glass while curing.

   The K style back glass molding is installed and removed in the same manner as the windshield molding but the back glass lower reveal molding must be removed prior to the one-piece vinyl reveal molding.

MOLDING CLIP REPLACEMENT

If a weld stud becomes damaged or broken, use the following repair procedure:

1. Drill a small hole in the panel next 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:

NOTICE: Use care to avoid contact between edge of glass and drill during drilling operation or damage to the glass could result.

1. Drill a small hole in the corner of the glass opening rabbet next to original weld stud or screw installation.
2. Insert a self-sealing screw through alternate replacement clip and into panel (Fig. 11-3).

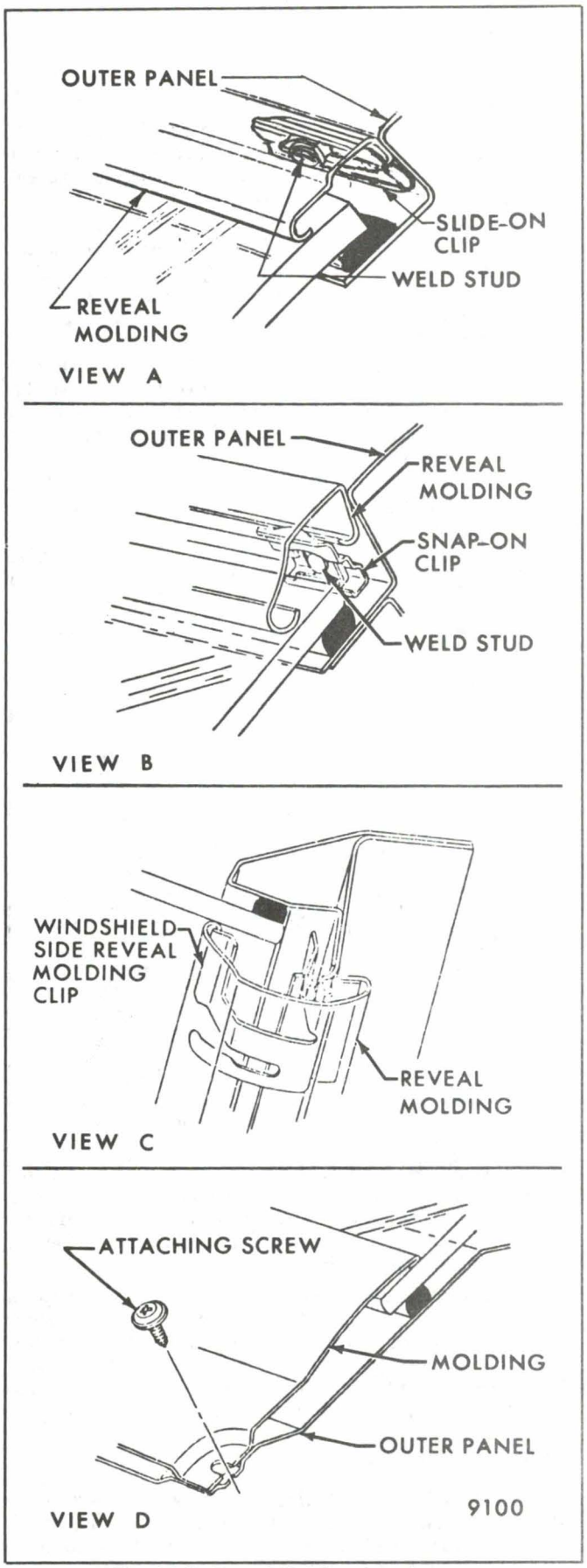


Fig. 11-2 - Reveal Molding Attachments

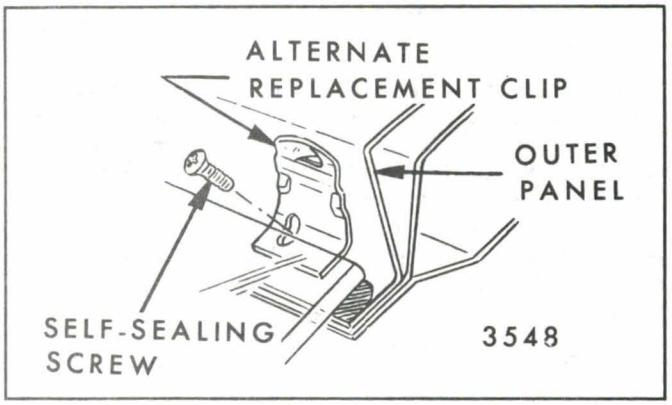


Fig. 11-3 - Reveal Molding Clip Alternate Replacement

STATIONARY GLASS

All windshield and back glass is installed from outside the body using self-curing urethane except the E style back glass which is installed from inside the body. When replacing these assemblies, urethane adhesive (part no. 9636067 or equivalent) **MUST** be used in order to maintain original installation integrity.

Quarter windows on coupe styles are bonded to the body opening with urethane adhesive or butyl tape. G-37 and 47 styles are also retained with studs and nuts.

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 where original adhesive material left on window opening pinchweld flanges after glass removal can serve as a base for the new glass. This method would be used in cases of cracked windshields or removal of windows that are still intact. The amount of adhesive left in window opening can be controlled during glass removal.

The extended method is to be used when the original adhesive material left in window opening after glass removal cannot serve as a base for replacement glass. This method would be used in cases needing metal work or paint refinishing in the opening. In these cases, original material is removed and replaced with new material during window installation.

ADHESIVE SERVICE KIT

Adhesive Kit No. 9636067 (urethane adhesive) or equivalent contains some of the items needed to remove and replace a urethane adhesive installed glass using short method or any adhesive installed glass using extended method.

Additional items required:

1. Solvent for cleaning edge of glass (preferably alcohol) and adhesive dispensing gun No. J-24811 or an equivalent 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.
2. Commercial type razor knife (for cutting around edge of glass.
3. Hot knife No. J-24709-1 or equivalent, cold knife No. J-24402-A or equivalent or two pieces of wood for wire handles.
4. Black weatherstrip adhesive.
5. Two side support spacers.
6. Butyl strip for windshields with embedded antenna
7. Lower support spacers - for short and extended method installations.

When glass is originally installed, a rubber sealing strip dam is used on the inside glass surface around edges of window to prevent excessive squeeze-out of adhesive material. Service installations do not use 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 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. The E style back glass is inside loaded and the removal and installation method for this style is outlined later in this section.

1. Place protective coverings around area where glass is being removed.
2. Remove all trim and hardware next to glass being removed. Depending on the glass involved, this could involve reveal moldings, garnish moldings or finishing lace, windshield wiper arms, lower glass stops and shroud top vent grille.
3. On styles equipped 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-A or equivalent.

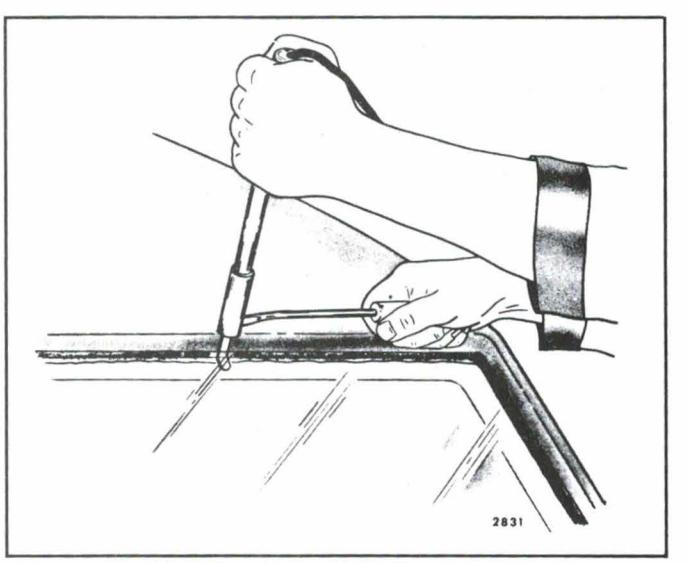


Fig. 11-4 Electric Hot Knife Removal Method

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.

   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

When installing a new windshield, it will be necessary to install a foam sealing strip to the new glass. The sealing strip is available as a service replacement and may have to be cut to length needed. To install sealing strip, perform the listed steps.

1. Remove backing paper from adhesive side of sealing strip.
2. Using original windshield as a guide, start at one end of new glass and apply sealing strip.

3. Make certain sealing strip does not obstruct view of VIN from outside the car.
4. If needed, trim off excess sealing strip using scissors or sharp knife.

Short method installation is intended for original urethane installations only. Any prior service installations using butyl tape or 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 as indicated in Figure 11-7 (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:

   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 required to fill existing gap on body. The strip should be about 200 mm (8″) long and is required to maintain radio reception quality.

   On styles without embedded windshield antenna, butyl strip is not required.

   On E and K styles with vinyl reveal molding, prefit replacement vinyl reveal molding.
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 ease clean-up after installation.

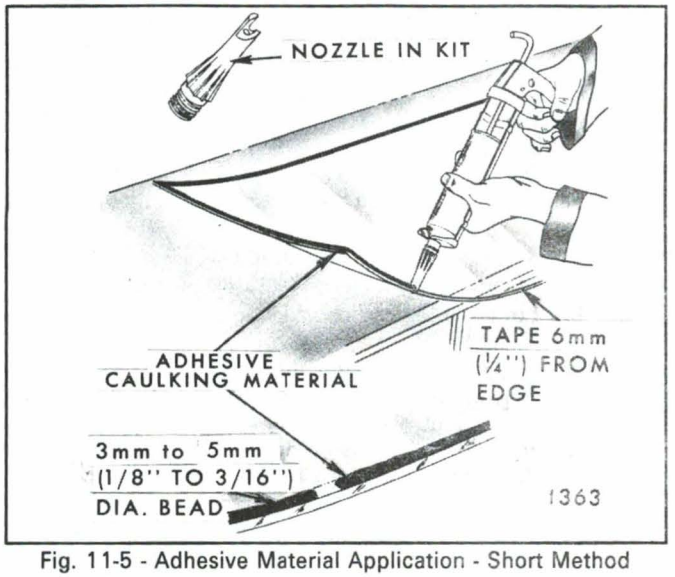


Fig. 11-5 - Adhesive Material Application - Short Method

5. 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.

When replacing windshield, urethane adhesive (part no. 9636067 or equivalent) **MUST** be used in order to maintain original installation integrity.

6. Two primers are provided in Urethane Adhesive Kit No. 9636067 or equivalent. The clear primer is used on the glass prior to the black primer and is applied as follows:
   a. On windshields equipped with embedded antenna, apply primer around periphery of glass as shown in Figure 11-9. Do not apply primer between marks established for 200 mm (8″) butyl strip application. 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 11-9. 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 (Fig. 11-5). On windshields with embedded antenna, omit adhesive caulking in butyl strip area 100 mm (4″) on 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 11-6, 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. Outside loaded quarter window glass can be installed in same manner. See quarter glass installation chart.

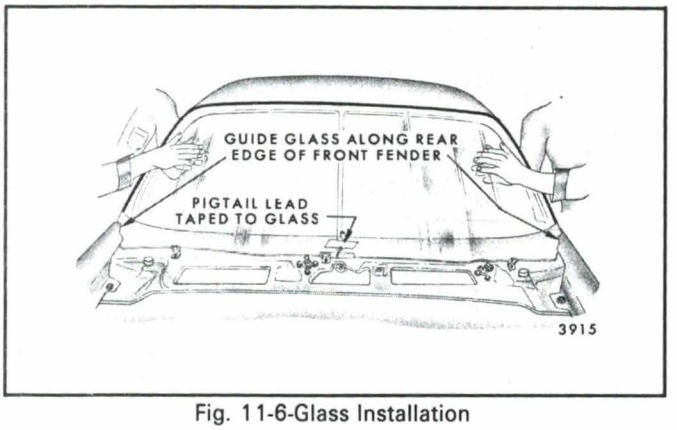


Fig. 11-6-Glass Installation

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 insure 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 at once 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.

    On E and K styles with one-piece vinyl reveal molding, spacers are not used. Install the one-piece vinyl reveal molding.

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

When installing a new windshield, it will be necessary to install a foam sealing strip to the new glass The sealing strip is available as a service replacement and may have to be cut to length needed. To install sealing strip, perform the listed steps.

1. Remove backing paper from adhesive side of sealing strip.
2. Using original windshield as a guide, start at one end of new glass and apply sealing strip.
3. Make certain sealing strip does not obstruct view of VIN from outside the car.
4. If needed, trim off excess sealing strip using scissors or sharp knife.

If prior service installation was made with butyl tape or urethane material remaining in window opening after window removal is damaged, or must be removed to permit refinishing of window opening, 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.

   If refinishing or painting operations are required, or painted surface is exposed during removal of material, black 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 2 mm (1/16″), replace or reform clip.

   NOTICE: If weatherstrip adhesive is used, apply enough 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.

3. Using black weatherstrip adhesive or adhesive material, cement flat rubber spacers to window opening pinchweld flanges. As shown in Figure 11-7, location B, spacers should be positioned to provide equal support around entire perimeter of glass. Spacers are not used on the E and K styles with one-piece vinyl moldings.
4. Figure 11-7, location A, illustrates rectangular spacer 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). The E style back window removal and installation is covered later in this section.
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. 11-6).
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. Outside loaded quarter window glass can be installed in same manner. See quarter glass installation chart.

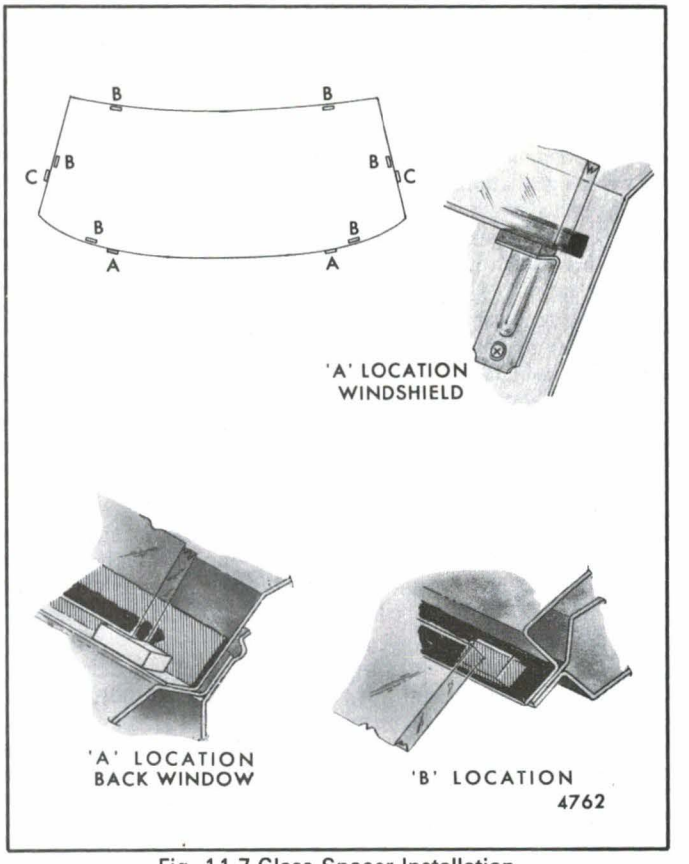


Fig. 11-7-Glass Spacer Installation

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.

   Spacer 1651608 or equivalent is available as a service part. Its various uses and locations are as listed. It may be necessary to trim spacer to obtain correct thickness as indicated. Spacers are not to be used on E and K styles with one-piece vinyl molding. The one-piece vinyl molding will not fit in the cavity between the glass and the body if spacers are used.
   a. Stand off spacers for maintaining glass 5 mm (3/16″) from body opening - see location B, Figure 11-7.
   b. Lower and side support spacers - see locations A and C, Figure 11-7.
8. Check relationship of glass contour to body opening. Gap space between back 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 10 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

200 mm (8″) butyl filler strip on bottom center of windshield inner surface as shown in Figure 11-9.

On styles without embedded windshield antenna, butyl strip is not required.

On E and K styles with one-piece vinyl molding, prefit service molding.

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. 11-8).

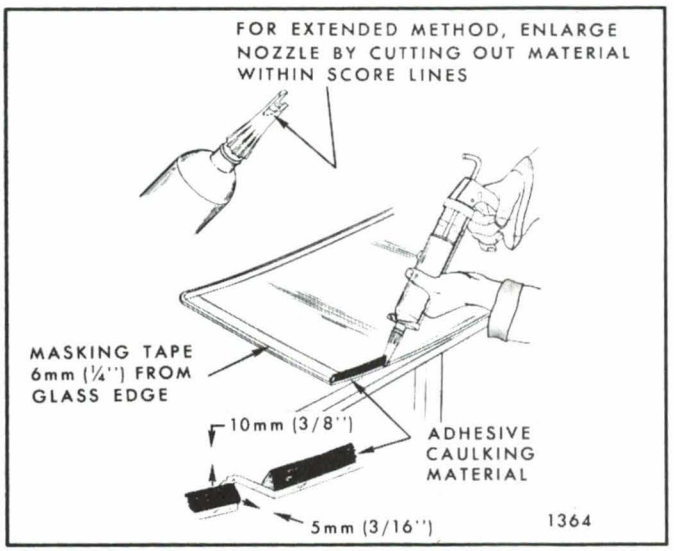


Fig. 11-8 - Adhesive Material Application - Extended Method

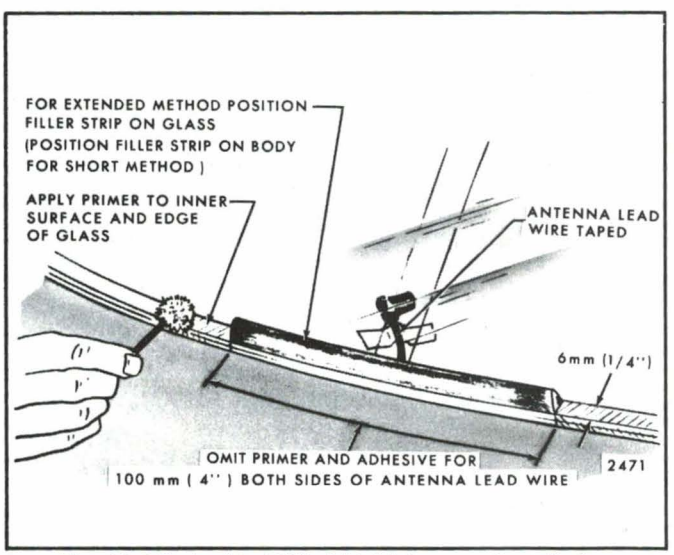


Fig. 11-9-Embedded Windshield Antenna Installation

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 11-8. Do not notch nozzle beyond score lines.
12. 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. Two primers are provided in Urethane Adhesive Kit No. 9636067 or equivalent. The clear primer is used on the glass prior to the black primer and is applied as follows:
    a. On windshield equipped with embedded antenna, apply primer around periphery of glass as shown in Figure 11-9. 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 11-9. Allow primer to dry for 5 minutes.
    c. Apply black primer to any portion of glass opening that required refinishing and painting operations, or any portion that was cleaned of former adhesive enough to expose the painted surface. Allow primer to dry for 5 minutes.
14. With caulking gun and nozzle positioned as illustrated in Figure 11-8, carefully apply smooth continuous bead of adhesive material 10 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. 11-6). Make certain glass is aligned properly 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 insure 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.

    On E and K styles with one-piece vinyl molding, make sure there is enough urethane adhesive to retain vinyl reveal molding.
16. Watertest at once 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 so that glass will remain centered in opening while adhesive material is curing.

    On E and K styles with one-piece vinyl molding, do not use spacers. Install vinyl reveal molding.
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 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

Urethane adhesive glass installation waterleaks can be corrected without removing and reinstalling glass. The following method applies only with use of adhesive material furnished in kit no. 9636067 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. On E and K styles with vinyl reveal moldings, remove vinyl window reveal molding.
2. Mark location of leak(s). Carefully push outward on glass in area of leak to determine extent of leak. This step 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 (operation A, Fig. 11-10) at leak point and 75 mm (3″) to 100 mm (4″) on both sides of leak point or beyond limits of leak area.
5. Prime affected area, as shown in operation B, Figure 11-10, with black 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 11-10, at leak point and 75 mm (3″) to 100 mm (4″) on both sides of leak point or beyond limits of leak area.
7. Right 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 insure watertight seal along entire length of material application (operation D, Fig. 11-10).
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.
9. On E and K styles with vinyl molding, install replacement moldings.

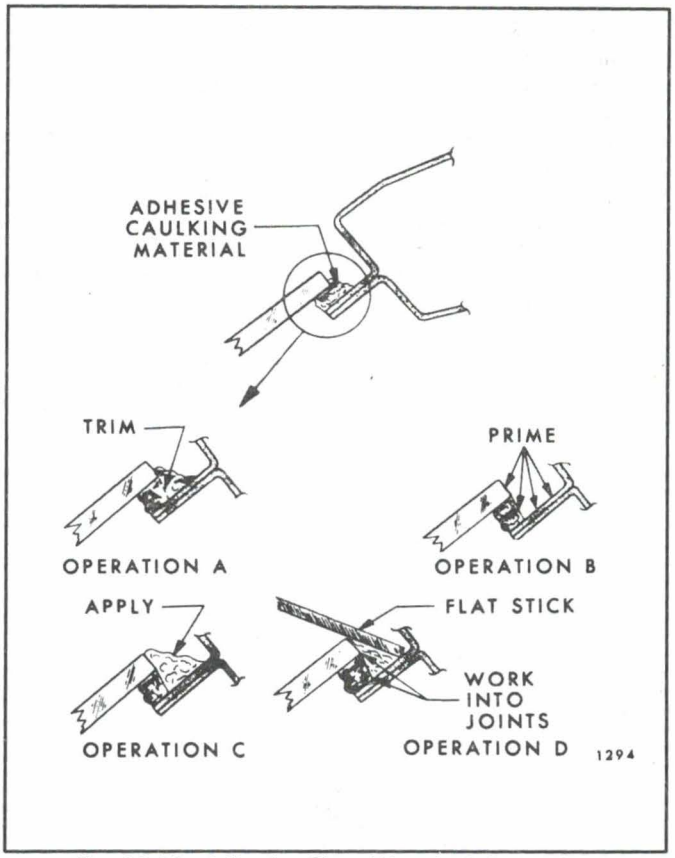


Fig. 11-10 - Adhesive Glass Waterleak Correction

STATIONARY QUARTER WINDOW - URETHANE, BUTYL OR MECHANICAL (REFER TO QUARTER GLASS INSTALLATION CHART)

The stationary quarter window is made of solid tempered safety plate glass. The following quarter glass installation chart lists various body styles and methods of installation, such as inside loaded glass (glass installed from inside the body), or outside loaded (glass installed from outside the body). This chart also indicates method of retention, such as adhesive (butyl tape or urethane) or mechanical (studs and nuts).

When servicing a urethane or butyl tape installation, it is recommended that urethane adhesive be used in place of butyl tape (except the G styles with stud and nut retention). This would require complete removal of original butyl and using the extended method.

QUARTER GLASS INSTALLATION CHART

BODY STYLE	METHOD OF LOADING	RETENTION
B - all less 35	Inside	Adhesive
B-35	Outside	Adhesive
C - all	Inside	Adhesive
G-35	Outside	Adhesive
G-37, 47	Outside	Stud and nut

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. On butyl installations, carefully cut butyl tape between glass edge and inboard surface of glass opening pinchweld flange and remove glass. Follow extended method.
4. On urethane installed glass (inside loaded), remove quarter trim as described in Section 6 of this manual.
5. On outside loaded urethane retained glass, remove the reveal moldings.

   On B and C styles, the quarter window reveal moldings were originally installed prior to glass installation and their removal is not required to service the quarter glass.
6. Follow the removal and installation procedure for urethane installed glass.

Removal - G-37, 47 Style Quarter Windows - Mechanically Retained (Fig. 11-11)

1. Remove all interior trim as specified in Section 6 of this manual.
2. Remove retainer nuts.
3. Push outboard on glass till glass is out of glass opening.

Installation - G-37, 47 Style Quarter Windows - Mechanically Retained

1. Remove all traces of butyl from window opening.
2. If new glass is being installed, apply a 6 mm (1/4″) diameter bead of butyl or equivalent around perimeter of glass inboard of retainer studs.
3. Locate glass in body opening and secure to body by tightening retaining nuts to 3.2 to 4.6 N·m (30 to 40 in-lb).
4. Check quarter glass for waterleak using method described in Section 1 of this manual.
5. Replace all previously removed trim.

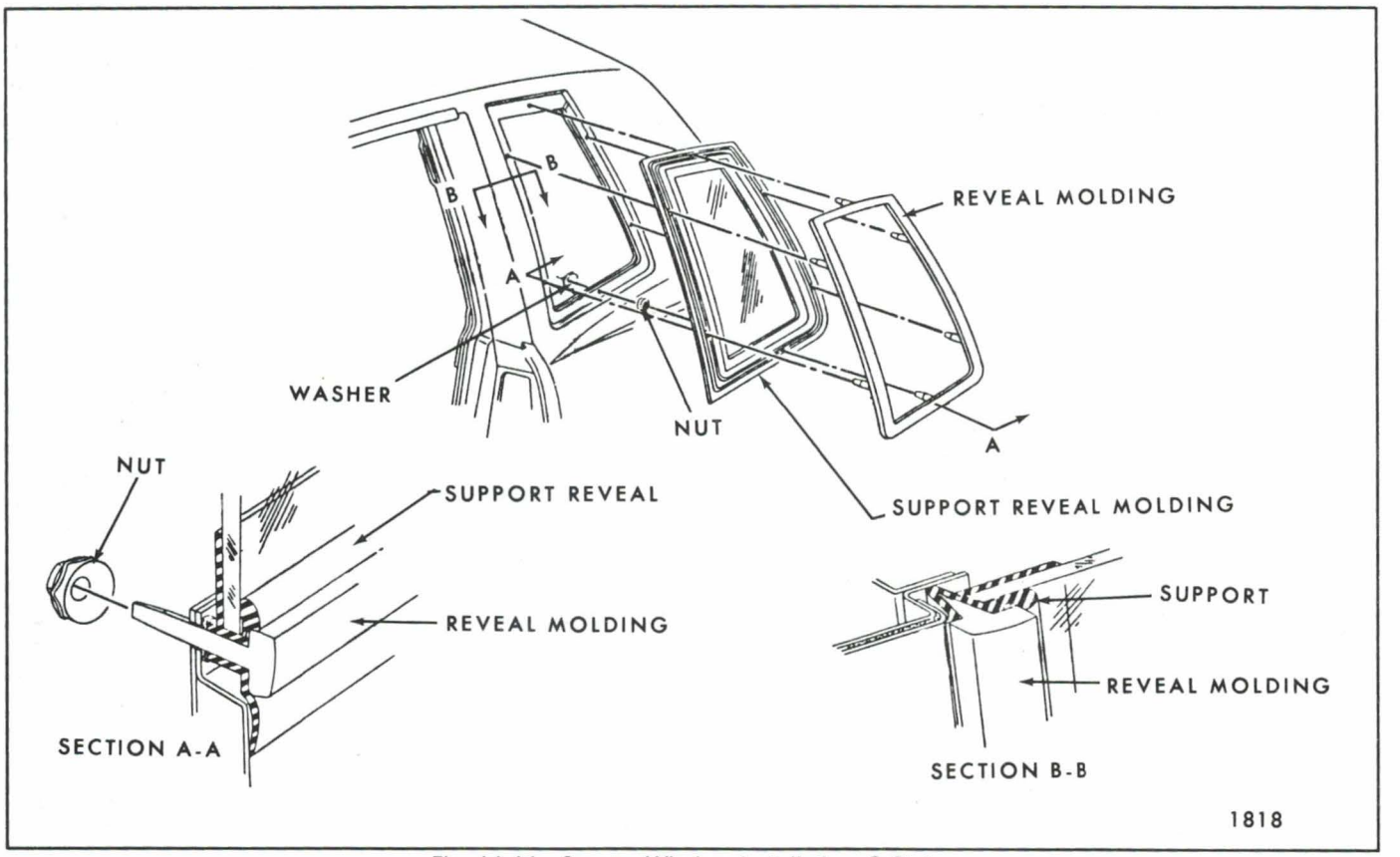


Fig. 11-11 - Quarter Window Installation, G Styles

G-35 QUARTER WINDOW REVEAL MOLDINGS

The G-35 styles incorporate a set of vinyl reveal moldings which are bonded to the quarter glass by the use of urethane and butyl adhesive. The moldings consist of two assemblies--the upper, front and back body pillar molding, and the lower belt reveal molding (Fig. 11-12, view A).

If the lower belt reveal molding is damaged or requires replacement, it will be necessary to also replace the upper, front and back molding assembly.

Removal - Upper, Front and Back Body Pillar Molding Assembly

1. Using a sharp knife or similar tool, cut through adhesive between glass and end of molding at lower rear corner of quarter window (Fig. 11-12, view B).
2. When end of molding is separated from the glass about 50 mm (2″), grasp loose end of molding with pliers and pull molding from glass, being careful not to damage the roof drip molding.

Removal - Lower Quarter Window Belt Reveal Molding

1. Remove upper, front and back molding assembly.
2. Repeat procedure outlined for upper front and back molding assembly (Fig. 11-12, view B).

   Prior to installation, remove all traces of adhesive from glass using a razor blade and shop cloth dampened with naphtha. Complete glass cleanup with a suitable glass cleaner. Install moldings using urethane adhesive kit (Part No. 9636067 or equivalent) and 3M Strip Calk (Part No. 8578 or equivalent). If all moldings have been removed, the lower belt reveal molding must be installed first.

Installation - Quarter Window Lower Belt Reveal Molding

1. Insert 3M Strip Calk or equivalent into outer groove of lower reveal molding (Fig. 11-12, view C).
2. Apply kit primer to glass and allow to air dry for 5 minutes. Then apply urethane adhesive into inner preprimed groove of lower belt reveal molding (Fig. 11-12, view C).
3. Position molding to edge of glass and install by pressing firmly along entire molding to distribute adhesive. Use care to avoid excess squeezeout which could cause an appearance problem. Clean any excess adhesive from glass and molding using a shop cloth and naphtha.

Installation - Upper, Front and Rear Body Pillar Molding

1. Insert 3M Strip Calk or equivalent into outside groove of molding (Fig. 11-12, view C).
2. Apply kit primer to glass and allow to air dry for 5 minutes. Then apply urethane adhesive to inner preprimed groove of molding (Fig. 11-12, view C) and install using the listed sequence.
   a. Position upper part of molding to top edge of glass and press molding into place.
   b. Install lock pillar portion of molding by pressing firmly to lock pillar for full length of molding.
   c. Install back body pillar portion of molding pressing firmly to back body pillar for full length of molding.
   d. Apply Loctite Super Bonded 414, or equivalent, to outboard side of lower belt reveal at each location where upper, front and rear body pillar moldings overlap and apply hand-pressure for 10 to 15 seconds.
   e. Press firmly along the entire molding to properly distribute adhesive, using care to avoid excessive squeezeout. Clean excess adhesive from glass and molding using shop cloth and naphtha.

If waterleaks should occur around the quarter glass, it will be necessary to remove upper front and back body pillar molding in order to determine the point of entry. The belt molding does not have to be removed unless waterleak appears to be in the belt line area.

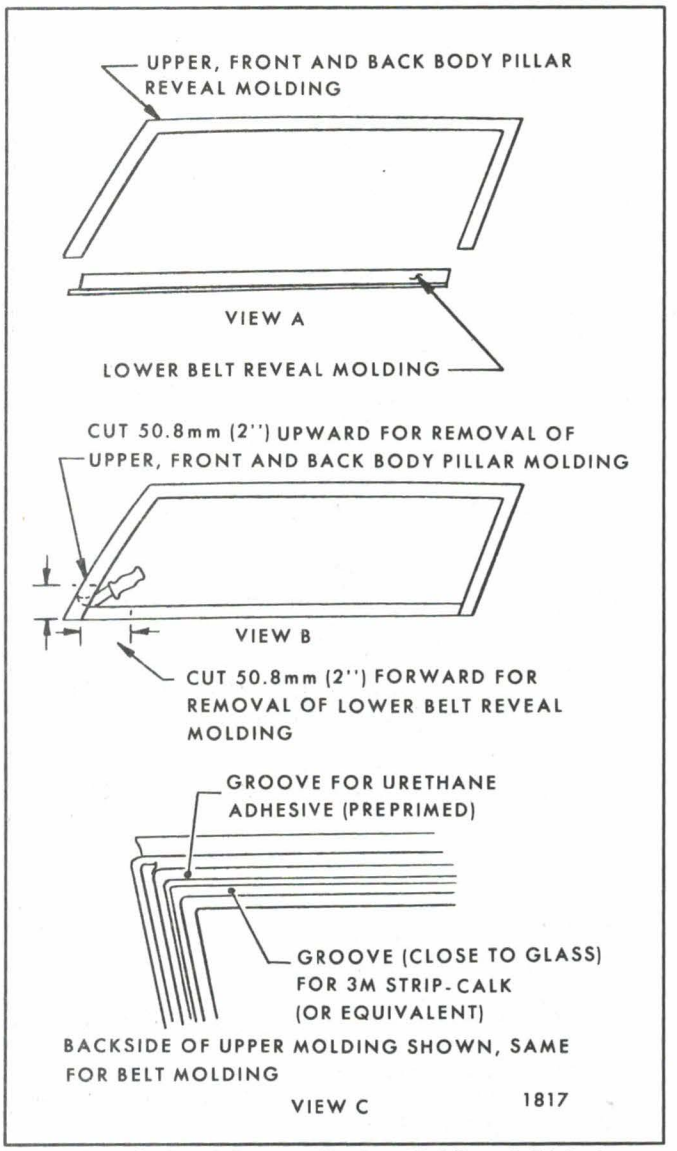


Fig. 11-12 - Vinyl Quarter Window Molding, G-35 Styles

To correct waterleaks, follow waterleak repair procedures in Section 1 of this manaul.

BACK WINDOW TRIM RING ASSEMBLY

On some styles with a fabric roof cover that do not have exposed back window reveal moldings, a rivet retained plastic trim ring assembly is installed around the back window. The fabric roof cover is cemented over the ring and tucked between the glass and trim ring around the window opening.

On styles with foam pad, the pad is cemented to trim ring and the cover is cemented over pad.

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 trim ring.
3. The back window glass (urethane installed) is removed and installed as described earlier in this section. Apply and smooth a small amount of medium body sealer at all rivet locations.

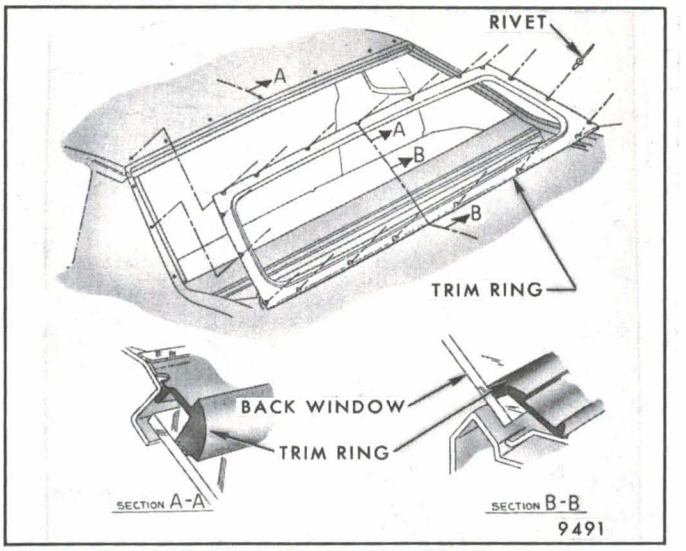


Fig. 11-13 - Back Window Trim Ring Assembly

4. To reinstall the trim ring, position ring in location and install rivets at all designated locations (Fig. 11-13).
5. Reposition previously removed foam pad and vinyl roof cover material as described in Section 8 of this manual.

BACK WINDOW - E AND G STYLES

The E style back window assembly is installed from inside the body and retained by a self-curing urethane adhesive, part no. 9636067 or equivalent.

Removal

1. Remove the following interior trim components:
   - Seat cushion and back assembly
   - Shelf trim and bracket
   - Quarter upper trim and brackets
   - Headlining assembly and moldings
   - Glass retainers
2. On styles without vinyl roof covers, remove applied rear compartment front panel (refer to Section 7).
   On styles with vinyl roof covers, remove attaching screws at rear of rear compartment front panel to allow more clearance between glass and the panel.
3. On styles without vinyl roof cover, apply protective tape around edge of the back window opening.
4. Using tool J-28628 or equivalent, cut out back window assembly from outside the body by slicing through the urethane adhesive as shown in Figure 11-14. The tool will cut out back windows on styles with or without vinyl roof covers. Wedges shown in Figure 11-14 can be used to gain more tool clearance.

The G style back window assembly is installed from outside the body and retained by a self-curing urethane adhesive. The lower edge of the glass is covered by the rear compartment front panel. This panel must be removed when servicing the back window assembly. Panel removal is described in Section 7 of this manual.

Installation - Short Method

1. If original glass is to be reinstalled, place it on a protective bench or holding fixture and remove old material using a razor blade or sharp scraper. Any remaining traces of adhesive material can be removed with a denatured alcohol or lacquer thinner dampened cloth. When cleaning back window glass, DO NOT use a petroleum base solvent such as kerosene or gasoline. The presence of oil will prevent adhesion of new material.

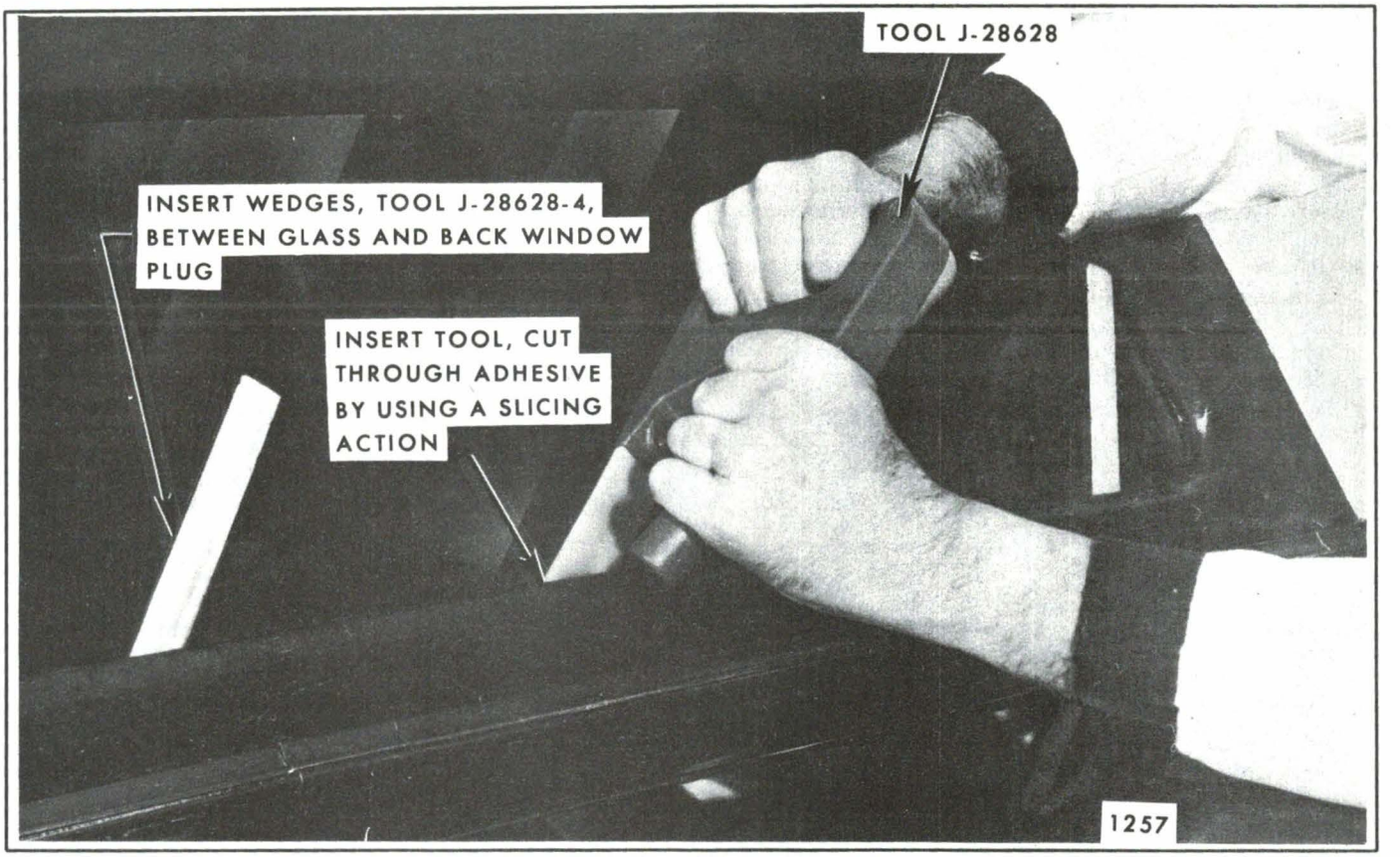


Fig. 11-14 - Back Window Removal

2. With aid of helper, center glass in opening and apply a piece of masking tape on outside surface of glass and body. Slit tape at edge of glass. During installation, tape on glass can be aligned with tape on body to guide glass into proper position.
3. Remove glass from opening.
4. Reclean outside surface of glass to which adhesive material is to be applied by wiping with a clean, alcohol dampened cloth. Allow to air dry.
5. Apply primers to entire perimeter of glass and to glass edge. Allow primer to dry 5 minutes.

   When replacing back window, urethane adhesive (part no. 9636067 or equivalent) **MUST** be used to maintain original installation integrity.
6. Apply a smooth continuous bead of adhesive material over cured urethane material on body opening.
7. With aid of helper, lift glass into window opening, making sure to align masking tape on glass to tape on body.
8. Install glass and press down firmly with hand pressure to set glass in opening.
9. Install upper and lower retainers. Then, using hand pressure, press side of glass to body and install left side retainer. Repeat for right side.
10. Check glass to body opening, making sure enough adhesive is in the body opening cavity. Apply more urethane adhesive if required.
11. Using a flat-bladed tool (such as a tongue depressor), paddle urethane adhesive around perimeter of glass.
12. 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 detected, paddle in extra urethane adhesive at leak point using a small disposable brush or flat-bladed tool.
13. Install all previously removed parts.
14. On back window installations, car must remain at normal room temperature for six hours to complete proper cure of adhesive material.

Installation - Extended Method

If adhesive material remaining in window opening after window removal is damaged or must be removed to permit refinishing of window opening, it will be necessary to use extended installation method.

Using sharp scraper or chisel, remove major portion of old adhesive material from window opening flanges around entire opening so that no mounds or loose pieces are left.

If painting operations were performed or painted surface is exposed during removal of material, kit black primer should be applied to any portion of glass opening that required painting operations, or any portion that was cleaned enough to expose the painted surface. Allow primer to dry five minutes.

Balance of installation procedure is the same as for the short method.

BONDED REARVIEW MIRROR SUPPORT

The rearview 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 has the mirror support as part of the glass assembly. To install a detached mirror support or install a new part, the following items are recommended:

1. Part No. 1052369, Loctite Minute-Bond Adhesive 312 two component pack or equivalent.
2. Original mirror support, prepared per steps 4 and 5 of installation procedure, replacement rearview mirror support, Service Part No. 9831062 or equivalent.
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. Locate rearview 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. 11-15):
   - 550 mm (21-21/32″) all B, C styles
   - 540 mm (21-1/4″) - D-23 styles
   - 615 mm (24-3/16″) - E and K styles
   - 533 mm (21″) - G-35,69 styles
   - 587.5 mm (23-1/8″) - G-37,47,80 styles
2. When location is determined, mark location on outside of glass with wax marking pencil or crayon. Also make larger diameter circle around the mirror support circle on the outside glass surface (Fig. 11-15).
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, sand bonding surface of new rearview mirror support, part no. 9831062 (or equivalent), or factory installed support.
   If original rearview 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. Follow directions on manufacturer's kit to properly prepare rearview mirror support prior to installation on glass.
7. 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.

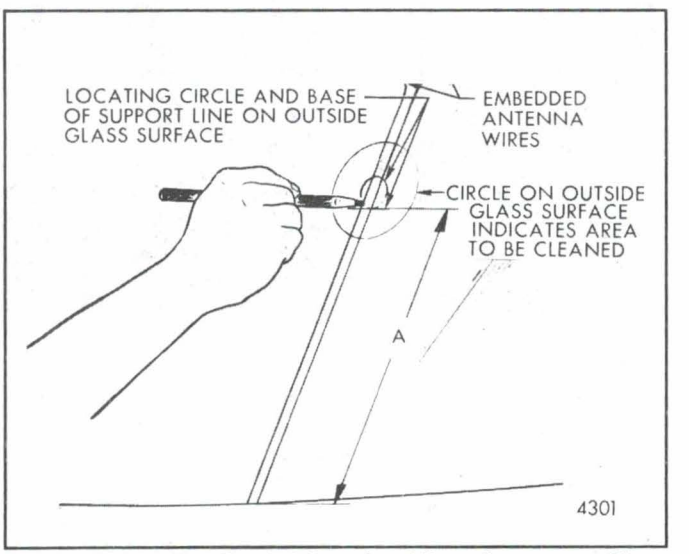
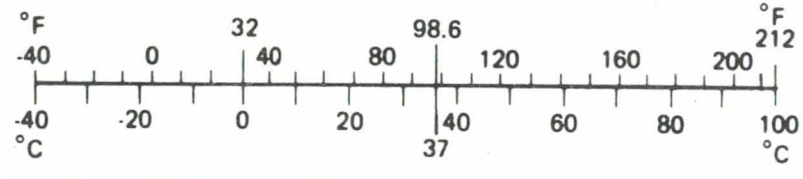


Fig. 11-15-Locating Bonded Rearview Mirror Support on Glass

SI METRIC-CUSTOMARY CONVERSION TABLE

Multiply	by	to get equivalent number of:
LENGTH		
Inch	25.4	millimeters (mm)
Foot	0.304 8	meters (m)
Yard	0.914 4	meters
Mile	1.609	kilometers (km)
AREA		
$Inch^2$	645.2	millimeters2 (mm^2)
	6.45	centimeters2 (cm^2)
$Foot^2$	0.092 9	meters2 (m^2)
$Yard^2$	0.836 1	meters
VOLUME		
$Inch^3$	16 387.	mm^3
	16.387	cm^3
	0.016 4	liters (l)
Quart	0.946 4	liters
Gallon	3.785 4	liters
$Yard^3$	0.764 6	meters3 (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	meter/sec2 (m/s2)
$Inch/sec^2$	0.025 4	meter/sec2
TORQUE		
Pound-inch	0.112 98	newton-meters (N•m)
Pound-foot	1.355 8	newton-meters
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 $3.6x10^6$	joules (J = one W's)
LIGHT		
Foot candle	10.764	lumens/meter2 (lm/m2)
FUEL PERFORMANCE		
Miles/gal	0.425 1	kilometers/liter (km/l)
Gal/mile	2.352 7	liters/kilometer (l/km)
VELOCITY		
Miles/hour	1.609 3	kilometers/hr. (km/h)

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

SECTION 2

WINDSHIELD WIPER SYSTEM

CONTENTS

Windshield Wiper System 2-1
Tester 2-1
Control Switches 2-1
Two-Speed Round Motor 2-3
Diagnosis - Wiper on Car 2-4
Diagnosis Chart - Wiper on Car 2-7
Diagnosis Chart - Wiper off Car 2-8
Wiper Motor 2-10
Wiper Arm 2-10
Wiper Blade 2-10
Wiper Transmission 2-11
Motor 2-12
Gearbox 2-13
Multiplex Pulse Wiper System 2-19
Diagnostic Procedures 2-24
Gearbox 2-24
Motor 2-24
Washer Systems 2-39
Round Motor Washer System 2-39
Diagnosis Chart 2-40
Multiplex Pulse Washer System 2-42
Diagnostic Procedures 2-45
Fluidic Washer 2-46

WINDSHIELD WIPER SYSTEM

A two-speed wiper motor is standard equipment on all models. The depressed park system uses a round motor and wiper blades that park below the hood line.

WINDSHIELD WIPER SYSTEM TESTER

A universal wiper system tester (tool J-25079C or equivalent) is available and can be used to greatly simplify diagnosing the following systems either on or off the car.

- Multiplex pulse round motor wiper system
- Two-speed round motor wiper system

A separate disgnostic manual which covers all the above systems is distributed with the tester.

WINDSHIELD WIPER CONTROL SWITCHES

Removal and Installation - Cadillac C and D Styles (Fig. 2-1)

1. Disconnect negative battery cable.
2. Loosen set screw in left climate control outlet door knob and remove knob.
3. Remove left climate control air outlet grille using tool J-24612-01 or equivalent.
4. Remove 6 screws securing left-hand instrument panel insert and applique. One screw is located inside of left air conditioning air outlet grille.
5. Remove 2 upper and 2 lower screws in lower steering column cover.
6. Disconnect steering column seal on lower surface and remove insert and applique.
7. Remove 2 screws securing wiper switch to instrument panel base.
8. Disconnect electrical connectors and remove switch.
9. Reverse removal procedure for installation. Check for proper operation.

Removal and Installation - Cadillac E and K Styles (Fig. 2-2)

1. Disconnect negative battery cable.
2. Remove two screws securing instrument panel left-hand insert and applique to instrument panel.
3. Remove two screws securing wiper switch to instrument panel.
4. Disconnect electrical connector and remove switch.
5. Reverse removal procedure for installation. Check for proper operation of switch.

Removal and Installation - Chevrolet B Styles (Fig. 2-3)

1. Disconnect battery ground cable.
2. Remove 4 screws securing control shroud on instrument panel (one screw hidden above headlight switch shaft and one screw hidden above cigar lighter knob).
3. Lift off shroud and remove two remaining screws.
4. Unplug wiper switch from harness.
5. Remove bulb with socket from mounting at rear of control.
6. To install, reverse removal procedure. Check operation of new switch.

For windshield wiper switch locations on the Chevrolet and Pontiac G, Oldsmobile and Buick B,C,E and G styles, refer to the divisional chassis manual.

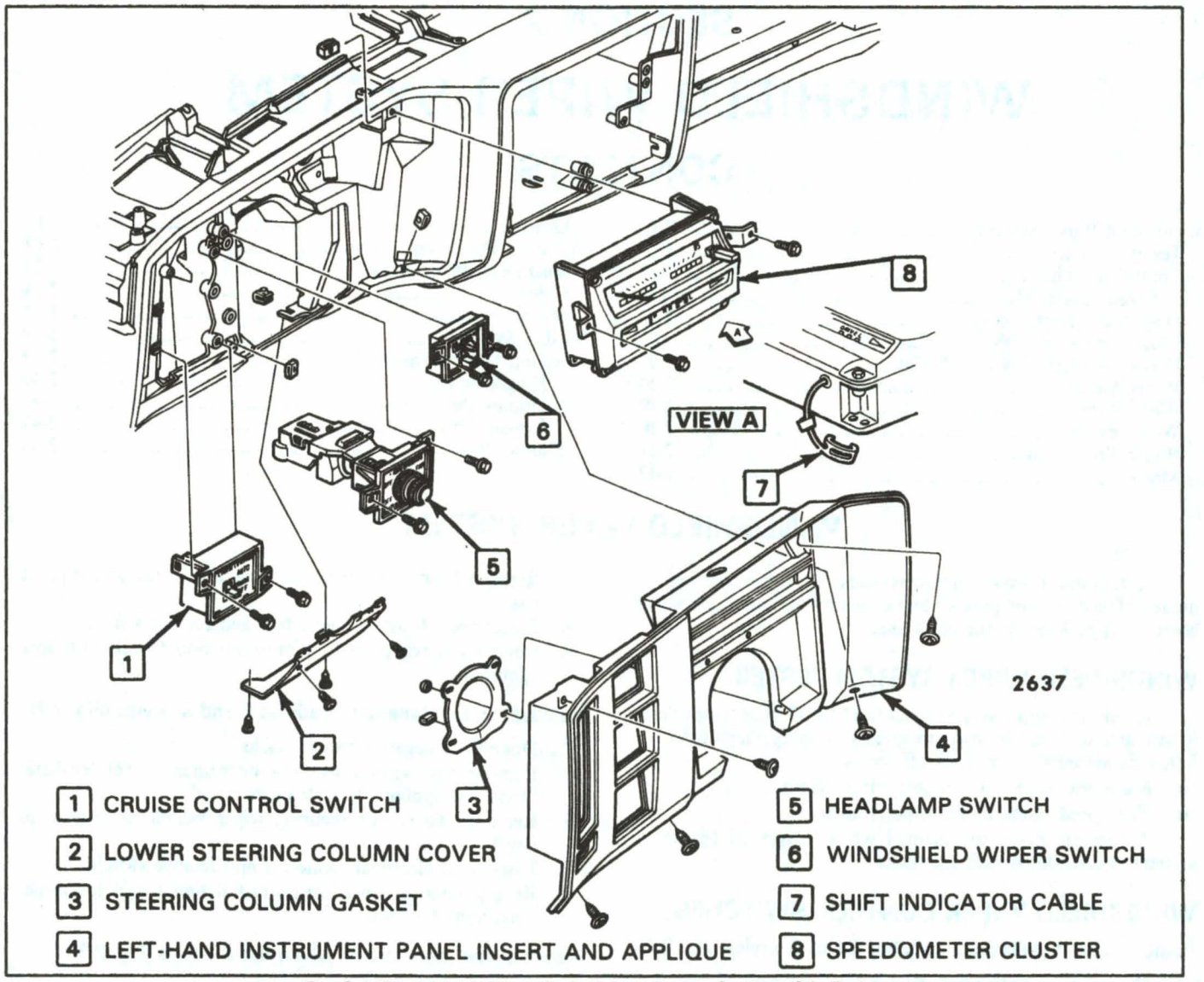


Fig. 2-1-Windshield Wiper Switch Installation Cadillac C,D Styles

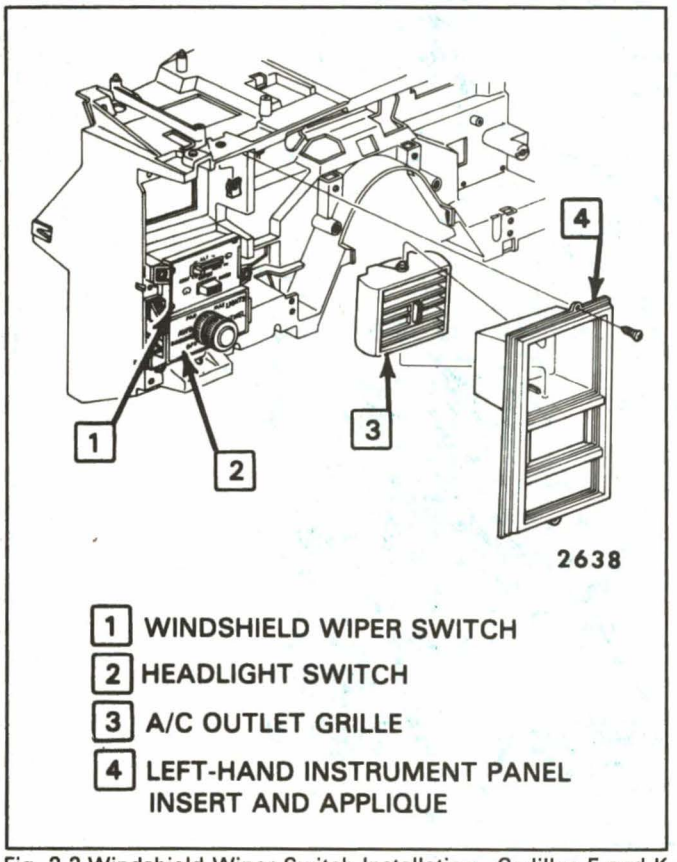


Fig. 2-2-Windshield Wiper Switch Installation - Cadillac E and K Styles

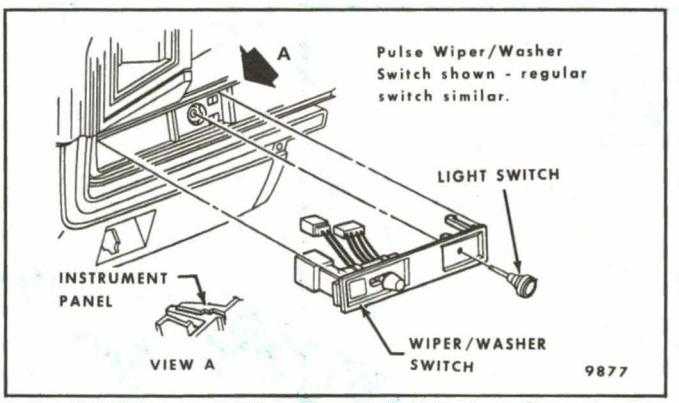


Fig. 2-3-Windshield Wiper Switch Installation - Chevrolet B Styles - Pulse Type

TWO-SPEED ROUND MOTOR

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

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. 2-4). These leads were formerly exposed on the past model design and routed through a grommet in the motor casting.

Styles with the multiplex 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.

Past model (prior to 1978) design washer pump assemblies cannot be used with the current design nonpulse motor and gearbox assembly.

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

A round motor application chart is shown in Figure 2-5.

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. 2-25). 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 12V 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. 2-6) completes the relay switch and terminal board coil circuit to ground at the wiper switch. 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. 2-7) 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. 2-8) is the first step in shutting the wiper off. The wiper motor itself actually completes the shutting off operation. When 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. 2-9).
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. 2-10). 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

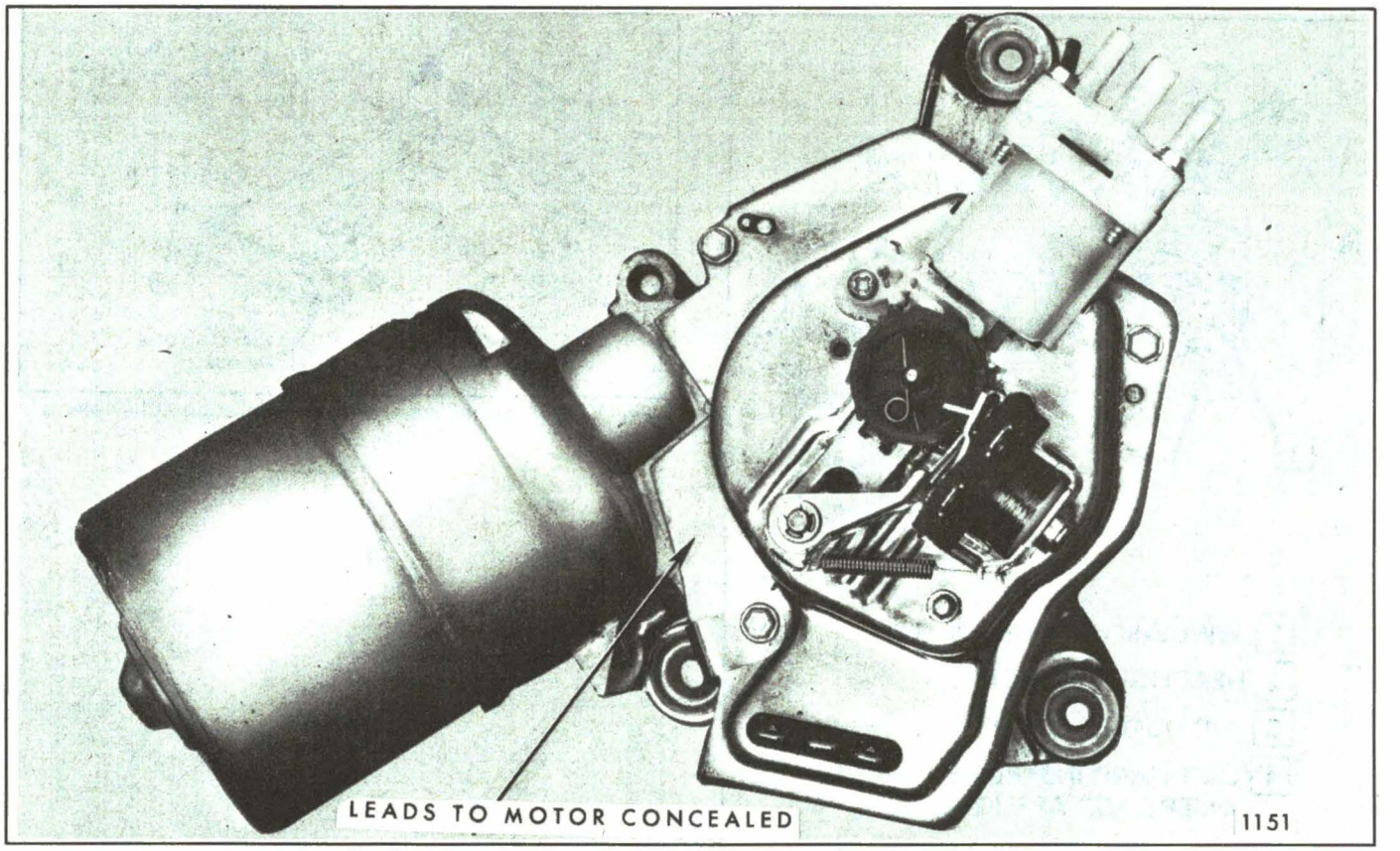


Fig. 2-4 - Round Wiper Motor and Pump Assembly (Internal Leads)

ROUND MOTOR APPLICATION				
CAR DIVISION	SERIES	MOTOR LENGTH	GEAR RATIO	CRANK ARM LETTER
CHEVROLET	B	114 mm (4-1/2")	51:1	7B
BUICK, CADILLAC AND OLDSMOBILE	B-C	114 mm (4-1/2")	51:1	7B
BUICK, CADILLAC AND OLDSMOBILE	E	114 mm (4-1/2")	51:1	9E
BUICK, CHEVROLET, OLDSMOBILE AND PONTIAC	G	114 mm (4-1/2")	51:1	AW
CADILLAC	K	114 mm (4-1/2")	51:1	9E

2583

Fig. 2-5-Round Motor Application Chart

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. 2-11).

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.
   e. With ignition switch turned on, there is a 12V 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 2-14. Check wiper operation in OFF, LO and HI positions. If wiper operates correctly, see Diagnosis Chart - Wiper On Car.

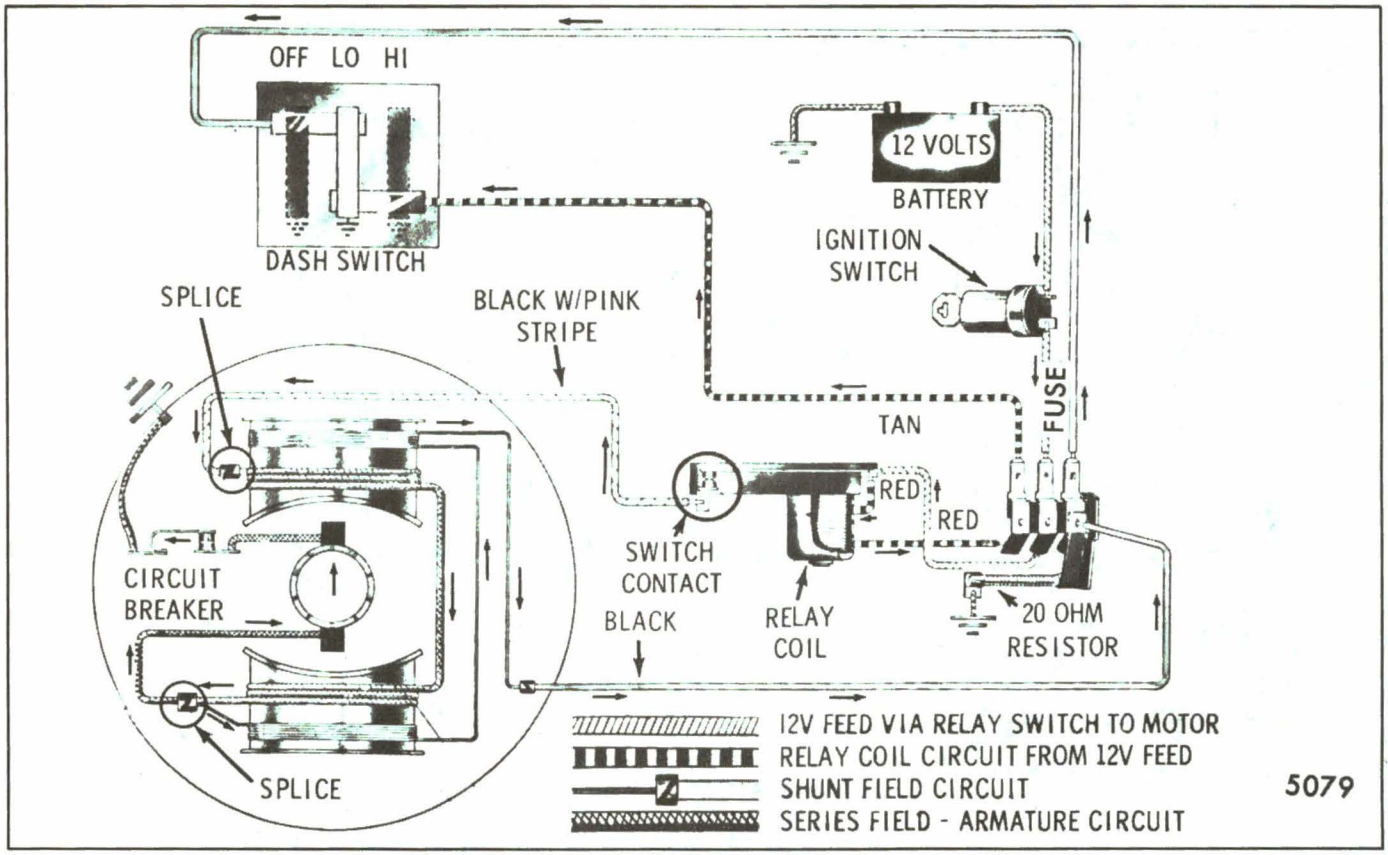


Fig. 2-6-LO Speed Circuit

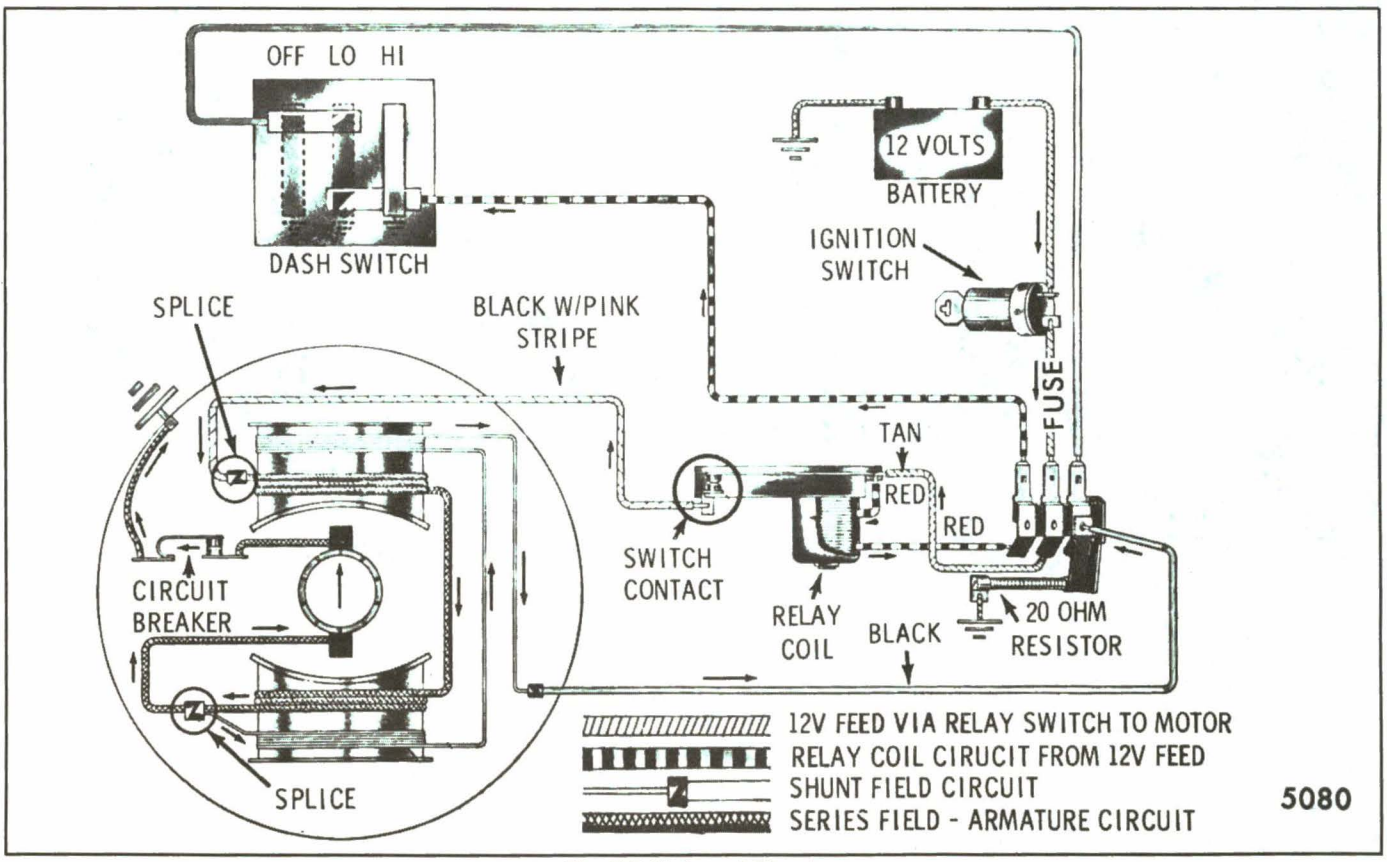


Fig. 2-7-HI Speed Circuit

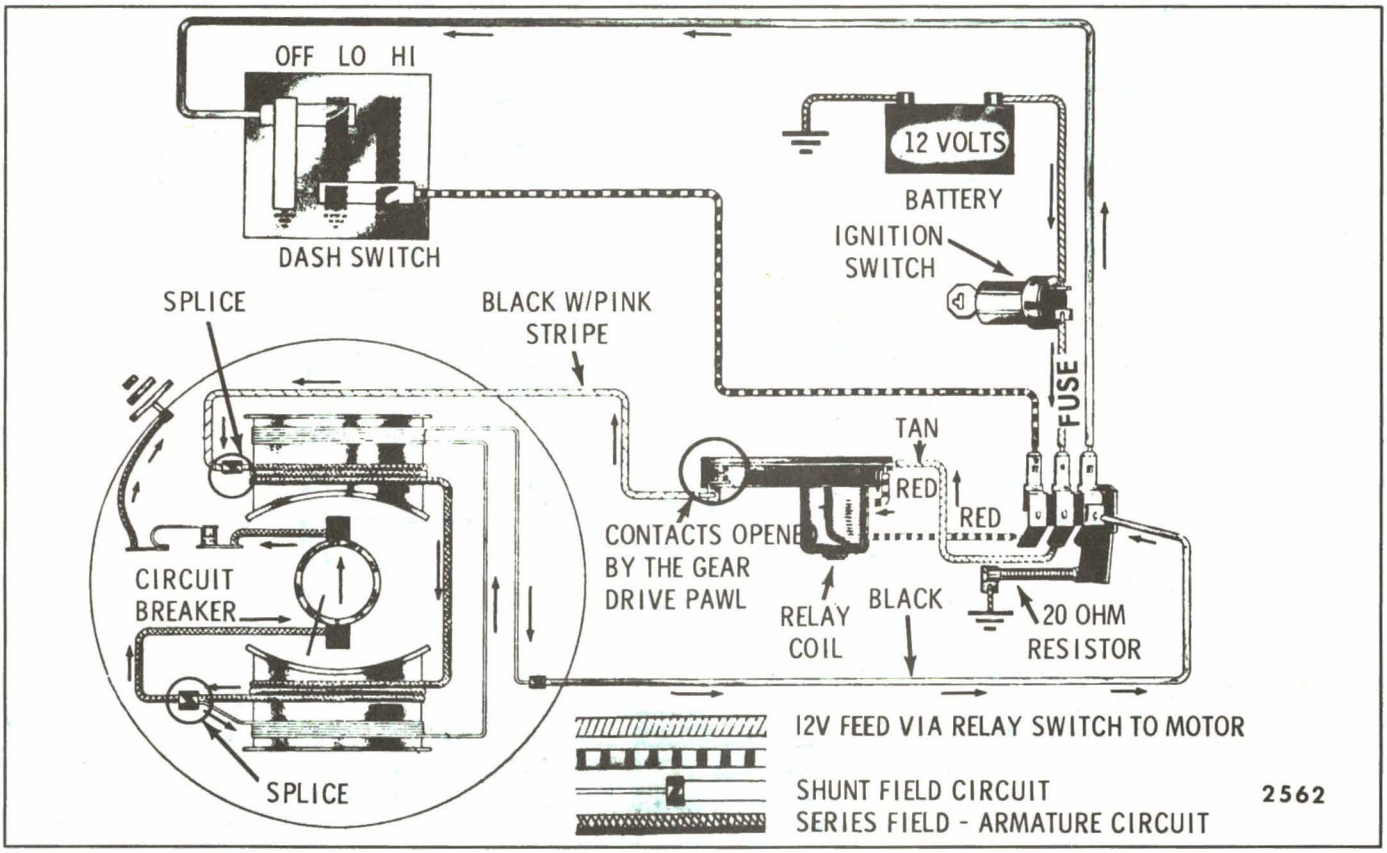


Fig. 2-8-Parking Circuit

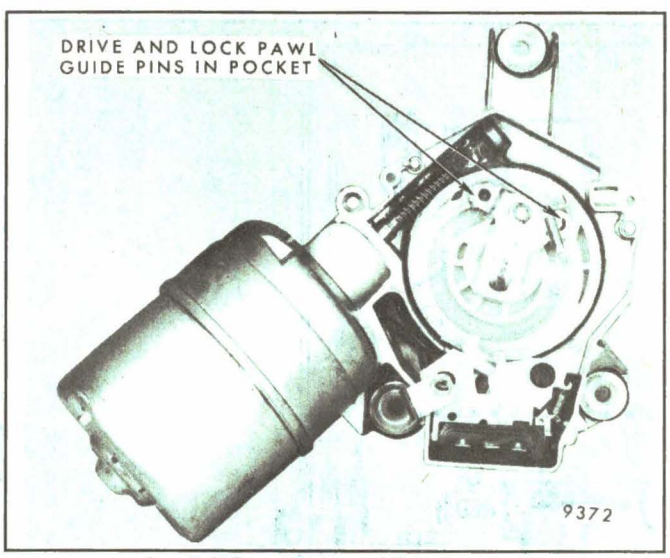


Fig. 2-9-Gear in Normal Run Position

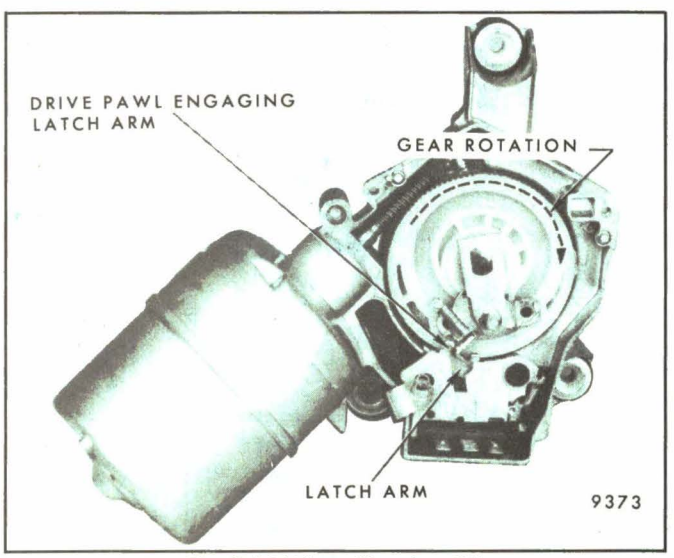


Fig. 2-10-Wiper Shutting Off

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

a. If wiper motor operates correctly, check linkage for severe binding condition or breakage.
b. If wiper fails to operate correctly, remove wiper motor from car and check Diagnosis Chart - Wiper Off Car.

To check dash switch and harness, remove harness from the three-terminal board at motor. Use 12 volt test lamp to probe center terminal of switch harness. With test lamp grounded and ignition switch on, test lamp should light. To check two other terminals in the connector, attach alligator clip end of test lamp to a B+ source (hot wire) and probe the two outside harness terminals. Move dash switch to low-speed position. Test lamp should light when contact is made at either of the outside terminals. Move switch to the high position. Test lamp should light at one outside terminal only. With switch in OFF position, light should light at OPPOSITE outside terminal only.

If switch and harness are okay, check the relay switch by hot wiring the motor. Make sure that motor is well grounded and run a hot wire to the black with pink stripe wire. If motor runs under these conditions and not when dash switch is used, the trouble is in the relay switch. If motor does not run when hot wired, then trouble is in motor.

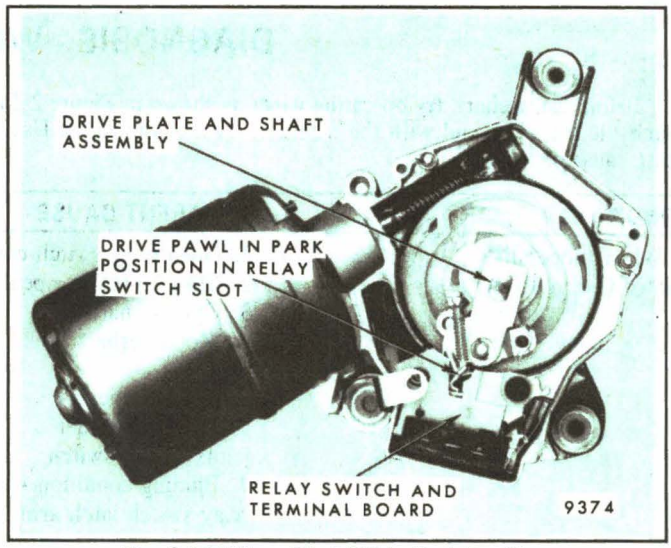


Fig. 2-11-Wiper Shut Off in Park Position

DIAGNOSIS - WIPER ON CAR

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 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 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° from park position	a. Open in lead wire from wiper terminal 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. High speed only	a. Open lead wire from wiper terminal 3 to wiper switch	a. Repair broken wire
	b. Wiper switch defective	b. Replace wiper switch
5. Low speed only	a. Grounded lead from wiper terminal 3 to wiper switch	a. Tape uninsulated portion of wire
	b. Defective wiper switch	b. Replace wiper switch
6. High speed in medium position (Cadillac)	a. Open medium speed resistor	a. Replace wiper switch

DIAGNOSIS - WIPER OFF CAR

Before using chart, try operating wiper as shown in Figure 2-14. Check if wiper has low and high 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°)	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, high, caused by open shunt field	Procedure C
4. Wiper has one speed, high	1. Shunt field open 2. Defective soldering at terminal 3 on relay switch and terminal board	Procedure C
5. Wiper has one speed, low	1. Shunt field internally grounded 2. Shunt field lead to relay switch and terminal board (black) grounded 3. Shorted armature	Procedure D
6. Wiper has excessive speed in high; low 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)

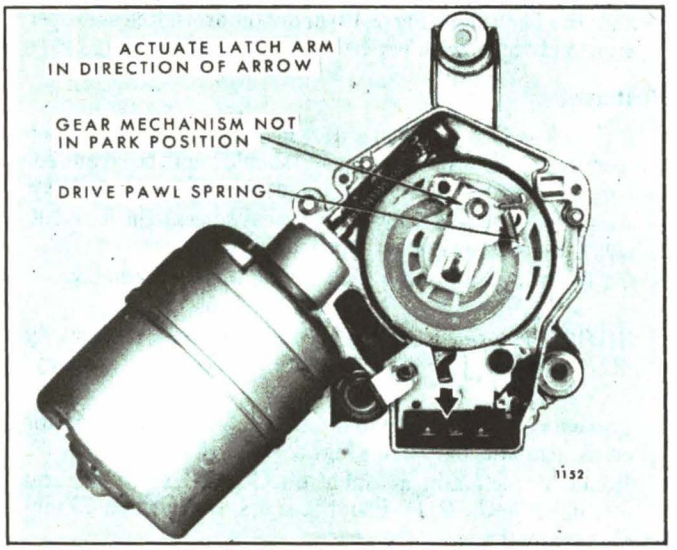


Fig. 2-12-Testing Relay Switch

1. Remove washer pump to gain access to relay switch and terminal board assembly.
2. Connect 12V source to wiper, feed side to center terminal, ground side to gear housing (Fig. 2-14). Do not connect jumper to terminal 1 and 3.
3. To find out if relay switch coil is open, connect test lamp to wiper terminal 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 2-12. Next, remove washer pump assembly and probe (penetrate insulation) black with pink stripe wire with 12V tester.
   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. 2-13).

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

1. Observe if latch arm spring is connected properly.
2. Manually operate latch arm to check it for possible binding condition.

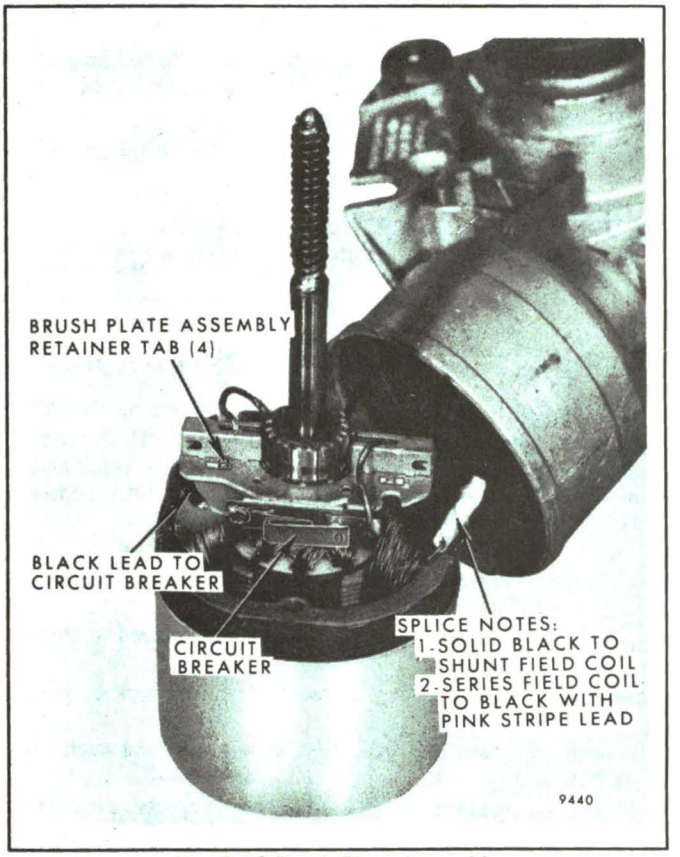


Fig. 2-13-Brush Plate Assembly

3. If items 1 and 2 check out, connect power source to wiper and connect jumper wire from terminal 3 to wiper housing. DO NOT make any connections from terminal 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)

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. 2-11).
2. Check wiper for LO speed operation (Fig. 2-14). If wiper has high speed only, check the following items:
   a. Solder joint at wiper terminal 3.
   b. Splice joint - field coil crossover splice (Fig. 2-25).
   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 2 and negative side to motor case. Install jumper wire from terminal 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 3. Refer to Figure 2-14 for terminal 3 location.
2. Disassemble motor section of wiper and check for grounded shunt field coil (Fig. 2-24).

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. 2-14). 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. 2-36).
   a. If current draw is normal and wiper cycles on and off, a weak circuit breaker is indicated. Replace brush plate assembly.
   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 - Styles with Depressed Park Systems

1. Raise hood and remove cowl screen. On E and K styles, remove front cowl panel and screen.
2. Loosen transmission drive link to crank arm attaching nuts (Fig. 2-16, 2-17 or 2-20).
3. Remove transmission drive link(s) from motor crank arm.
4. Disconnect wiring and washer hoses.
5. Remove the 3 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).

WIPER ARM

Removal and Installation

1. Raise hood to gain access to wiper arms. On E and K styles, remove cowl upper panel and screen.
2. Use tool J-8966 or equivalent (Fig. 2-18), and lift arms off transmission shaft.
3. Lift wiper arm and slide latch clip (Fig. 2-19) out from under wiper arm.
4. Release wiper arm and lift wiper arm assembly off transmission shaft. The tool used for wiper arm removal may also be used to install the arm.
5. On B and 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. Windshield wiper blade assembly release button or clip must be towards base of arm assembly for proper matching of blade to glass contour.
6. On G styles, align the right wiper arm assembly in the proper park position and install wiper arm to transmission shaft.
7. On B, C, D, E and K styles, lift the wiper arm assemblies and slide latch clips (Fig. 2-19) under 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 E and K styles remove cowl upper panel and screen.
2. On G styles, remove the right arm and blade assembly.

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

3. Loosen, do not remove, the transmission drive link to motor crank arm attaching nuts (Figs. 2-15, 2-16 or 2-20).
4. Rotate the left arm assembly on G styles and both arm assemblies on B, C, D, E and K styles to a position 25 mm (1″) below the blade stops.
5. On G styles, tighten the attaching nuts on the transmission drive link(s) to motor crank arm 2.8 to 4.0 N·m (25 to 35 in-lb torque). On B, C, D styles tighten to 3.6 to 5.0 N·m (30 to 45 in-lb).
6. On G styles, position the right arm and blade assembly 25 mm (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 2-22 for various body styles is as follows:
   a. B, C, D and E styles - 35 mm (1.35″) plus or minus 12 mm (0.50″)
   b. G-35 and 69 styles - 36 mm (1.42″) plus 10 mm (0.39″) or minus 15 mm (0.59″)
   c. G-37, 47, 80 styles - 43 mm (1.69″) plus 10 mm (0.39″) or minus 15 mm (0.59″)
   d. K style - 38 mm (1.50″) plus 19 mm (0.75″) or minus .00 mm (.00″)

   The correct park position and outwipe dimensions are determined with the wipers operating at low speed on a wet glass.
9. Install cowl vent screen or cowl upper panel and screen.

WIPER BLADE

Removal and Installation (Fig. 2-23)

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.

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

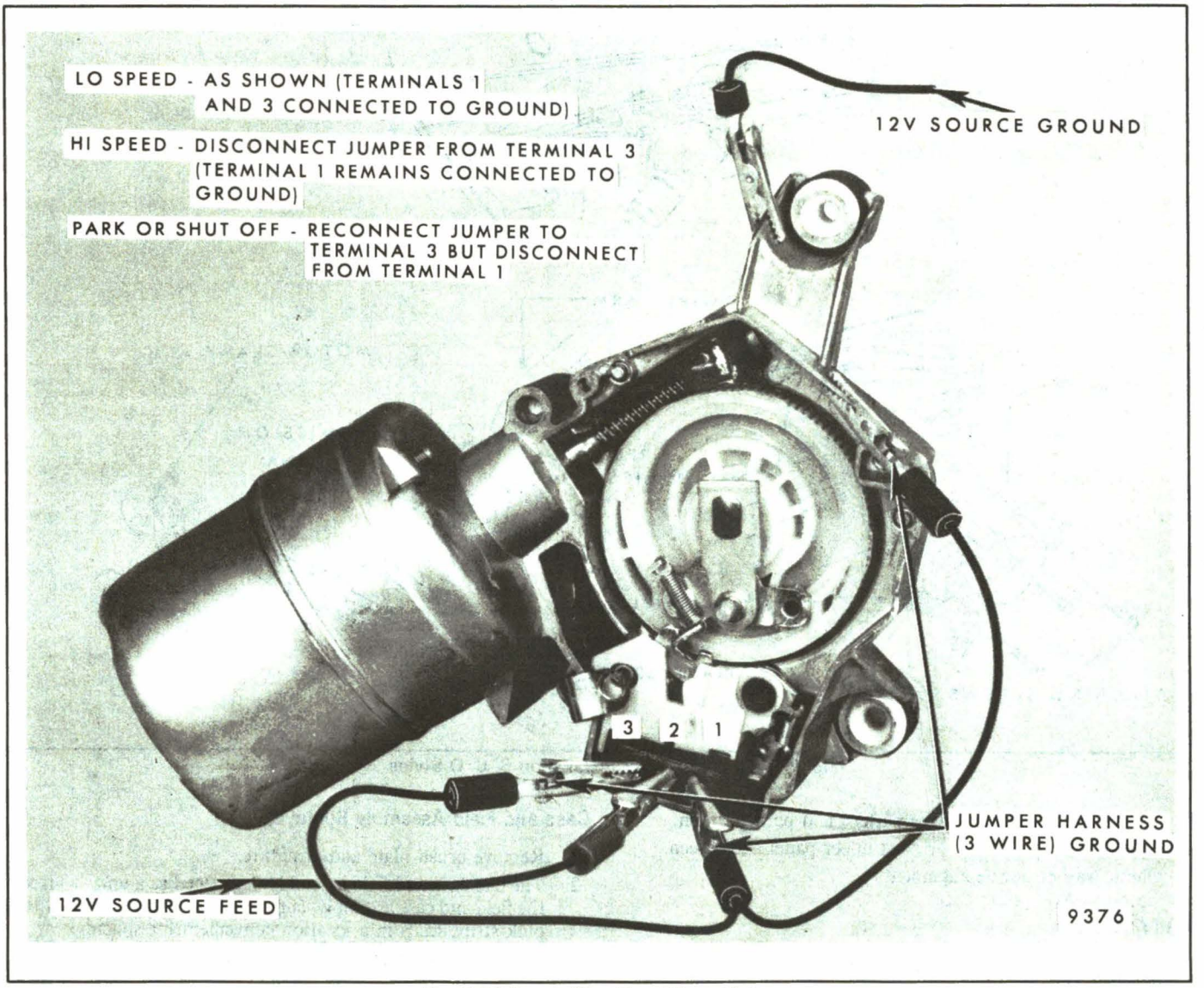


Fig. 2-14-Bench Checking Wiper Motor

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. 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 style remove cowl upper panel.
2. Remove right and left wiper arm and blade assemblies.
3. Loosen (do not remove) attaching nuts securing transmission drive link(s) to motor crank arm (Figs. 2-15, 2-16 and 2-17).
4. Disconnect the transmission drive link(s) from the motor crank arm.
5. Remove transmission to body attaching screws.
6. On E and K styles, the wiper motor support bracket must be moved to allow clearance for transmission removal. Use the following steps:
   a. Drill out upper spot welds with a spot-weld cutter (Fig. 2-26).
   b. On K styles, bend bracket up. On E styles, move the transmission assembly against the cowl panel and bend the bracket down.
   c. Apply cloth-backed tape to the top of the left fender to protect painted surface (Fig. 2-27).
7. Remove transmission(s) and linkage assembly by guiding it through plenum chamber opening or to left side under dash panel extension.
8. To install transmission(s) and linkage assemblies, position assembly in plenum chamber through the openings or below dash extension panel from left side. On E and K styles, move motor attaching bracket into place and attach with nuts and bolts. Seal all broken seams and cut welds with body caulk.
9. Loosely install transmission to body attaching screws.
10. On G and K styles, install transmission drive link(s) to motor crank arm and tighten attaching nuts to 2.8 to 4.0 N·m (25 to 35 in-lb) torque. On B, C, D styles, torque attaching nuts to 3.6 to 5.0 N·m (30 to 45 in-lb). See Figures 2-15, 2-16 and 2-17.
11. Align transmission(s) and tighten attaching screws to body.
12. Install wiper arm and blade assemblies and adjust as described under Wiper Arm Adjustment.

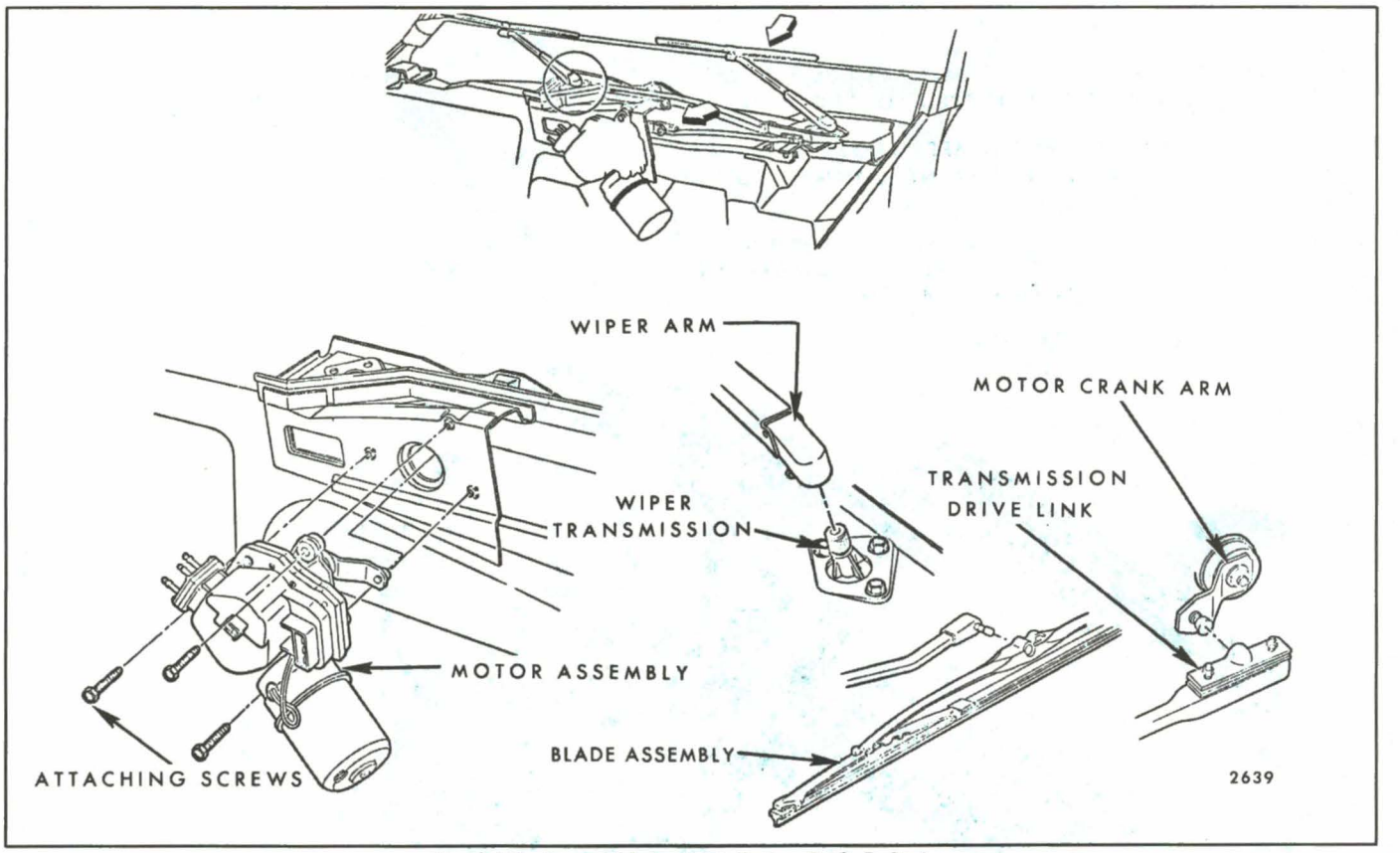


Fig. 2-15 - Round Motor Installation B, C, D Styles

13. Check wiper operation, wipe pattern and park position.
14. Install cowl vent screen or cowl upper panel and screen.
15. Check washer nozzle alignment.

MOTOR

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. 2-25). 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. Carefully straighten out the four tabs that secure the brush plate to the field coil retainers (Fig. 2-13).
6. Install U-shaped brush retainer clip over brush holder that has brush lead attached to circuit breaker (Fig. 2-13).
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 through 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. The 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. 2-36). Next, install thrust ball in end of shaft.
4. Assemble armature in the case and field assembly.
5. Position the partially assembled brush plate (Fig. 2-28) 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 2-13. The 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. 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.

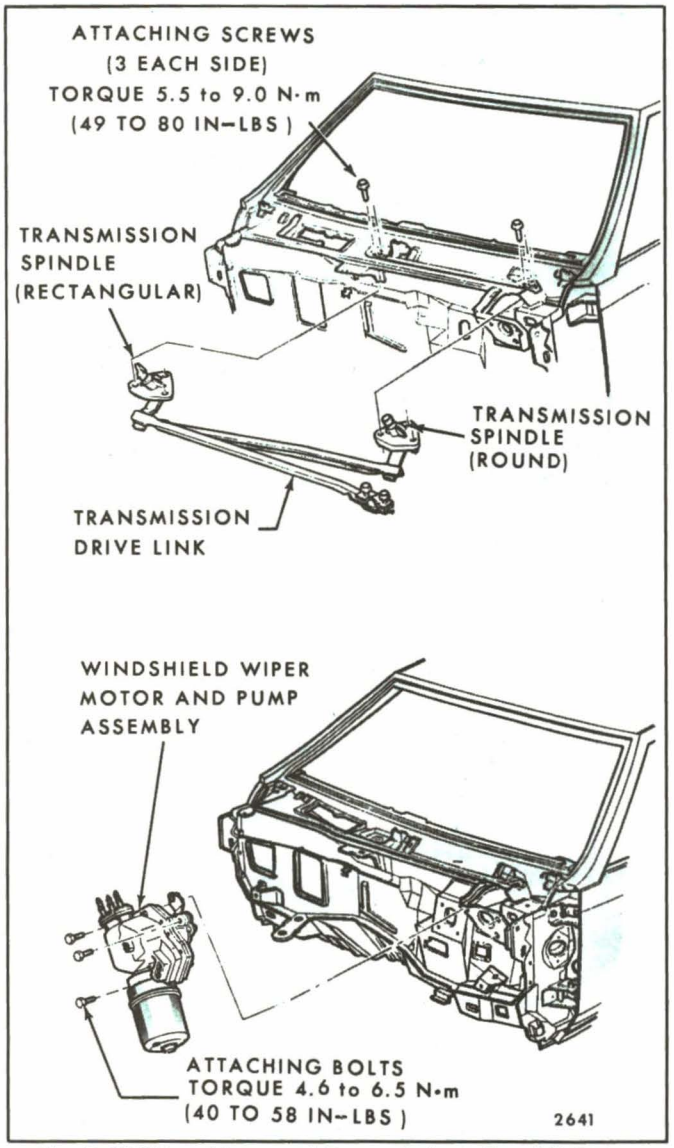


Fig. 2-16-Wiper Motor and Transmission - E and K Styles

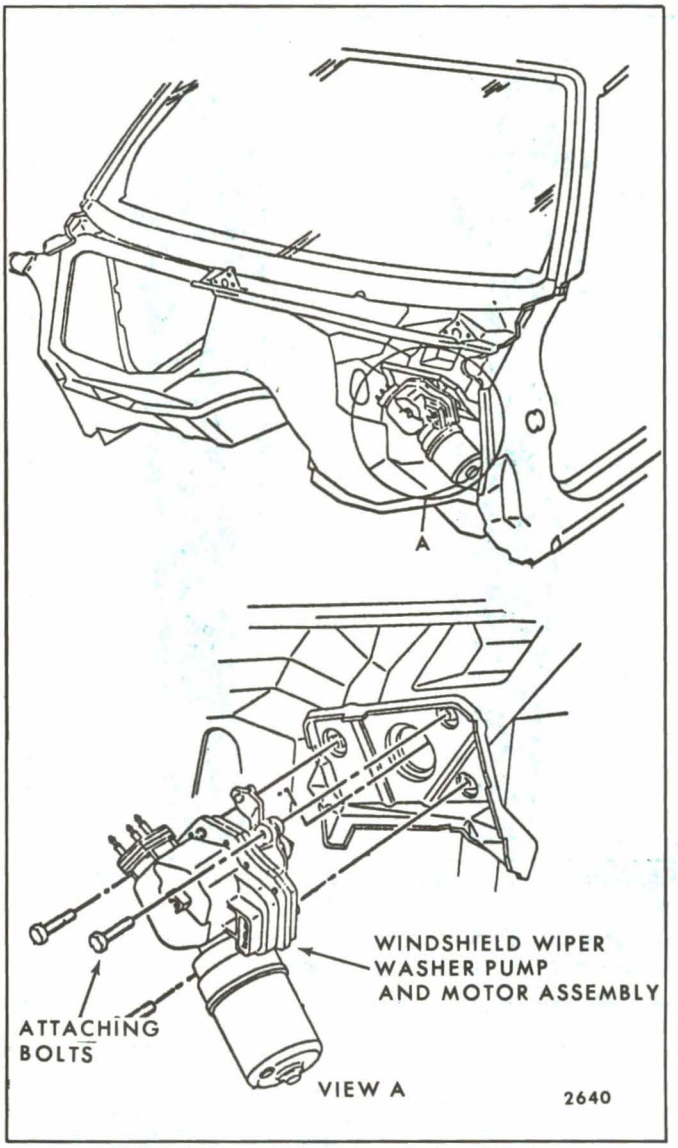


Fig. 2-17-Round Motor Installation G Styles

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. 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. 2-35).

GEARBOX

Relay Switch and Terminal Board Assembly Removal

1. Remove washer pump.

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

   If wiper gear mechanism is not in park position as shown in Fig. 2-11 (drive pawl away from latch arm), proceed to step 3.

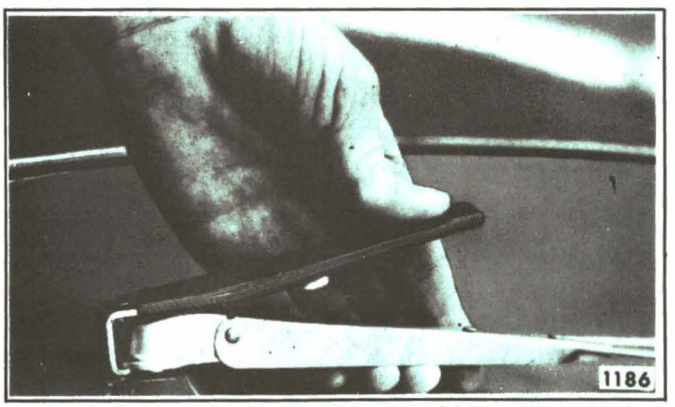


Fig. 2-18-Wiper Arm Removal Tool J-8966 (or Equivalent)

2. If wiper gear drive pawl is in park position (Fig. 2-11), 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 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

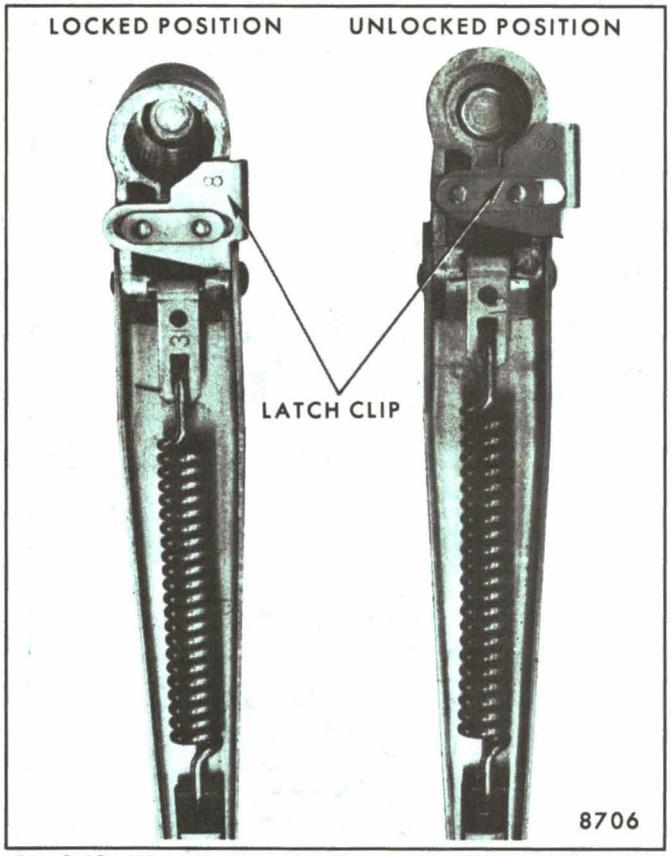


Fig. 2-19 - Wiper Arm Latch Clips - B, C, D Styles, E, G and K Styles Similar

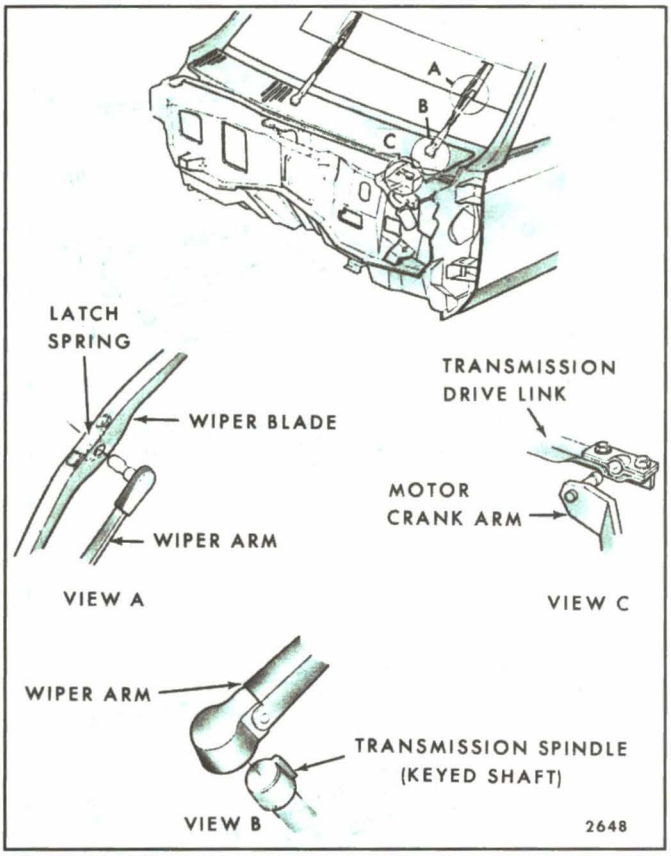


Fig. 2-21 - Wiper Arm, Blade and Transmission Drive Link - E and K Styles

current at this point. Be sure to cover the exposed wire with tape after the operation is completed.

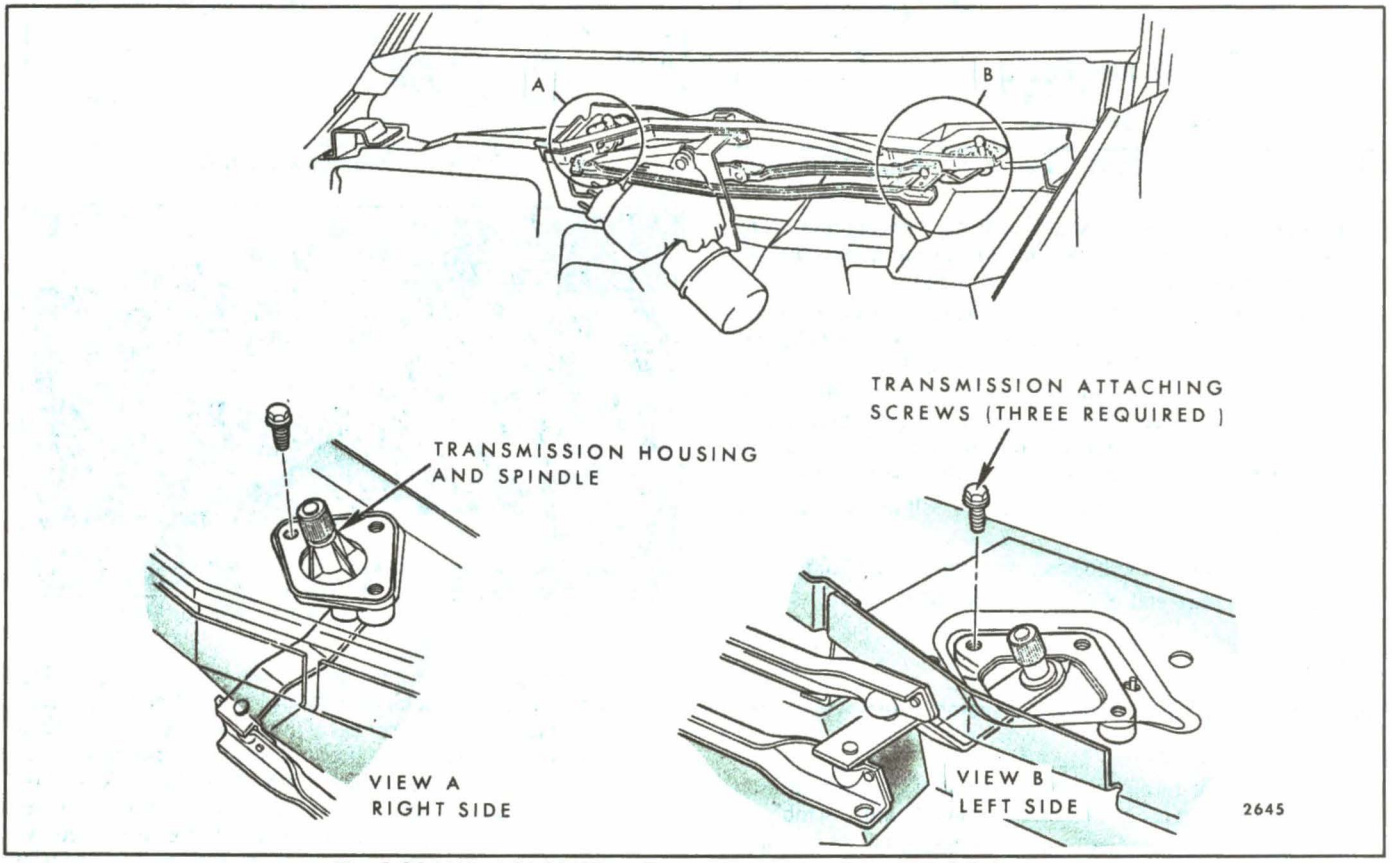


Fig. 2-20 - Windshield Wiper Transmission Installation - B,C,D Styles

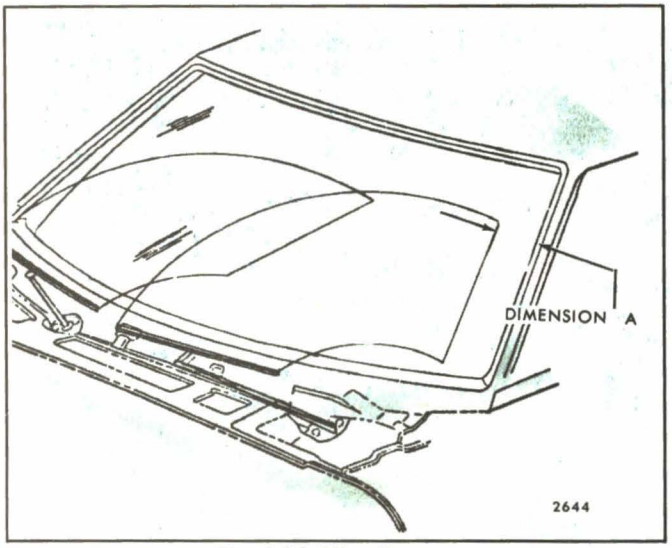


Fig. 2-22-Wipe Pattern

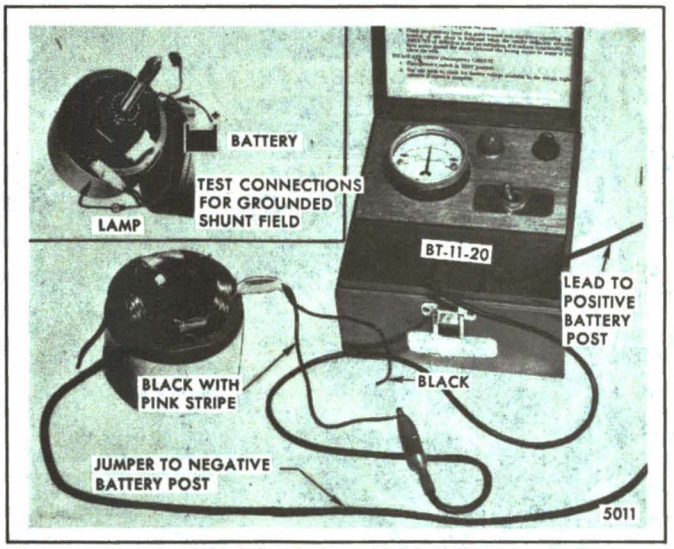


Fig. 2-24-Testing Field Coils

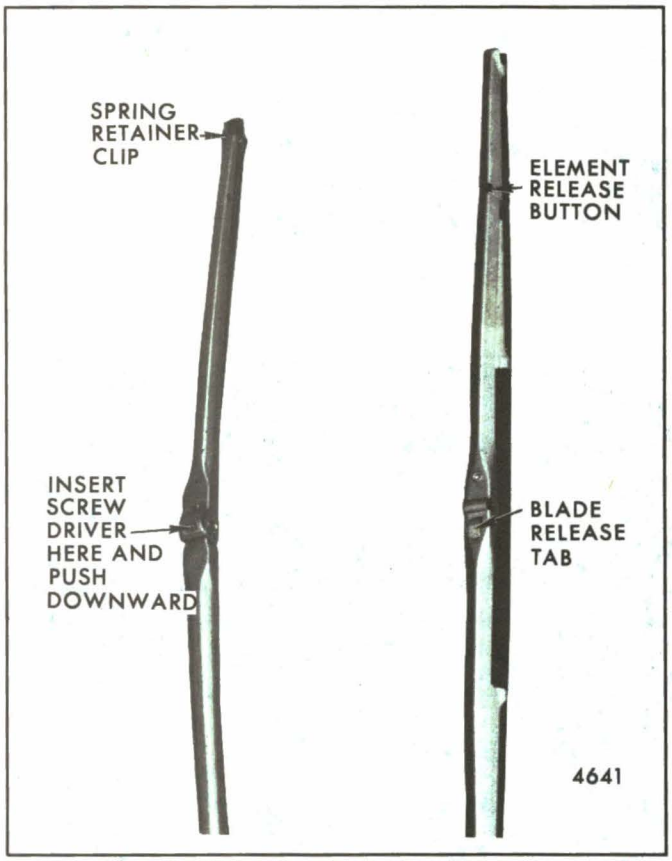


Fig. 2-23-Wiper Blade Assemblies

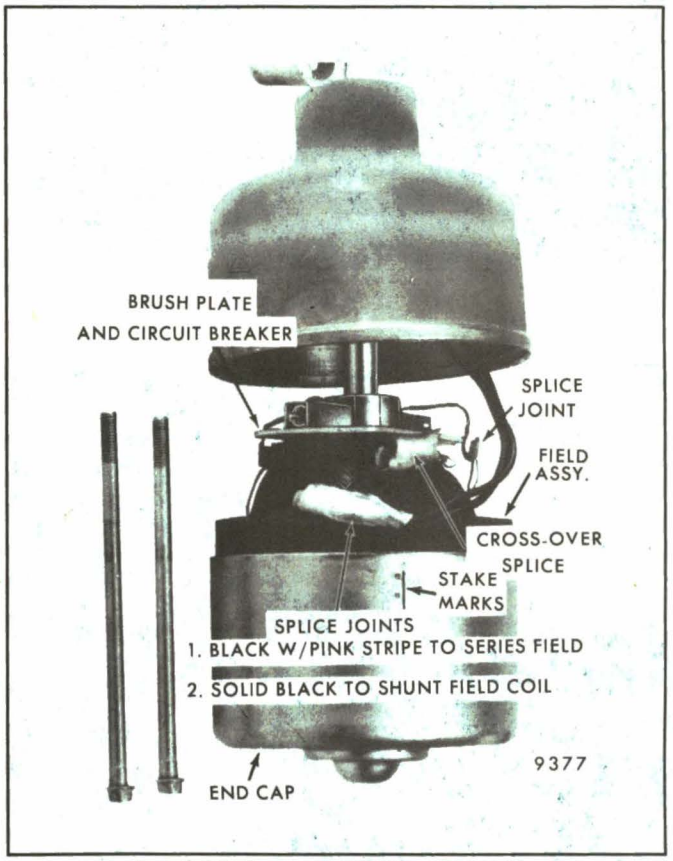


Fig. 2-25-Field and End Cap Assembly

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 2-29 when resoldering leads.

Reassembly of Relay Switch and Terminal Board Assembly

1. Resolder leads to relay switch and terminal board assembly as required. Solder black wire to terminal 3, black with pink stripe wire to the fixed contact post.

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

2. Position relay switch and terminal board assembly in housing.
3. Install relay switch and terminal board attaching screw.
4. Install washer pump to wiper motor. Refer to Round Motor - Washer System, Assembly of Washer Pump to Wiper Motor.

Drive Gear Disassembly

1. Remove washer pump.

NOTICE: Clamp crank arm in vise to avoid stripping drive gear teeth

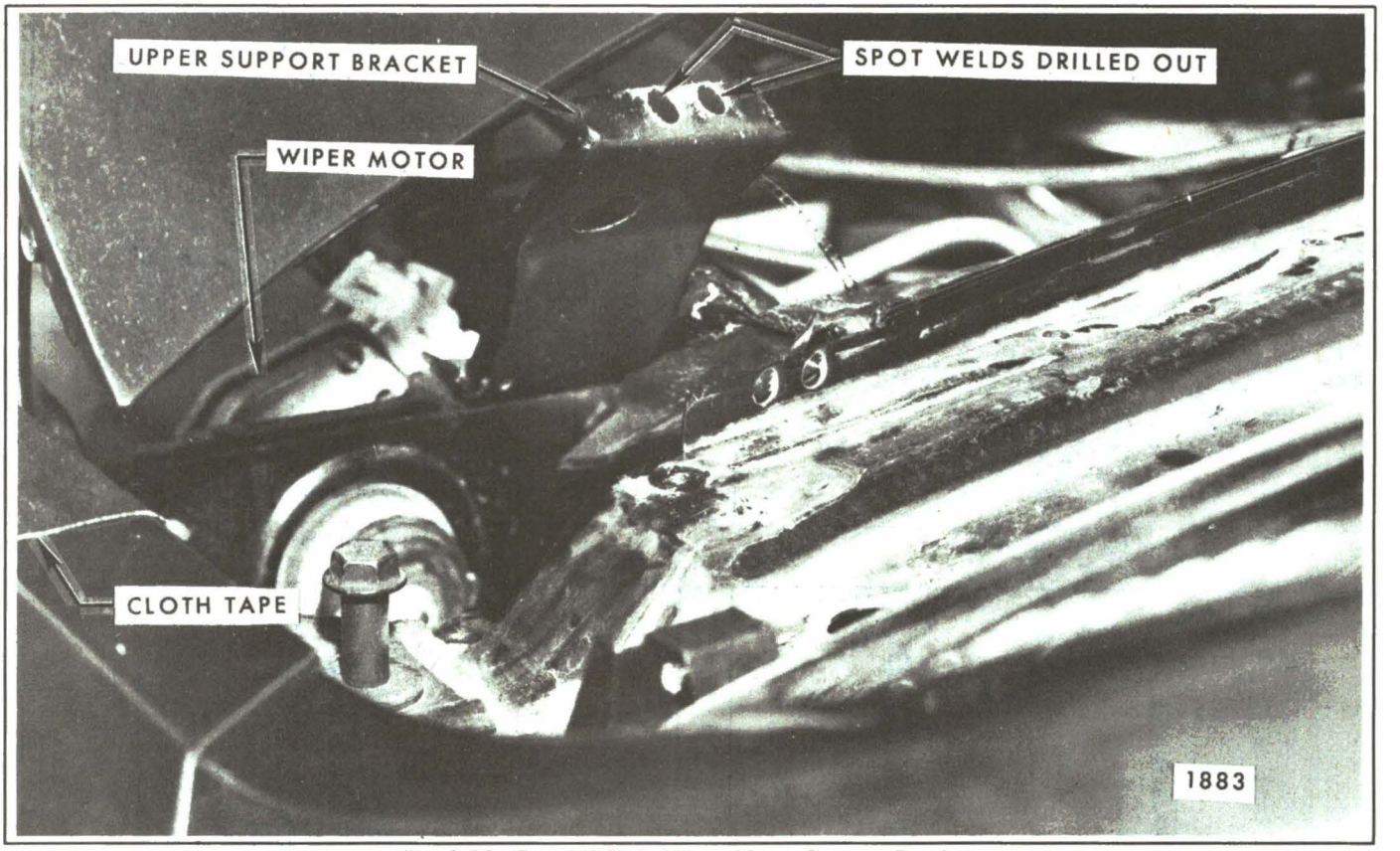


Fig. 2-26 - E and K Style Wiper Motor Support Bracket

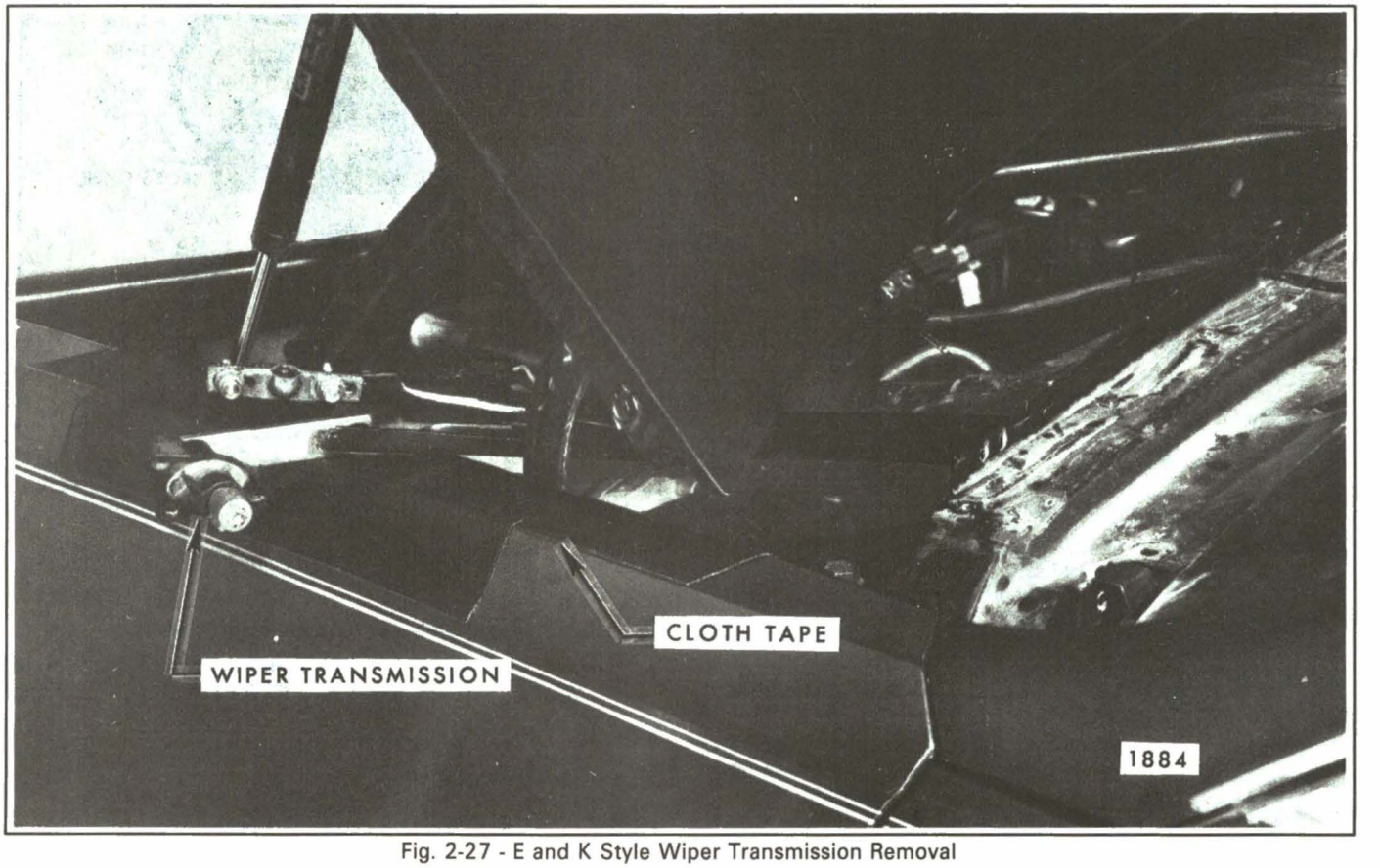


Fig. 2-27 - E and K Style Wiper Transmission Removal

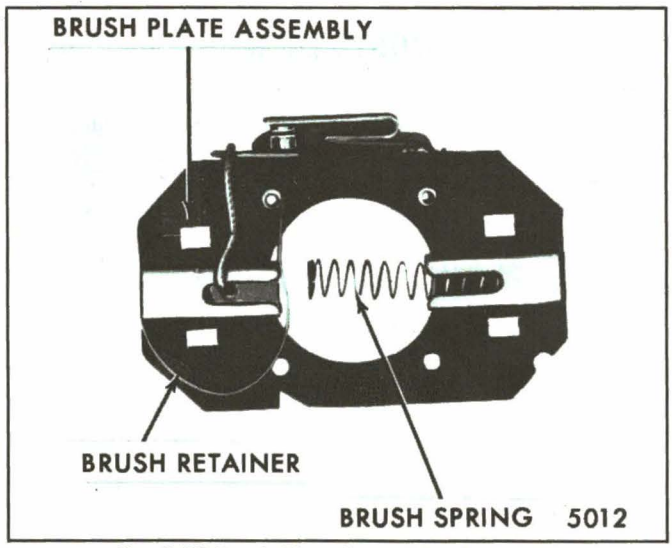


Fig. 2-28-Brush Plate Assembly - Removed

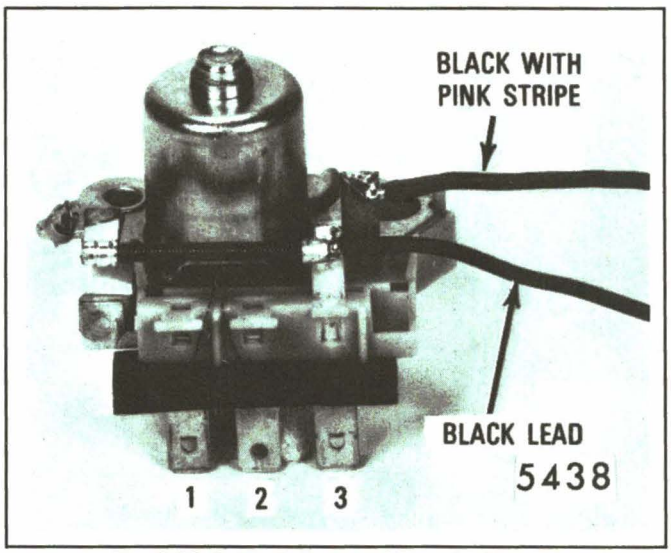


Fig. 2-29-Relay Switch and Terminal Board

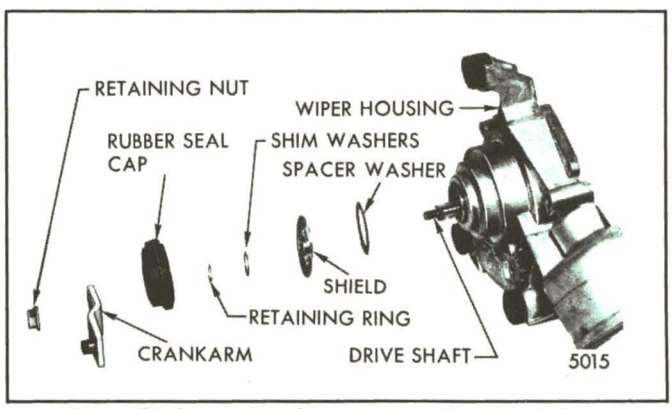


Fig. 2-30-Crank Arm Components - Exploded View

2. Remove crank arm retaining nut.
3. Remove crank arm, rubber seal cap, retaining ring, shim washers, shield and spacer washer in the order indicated (Fig. 2-30).
4. Slide gear assembly out of housing (Fig. 2-31). 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. 2-32). 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.

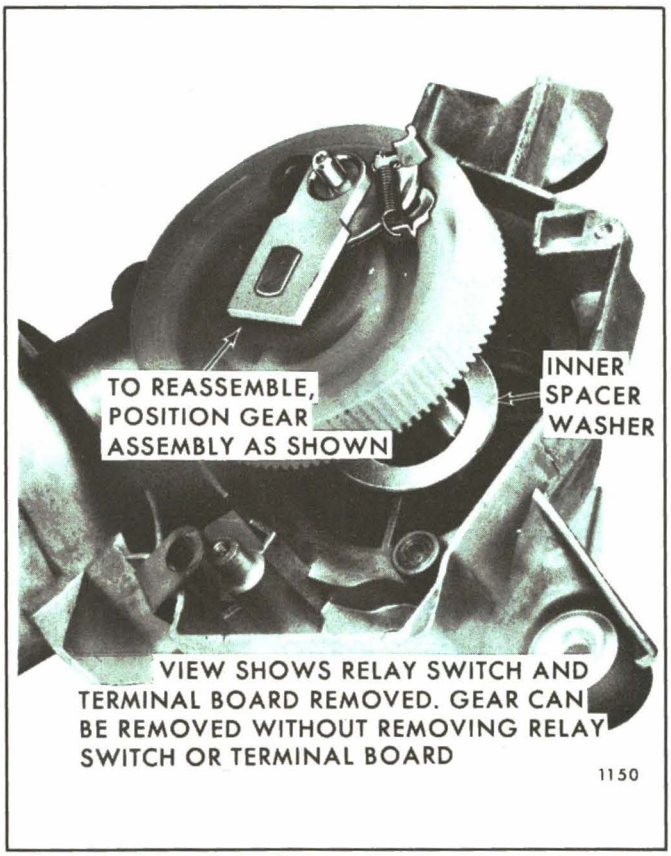


Fig. 2-31-Removing Gear

Drive Gear Reassembly

1. Position drive pawl on drive plate.
2. Assemble lock pawl over drive pawl as shown in Figure 2-33.
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. 2-34).
5. Reinstall coil spring between lock and drive pawls. 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 location shown in Figure 2-31.
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 2-30.

NOTICE: Clamp crank arm in vise before securing retaining nut to avoid stripping drive gear teeth.

8. Operate wiper to park position and install crank arm in the position shown in Figure 2-35.
9. Install washer pump to wiper motor. Refer to Washer System - Round Motor, Assembly of Washer Pump to Wiper Motor.

Fig. 2-32-Gear Removed

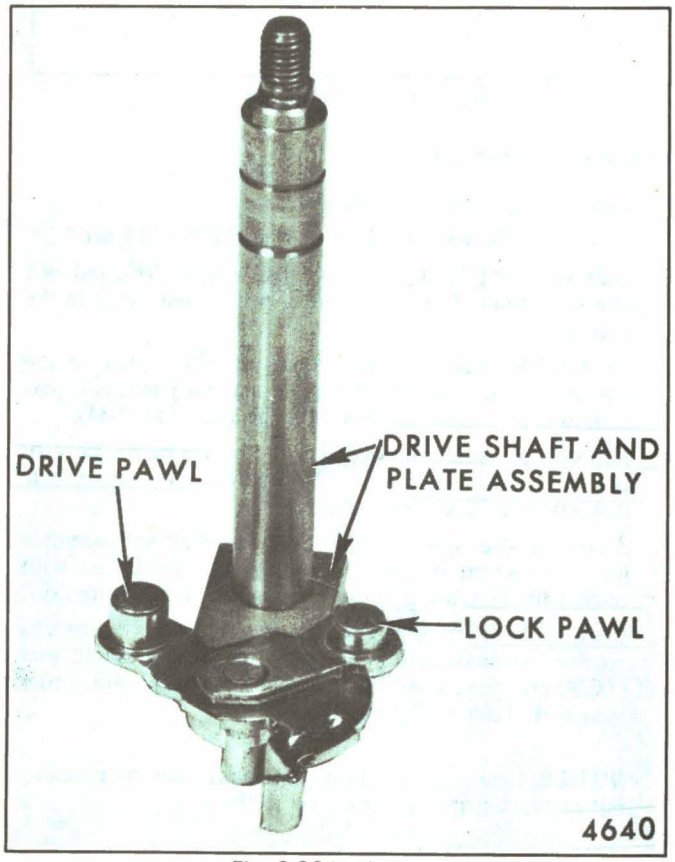


Fig. 2-33-Lock Pawl

WIPER MOTOR ADJUSTMENTS

Armature End Play

1. Loosen adjusting screw locknut (Fig. 2-35) 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. 2-30).

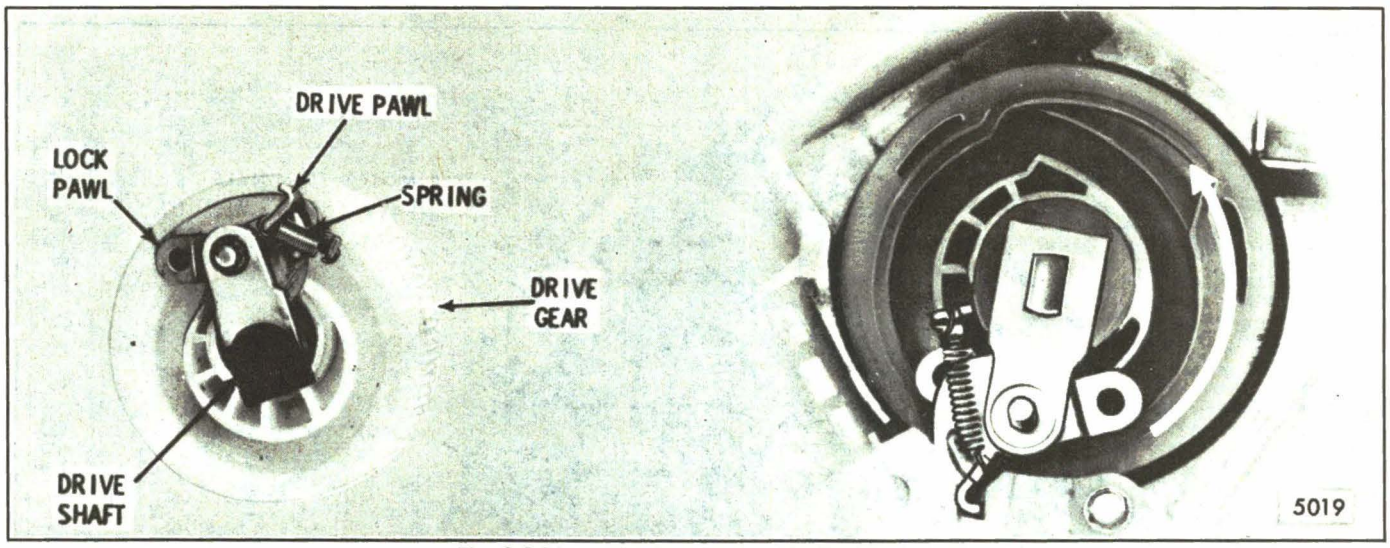


Fig. 2-34-Lock Pawl and Drive Pin Positioning

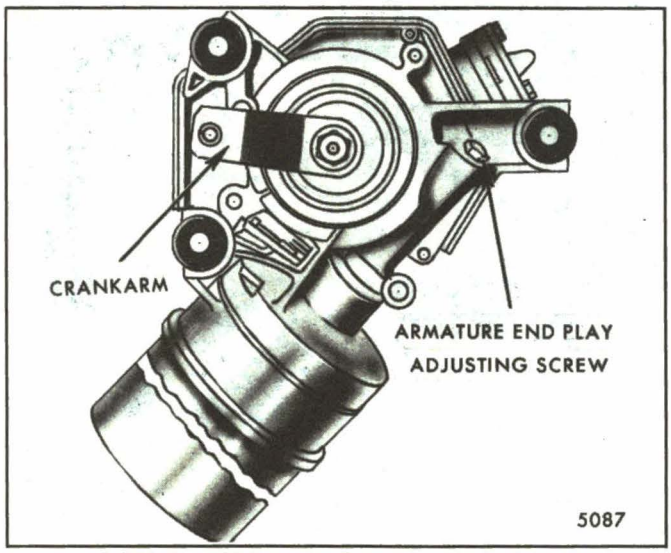


Fig. 2-35-Wiper Motor and Crank Arm in Park Position

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.	
CRANK ARM SPEED (RPM'S)		
Lo Speed	31 Min.	12 V
Hi Speed	55 Min.	12 V
TORQUE	N·m	In-lb
Washer Pump Mounting Screws	2	18
Motor Tie Bolts	4	30
Motor Crank Arm Attaching Nut	11-15	100-130
Motor Crank Arm to Drive Link	3-4	25-35
Motor to Body Attaching Bolts	4-5	30-45
Transmission to Body Bolts	5-8	48-72
Transmission Hex Head Nut	16-24	144-216
LUBRICATION		
Armature Shaft Bearings Gear Teeth Seal Cap (Inside)	Multifak EP-1 Or Equivalent	1734

Fig. 2-36-Specification Chart - Round Motor

MULTIPLEX PULSE WIPER SYSTEM

The multiplex pulse wiper system provides a controlled wiping action. This system is standard on Cadillac E and K styles and is available on B, C, D, E and G styles. It uses a round motor and wiper blades that park below the hoodline. The system can be identified by a single electrical lead (green wire) leading to the timing circuit (Fig. 2-37).

The dash switch in the DELAY mode can be turned from a MIN (minimum) to a MAX (maximum) position. The turning of the control knob from the MIN to MAX position varies the amount of time the wiper will delay between each wipe. The delay ranges between 0 and 12 seconds depending on the position of the knob. MIN delay or 0 seconds between wipes provides the equivalent of LO speed continuous operation.

The multiplex pulse wiper motor less the washer pump is the same as the 44.5 mm (1-3/4") stack standard depressed park wiper motor except for the concealed electrical leads.

The multiplex pulse windshield wiper and washer components are similar in appearance to the past model modified pulse system (Fig. 2-38); however, the pulse timing circuit is considerably different (Fig. 2-39).

The timing circuit for the multiplex system differs from the past model modified pulse system as follows:

1. One terminal is eliminated from the timing circuit.
2. 12 Volt DC circuit from the fuse block to the wiper control switch is eliminated.
3. The control switch grounds all circuits.
4. Eliminates a repeat park cycle when the wash cycle is started.

On the modified pulse system when the wash cycle was started from the off position at the switch, the blades would start out of the park position, then return to park momentarily before completing the wash cycle.

MOTOR OPERATION

The dash switches are a combination of switches and a variable resistor controlled by a single knob and a wash button switch (Fig. 2-40). Two relays control the operation of the motor.

- Parking relay (gearbox relay) located in the gearbox.
- Pulse relay (part of the timing circuit) located on the washer pump frame.

Both relays must be energized to complete 12V DC circuit to the wiper motor windings (Fig. 2-40).

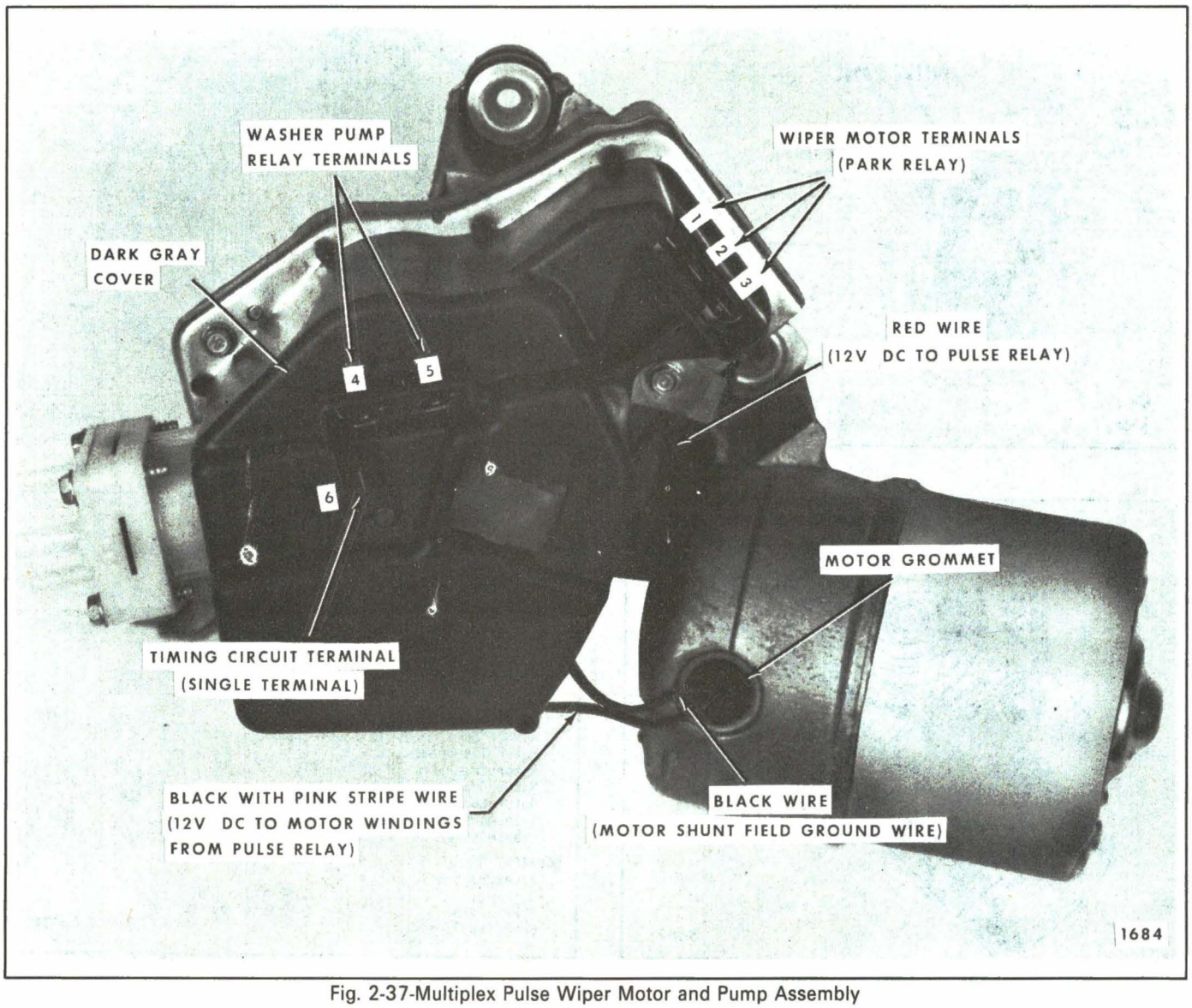


Fig. 2-37-Multiplex Pulse Wiper Motor and Pump Assembly

Low, Medium, High Speed

When the wiper motor is operating, both relay coil circuits are completed to ground at the control switch. The speed of the motor is controlled by varying external resistance in the shunt field circuit as follows:

LOW SPEED - Motor shunt field is connected directly to ground at the control switch (no external resistance).

MEDIUM SPEED - Shunt field is connected to ground through two external resistors (one 20 ohm resistor located in the parking relay and a 13 ohm resistor located on the control switch). The resistors are connected in parallel which provides an equivalent resistance of approximately 8 ohms.

HIGH SPEED - This circuit is open at the control switch and completed to ground through the 20 ohm resistor in the parking relay.

PULSE (Delay Operation) - During the pulse or delay mode, the parking relay coil ground circuit is maintained at the control switch keeping it energized. This maintains the 12V DC circuit to the pulse relay coil. The pulse relay coil ground circuit, however, is opened at the control switch and the timing circuit controls the ground circuit as explained below.

TIMING CIRCUIT OPERATION

The timing circuit consists of a capacitor, variable resistor in the control switch and the integrated circuit board. The variable resistor adjusts the time it takes to charge up the capacitor. When the capacitor reaches a certain charge, the integrated (switching) circuit is turned on. This action completes the pulse relay to ground. With the pulse relay energized, the feed circuit is completed to the motor windings which starts the motor. Shortly after the wipers start, the holding switch contacts close. (The holding switch contacts are located in the wiper gearbox and held open by a fin on the washer pump drive cam when the wiper is off, Figure 2-41.) When wiper starts running, the fin moves away, allowing the contacts to close. The closed contacts complete a dual function.

1. The capacitor is discharged which turns off the switching circuit.
2. It provides a holding circuit to ground for the pulse relay coil to maintain wiper operation.

When the wipe stroke is completed, the fin on the drive cam opens the holding switch. This opens the pulse relay grounding circuit. With the pulse relay not energized, the 12V DC circuit to the motor is opened and the wiper shuts off. Also with the holding switch open, the capacitor can charge up again.

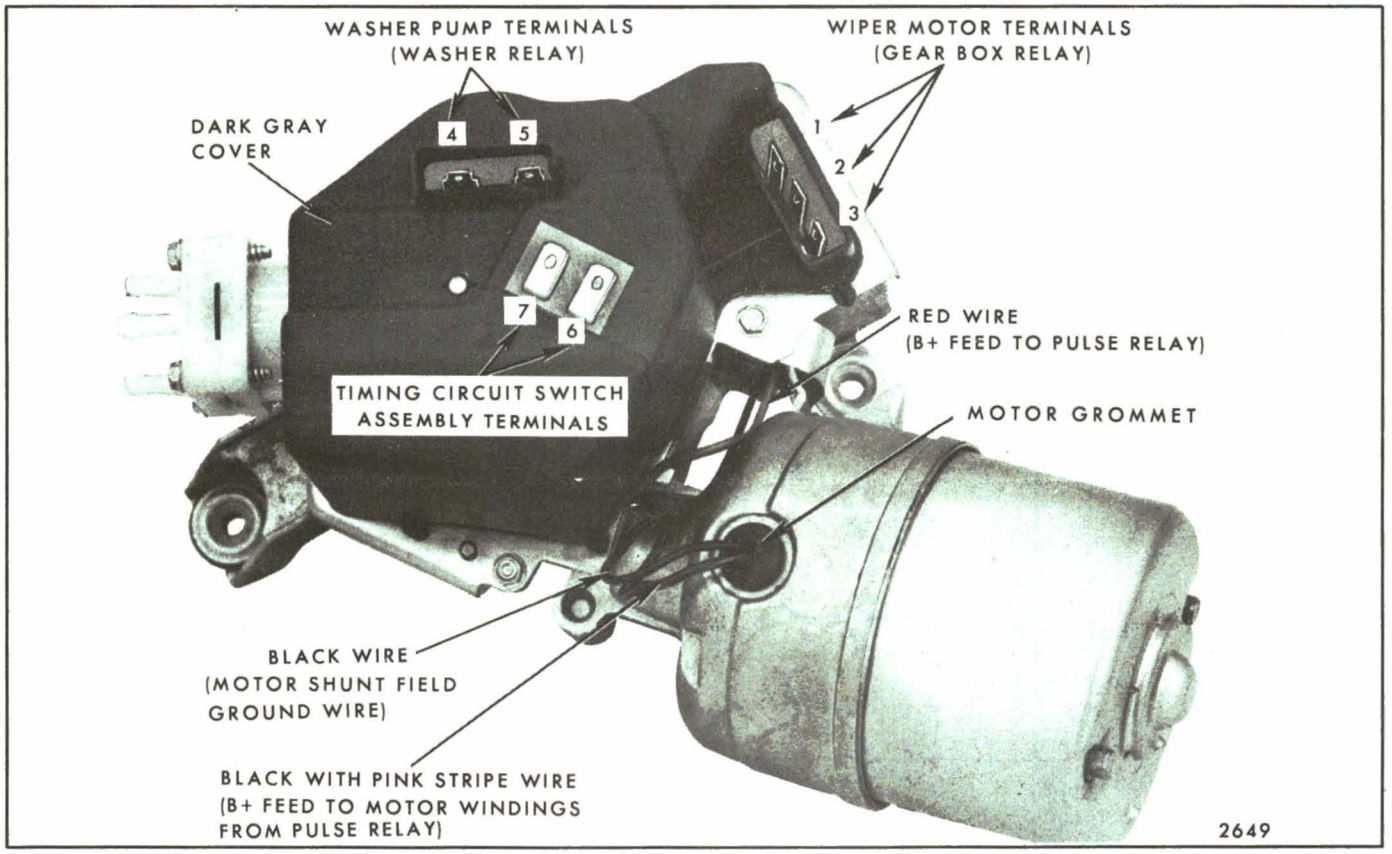


Fig. 2-38-Past Model Modified Pulse Wiper Motor and Washer Assembly

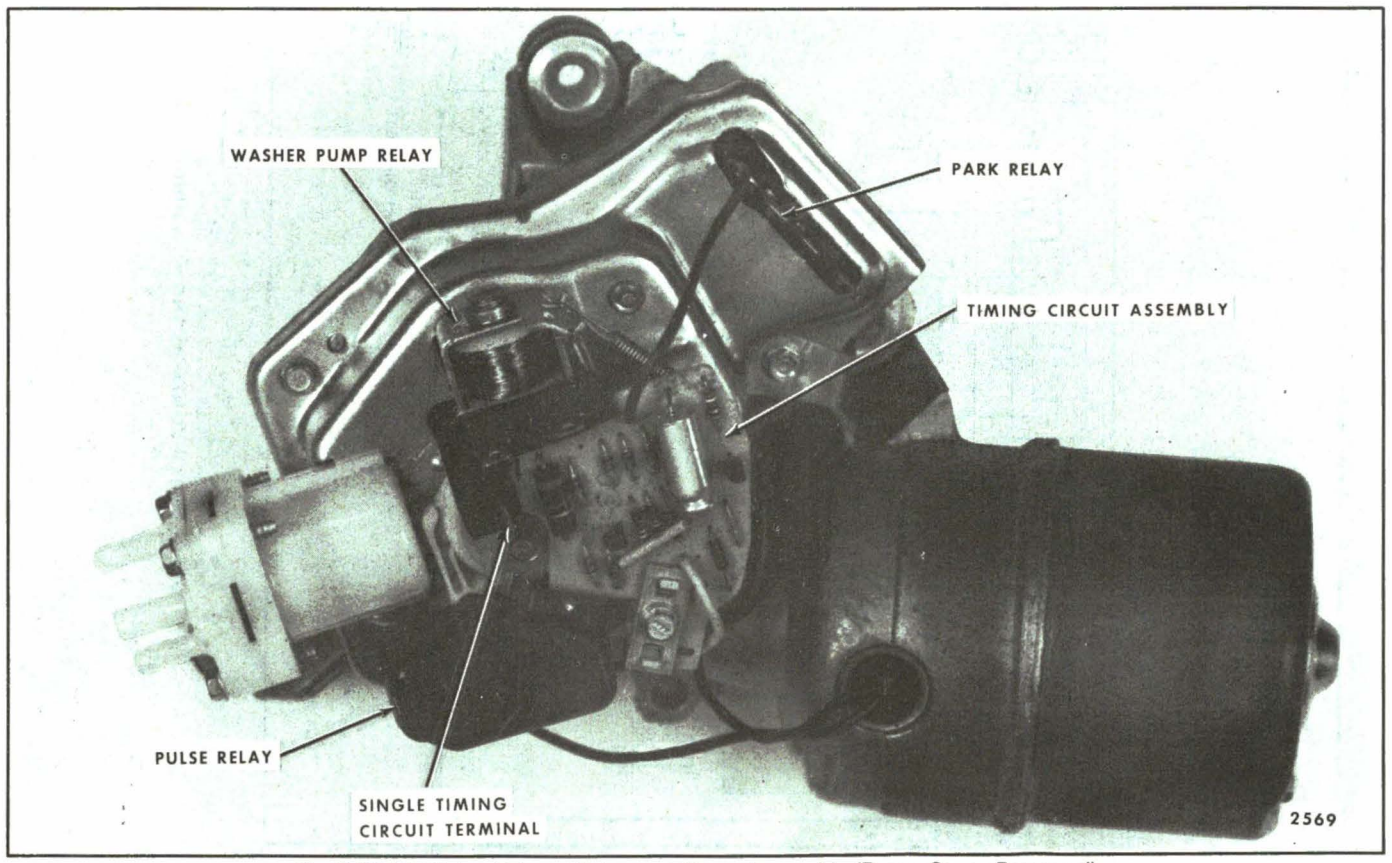


Fig. 2-39-Multiplex Wiper Motor and Pump Assembly (Pump Cover Removed)

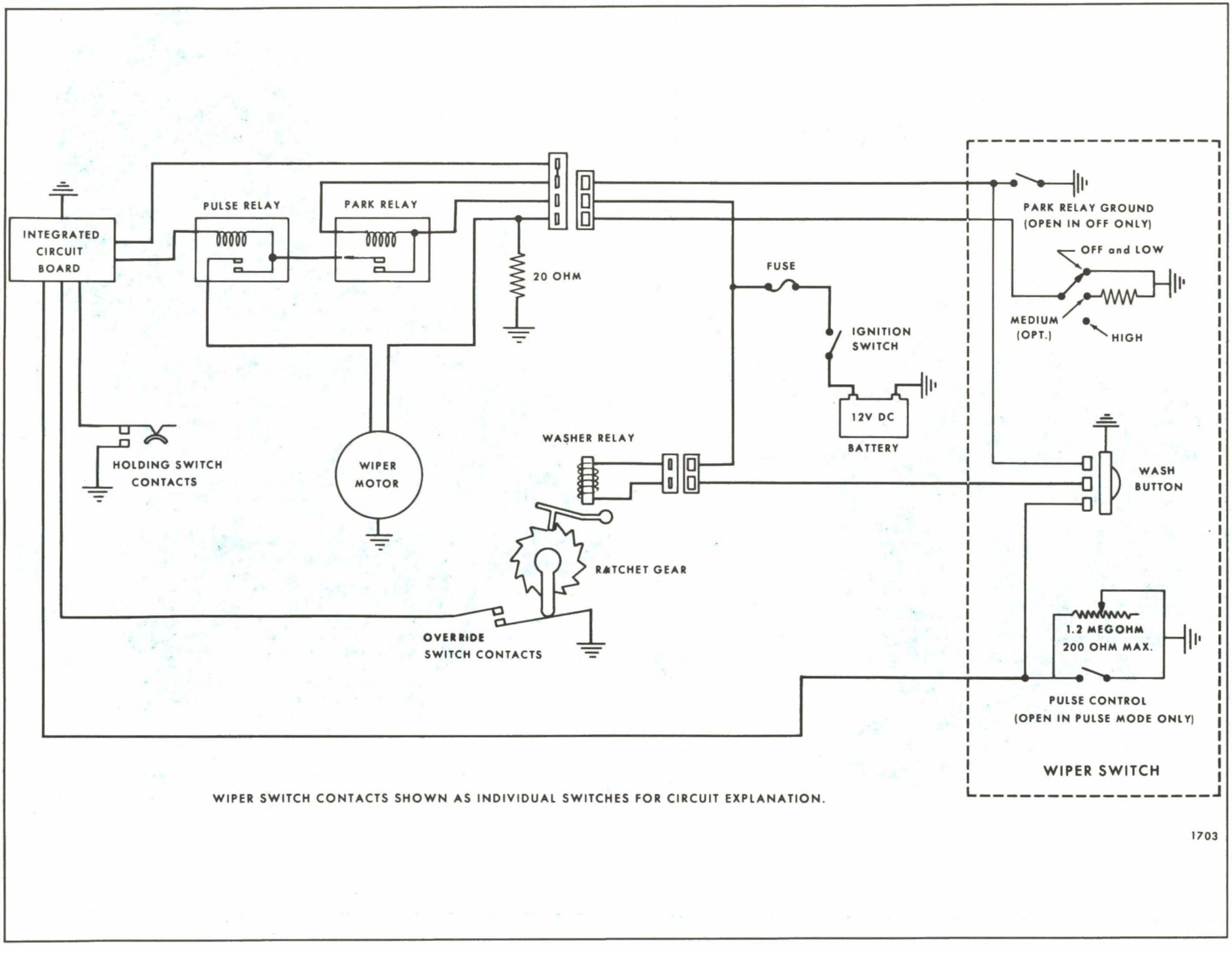


Fig. 2-40-Multiplex Windshield Wiper System Circuit Diagram

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.

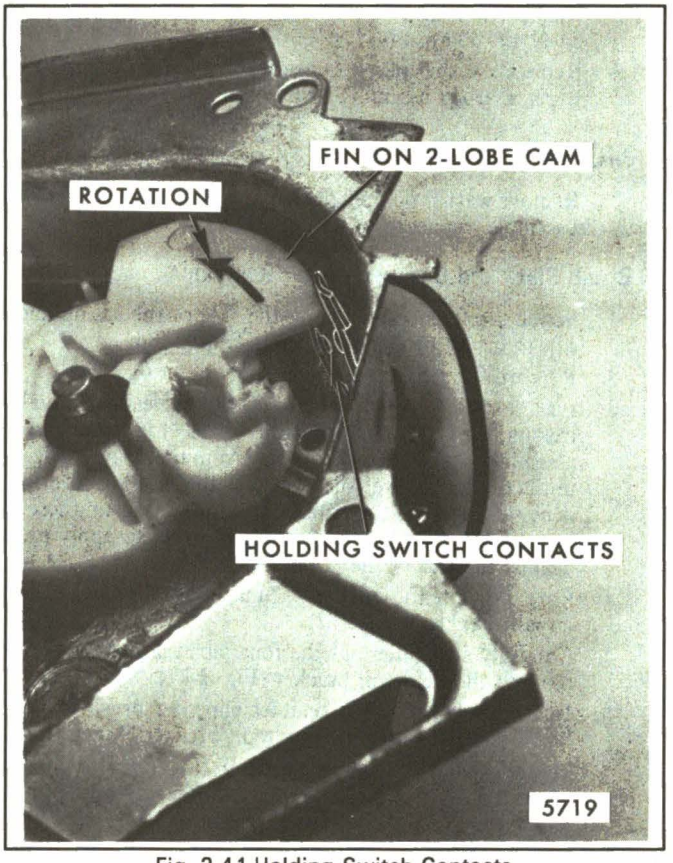


Fig. 2-41-Holding Switch Contacts

The holding switch contacts are held open by a fin on the washer pump drive cam (Fig. 2-41). 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.

SHUTTING THE WIPER OFF

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

1. The park relay coil circuit is opened allowing the spring-loaded relay latch arm to move out into the path of the gear mechanism (Fig. 2-42). 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.
3. The shunt field is connected directly to ground at the dash switch to maintain low speed operation during park cycle.

The continuing rotation of the motor gear causes the gear drive pawl to engage the relay latch arm (Fig. 2-43). 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 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. 2-44), which opens the relay switch contacts. This opens the B plus circuit to the 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 causes a somewhat lateral movement of the crank arm. This causes the wiper transmission to produce the additional angular rotation to move the blades into the full park position below hood level.

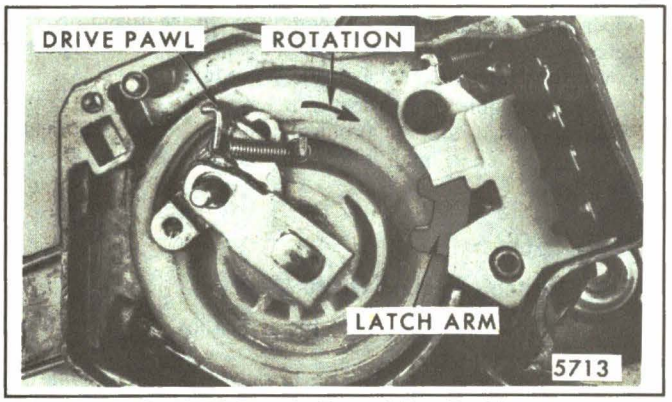


Fig. 2-42-Gear in Normal Run Position

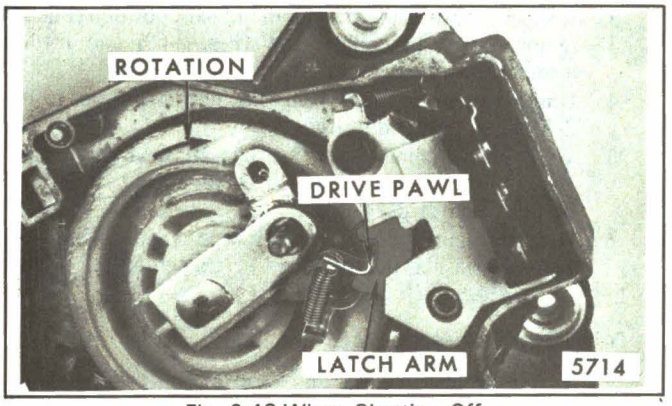


Fig. 2-43-Wiper Shutting Off

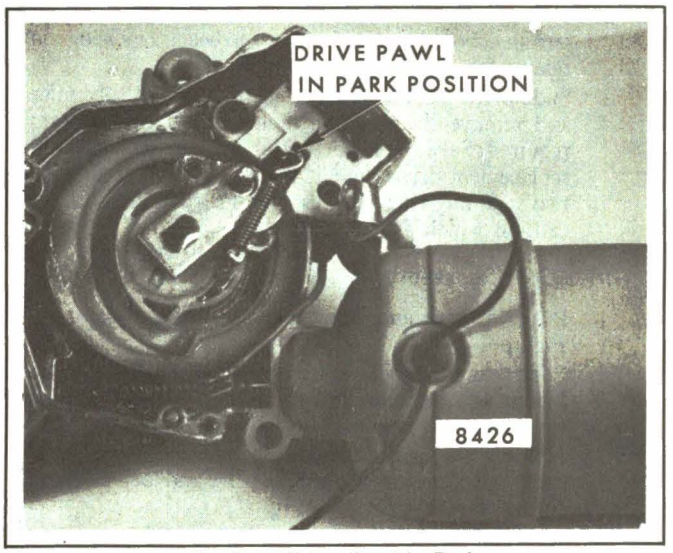


Fig. 2-44-Drive Pawl in Park

DIAGNOSTIC PROCEDURES

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

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. Find 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 to the chart and follow the procedures for the second condition.

GEARBOX

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. 2-69), operate the motor as required to move pawl out of relay slot (Fig. 2-66). If wiper will not run, remove the gear mechanism.
3. If wiper gear drive pawl is not in full park position (Fig. 2-42), remove relay attaching screw (Fig. 2-69) and lift relay-terminal board assembly out of gearbox.
4. Unsolder the black lead from relay terminal. Refer to Figure 2-70 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 2-66 and operate wiper to park position, then reinstall washer pump. Refer to reassembly of washer to wiper gearbox (Fig. 2-69).

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. 2-71).
2. Slide gear assembly out of housing (Fig. 2-72). If relay-terminal board assembly has not been removed, move the relay latch arm out of the way.
3. Slide drive plate and shaft out of gear and tube (Fig. 2-73) and remove the drive pawl, lock pawl and coil spring as required. Save the inside spacer washer for reassembly. 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.

Drive Gear Reassembly

1. Position drive and lock pawls on drive plate as shown in Figure 2-73.
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. 2-73).
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. 2-74).
4. Reinstall pawl spring between lock and drive pawls (Fig. 2-74).
5. Assemble inner spacer washer over the gear tube and reassemble gear mechanism in gearbox (Fig. 2-72). Be careful to maintain the gear mechanism in its assembled position during this step.
6. Reassemble parts removed in step 1 under disassembly. Use shim washers as required to obtain a maximum of 0.13 mm (.005) end play.
7. Refer to Figure 2-66 and operate wiper to park position; then position crank arm on output shaft flat so that it points in the direction shown in Figure 2-75. Next, install crank arm retaining nut fingertight.
8. Clamp crank arm in vise and torque retaining nut to about 34 N·m (300 in-lb).
9. Reinstall washer pump to gearbox. Refer to washer pump to wiper gearbox assembly instructions.

MOTOR

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

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. 2-76).
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. 2-76) until the armature shaft clears the casting bearing. 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 (Fig. 2-77).
5. Carefully straighten out the four tabs that secure the brush plate to the field coil bracket (Fig. 2-77).
6. Install U-shaped brush retainer clip over brush holder that has brush lead attached to circuit breaker (Fig. 2-77).
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. 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.