

**PASSENGER  
CAR**

**1962**  **CHEVROLET**

**SHOP  
MANUAL**  
*Supplement*

# 1962

## *Chevrolet*

### PASSENGER CAR SHOP MANUAL SUPPLEMENT

#### FOREWORD

This supplement has been prepared for use with the 1961 Passenger Car Shop Manual and covers additional service information pertaining to the 1962 passenger cars.

Summaries of new Special Tools are found at the end of each major section. New or revised specifications covering vehicle components are presented in Section 16.

All information, illustrations and specifications contained in this literature 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.

#### CHEVROLET MOTOR DIVISION

General Motors Corporation  
DETROIT, MICHIGAN

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## SECTION 1

# GENERAL INFORMATION

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The information provided in the 1961 Passenger Car Shop Manual together with changes and additions contained herein reflects the latest information necessary for service of the 1962 Chevrolet Passenger Car.

### MODEL IDENTIFICATION

	Biscayne		Bel Air		Impala	
	6 Cyl.	V-8	6 Cyl.	V-8	6 Cyl.	V-8
11-2 Door Sedan	1111	1211	1511	1611	—	—
35-4 Door Station Wagon (6 Pass.)	1135	1235	1535	1635	1735	1835
37-2 Door Sport Coupe	—	—	1537	1637	—	—
39-4 Door Sport Sedan	—	—	—	—	1739	1839
45-4 Door Station Wagon (9 Pass.)	—	—	1545	1645	1745	1845
47-2 Door Sport Coupe	—	—	—	—	1747	1847
67-Convertible	—	—	—	—	1767	1867
69-4 Door Sedan	1169	1269	1569	1669	1769	1869

### SELECTION OF GASOLINE

Chevrolet Hi-Thrift, 6 cylinder (8.25:1 compression ratio) and Turbo-Fire V-8 (8.5:1 compression ratio) engines are designed to operate efficiently on Regular grade gasolines. Chevrolet High-Performance V-8 engines with 9.5:1 compression ratio are designed to operate efficiently on Premium grade gasolines. Chevrolet High-Performance engines with 11.0:1 or 11.25:1 compression ratio require Super-Premium gasolines for proper performance and efficiency. The use of Regular grade gasolines in the 9.5:1 compression ratio engine or the use of Regular or Premium grade gasolines in either 11.0:1 or the 11.25:1 compression ratio engine will result in excessive knocking, which may lead to engine damage. The use of an incorrect grade of gasoline constitutes misuse of the engine.

### UNIT AND SERIAL NUMBER LOCATIONS

The 1962 unit and serial number locations remain the same as in 1961 except for the Turboglide transmission which has been discontinued. A new light weight Powerglide unit, available as optional equipment with 327 cubic inch engine, is illustrated in

Figure 1. Unit number for the transmission is located on right front corner of case beneath the converter cover.

Positraction Identification - Positraction units are not visibly distinguished from the conventional differential, that is both are contained within the same type carrier. However, positraction units require special

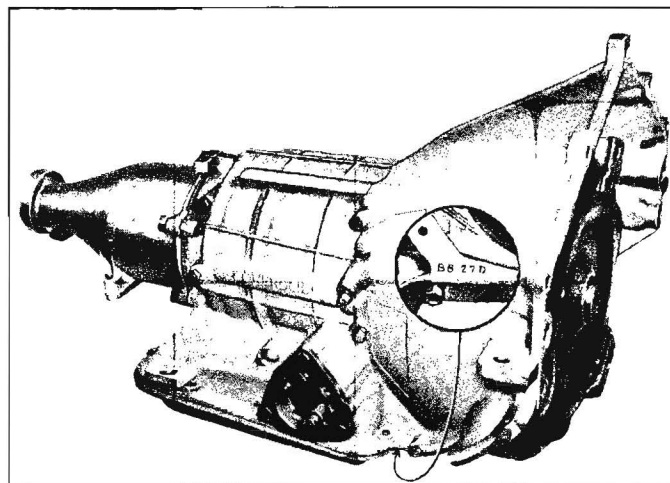


Fig. 1—Powerglide Unit Number Location

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lubricant (See Section 2.) and are identified by the prefix "P" stamped with the serial number on the left front side of differential carrier. Further identification is provided in the form of a metal tag affixed to the filler plug opening.

**DIMENSIONS**

Length . . . . .	209.6 inches
Wheelbase . . . . .	119.0 inches
Width. . . . .	79.0 inches
Height	
Convertible . . . . .	55.0 inches
Sedan and Coupe . . . . .	55.5 inches
Station Wagon . . . . .	56.0 inches

## SECTION 2

# GENERAL LUBRICATION

Lubrication information for the 1962 Chevrolet remains basically the same as contained in the

1961 Chevrolet Passenger Car Shop Manual except for the changes and additions covered below.

### CRANKCASE LUBRICATION

The crankcase oil change intervals for 1962 models will be as follows:

Notice that the initial change interval has, under favorable conditions, been increased to 4,000 miles. Subsequent oil changes remain as in the 1961 model.

Prevailing Daytime Temperature	Initial Oil Change Interval	Regular Oil Change Interval
Above 32°F.	First 60 days or first 4,000 miles - whichever occurs first.	Every 60 days or 4,000 miles - whichever occurs first.
Below 32°F. or during adverse operating conditions	First 30 days or first 4,000 miles - whichever occurs first.	Every 30 days or 4,000 miles - whichever occurs first.

### Types of Oils

In service, crankcase oils may form sludge and varnish and, under some conditions, corrosive acids unless protected against oxidation. To minimize the formation of these harmful products and to assure the use of oil best suited for present day operating conditions, automobile manufacturers have developed a series of sequence tests designed to evaluate the ability of any oil to properly lubricate automobile engines.

It is recommended that only those oils which are certified by their suppliers as meeting or exceeding the maximum severity requirements of these sequence tests (or GM Standard 4745-M) be used in Chevrolet engines. Certified sequence-tested oils will be described as such on their containers.

### OIL FILTER

The oil filter cartridge should be replaced at the

initial oil change and every 6 months or 4,000 miles (whichever comes first) thereafter.

### FUEL FILTER

This filter located in the carburetor fuel inlet, will no longer require replacement at regular 15,000 mile intervals as recommended in the past. Replacement will be necessary only when the filter is found to be dirty or plugged or if carburetor flooding occurs.

### REAR AXLE LUBRICANT

The rear axle lubricant does not require changing for the life of the vehicle. If replenishing is necessary or when refilling after rear axle service procedures, use SAE 90 or SAE 80-90 Multi-purpose Gear Lubricant.

# SECTION 3

## FRAME AND SUSPENSION

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## FRAME

### GENERAL DESCRIPTION

The 1962 Chevrolet passenger car frame is a carryover of the all-welded, X-type frame used in 1961. Frame design is the same except for an additional rear crossmember, included to support new

design station wagon tail-gate hinges. All specifications, checking and service procedures on the 1962 frame, remain the same as outlined in the 1961 Passenger Shop Manual, Section 3-1, 3-2.

## SUSPENSION

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### GENERAL DESCRIPTION

The 1962 Chevrolet Passenger Car short-long arm front suspension design and service operations remain the same as outlined in the 1961 Passenger Car Shop Manual, Section 3-3, with the exception of revised front wheel bearing adjusting specifications, front alignment specifications, and the addition of a revised

steering knuckle service procedure. The four-link, coil spring rear suspension is a carryover from 1961 and all service operations remain the same as outlined in your 1961 Passenger Car Shop Manual, Section 3-3.

## MAINTENANCE AND ADJUSTMENTS

Periodic maintenance of the front suspension includes lubrication of each of the four spherical joints every 1,000 miles and lubrication and adjustment of the front wheel bearings every 10,000 miles.

### FRONT WHEEL BEARINGS—ADJUST

The proper adjustment of the front wheel bearings is one of the important service operations that has a

## SUSPENSION 3-2

definite bearing on safety. A car with improperly adjusted front wheel bearings lacks steering stability, has a tendency to wander or shimmy and causes excessive tire wear. In an effort to provide for more accurate adjustments the spindles are drilled both vertically and horizontally and the adjusting nuts are slotted on all six sides.

**NOTE:** Do not repack or readjust front wheel bearings as part of New Car Conditioning. This will seriously affect the proper mating-in of these close tolerance bearings.

1. Jack up front end of vehicle. Remove hub cap and dust cap. Remove cotter pin from end of spindle.
2. Tighten spindle nut to 15 ft. lbs. (or 180 in. lbs.) torque while rotating wheel.
3. Back off adjusting nut one flat and insert cotter pin.
4. If slot and cotter pin hole do not align, back off adjusting nut an additional  $1/2$  flat or less as required to insert cotter pin.
5. Spin the wheel to make sure that it rolls freely. Properly lock the cotter pin by spreading the end and bending it around.

**NOTE:** These tapered roller wheel bearings should have zero preload and .000" to .007" end movement when properly adjusted.

Install the dust cap and hub cap or wheel disc.

6. Remove jack.

## FRONT WHEEL ALIGNMENT

Front wheel alignment consists of the inspection, maintenance and adjusting of all the inter-related steering angles of the front suspension system. The correct adjustment of these angles (camber, caster, ball joint inclination, toe-out on turns and toe-in) must be maintained to assure ease and stability of steering and satisfactory tire life.

### Alignment Preliminary Steps

There are several different types of front end alignment machines, all of which outline proper procedure for checking factors of front wheel alignment. The instructions furnished with each type of machine should be followed. All checks must be made with the vehicle level and at curb weight. Preliminary inspection of the vehicle before checking front wheel alignment should include:

1. Loose or improperly adjusted steering gear.
2. Steering gear housing to frame mounting.
3. Excessive wear in spherical joints or steering shaft coupling.

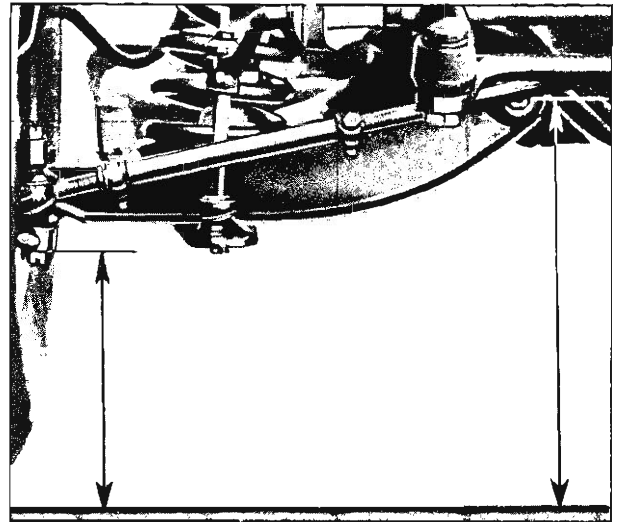


Fig. 1—Checking Riding Height

4. Tie rod or steering connections.
5. Front riding heights. (See Figure 1)
6. Tire inflation.
7. Wheel and tire balance.
8. Wheel bearing adjustment.
9. Shock absorber operation.

Toe-out on turns should be checked only after caster, camber and toe-in have been checked and adjusted to specifications.

## Riding Height and Front Coil Spring Sag

If the front suspension is visibly sagging during the alignment preliminary checks, the following procedure should be followed to determine whether the front spring heights are within correct limits.

1. Position car on smooth, level floor.
2. Bounce and rock the car several times and allow it to settle to a normal height.
3. Measure the distance from the floor to the center of the front inner pivot of lower control arm (fig. 1). Record this measurement.
4. Measure the distance from the floor to the lower face of the lower steering knuckle boss for the spherical joint on the same side of the vehicle. Record this measurement.
5. The difference between these two measurements, should be  $4 \frac{1}{4}'' \pm \frac{1}{2}''$  for all six cylinder vehicles, and  $4 \frac{7}{16}'' \pm \frac{5}{16}''$  for all V-8 equipped vehicles.

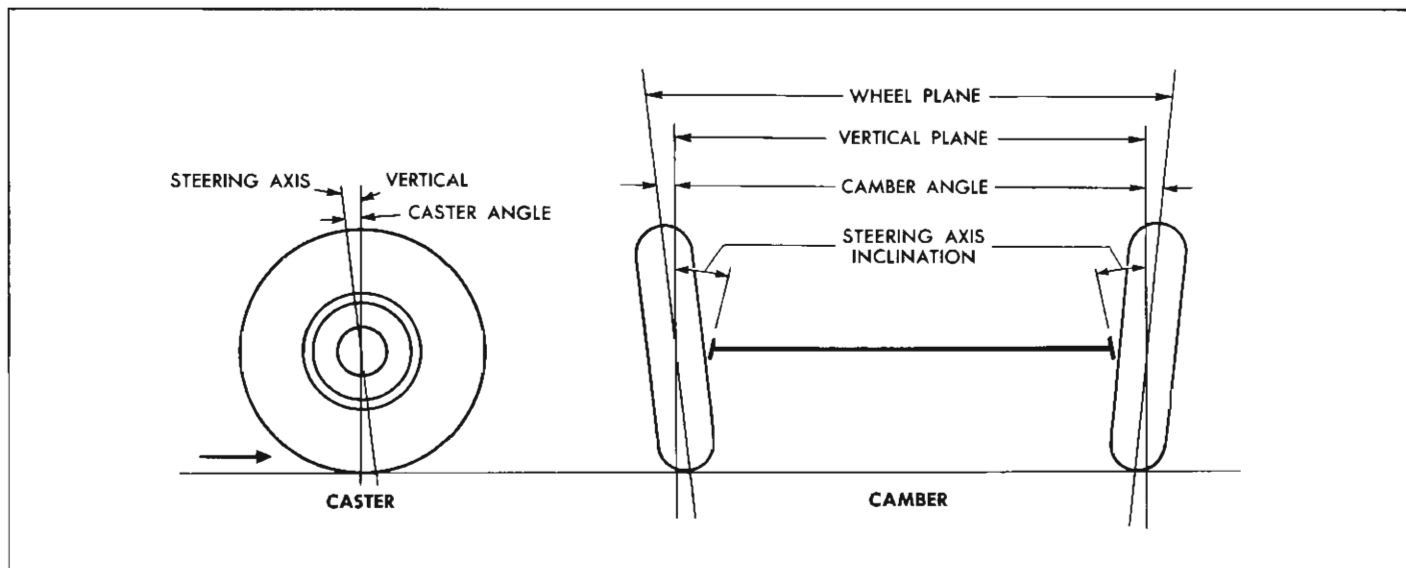


Fig. 2—Caster and Camber Angles

6. Measure the opposite side of the vehicle in a similar manner. It is essential that the two differences be within  $1/2''$ .

**NOTE:** Before adjusting caster and camber angles after complaint of excessive tire wear or poor handling, the front bumper should be depressed and quickly released to allow car to return to its normal height.

### Caster

The caster angle (fig. 2) is the angle measured between a true vertical line through the center of the wheel and the center line through the upper and lower ball joints. The correct caster angle or positive backward tilt should be  $0^{\circ} \pm 1/2^{\circ}$ . Caster adjustments are made by means of shims between the upper control arm inner support shaft and the frame side rail support bracket. The addition of shims at the front bolt or removal of shims at the rear bolt will decrease positive (backward) caster. A  $1/32''$  shim will change caster angle  $1/4^{\circ}$ .

### Camber

The camber angle (fig. 2) is the angle measured between a true vertical line and the centerline drawn through the vertical plane of the wheel and tire. The correct camber angle or outward tilt of the front wheels should be  $1/2^{\circ} \pm 1/2^{\circ}$ . Adding or removing shims at both front and rear bolts of upper control arm support shaft will adjust camber. A  $1/32''$  shim will vary camber  $1/6^{\circ}$ .

**NOTE:** Both caster and camber can be adjusted in one operation.

### Steering Axis Inclination

Steering axis inclination, comparable to king pin inclination in vehicles using king pins, is the inward tilt of the steering knuckle. From this definition, and from the definition of camber (outward tilt of the wheels), it is evident that one cannot be corrected without changing the other. The correct steering axis inclination should be  $7\ 1/4^{\circ} \pm 1/2^{\circ}$ . The sum of camber and steering axis inclination should be  $7\ 3/4^{\circ} \pm 1/2^{\circ}$ . If it is not within these limits, the steering knuckle is bent and should be replaced. If a new knuckle is installed, front end alignment must be readjusted. See Service Operations this section for steering knuckle replacement.

### Toe-In Adjustment

Toe-in, or the inward pointing of both front wheels, is checked with the wheels in a straight ahead position. It is the difference of the distance measured between the extreme front of both front wheels and the distance measured between the extreme rear of the wheels. Correct total toe-in should be  $1/8$  to  $1/4''$ .

If the equipment being used measures the toe-in of each wheel individually, the following procedure should be used:

1. Set steering gear on high point, mark 12 o'clock position on steering shaft, and position steering wheel for straight ahead driving.
2. Loosen clamp bolt at each end of each tie rod and adjust to a total of  $1/8''$  to  $1/4''$  toe-in (Fig. 3).
3. Position inner tie rod clamp bosses forward to  $90^{\circ}$  down to avoid stabilizer link bolt interference.



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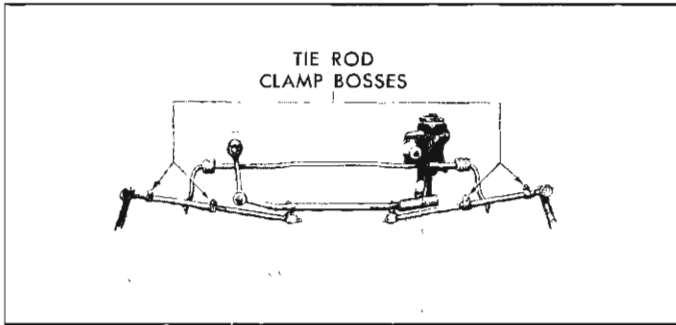


Fig. 3—Toe-In Adjustment

If a tram gauge is used, the following procedure should be used:

1. Set front wheels in a straight ahead position.
2. Loosen clamp bolts on one tie rod and adjust for 1/8" to 1/4" toe-in.

3. Loosen other tie rod clamp bolts. Turn both rods the same amount and in the same direction to place the steering gear on its high point and position the steering wheel for straight ahead driving.
4. Position inner tie rod clamp bosses forward to 90° down to avoid stabilizer link bolt interference.

### Cornering Wheel Relationship

Cornering wheel relationship, or toe-out on turns, is determined by the angle of the steering arms and is not adjustable. If this measurement does not fall within the limits (inner wheel  $20^{\circ} \pm 1^{\circ}$  outer wheel  $18^{\circ} \pm 1^{\circ}$ ), it will be necessary to replace the steering arm on the wheel side that does not fall within limits. See Section 4, Steering, for steering arm replacement.

## SERVICE OPERATIONS

### STEERING KNUCKLE

**NOTE:** It is recommended that vehicle be raised and supported on a twin-post hoist so that the front coil spring remains compressed, yet the wheel and steering knuckle assembly remain accessible. If a frame hoist is used, support lower control arm with an adjustable jackstand to safely retain spring in its curb height position.

#### Removal

1. Raise vehicle and support lower control arm as noted above.
2. Remove hub cap, wheel hub dust cover, cotter pin adjusting nut and washer, withdraw wheel and tire, brake drum, and wheel hub and bearing assembly from steering knuckle spindle.
3. Disengage brake shoe return springs and remove brake shoe hold-down clips. Remove brake shoes from backing plate.

**CAUTION:** Keep brake shoes clean and dry.

4. Remove brake anchor pin and two bolts securing brake backing plate and steering arm to steering knuckle.
5. Withdraw steering arm and brake backing plate from steering knuckle. Wire backing plate to frame. Do not disconnect brake line.

**NOTE:** Refer to Section 4 - Steering, Service Operation entitled Steering Linkage - Tie Rod, for further steering arm service operations.

6. Remove upper and lower ball stud cotter pins and remove ball stud nuts. Free steering knuckle from ball studs by rapping steering knuckle bosses. Withdraw steering knuckle.

#### Installation

1. Place steering knuckle in position and insert upper and lower ball studs into knuckle bosses.
2. Install ball stud nuts and tighten upper nut 42-47 ft. lbs., lower nut 60-94 ft. lbs. Insert new cotter pins.

**NOTE:** If necessary, tighten one more notch to insert cotter pins.

3. Place brake backing plate and wheel cylinder in position on steering knuckle and insert anchor pin.
4. Place steering arm in position on back of steering knuckle and insert two bolts through backing plate, steering knuckle and steering arm. Install lock nuts and tighten 40-50 ft. lbs.
5. Torque brake anchor pin to 65 ft. lbs.
6. Install brake shoes, brake shoe hold-down clips and return springs.
7. Install wheel hub, brake drum, wheel and tire assembly over spindle.
8. Insert outer wheel bearing race and roller assembly, washer and nut. Adjust front wheel bearing as shown under Maintenance and Adjustments in this section. Install new cotter pin, dust cap and hub cap.
9. Lower vehicle, recheck and readjust wheel alignment where necessary.

# WHEELS AND TIRES

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## GENERAL DESCRIPTION

All 1962 Passenger Car models carry disc wheels and 4-ply rating tubeless tires of the same design and operation as used in 1961. The five-stud wheels pilot on machined pilot diameters on the wheel hubs and axle

shafts, instead of the stud bolt circle as in 1961. All service operations are the same as outlined in your 1961 Passenger Car Shop Manual, Section 3-19. See Section 16 for further data and specifications.

## SPECIFICATIONS

Refer to Section 16 for Frame and Suspension Specifications.

# SECTION 4

# STEERING

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## STANDARD STEERING

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## GENERAL DESCRIPTION

The standard manual steering system used in the 1962 Chevrolet remains basically the same as the proven design used in 1961. There are, however, certain parts which have been improved in design and others which have been restudied in the area

of service procedures. Changes resulting from both the design changes and service procedure changes are outlined in the following pages. Those parts not covered herein may be assumed to be serviced as outlined in the 1961 Shop Manual.

## SERVICE OPERATIONS

### UPPER STEERING COUPLING

The design of the upper steering coupling has been changed to incorporate a single spring which is placed between the two bearing blocks, tending to spread them apart and automatically take up wear. Service may be performed as outlined on Page 4-4 of 1961 Passenger Car Shop Manual, except that references to wave washers no longer apply. Figures 1 and 2 show installed and relative positions of the new spring.

Note that if steering shaft pin is found to be worn or damaged, the entire steering upper shaft must be replaced. This may be accomplished as follows:

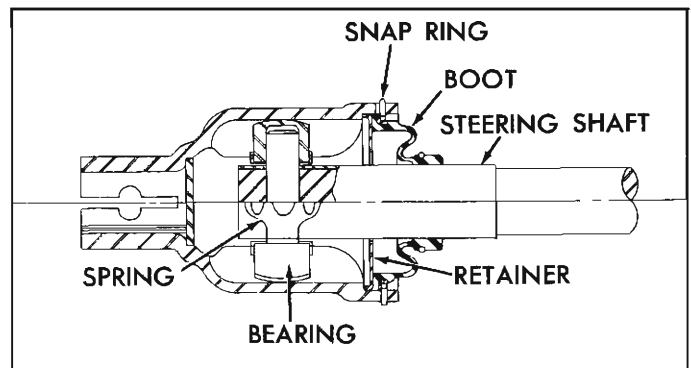


Fig. 1—Cross Section of Upper Steering Coupling

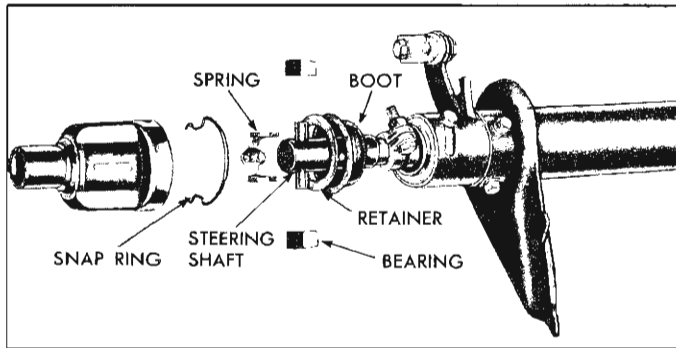


Fig. 2—Exploded View of Upper Steering Coupling

### UPPER STEERING SHAFT

#### Removal

1. Remove steering wheel as outlined in Operation 2 of "Mast Jacket (All) Removal", 1961 Passenger Car Shop Manual, Page 4-5.
2. Withdraw steering shaft from forward end of mast jacket.

#### Installation (Fig. 3)

1. Install spring stop clamp and spring on steering shaft.
2. Insert splined end of steering shaft in forward end of mast jacket and pass shaft up through jacket so that splined end protrudes from top.
3. Install steering wheel as outlined on Page 4-15, Operation 5, of 1961 Passenger Car Shop Manual.
4. Perform Operation One under "Installation Adjustments - All", Page 4-15 of 1961 Passenger Car Shop Manual.
5. Attach intermediate shaft, if removed, to upper coupling, aligning the marks as shown in Figure 4.

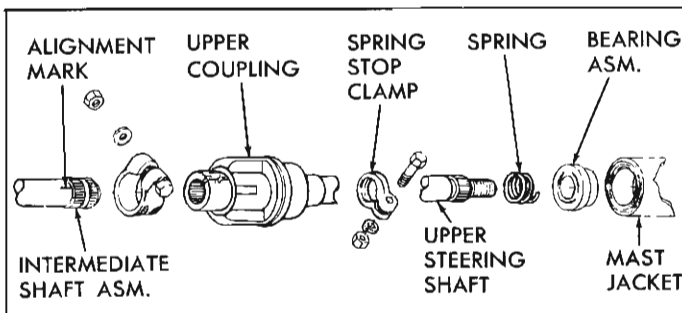


Fig. 3—Installation of Upper Steering Coupling

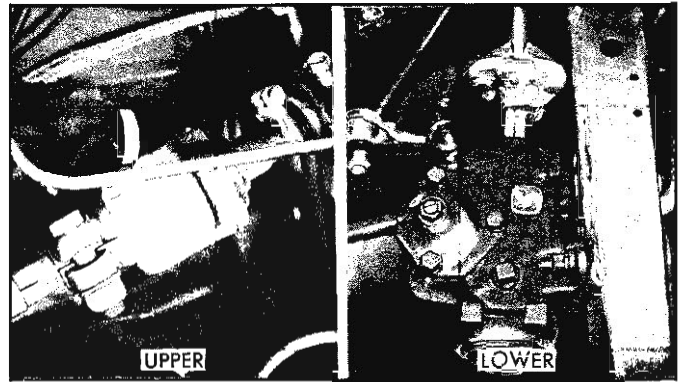


Fig. 4—Steering Shaft Alignment Points

### LOWER STEERING COUPLING AND INTERMEDIATE SHAFT ASSEMBLY

The lower coupling-shaft assembly now has the coupling parts riveted together in manufacture as shown in Figure 5. When service of the coupling parts is required, the rivets may be removed by drilling or cutting, the faulty parts replaced, and the coupling reassembled using the special bolts, nuts, lockwashers and reinforcements available as a repair unit through regular Chevrolet part outlets.

The intermediate shaft assembly may be removed and replaced as follows:

#### Removal

1. With the front wheels straight ahead, remove the upper coupling clamp bolt (fig. 3), then push the upper coupling toward the dash as required to free the upper end of the intermediate shaft.

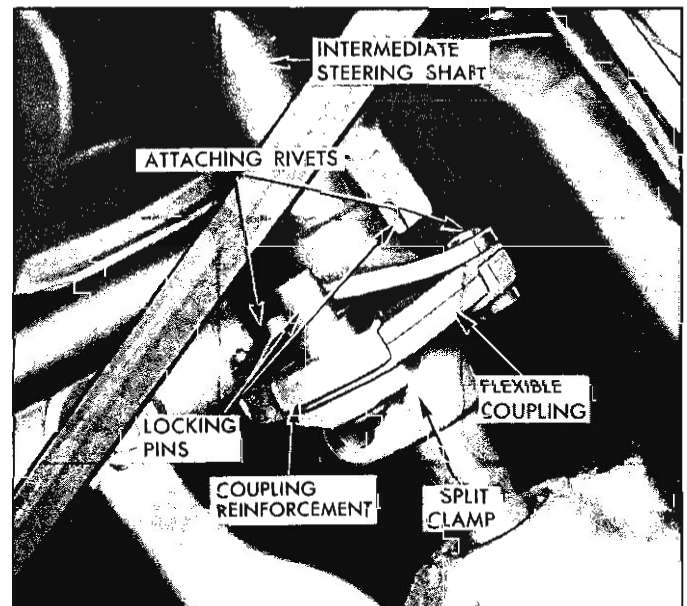


Fig. 5—Lower Steering Coupling

Further upward movement may be obtained if necessary by loosening steering shaft spring stop clamp (fig. 3).

- Using a 7/16" - 12 point socket, remove and save the special clamp bolt securing the lower coupling to the steering gear wormshaft and remove the intermediate shaft and coupling.

### Installation

- Install new intermediate steering shaft and lower coupling assembly by connecting lower coupling to wormshaft with the cast pointer on the coupling aligned with the mark on the wormshaft (fig. 4). Secure coupling by installing special clamp bolt. Tighten clamp bolt to 20-25 ft. lbs. using a 7/16" - 12 point socket.
- Complete installation by engaging upper end of intermediate shaft to the upper coupling. The split in the upper coupling clamp must be aligned to the mark on the upper end of the intermediate shaft to maintain steering wheel centering with steering gear hi-point. See Figure 4. Secure attachment by tightening the upper coupling clamp bolt, nut and washer to 20-25 ft. lbs. If spring stop clamp was loosened, grasp clamp and push up toward steering wheel, compressing spring until approximately .020" space remains between coils; tighten clamp bolt.

## STEERING GEAR

### Ball Nut Servicing

The ball guides used in the 1962 steering gear have been modified to ease insertion of the balls into the ball nut channels.

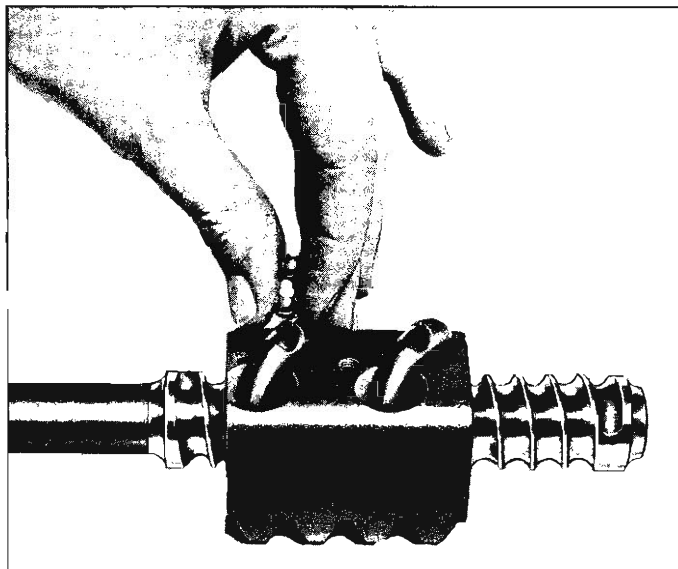


Fig. 6—Ball Nut with Guides in Place

Figure 6 shows the 1962 ball guides installed. It will be noted that it is no longer necessary to pack each ball guide with petroleum jelly and load the balls before installation. It is now possible to place the guides in the ball nut first and load all balls through the holes in the guides. It is suggested that the worm, inside of ball nut and guides be coated with steering gear lube before assembly. Installation of the guide clamp closes the holes in the guides. Do not substitute 1961 type guide clamp for 1962 clamp with coined hole closures.

The service procedure for the ball nut remains the same as for 1961 except for references to the old type closed ball guides.

## STEERING LINKAGE

### Steering Arms

If, through collision or other damage, it becomes necessary to remove and replace either steering arm, proceed as follows:

### Removal

- Remove tie rod from steering arm as outlined under "Steering Linkage - Tie Rod - Removal" Operations 1 and 2, Page 4-20 of 1961 Passenger Car Shop Manual.
- Remove front wheel, hub and brake drum as a unit by removing hub cap and dust cap, cotter pin from spindle nut and the spindle nut. Pull assembly toward outside of vehicle. If removal is difficult, it may be necessary to back off brake adjustment to increase brake shoe-to-drum clearance; see Hydraulic Brake Adjustment, Page 6-5, 1961 Passenger Car Shop Manual.
- With wheel and drum assembly removed, steering arm retaining bolt heads are accessible and removal of steering arm from vehicle may be accomplished by removing retaining nuts.

### Installation

- Place steering arm in position on vehicle and install retaining bolts. Note that longer bolt is installed in forward hole.
- Install nuts and torque to 40-50 ft. lbs. Use only the special locknut listed for this use in the Chevrolet Parts Catalog.
- Pack wheel bearings using a high quality wheel bearing lubricant. Install bearings and wheel-hub-brake drum assembly removed previously.
- Install keyed washer and spindle nut. Proceed as outlined on Page 3-3 of 1961 Passenger Car Shop Manual under "Front Wheel Bearings - Adjust."

#### STANDARD STEERING 4-4

5. Install tie rod ball stud in steering arm. Be sure that the dust cover is in place on ball stud.
6. Install castellated nut on ball stud, tighten securely and install cotter pin.
7. Following directions given on Page 3-5 of 1961 Passenger Car Shop Manual, check cornering wheel relationship and toe-in; correct as required.

## SPECIFICATIONS

Standard steering specifications may be found in Section 16 of this book.

# POWER STEERING

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## GENERAL DESCRIPTION

The 1962 power steering incorporates few changes to the proven design used in 1961. Those parts which have changed in design so as to affect service procedures are covered here in the order used in the 1961 Passenger Car Shop Manual. Also outlined are several procedures which have changed through restudy.

Included in this section is a new hydraulic system diagnosis, power steering pump service information and detailed hydraulic hose installation instructions.

Components not covered may be considered unchanged for 1962 and will be serviced as outlined in the 1961 Passenger Car Shop Manual.

## MAINTENANCE AND ADJUSTMENTS

### HYDRAULIC SYSTEM DIAGNOSIS

The following procedure outlines methods to identify and isolate power steering hydraulic circuit difficulties. This test is divided into two parts. Test



Fig. 7—Checking Power Steering Pump Belt Tension

number one provides means of determining whether power steering system hydraulic parts (pump and/or control valve and hydraulic lines) are actually faulty. If test number one results in readings indicating faulty hydraulic operation, test number two will identify the faulty part. Before performing hydraulic circuit test, carefully check belt tension and condition of driving pulley. Strand tension of belt should be 75 lbs. on new belts and 70 lbs. on old belts, as indicated by Tool J-7316 (fig. 7).

### Test Number One—Oil Circuit Open

Engine must be at normal operating temperature. Inflate front tires to correct pressure. All tests are made with engine idling, so adjust engine idle speed to correct specifications listed in Section 16 and proceed as follows:

- A. With engine not running, disconnect flexible pressure line from steel pressure line of pump and install Tool J-5176 as shown in Figure 8. Gauge must be between shut-off valve and pump. Shut-off valve must be open.
- B. Remove filler cap from pump reservoir and check fluid level. Fill pump reservoir to full mark on dipstick. Start engine and, holding steering wheel against stop, check connections at Tool J-5176 for leakage. Insert thermometer (Tool J-5421) in reservoir filler opening. Move steering wheel

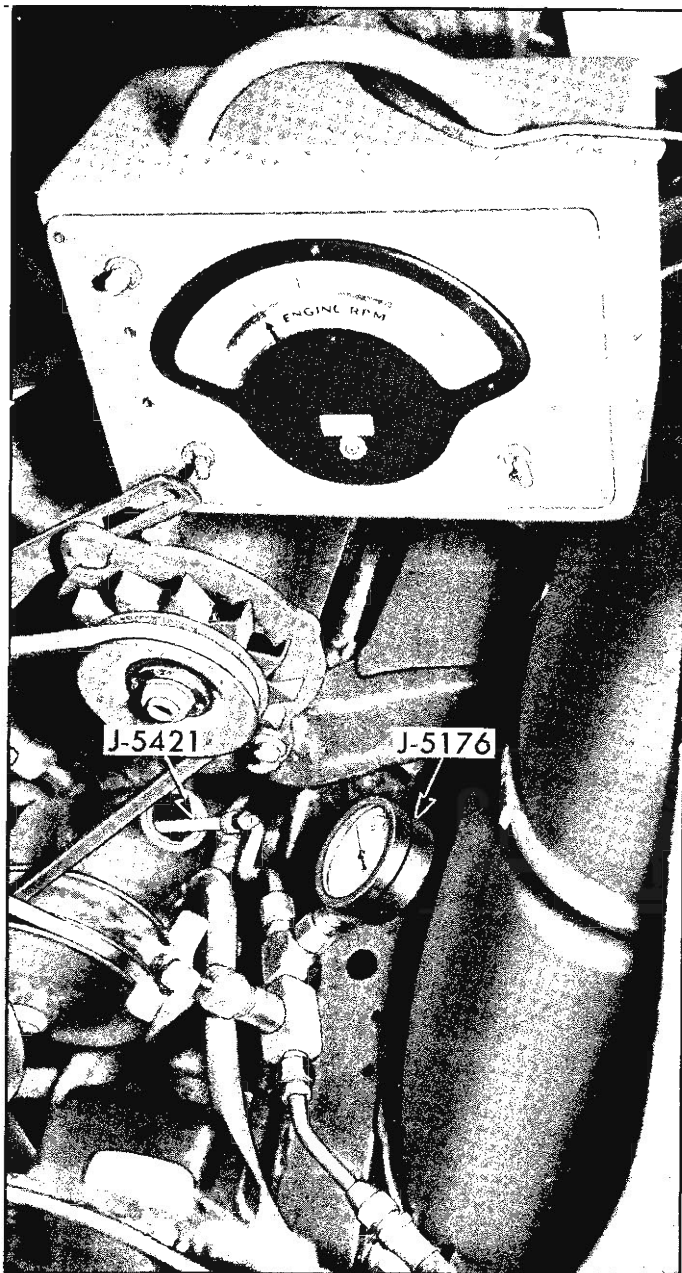


Fig. 8—Power Steering Diagnosis

from stop to stop several times until thermometer indicates that hydraulic fluid in reservoir has reached temperature of 150° to 170°.

**CAUTION:** To prevent scrubbing flat spots on tires, do no turn steering wheel more than five times without rolling car to change tire-to-floor contact area.

- C. Hold steering wheel against a stop momentarily and read pressure gauge. If the maximum pressure is below 800 psi, a faulty hydraulic circuit is indicated. To determine which part is faulty, proceed with test number two.

#### Test Number Two—Oil Circuit Closed

- A. Slowly turn shut-off valve on J-5176 to closed position and read pressure indicated on gauge. If indicated pressure is less than 850 psi, pump output is below requirements and pump may be considered faulty. If pressure indicated is 850 psi or more, it may be safely assumed that the control valve is not functioning properly.

**NOTE:** If pump proves faulty in test number two, test should be repeated after pump is repaired and installed in vehicle. This will provide a means of checking the repairs made to the pump and the condition of the control valve, which may also be faulty.



## SERVICE OPERATIONS

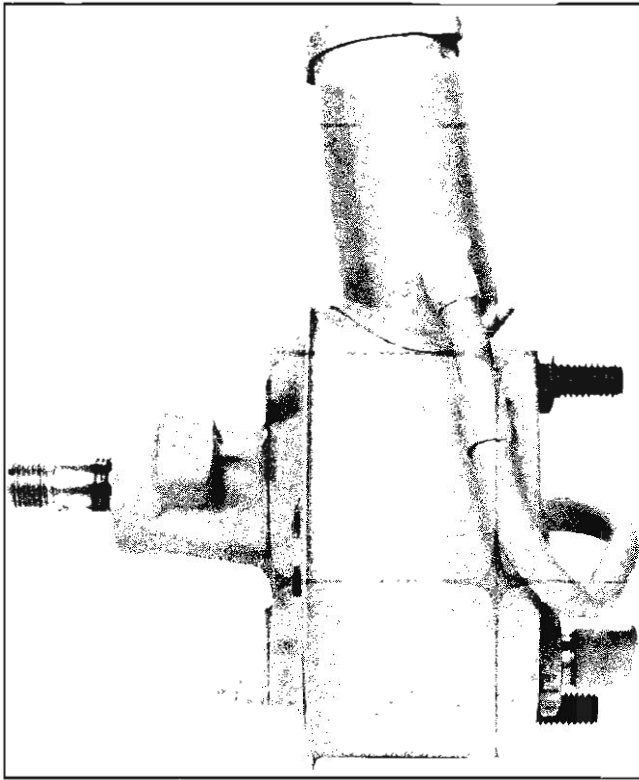


Fig. 9—Power Steering Pump Assembled

### POWER STEERING PUMP

Changes to the 1962 pump are a change in routing of the pump return line and the substitution of studs for the cap screws previously used to secure the reservoir to the cast housing. Figures 9 and 10 show the new parts in installed and relative positions. The studs retaining the reservoir allow adjustments to be made and removal of the pump from the vehicle without disturbing reservoir sealing.

### Disassembly and Assembly

The pump is disassembled and assembled in the same manner as in 1961 except that all references in the 1961 manual to reservoir retaining bolts no longer apply.

### Installation on Vehicle

The pumps are installed and removed in much the same manner as outlined in the 1961 Passenger Car Shop Manual. The difference lies in the engagement of the pump studs to the mounting brackets. Figure 11 shows the mounting for V-8 engines. The pump mounting on six cylinder engines is shown in Figure 12.

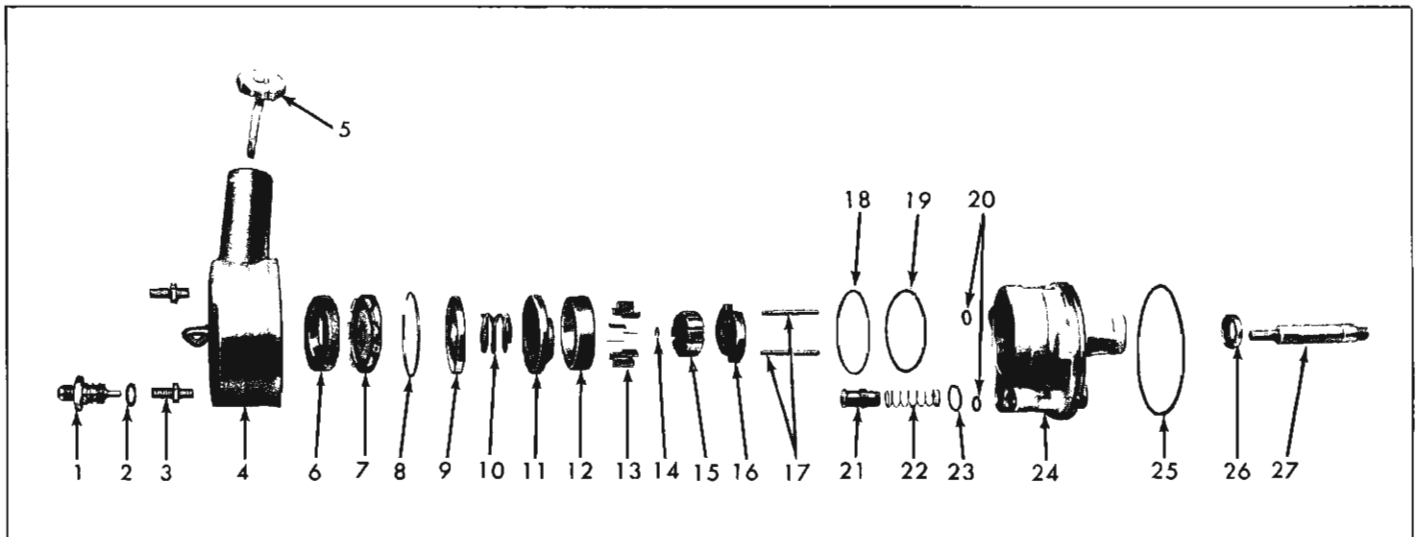


Fig. 10—Exploded View of Power Steering Pump

- |                             |                           |                             |                             |
|-----------------------------|---------------------------|-----------------------------|-----------------------------|
| 1. Union                    | 9. End Plate              | 16. Thrust Plate            | 22. Flow Control Valve      |
| 2. Seal                     | 10. Spring                | 17. Dowel Pins              | Spring                      |
| 3. Mounting Bolts           | 11. Pressure Plate        | 18. End Plate "O" Ring      | 23. Flow Control Valve "O"  |
| 4. Reservoir                | 12. Pump Ring             | 19. Pressure Plate "O" Ring | Ring Seal                   |
| 5. Dip Stick and Cover      | 13. Vanes                 | 20. Mounting Bolt "O" Ring  | 24. Pump Housing            |
| 6. Filter                   | 14. Drive Shaft Retaining | Seals                       | 25. Reservoir "O" Ring Seal |
| 7. Cage Assembly            | Ring                      | 21. Flow Control Valve      | 26. Shaft Seal              |
| 8. End Plate Retaining Ring | 15. Rotor                 |                             | 27. Shaft                   |

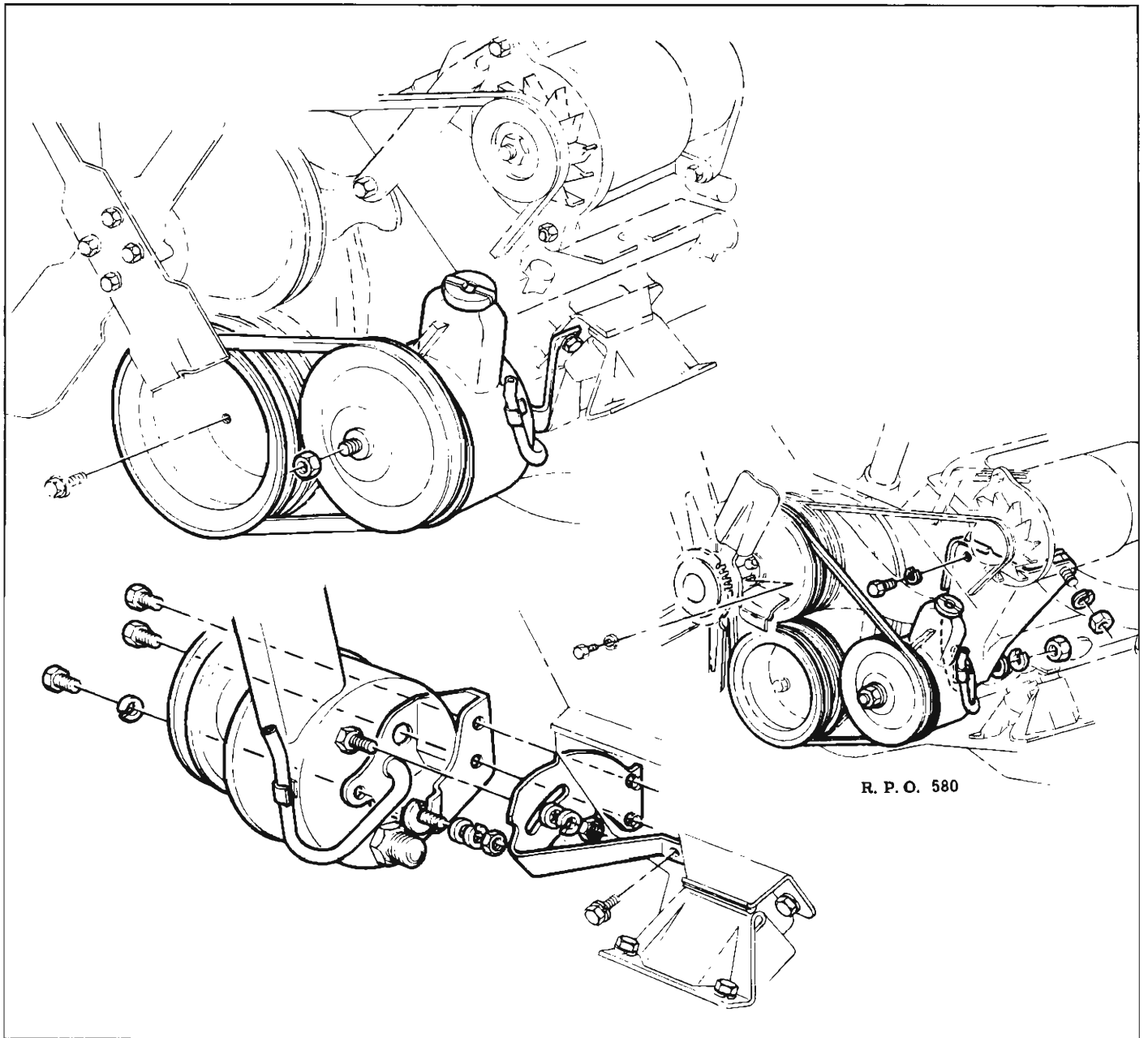


Fig. 11—Power Steering Pump Installed—8 Cylinder Engine

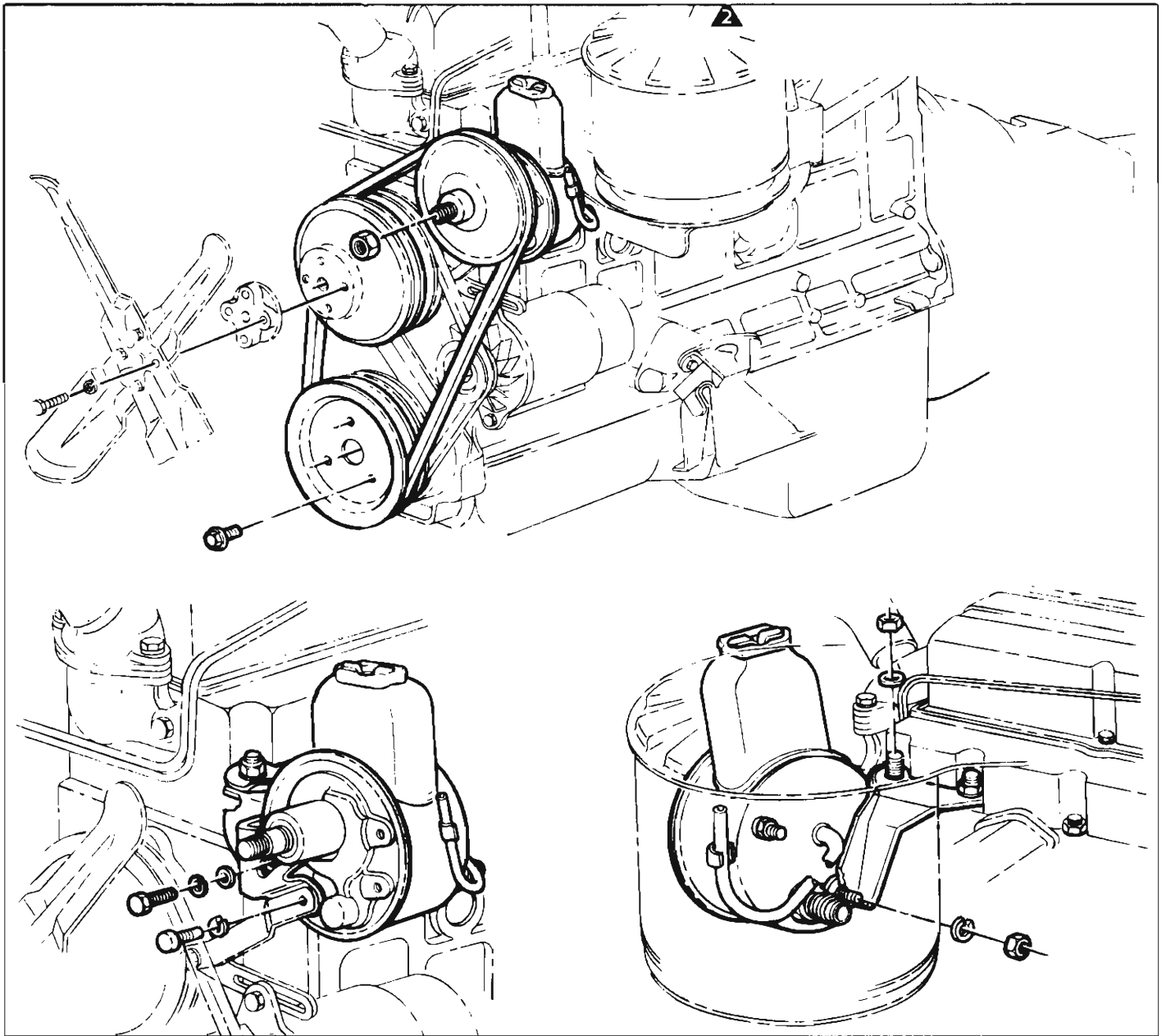


Fig. 12—Power Steering Pump Installed—6 Cylinder Engine

## POWER STEERING HOSES

It is important that the power steering hoses be correctly installed. Hoses installed out of position may be subjected to chafing or other abuse during sharp turns. Always make hose installations with front wheels in straight ahead position. Do not impart any unnecessary twist to hoses during installation. Remove and replace hoses as follows:

### Removal (All Hoses)

1. Disconnect hose from valve, cylinder or pump.
2. If removing either pump-to-valve hose, loosen and remove clamp which secures hose to frame form.
3. Withdraw hose from car.

**CAUTION:** Do not start engine with any power steering hose removed or disconnected.

### Installation (All Hoses)

Refer to Figure 13

1. Carefully route hose through chassis and body parts (pump-to-valve hoses only) being careful of clamps and supports. Note position of sponge rubber protector (fig. 14).
2. Loosely install flare fittings in appropriate com-

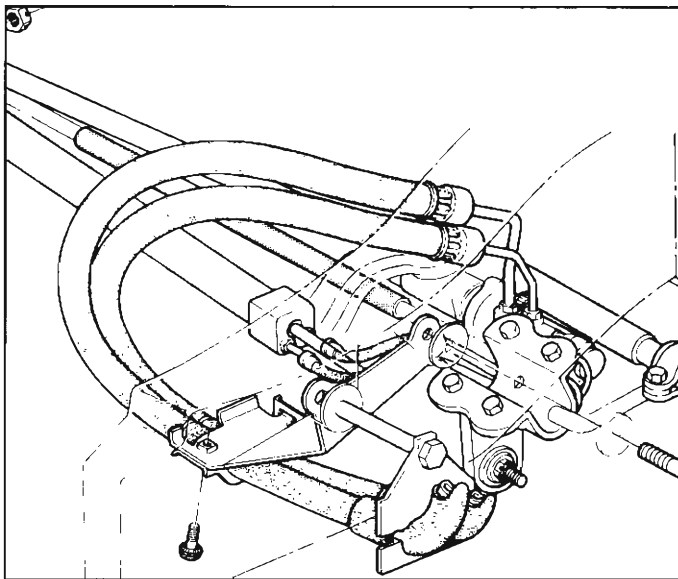


Fig. 13—Power Steering Hose Routing

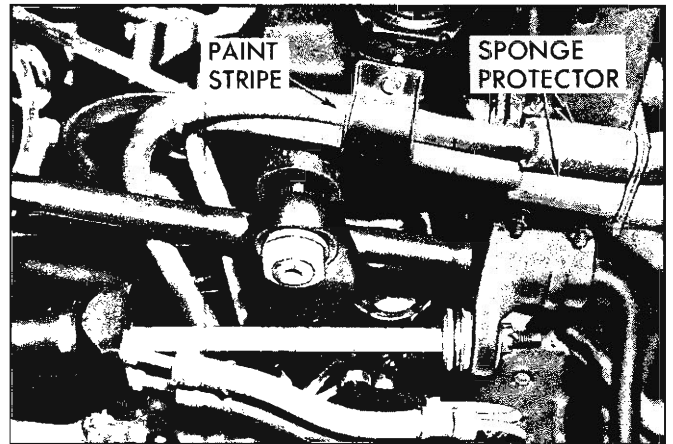


Fig. 14—Position of Clamp, Hose and Protector

ponents. Carefully adjust position of hose so that no undue twisting occurs. Be sure that pump return hose clamp does not interfere with lower steering coupling on 409 V-8 Models. Install as shown in Figure 15.

3. On pump-to-valve hoses, align green stripe on hose with inboard edge of wide clamp as shown in Figure 14; tighten clamp.
4. Tighten flare fittings and bleed hydraulic system as outlined in 1961 Passenger Car Shop Manual, Page 4-24.

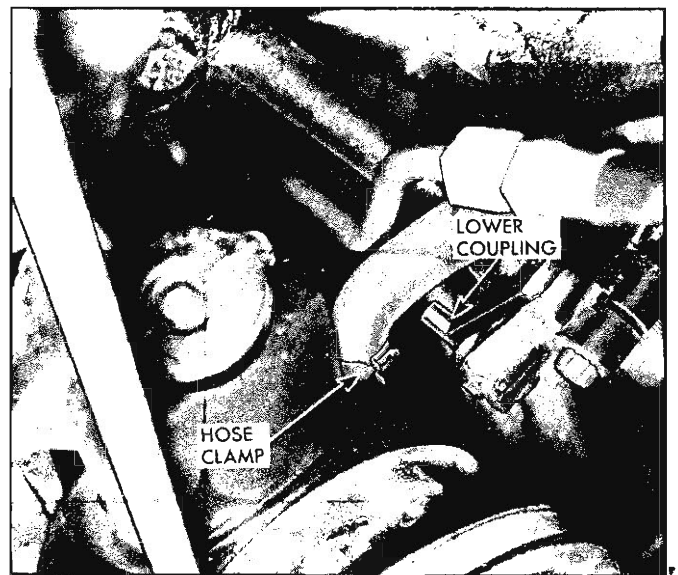


Fig. 15—Position of Pump Inlet Hose Clamp

## POWER CYLINDER

Later model power cylinders incorporate a change which eliminates the scraper back-up washer (fig. 16). These units are serviced as outlined in the 1961 Passenger Car Shop Manual, except that references to the back-up washer should be disregarded.

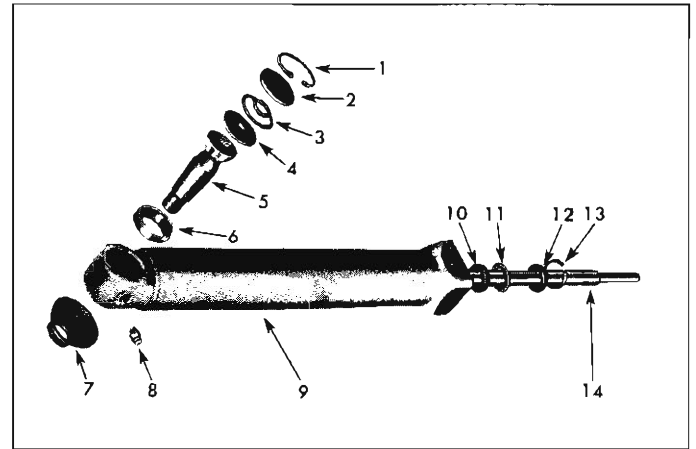


Fig. 16—Power Cylinder Exploded View

- |                     |                     |
|---------------------|---------------------|
| 1. Snap Ring        | 8. Lube Fitting     |
| 2. End Plug         | 9. Piston Body      |
| 3. Spring           | 10. Piston Rod Seal |
| 4. Spring           | 11. Scraper         |
| 5. Ball Stud        | 12. Washer          |
| 6. Ball Seat        | 13. Snap Ring       |
| 7. Ball Stud Shield | 14. Piston Rod      |

## SPECIFICATIONS

Power Steering Specifications may be found in Section 16 of this book.

## SPECIAL TOOLS

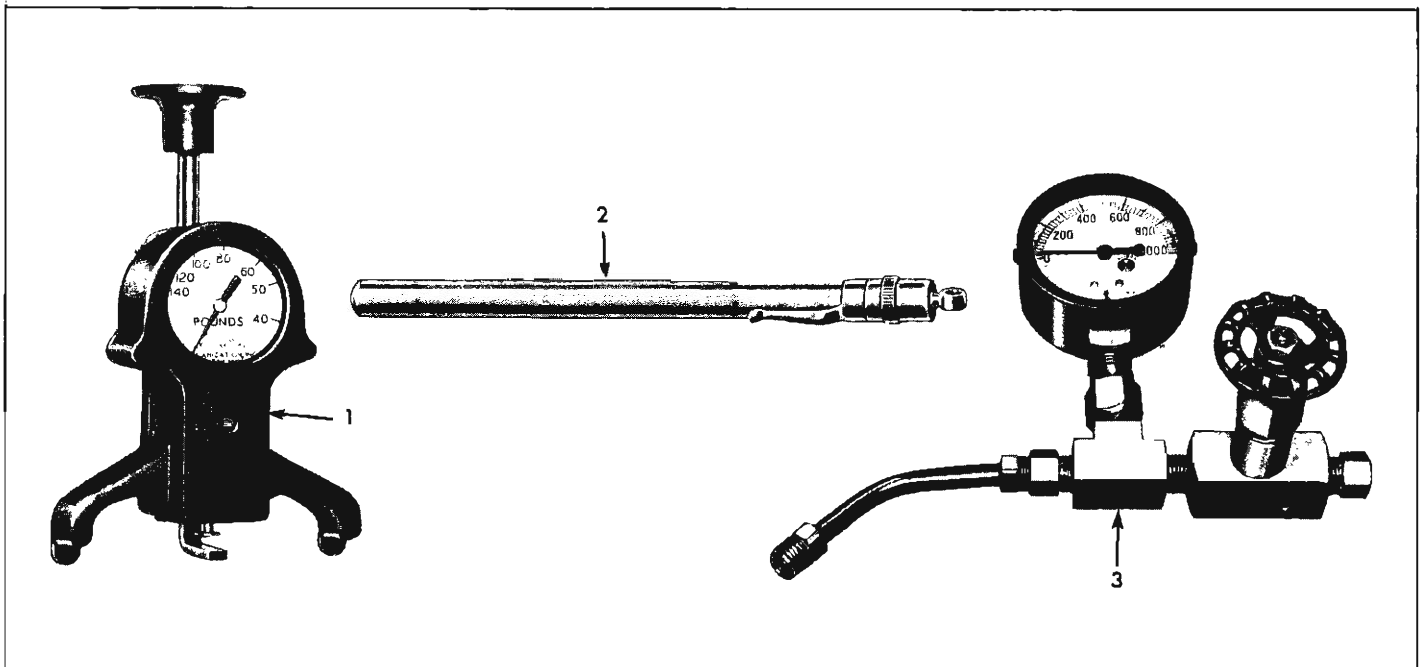


Fig. 17—Special Tools

1. J-5178 Belt Tension Gauge

2. J-5421 Thermometer

3. J-5176 Pressure Gauge

# SECTION 5

## REAR AXLE

### GENERAL DESCRIPTION

The 1962 Chevrolet Passenger Car axle assembly design and service operations remain the same as

outlined in the 1961 Passenger Car Shop Manual, Section 5.

### MAINTENANCE AND ADJUSTMENTS

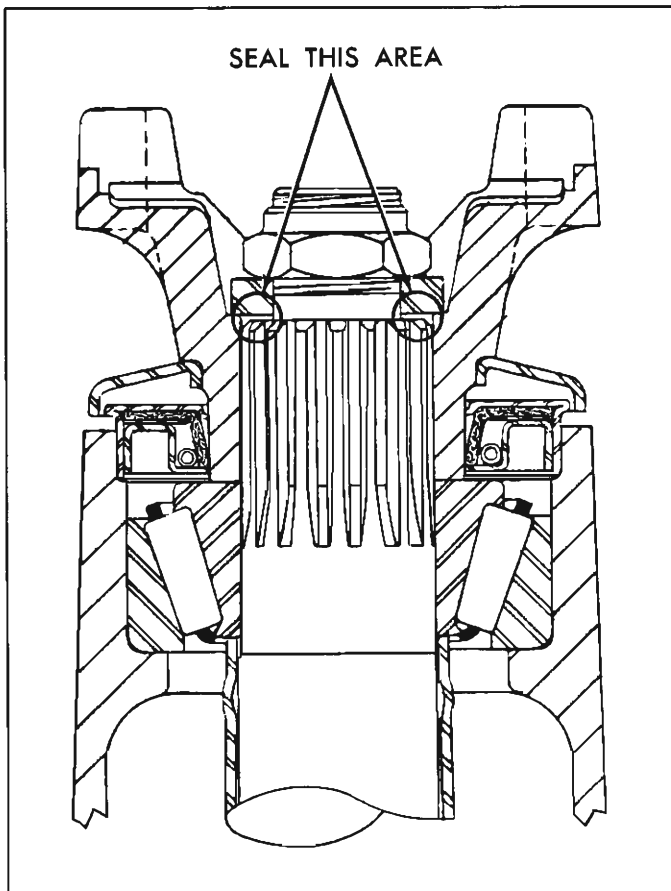


Fig. 1—Companion Flange Sealing

#### LUBRICANT LEAKS

Lubricant leaks should be checked for at the companion flange or rear universal joint yoke oil seal, differential carrier to axle housing gasket, lubricant filler plug and at axle shaft housing. If there is leakage at the companion flange nut, pack cavity between hypoid pinion shaft, pinion flange and pinion nut washer with sealant as shown in Figure 1.

Rear axle oil level should be periodically checked and maintained at the level of the filler plug. The drain plug has been removed in 1962 as the axles are now permanently lubricated at the factory and are to be drained only during differential carrier removal.

# SECTION 6 BRAKES

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## STANDARD BRAKES

Service of the 1962 passenger car hydraulic brakes will essentially be accomplished as outlined in the 1961 Passenger Car Shop Manual. Various design changes have been incorporated in the 1962 models; however, these changes will not affect over-all service procedures except as noted below.

### MAIN CYLINDER

The brake main cylinder (fig. 1) is functionally the same as past models, but due to design of the reser-

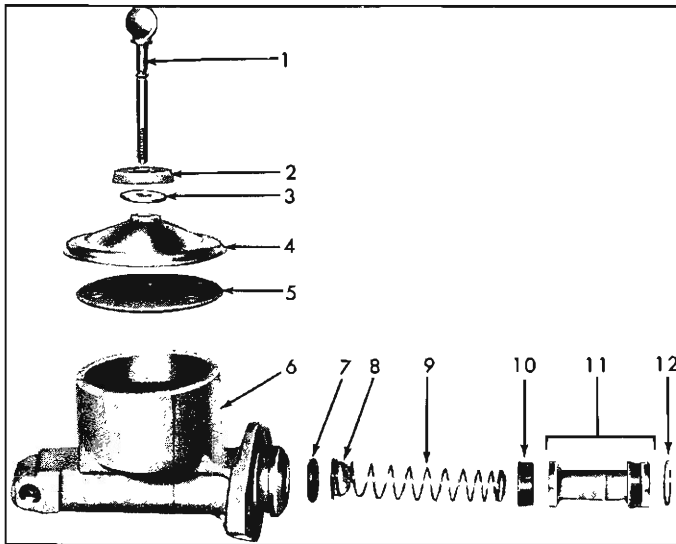


Fig. 1—Main Cylinder

- |                    |                              |
|--------------------|------------------------------|
| 1. Thumb Screw     | 7. Valve Seat                |
| 2. Vent Cover      | 8. Valve Assembly            |
| 3. Flat Washer     | 9. Spring                    |
| 4. Reservoir Cover | 10. Primary Cup              |
| 5. Gasket          | 11. Secondary Cup and Piston |
| 6. Body            | 12. Lock Ring                |

voir, a special adapter is required for pressure bleeding. The main cylinder bleeding adapter (fig. 2) is designed to allow filling of the reservoir to the proper level (1/4" from the reservoir rim) during the bleeding operation.

### PARKING BRAKE

#### Release Handle Replacement

If replacement of the release handle is necessary, all of the existing handle and any material used to

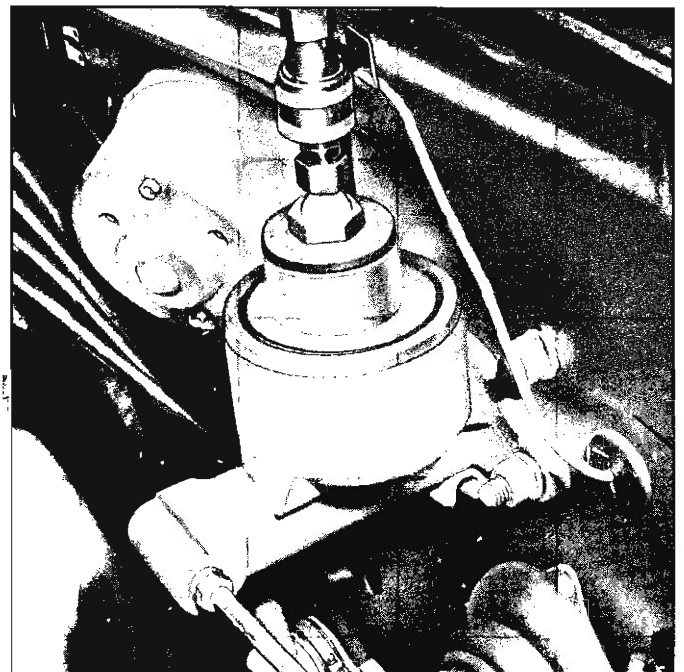


Fig. 2—Brake Pressure Bleeding Adapter Installed

secure it should be cleaned from the release rod. After the rod has been effectively cleaned, proceed as follows:

1. Heat the handle end of the release rod to approximately 115 degrees.
2. Slowly insert the new handle on the release rod - push gently and slowly on handle to allow heat from the rod to be absorbed by handle and to align properly on the rod. When the rod has cooled, the plastic handle will contract and grip the rod securely.

### **Adjustment**

Although the release handle indicating feature has been eliminated on 1962 models, the adjustment procedure will remain as specified in the 1961 shop manual.

### **HYDRAULIC BRAKE HOSE**

#### **Replacement**

When replacing hydraulic brake hose, follow procedure outlined in 1961 Passenger Car Shop Manual and add the following precautionary inspection.

Inspect hose installation by removing weight completely from wheel and turn wheels from lock to lock, while observing hose position. Be sure that hose does not touch other parts at any time during suspension or wheel travel. If contact does occur, remove hose retainer and rotate female hose end in support bracket one or two points in appropriate direction, replace retainer, and reinspect.

### **CLUTCH AND BRAKE PEDAL**

#### **Removal**

1. Disconnect clutch pedal return spring (located in engine compartment).

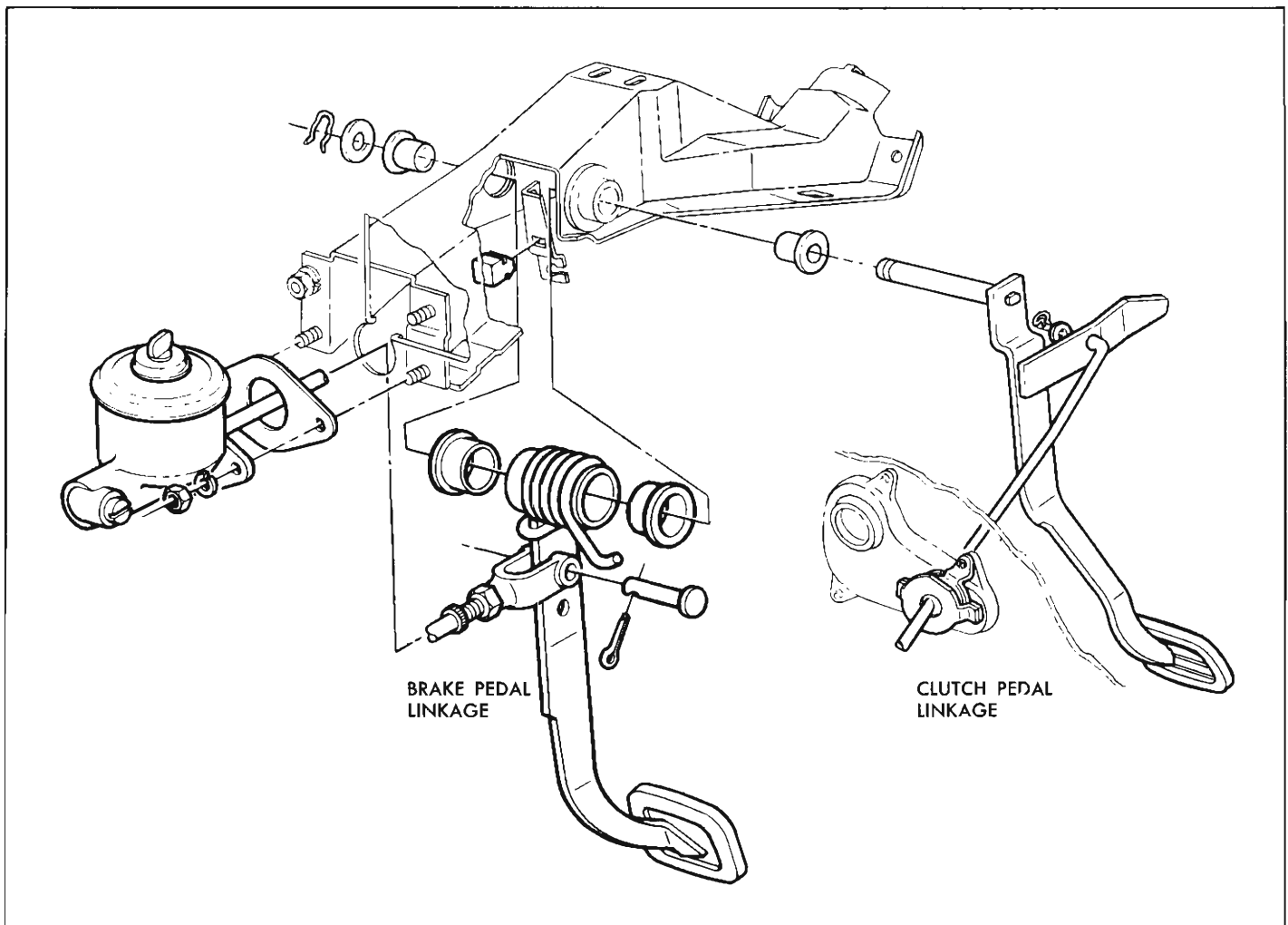


Fig. 3—Clutch and Brake Pedal Installation



2. Remove cotter pin and clevis retainer pin from brake pedal arm (fig. 3).
3. Remove retainer and washer from clutch pedal push rod, and disengage push rod from clutch pedal bracket.
4. Remove retainer clip and spring washer from right side of clutch pedal pivot shaft.
5. Slide the clutch pedal assembly to the left and remove from panel brace. Brake pedal arm and tension spring will be free for removal when pivot shaft clears panel brace.
6. Withdraw brake pedal and all nylon bushings.

### Inspection

1. Clean all metal parts with a good nontoxic cleaning solvent.
2. Wipe the nylon bushings clean with a clean cloth.
 

**CAUTION:** Nylon bushings should not be treated with cleansing agent of any nature.
3. Inspect all nylon bushings for wear and damage.
4. Inspect all mating surfaces of bushings for wear and damage - replace parts as required.

### Installation

1. Install nylon bushings on clutch pedal pivot shaft, right side of panel brace cutout and through both ends of brake pedal bore.
2. Position the brake pedal return spring on pedal arm, and place pedal assembly in panel brace (index return spring in panel brace cutout).
3. Slide clutch pedal pivot shaft through panel brace and brake pedal bore.
4. Install spring washer and retainer clip to right side of clutch pedal pivot shaft.
5. Connect clutch pedal push rod to clutch pedal bracket, and install washer and retainer.
6. Position main cylinder push rod clevis to brake pedal arm, and install clevis retainer pin and cotter pin.
7. Adjust brake pedal free play to 1/16 to 1/4 inch, and check stop light switch position - adjust if necessary so that electrical contact is made when pedal is depressed 5/8 inch.
8. Connect clutch pedal return spring.

### METALLIC BRAKE SHOE LINING

As brake shoes with this type lining require specially finished brake drums (honed to a 20 micro-inch finish), metallic facings are not recommended for service replacement on vehicles with standard brake drums that have not been honed to specified finish.

All service operations remain the same as the standard brakes, except for the adjustment and seating of the linings to the drums after replacement. New linings may be used with the old drums as is, provided surface smoothness of drum is as specified.

The following information on parts placement must be followed to provide maximum efficiency of this brake system.

- Pink brake shoe pull back springs are to be used with the front primary, rear primary and rear secondary shoes.
- Yellow brake shoe pull back springs are to be used with the front secondary shoes.
- Green brake shoe hold down springs are to be used on all shoes.

**NOTE:** The proper springs must be used with this brake system as these springs are heat resistant.

- The large hold down spring cup must be placed against the web and the small cup placed at the outer end of the hold down spring.

After the brakes have been adjusted to 12 notches loose, the following recommended "lining seating" procedure should be accomplished.

1. Make six to eight stops from 30 mph with moderate pedal pressure to aid in seating and to modulate any tendency to dive.
2. Make six to eight complete stops from maximum legal highway speed at approximately one mile intervals to fully seat the linings.
3. Readjust brakes if required.

# BENDIX POWER BRAKES

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## GENERAL DESCRIPTION

The Master - Vac (fig. 4) is a self-contained hydraulic and vacuum unit for power braking, utilizing manifold vacuum and atmospheric pressure for its power.

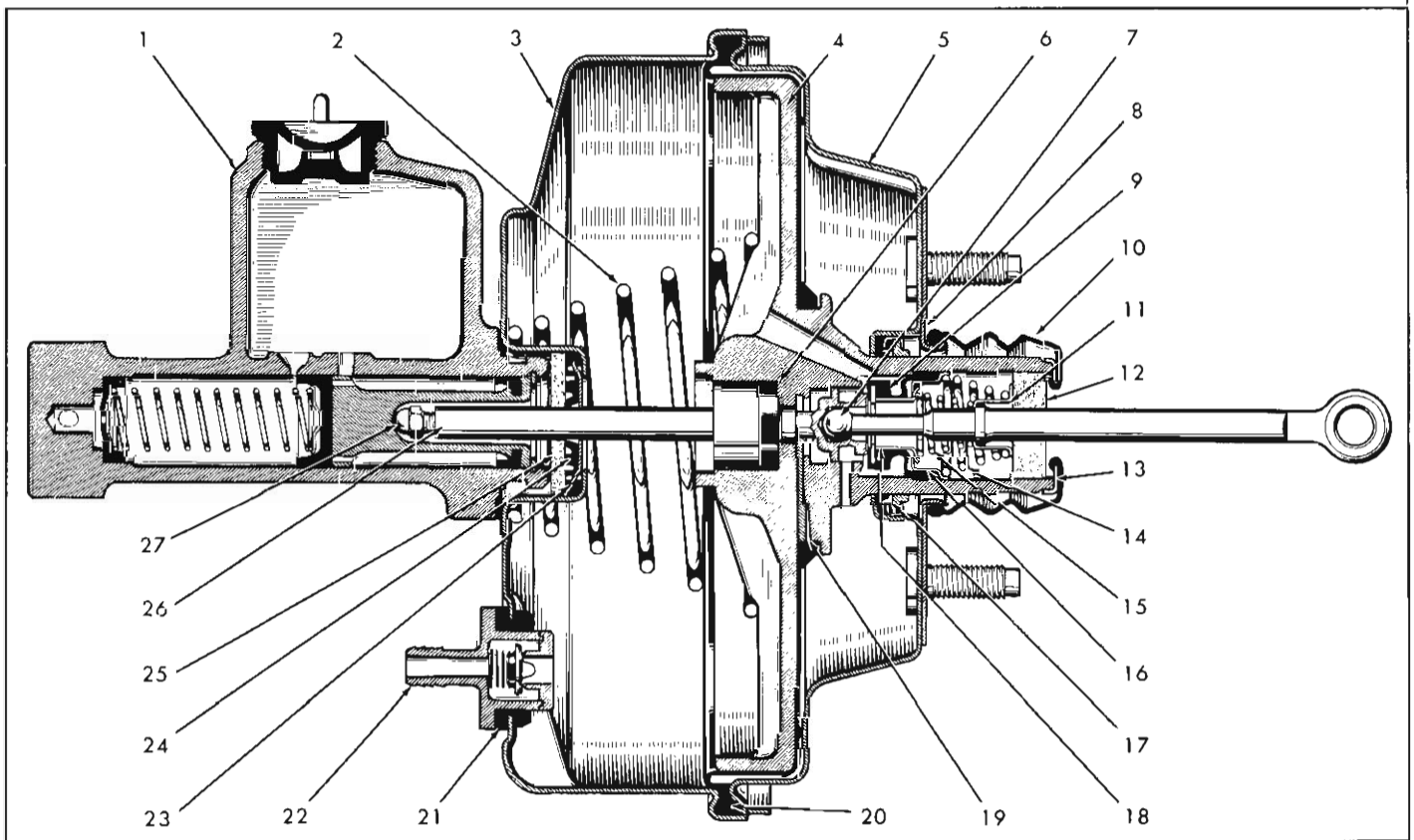


Fig. 4—Bendix Power Brake Unit

- |                                |                          |                               |                          |
|--------------------------------|--------------------------|-------------------------------|--------------------------|
| 1. Main Cylinder               | 8. Retainer Plate        | 15. Air Valve Return Spring   | 22. Check Valve          |
| 2. Power Piston Return Spring  | 9. Poppet                | 16. Poppet Retainer           | 23. Seal Support         |
| 3. Front Shell                 | 10. Rubber Boot          | 17. Bearing Seal              | 24. Push Rod Seal        |
| 4. Diaphragm Plate             | 11. Spring Retainer      | 18. Air Valve Spring Retainer | 25. Main Cylinder Filter |
| 5. Rear Shell                  | 12. Air Cleaner Filter   | 19. Air Valve Lock            | 26. Hydraulic Push Rod   |
| 6. Reaction Disc               | 13. Filter Retainer      | 20. Rolling Diaphragm         | 27. Adjusting Screw      |
| 7. Air Valve Push Rod Assembly | 14. Poppet Return Spring | 21. Grommet                   |                          |

The Master-Vac power brake unit permits the use of a low brake pedal as well as less pedal effort than is required with the conventional (nonpower) hydraulic brake system. Only two external line connections are necessary - one a vacuum connection from manifold to check valve located on front

shell; the other a hydraulic connection from the main cylinder outlet directly into the hydraulic system. The unit is mounted on the engine side of the fire wall and connected to the brake pedal through an auxiliary lever and rod.

## MAINTENANCE AND ADJUSTMENTS

### Inspections

1. Check vacuum line and vacuum line connections as well as vacuum check valve in front shell of power unit for possible vacuum loss.
2. Inspect all hydraulic lines and connections at the wheel cylinders and main cylinder for possible hydraulic leaks.
3. Check brake assemblies for scored drums, grease or brake fluid on linings, worn or glazed linings, and make necessary adjustments.
4. Check the brake fluid level in the hydraulic reservoir. The reservoir should be filled to within 1/2" of the top of the filler cap opening. Inspect the reservoir cover for fluid leaks at gasket.
5. Check for loose mounting bolts at main cylinder and at power section.
6. Check air cleaner filter located in the power piston extension - replace filter if necessary.
7. Check brake pedal for bending and misalignment between pedal and push rod.

### Lubrication

The Master-Vac power brake unit is lubricated at assembly and needs no further lubrication other than maintaining normal reservoir fluid level. The reservoir should be filled as described in this section, using only recommended brake fluid.

### Bleeding Instructions

The power system may be bled manually or with a pressure bleeder as outlined in this section. If pressure bleeding method is used as specified under "Standard Brakes," omit use of Tool J-9477.

Use only recommended brake fluid. Do not use power assist while bleeding. The engine should not be running and the vacuum reserve should be reduced to zero, by applying the brake several times before starting the bleeding procedure.

### Air Cleaner Service

The air cleaner filter used with the power brake unit should be cleaned at least twice a year. To clean, remove air cleaner element and wash thoroughly in cleaning solvent - allow element to dry before reinstalling.

## SERVICE OPERATIONS

### Removal

1. Disconnect push rod clevis at brake pedal arm.  
**NOTE:** If clearance hole through fire wall is not large enough, it may be necessary to remove clevis from push rod. Note approximate location of clevis on rod.
2. Remove vacuum hose from check valve.
3. Disconnect hydraulic line at main cylinder.
4. Remove four nuts and lockwashers securing power unit to fire wall, and remove power unit from engine compartment.

### Disassembly

The following procedure applies to the power section of the power brake unit only - for service of the main cylinder refer to applicable portion of "Standard Brakes."

1. Remove main cylinder from power section, and place main cylinder aside.
2. Remove main cylinder filter, piston seal assembly and main cylinder push rod from front shell (fig. 5) - pulling the push rod from front shell will also remove the filter and seal assembly.
3. Position and secure Tool J-9576-1 (fig. 6) to

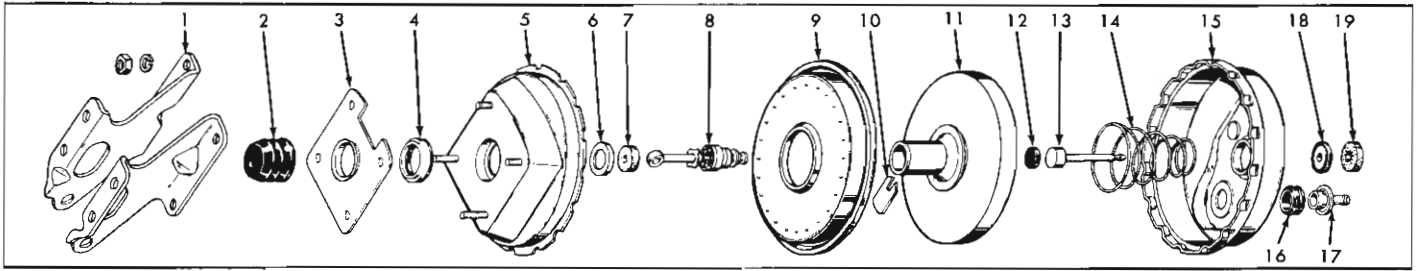


Fig. 5—Component Exploded View

- |                     |                                |                                |                          |
|---------------------|--------------------------------|--------------------------------|--------------------------|
| 1. Mounting Bracket | 6. Filter Retainer             | 11. Diaphragm Plate            | 15. Front Shell          |
| 2. Rubber Boot      | 7. Air Cleaner Filter          | 12. Reaction Disc              | 16. Grommet              |
| 3. Retainer Plate   | 8. Air Valve Push Rod Assembly | 13. Hydraulic Push Rod         | 17. Check Valve          |
| 4. Bearing Seal     | 9. Rolling Diaphragm           | 14. Power Piston Return Spring | 18. Push Rod Seal        |
| 5. Rear Shell       | 10. Air Valve Lock             |                                | 19. Main Cylinder Filter |

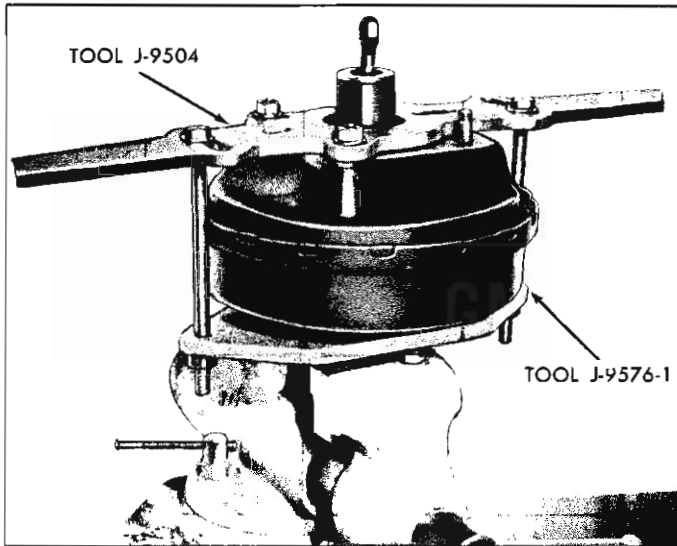


Fig. 6—Separating Shells with Tools J-9504 and J-9576-1

main cylinder mounting studs, and place tool and power unit in a vise. Be sure to align tool so that check valve in front shell is not damaged.

4. Disconnect linkage at air valve push rod, and remove mounting bracket from rear shell.
  5. Remove rubber boot and retainer plate from rear shell.
  6. Remove filter retainer from end of diaphragm plate extension, and remove air filter element from location within the diaphragm plate extension.
- NOTE:** To prevent chipping of the plastic diaphragm plate, exercise extreme caution when removing the air filter retainer. Use a small screwdriver or other suitable tool, and pry at several peripheral locations until the retainer is freed.
7. Scribe alignment mark across surface of front and rear shells.

8. Position bar wrench (Tool J-9504) over studs of the rear shell so that holes in bar wrench line up with holes in holding fixture (Tool J-9576-1). Install through bolts in aforementioned holes, and tighten nuts until a slight compression is obtained.

9. Rotate Tool J-9540 until cutouts of rear shell are aligned with lances in front shell.
10. Loosen, but do not remove, the nuts on the through bolts. The shells should begin to separate as the nuts are loosened. If shells do not begin to separate, tap rear shell with a soft faced hammer. After shells begin to separate, remove nuts from through bolts.

**CAUTION:** Hold rear shell firmly when removing nuts from through bolts. Pressure exerted by internal diaphragm spring may cause rear shell to fly off when shells are in the released position.

11. Remove power piston from front shell, separate power piston from rear shell, and remove Tool J-9504 from unit.
12. Disassemble power piston. (See Figure 7.)
  - a. Remove rolling diaphragm from the groove in the diaphragm plate hub.
  - b. Hold the diaphragm plate so that the push rod is in its normal (horizontal) installed position, depress the push rod slightly (approximately 1/16 inch), and rotate piston so the air valve lock will fall from its location in the piston hub.
  - c. Remove the air valve push rod assembly from the piston.
  - d. Remove the reaction disc from its location in the diaphragm plate bore. (Insert the main cylinder push rod or other suitable tool through diaphragm plate extension and push disc from its seat.) Exercise care so as not

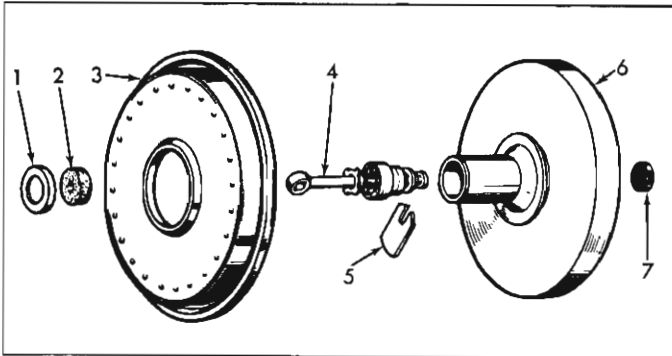


Fig. 7—Power Piston Exploded View

- |                                |                    |
|--------------------------------|--------------------|
| 1. Filter Retainer             | 5. Air Valve Lock  |
| 2. Air Cleaner Filter          | 6. Diaphragm Plate |
| 3. Rolling Diaphragm           | 7. Reaction Disc   |
| 4. Air Valve Push Rod Assembly |                    |

to chip surface of passages in the diaphragm plate.

**NOTE:** Perform Step 13 only if seal is defective and a new seal is available. Do not reuse seal once it has been removed from the unit.

13. Support outer surface of rear shell on blocks of wood or other suitable material and drive out seal with a punch or a thin blade screwdriver. Discard seal.
14. Remove check valve from grommet; then remove grommet from front shell.
15. Remove front shell and holding fixture from vise; then remove holding fixture from front shell.

### Cleaning

Use an approved nontoxic cleaning solvent to clean all metal parts. Use alcohol or an approved commercial cleaning solvent for cleaning rubber and plastic parts. Immerse parts in cleaning solvent and use a hair brush to remove foreign matter. Blow out all passages, orifices and valve holes. Air dry and place cleaned parts on clean paper or lint-free cloth. If slight rust is found on inside surface of power cylinder housing, polish clean with crocus cloth or fine emery cloth, then follow with a thorough cleaning.

The use of gasoline, kerosene, antifreeze alcohol or any other cleaner with even a trace of mineral oil will damage rubber parts. Be particularly careful during reassembly that no grease or mineral oil comes in contact with these rubber parts.

### Inspection

Carefully inspect each part for damage and wear - inspect rubber parts for cuts, nicks and distortion.

These rubber parts are the key to control of air flow and should account for the majority of trouble traceable to leakage. If there is any question whatever as to serviceability of any part, replace it.

### Assembly

The following procedure refers to the power section of the power brake unit only - for assembly procedure of the main cylinder, refer to applicable portion of "Standard Brakes."

During assembly, make sure all parts are free of foreign material before applying lubricant. If there is any doubt of cleanliness, rewash and air dry. When applying lubricant as specified in assembly procedure, use an approved lubricant of known quality and composition that will not be harmful to rubber and plastic materials.

1. Install check valve grommet in front shell - beveled edge of grommet is to be inside shell. Dip check valve in clean alcohol and install in grommet - check valve stem is to be outside shell.
2. Position and secure Tool J-9576-1 (fig. 6) to main cylinder mounting studs, and place tool and front shell in a vise. Be sure to align tool so that check valve is not damaged.
- NOTE:** If either or both of the shells are replaced, make sure alignment marks are transferred to new shell.
3. Place rear shell on block, to back up plate around center hole, and position bearing seal in center hole. Use Tool J-9540 (fig. 8) to seat seal in recess of rear shell. Tool bottoms against shell when seal is in place.
4. Assemble the power piston assembly. (See Figure 7.)

- a. Apply lubricant to outside diameter of diaphragm plate and extension, to bearing surfaces of valve and plunger, and to outer edge of valve poppet. Insert valve and rod assembly in extension of diaphragm plate.
- b. Depress the push rod slightly, and install the air valve lock. Make sure the lock indexes and retains the air valve.
- c. Install the rolling diaphragm in the groove of diaphragm plate hub.
- d. Apply lubricant to surface of reaction disc and position disc in center bore of diaphragm plate. Use main cylinder push rod to seat disc in bore. Make sure disc is fully seated before removing push rod.

**NOTE:** If reaction disc is not fully seated, it will result in an erroneous push rod height adjustment.

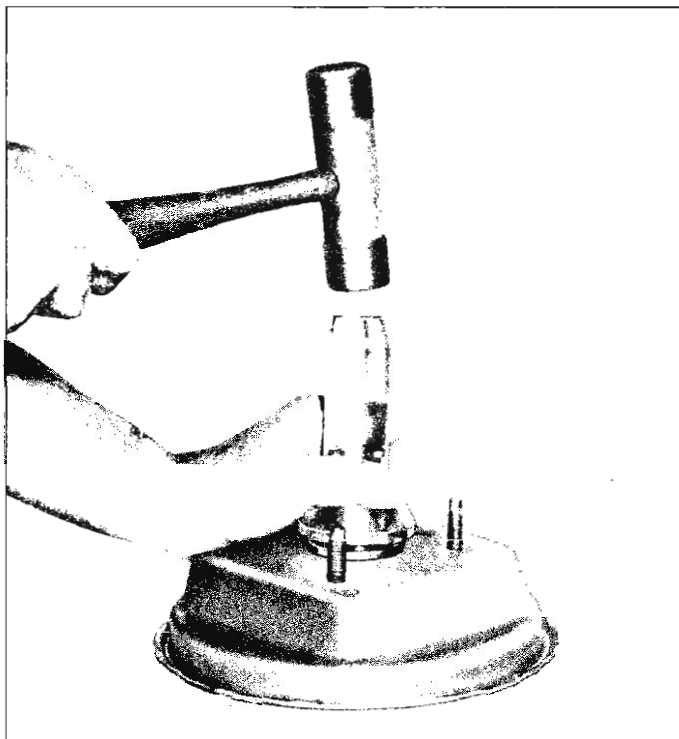


Fig. 8—Installing Piston Bearing Seal

5. Apply lubricant to ID of bearing seal and diaphragm bead contact surface of rear shell. Install power piston assembly in rear shell.
6. Position bar wrench (Tool J-9504) over studs of rear shell so that holes in bar wrench will line up with holes in holding fixture (Tool J-9576-1).
7. Place power piston return spring in front shell and position rear shell assembly on front shell. Position rear shell so that when shells are locked scribe marks on front and rear shells will be in alignment.
8. Depress rear shell assembly and install through bolts to the fixture. Tighten through bolts sufficiently to bring scallops on rear shell slightly below lances on front shell. Rotate Tool J-9504 until scribe marks on front and rear shells are in alignment. Remove Tool J-9504 from unit.
9. Install air cleaner element and retainer to piston extension.
10. Install boot retainer and boot over piston extension and secure boot to air cleaner retainer.
11. Align and install mounting bracket to rear shell. Connect linkage to air valve push rod.
12. Remove unit from holding fixture (Tool J-9576-1).
13. Apply lubricant sparingly to the hydraulic push rod, keeping lubricant away from adjusting screw end of rod. Guide push rod into center bore of

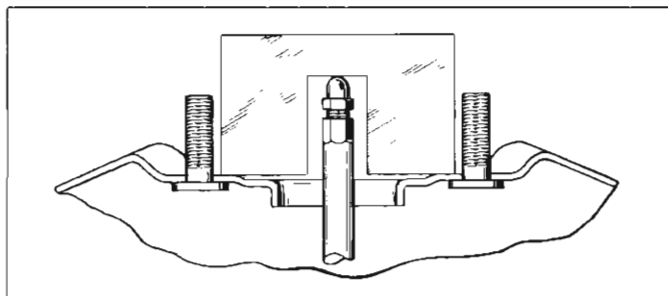


Fig. 9—Adjustment of Push Rod

power piston until it is fully seated against reaction disc.

14. Install seal and main cylinder filter and press filter and seal into front shell until seal is bottomed in recess of shell.
15. Place Tool J-7723-01 over the push rod so that it fits between studs on front shell (fig. 9). Gauge should be parallel to studs and resting on surface of front shell. Cutout portion of gauge should just match height of push rod. Any variation may be compensated for by turning adjusting screw.

**NOTE:** If push rod height adjustment gauge is not available, the required dimensions for fabrication are given in Figure 10.

16. After push rod adjustment is correct, assemble main cylinder to front shell and securely tighten retaining nuts.

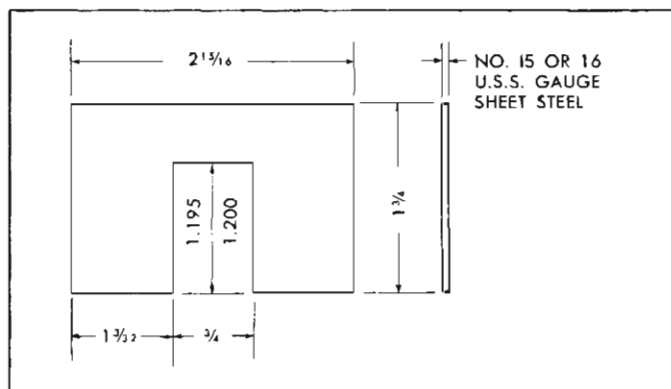


Fig. 10—Push Rod Gauge

### Installation

1. Mount the power brake assembly in place and install four attaching nuts and lockwashers. Be certain to place push rod through cutout in fire wall.
2. Attach vacuum line to check valve.
3. Secure hydraulic line to main cylinder.
4. Attach push rod clevis to brake pedal assembly.

Adjust pedal height by means of clevis on brake pedal push rod at pedal. Pedal height is obtained by measuring from floor covering at toe pan to top of pedal pad. Correct heights are:

- Biscayne and Bel Air . . . . . 4 7/8"
- Impala . . . . . 4 5/8"

**NOTE:** Check operation of stop light after adjusting pedal height.

5. Bleed brakes as outlined in this section.

**NOTE:** After completing the bleeding operation, make sure reservoir fluid level is at correct height. The reservoir should be filled to within 1/2 inch of the filler cap opening.

6. Check operation of the brakes as outlined in this section.

# MORaine POWER BRAKES

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## GENERAL DESCRIPTION

The Moraine power brake unit is composed of two main sections - the vacuum power cylinder (fig. 11) and the hydraulic main cylinder.

The vacuum power cylinder contains the power piston assembly, which houses the control valve and reaction mechanism, and the power piston return spring. The

control valve is made up of the air valve and the floating control valve assembly. The reaction mechanism consists of a hydraulic piston reaction plate and a series of levers. The vacuum check valve is located on the forward shell of the power cylinder and provides a hose connection to accommodate the vacuum line. The air cleaner element is contained within the extended portion of the control valve housing.

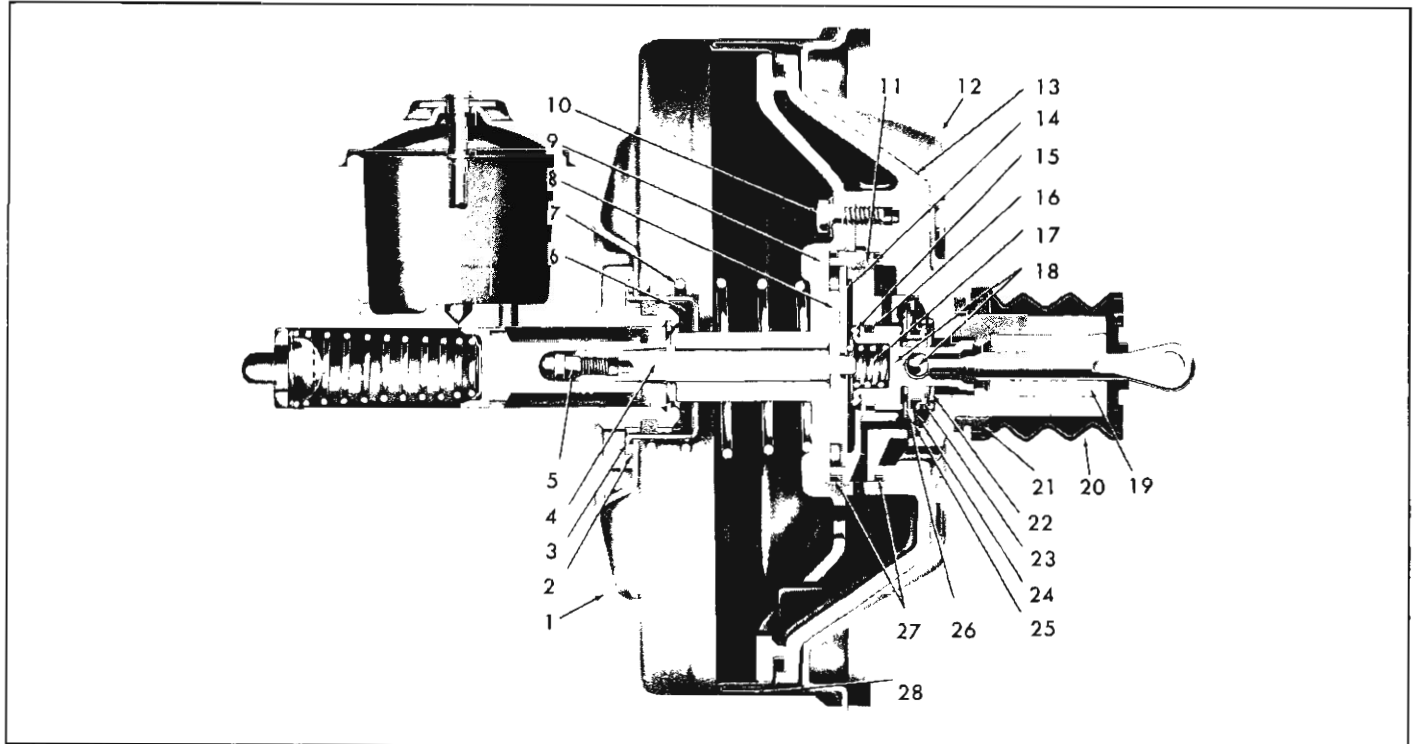


Fig. 11—Moraine Vacuum Power Cylinder

- |                               |                                   |                                     |                                    |
|-------------------------------|-----------------------------------|-------------------------------------|------------------------------------|
| 1. Front Shell                | 9. Support Plate                  | 16. "O" Ring                        | 23. Spring and Valve Seat          |
| 2. Gasket                     | 10. Support Plate Retaining Screw | 17. Air Valve Return Spring         | 24. Control Valve Diaphragm        |
| 3. Seal Retainer              | 11. Power Piston Insert           | 18. Air Valve and Push Rod Assembly | 25. Diaphragm Support              |
| 4. Main Cylinder Push Rod     | 12. Rear Shell                    | 19. Air Cleaner Element             | 26. Floating Control Valve         |
| 5. Push Rod Adjusting Screw   | 13. Power Piston                  | 20. Rubber Boot                     | 27. Insert Seals                   |
| 6. Support Plate Seal         | 14. Reaction Lever                | 21. Power Piston Bearing            | 28. Power Piston Rolling Diaphragm |
| 7. Power Piston Return Spring | 15. Rubber Bumper                 | 22. Control Valve Return Spring     |                                    |



## MAINTENANCE AND ADJUSTMENTS

### Inspections

1. Check vacuum line and vacuum line connections as well as vacuum check valve in front shell of power unit for possible vacuum loss.
2. Inspect all hydraulic lines and connections at the wheel cylinders and main cylinder for possible hydraulic leaks.
3. Check brake assemblies for scored drums, grease or brake fluid on linings, worn or glazed linings, and make necessary adjustments.
4. Check the brake fluid level in the hydraulic reservoir. The reservoir should be filled to within 1/4 inch of the reservoir rim.
5. Check for loose mounting bolts at main cylinder and at power section.
6. Check air cleaner filter in power piston extension, and replace filter if necessary.
7. Check brake pedal for binding and misalignment between pedal and push rod.

### Lubrication

The Moraine power brake unit is lubricated at assembly and needs no further lubrication other than maintaining normal reservoir fluid level. The reservoir should be filled as described in this section, using only recommended brake fluid.

### Bleeding Instructions

The power system may be bled manually or with a pressure bleeder as outlined in this section. Use only recommended brake fluid. Do not use the power assist while bleeding. The engine should not be running and the vacuum reserve should be reduced to zero by applying the brake several times before starting the bleeding procedure.

### Air Cleaner Service

The air cleaner filter used with the power brake unit should be cleaned at least twice a year. To clean, slide the rubber boot rearward, and remove the filter. Wash the filter thoroughly in cleaning solvent and allow to dry before reinstalling.

## SERVICE OPERATIONS

### Removal

1. Disconnect clevis at brake pedal assembly.

**NOTE:** If clearance hole through fire wall is not large enough, it may be necessary to remove clevis yoke from push rod. Note approximate location of yoke on rod.

2. Remove vacuum hose from vacuum check valve.

3. Disconnect hydraulic line at main cylinder.

4. Remove four nuts and lockwashers securing power unit to fire wall and remove power unit from engine compartment.

### Disassembly

The following procedure applies to the power

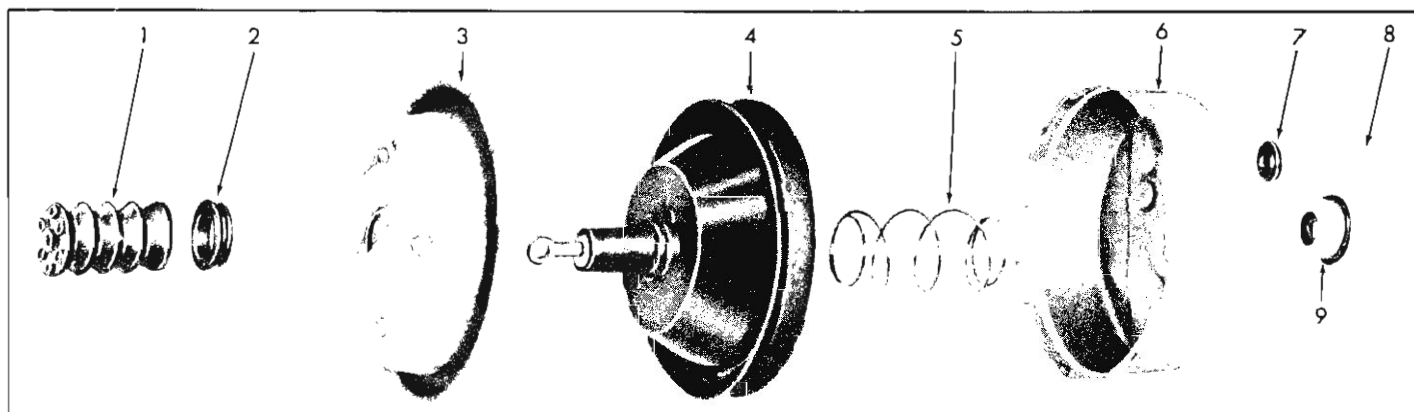


Fig. 12—Component Exploded View

1. Rubber Boot
2. Bearing Seal
3. Rear Shell
4. Power Piston Assembly

5. Power Piston Return Spring
6. Front Shell
7. Grommet

8. Check Valve
9. Support Plate Seal Retainer Assembly

**BRAKES—MORAINE 6-12**

section of the power brake unit only - for service of the main cylinder refer to applicable portion of "Standard Brakes."

1. Remove main cylinder from power section of power brake unit and place main cylinder aside.
2. Place main cylinder retaining nuts on main cylinder mounting studs, and position power section in vise so that jaws of vise will bear against retaining nuts.

**NOTE:** Scribe alignment marks on top center of front and rear shell to facilitate reassembly.

3. Disconnect linkage at air valve push rod, and position linkage so that a metal bar can be inserted through access holes in mounting bracket.
4. With metal bar in position, press down on bar and rotate rear shell counterclockwise until rear shell is separated from front shell.

**CAUTION:** Care must be exercised not to damage or loosen studs in shell. Also, take care that no pressure is brought to bear on plastic power piston extension.

5. Remove rubber boot from power piston extension and separate power piston from rear shell. Remove air filter element from power piston extension, and remove power piston bearing from the rear shell (fig. 12).

**CAUTION:** Extreme care must be taken in handling the diaphragm of the power

piston assembly (fig. 13). The diaphragm should be guarded against grease, oil, foreign matter and must be protected from nicks, scratches and gouges.

6. Support power piston so that it will remain in an upright position (main cylinder push rod up). Remove hex head screws that secure support plate to power piston, and remove support plate from piston assembly.
7. Remove power piston rolling diaphragm from the support plate assembly. The main cylinder push rod can be removed from support plate, and, if necessary, reaction plate may be removed by pressing from push rod. The adjusting screw may also be removed from push rod.
8. Remove three reaction levers from their seats in the power piston insert, and remove air valve return spring from the counterbore of air valve.
9. Remove power piston insert then remove two seals from OD of insert.
10. Lift air valve and push rod assembly (fig. 15) from power piston and remove snubber and "O" ring from air valve.
11. Push the floating control valve assembly from its position in the center of power piston. Disassemble floating control valve. Removal of floating control valve assembly exposes floating control valve spring and seat.
12. Remove the power piston return spring from the front shell, and remove front shell from vise.

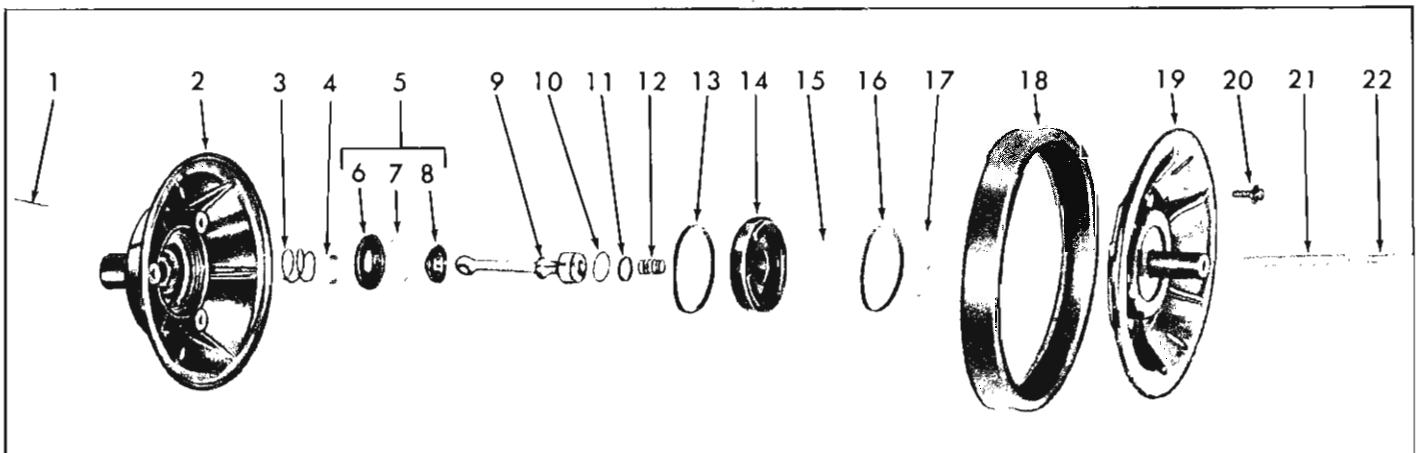


Fig. 13—Power Piston Exploded View

- |                                    |                                |                             |                        |
|------------------------------------|--------------------------------|-----------------------------|------------------------|
| 1. Air Cleaner Element             | 6. Diaphragm                   | 12. Air Valve Return Spring | 18. Rolling Diaphragm  |
| 2. Power Piston                    | 7. Diaphragm Support           | 13. Insert Seal             | 19. Support Plate      |
| 3. Control Valve Return Spring     | 8. Floating Control Valve      | 14. Insert                  | 20. Retaining Screw    |
| 4. Spring and Valve Seat           | 9. Air Valve Push Rod Assembly | 15. Reaction Levers         | 21. Hydraulic Push Rod |
| 5. Floating Control Valve Assembly | 10. "O" Ring                   | 16. Insert Seal             | 22. Adjusting Screw    |
|                                    | 11. Rubber Bumper              | 17. Reaction Disc           |                        |

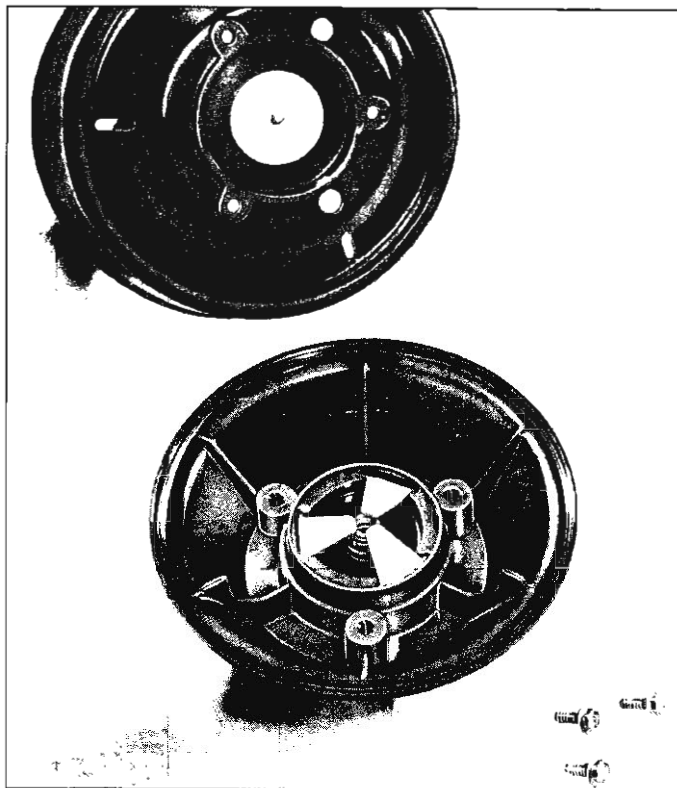


Fig. 14—Disassembling Power Piston

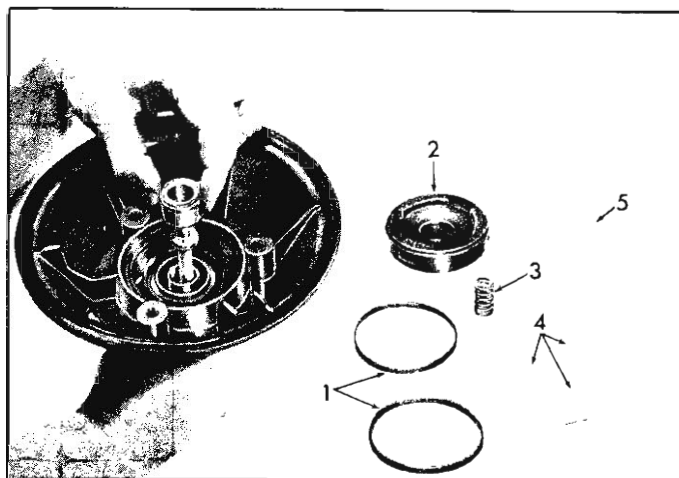


Fig. 15—Removing Air Valve Push Rod Assembly

- |                            |                        |
|----------------------------|------------------------|
| 1. Insert Seals            | 4. Reaction Levers     |
| 2. Insert                  | 5. Air Cleaner Element |
| 3. Air Valve Return Spring |                        |

13. Remove the support plate seal retainer from the center of the front shell. Disassemble retainer by removing gasket and seal.

14. Pull check valve from grommet in front shell, and remove grommet.

## Cleaning

Use "Declene" or clean brake fluid to clean all metal, plastic and rubber parts of the power cylinder. Immerse parts in cleaning fluid and use a hair brush to remove foreign matter. Blow out all passages, orifices and valve holes. Air dry and place cleaned parts on clean paper or lint-free cloth. If slight rust is found on inside surface of power cylinder housing, polish clean with crocus cloth or fine emery cloth, then follow with a thorough cleaning.

Dirt is the major cause of trouble and wear in service. Be certain to keep parts completely clean until reassembly.

If there is any suspicion of contamination or evidence of corrosion, completely flush hydraulic brake system as described in this section. Failure to clean hydraulic system can result in early repetition of trouble.

Use of gasoline, kerosene, antifreeze alcohol or any other cleaner with even a trace of mineral oil will damage rubber parts. Be particularly careful during reassembly that no grease or mineral oil comes in contact with these rubber parts.

## Inspection

Wipe cleaning fluid from all parts and carefully inspect each part for damage and wear. Inspect rubber parts for cuts, nicks and distortion. These rubber parts are the key to control of air flow and should account for the majority of trouble traceable to leakage. If there is any question whatever as to serviceability of any part, replace it.

## Assembly

Be sure that all parts are clean. If there is any doubt of cleanliness, rewash and air dry. Lubricate rubber parts with an approved rubber lubricant. Lubricate all plastic and metal friction points with an approved lubricant.

1. Install power piston bearing in rear shell so that the large flange is outside (fig. 12). Lubricate the grooves in the ID of the power piston bearing.
2. Insert check valve grommet in front shell cutout, and position check valve in grommet.
3. Press reaction plate over the small, knurled end of main cylinder push rod until it rests against shoulder, and install adjusting screw in taped end of push rod.
4. Position push rod through support plate so that reaction plate lies against support plate.

5. Place power piston in a vise so that extension is down. Do not clamp piston.
6. Place floating valve spring and spring seat in center of piston.
7. Assemble floating valve diaphragm over flanged hub of floating control valve. Flat surface of diaphragm will be on side opposite rubber face of floating control valve. Insert diaphragm plate under lip of diaphragm.
8. Press floating control valve and diaphragm assembly into the power piston so that control valve bears against spring seat and compress spring.

**NOTE:** As the floating valve assembly is pressed into power piston, make sure diaphragm is not distorted.

9. Install "O" ring and snubber on air valve, and position push rod through floating control valve and into piston extension so that push rod passes through the loading slot in extension (fig. 15).
10. Assemble seals to insert and position insert over air valve. Reaction lever locations in insert must be visible when installing insert.
11. Place air valve return spring in counterbore of air valve. Position the ears of the reaction levers in the molded locations in the piston insert and rest small ends of levers on return spring.
12. Place the unfolded diaphragm over the support plate so that second bead is on outside wall. Position the support plate on power piston, making sure that the beaded edge of diaphragm is located between flange on support plate and flange on edge of power piston.
13. Align screw holes in support plate with taped holes in power piston. Be sure that reaction levers maintain their positions in seats of power piston insert.
14. Depress support plate until support plate bottoms on insert gasket. Hold support plate in this depressed position and finger tighten support plate retaining screws.
15. Torque support plate retaining screws to 80-100 inch pounds.
16. Wrap the flat piece of filter material around push rod and slide filter into power piston extension.
17. Place main cylinder retaining nuts on main cylinder mounting studs. Position power section in vise so that jaws of vise will bear against retaining nuts.
18. Position power piston return spring in the front shell.
19. Insert power piston, air valve push rod first, into the rear shell until the piston extension passes through piston bearing.
20. Fold the rolling diaphragm back over rear shell and apply talcum powder or rubber lubricant to beaded portion of diaphragm.
21. Position rear shell and power piston assembly to front shell. Make sure support plate extension goes through power piston spring.
22. Rotate the rear shell assembly to assure that when the shell is in the locked position, the scribe mark will be in line with the scribe mark on the front shell.
23. Place a metal bar through the access holes in the mounting bracket; press down on metal bar and check to be sure that bead on edge of rolling diaphragm is positioned correctly between the shells. If this is satisfactory, apply additional downward pressure and rotate rear shell clockwise into locked position.

**NOTE:** If unit is not easily locked, hold shells together and apply vacuum to check valve in front shell. Do not put pressure on power piston extension. Support plate seal retainer must be installed if vacuum assist is necessary. See Step 29 for installation.

24. Position rubber boot over push rod and power piston bearing flange.
  25. Connect linkage to air valve push rod.
  26. Remove unit from vise and remove nuts from main cylinder mounting studs.
  27. Place power unit in a vise or fixture so that the main cylinder push rod is up.
  28. Place Tool J-7723-01 over the push rod so that it fits between studs on front shell (fig. 9). Gauge should be parallel to studs and resting on surface of front shell. Cutout portion of gauge should just match height of push rod. Any variation may be compensated for by turning adjusting screw. If support plate seal retainer was used in step 23, remove it for gauging procedure.
- NOTE:** If push rod height adjustment gauge is not available, the required dimensions for fabrication are given in Figure 10.
29. Place support plate seal in support plate seal retainer so that flat surface of seal lies against bottom of retainer. Place gasket on OD of seal retainer, and insert retainer in front shell cutout so that gasket is between front shell and retainer flange.
  30. Position main cylinder to power cylinder. Make sure filter is installed in main cylinder. Install

lockwashers and nuts and torque to 15-20 foot pounds.

### Installation

If linkage was removed, proceed as follows:

1. Place one operating lever on collar. Tap into place until it seats against shoulder. Install second operating lever.
2. Place the lever and collar in position and install pivot pin and cotter pin.
 

**NOTE:** The large diameter of collar must be on the inboard side of mounting bracket. The pivot pin can only be installed from outer side of mounting bracket.
3. Place one wave wash on inner side of outer operating lever (over upper hole), and install clevis pin, flat washer and cotter pin.
4. Place one wave washer on inner side of outer operating lever (over middle hole), and install

clevis pin, flat washer and cotter pin to brake pedal push rod.

If linkage was not removed, omit Steps 1-4, and proceed with Step 5.

5. Mount the power brake assembly in place and install four attaching nuts and lockwashers. Be certain to place push rod through cutout in fire wall.
6. Attach vacuum line to check valve.
7. Secure hydraulic line to main cylinder.
8. Attach push rod clevis to brake pedal assembly. Adjust pedal height by means of clevis on brake pedal push rod at pedal. Pedal height is obtained by measuring from floor covering at toe pan to top of pedal pod. Correct heights are:
 

Biscayne and Bel Air . . . . .	4 7/8"
Impala . . . . .	4 5/8"

**NOTE:** Check operation of stop light after adjusting pedal height.
9. Bleed brakes as outlined in this section.

## SYSTEM TESTS AND DIAGNOSIS

### SYSTEM TESTS

1. Road test brakes by making a brake application at about 20 mph to determine if vehicle stops evenly and quickly. If pedal has a spongy feel when applying the brakes, air may be present in the hydraulic system. Bleed system as described in this section.
2. With engine stopped and transmission in neutral, apply brakes several times to deplete all vacuum reserve in the system. Depress brake pedal, hold light foot pressure on pedal and start engine. If the vacuum system is operating, pedal will tend to fall away under foot pressure, and less pressure will be required to hold pedal in applied position. If no action is felt, vacuum system is not functioning.
3. Stop engine and again deplete all vacuum reserve in system. Depress brake pedal and hold foot pressure on pedal. If pedal gradually falls away under foot pressure, the hydraulic system is leaking.
4. If the brake pedal travels to within 1" of the toeboard, brakes require adjustment or brake shoes require relining.
5. Start engine. With brakes off, run to medium speed and turn off ignition, immediately closing throttle. This builds up vacuum. Wait no less than 90 seconds, then try brake action. If not

vacuum assisted for three or more applications, vacuum check valve is faulty.

### DIAGNOSIS

The same types of brake trouble are encountered with power brakes as with standard brakes. Before check of power brake system for source of trouble, refer to "Troubles and Remedies" of standard brakes in this section. After these possible causes have been eliminated, check for cause as outlined below:

#### Hard Pedal

- a. Vacuum Failure Due to
  1. Faulty vacuum check valve.
  2. Collapsed vacuum hose to manifold.
  3. Plugged or loose vacuum fittings.
- b. Bound Up Pedal Mechanism
- c. Power Brake Unit Trouble
  1. Jammed air valve.
  2. Vacuum leaks in unit caused by loose support plate screws, faulty air valve seal or support plate seal. Also, a damaged floating control valve, bad seal of main cylinder or mounting studs. Bad seal of the diaphragm between

## BRAKES—MORAINÉ 6-16

- shells or at power piston. Faulty power piston insert seal rings or check valve grommet.
3. Defective rolling diaphragm.
  4. Restricted air filter element.
  5. Worn or badly distorted reaction plate or levers.
  6. Cracked or broken power piston or support plate.

### Grabby Brakes (Apparant On-and-Off Condition)

- a. Power brake unit valve trouble.
  1. Reaction diaphragm leakage.
  2. Sticking air valve.
  3. Worn or distorted levers or plate.

### Pedal Goes to Floor (Or Almost to Floor)

- a. Fluid in reservoir needs replenishing.

- b. Power brake hydraulic leakage.
  1. Defective primary or secondary cup.
  2. Cracked main cylinder casting.
  3. Leaks at wheel cylinder, brake pipes or connections.
- c. Faulty main cylinder check valve.
- d. Main cylinder compensating port restricted.
- e. Brakes need adjustment.

### Brakes Fail to Release

- a. Faulty hydraulic check valve.
- b. Blocked passage in power piston.
- c. Air valve sticking shut.
- d. Broken piston return spring.
- e. Broken air valve spring.
- f. Tight pedal linkage.

## SPECIFICATIONS

Refer to Section 16 for Brake Specifications

## SPECIAL TOOLS

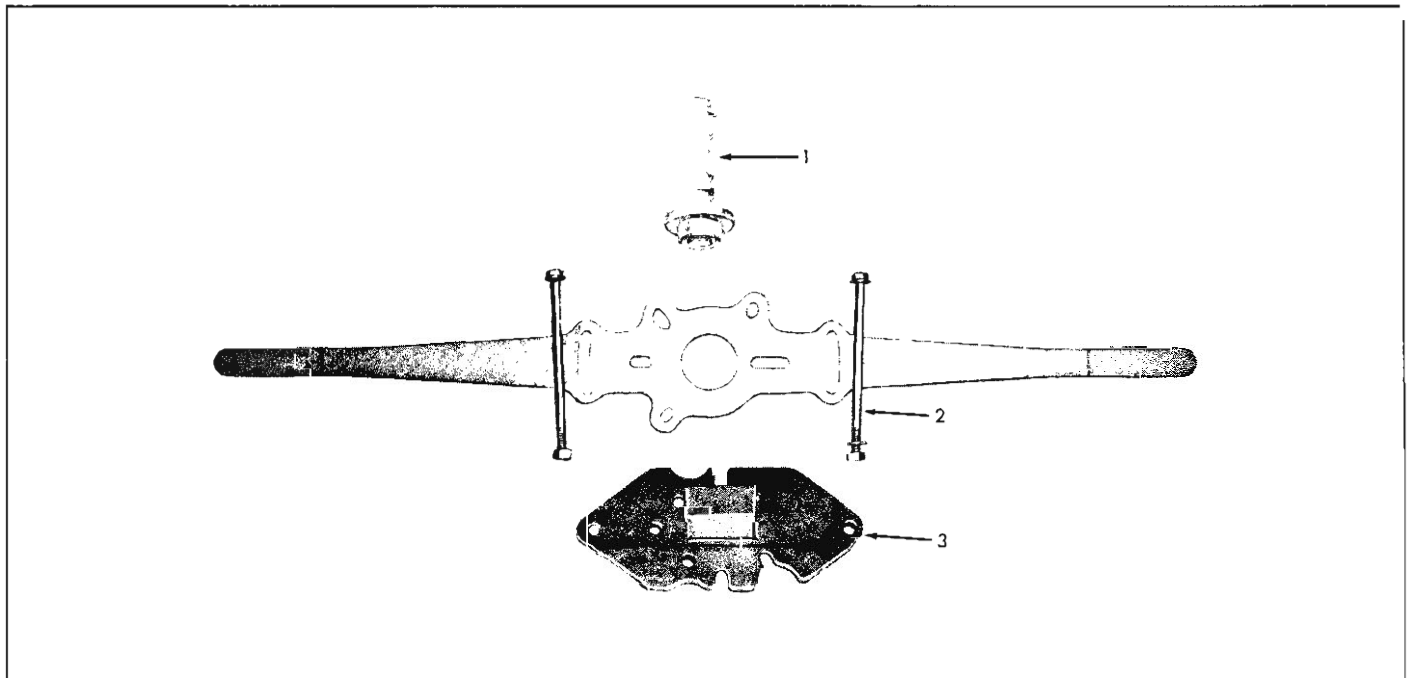


Fig. 16—Power Brake Special Tools—Bendix

1. J-9540 Vacuum Power Cylinder Seal Installer

2. J-9504 Vacuum Power Cylinder Spanner Wrench

3. J-9576-1 Vacuum Power Cylinder Holder and Compressor

# SECTION 7

## ENGINE TUNE-UP

### GENERAL DESCRIPTION

This Section, outlines the changes and additional procedures required for maintenance and service tune-up of the current passenger car engines. Two new engines, a 327 cu. in. engine, RPO 300 and RPO 397, and a 409 cu. in. engine, RPO 580 and RPO 587 have been added for 1962.

Tune-up procedures are the same for 1962 as described in the 1961 Passenger Car Shop Manual. Detailed adjustments and overhaul procedures for the carburetors are described in Section 10. The 1962 Engine Tune-up Specifications Chart is shown on the following page.

### MECHANICAL CHECKS AND ADJUSTMENTS

The following procedures are suggested changes for all 1961 and 1962 vehicles. For other procedures refer to the 1961 Passenger Car Shop Manual.

#### FAN BELT ADJUSTMENTS

Fan belts should be adjusted using a strand tension gauge Tool J-7316 midway between generator and water pump pulleys (fig. 1).

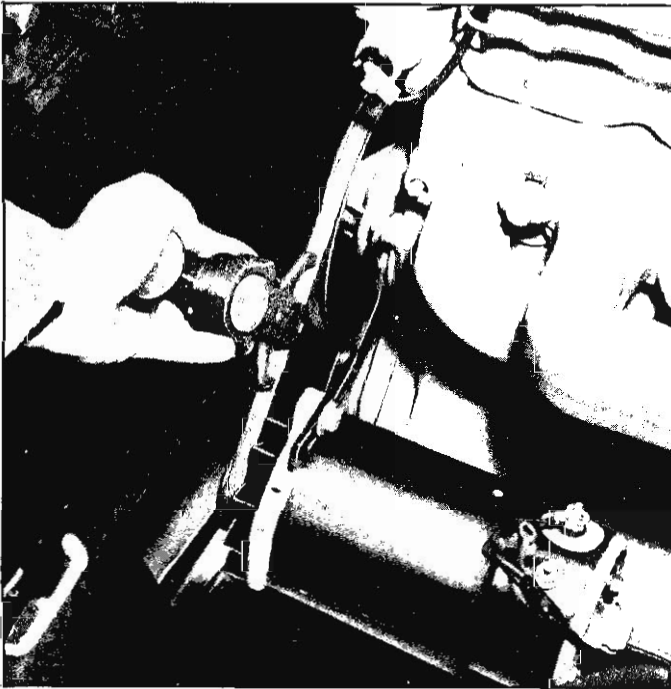


Fig. 1—Adjusting Fan Belt

Adjust fan belt (moving generator) to obtain a gauge reading of 90 lbs. on a new belt and 70 lbs. on a used belt.

**NOTE:** A belt is considered new until it has been used approximately 1,000 miles.

#### POSITIVE VENTILATION

The positive ventilation valve and hose (or tubing) should be checked for cleanliness at each tune-up or sooner if necessary. Refer to Section 8 of this supplement for identification and servicing of parts.

#### SPARK PLUGS

The plugs are to be cleaned and serviced as outlined in the 1961 Passenger Car Shop Manual. Each plug should be inspected for make and heat range. All plugs must be of the same make and number or heat range.

**NOTE:** The following lineup of 14 mm plugs are provided for 1962 Passenger Car engines:

1962 SPARK PLUG USAGE

Engine	"Colder"	Standard	"Hotter"
235 L-6 283 V-8	AC-44	AC-46	
327 V-8 WCFB Carb.	AC-43	AC-44	AC-45
327 V-8 AFB Carb.	AC-43	AC-44	AC-45
409 V-8 1 - 4-Bbl. AFB Carb.	AC C-42N	AC-43N	AC-44N
409 V-8 2 x 4 Bbl. AFB Carbs.	AC C-42N	AC-43N	AC-44N

# 1962 PASSENGER CAR ENGINE TUNE-UP SPECIFICATIONS

PARTS		ENGINES				
		235 Cu. In. Hi-Thrift Six	283 Cu. In. Turbo-Fire	327 Cu. In. RPO 300	327 Cu. In. RPO 397	409 Cu. In. RPO 580-587
Compression		130 psi (Min.)	140 psi (Min.)	160 psi (Min.)	160 psi (Min.)	150 psi (Min.)
SPARK PLUGS	Make & Number	AC-46	AC-46	AC-44	AC-44	AC-43N
	Gap	.035	.035	.035	.035	.035
D I S T R I B U T O R	Cam Angle	28° - 35°	28° - 32°	28° - 32°	28° - 32°	29° Each Breaker 33° - 34° Overall
	Point Gap	.019 (New) .016 (Used)	.019 (New) .016 (Used)	.019 (New) .016 (Used)	.019 (New) .016 (Used)	.019 (New) .016 (Used)
	Arm Spring Tension	19 - 23 oz.	Preset	Preset	Preset	Preset
	Condenser	.18 - .25 MFD	.18 - .25 MFD	.18 - .25 MFD	.18 - .25 MFD	.18 - .25 MFD
Fan Belt		See Note 1	See Note 1	See Note 1	See Note 1	See Note 1
Carburetors		BC	2GC	WC FB or 4GC	AFB See Section 10	AFB RPO 580- 4 Bbl. RPO 587- 2 x 4 Bbl.
Air Cleaner		See Note 2	See Note 2	See Note 2	See Note 2	See Note 2
TAPPET CLEAR- ANCE	Inlet	Hydraulic One Turn	Hydraulic One Turn	Hydraulic One Turn	Hydraulic One Turn	Mech. .008 (Hot)
	Exhaust	Hydraulic One Turn	Hydraulic One Turn	Hydraulic One Turn	Hydraulic One Turn	Mech. .018 (Hot)
Ignition Timing Note #4		5° BTDC Nominal Range 0° to 8°	4° BTDC Nominal Range 4° to 8°	4° BTDC Nominal Range 4° to 10°	8° BTDC Nominal Range 6° to 12°	12° BTDC Nominal - -
Engine Idle RPM		500 Standard 475 Automatic Trans. (In Drive)	500 Standard 475 Automatic Trans. (In Drive)	500 Standard 475 Automatic	500 Standard 475 Automatic	650 - 700 Standard
FUEL PUMP	Press.	3 1/2 to 4 1/2 psi	5 1/4 to 6 1/2 psi	5 1/4 to 6 1/2 psi	5 1/4 to 6 1/2 psi	9 1/4 to 10 3/4 psi
	Vol.	See Note 3	See Note 3	See Note 3	See Note 3	See Note 3
Cooling System Radiator Pressure		13 psi	13 psi	13 psi	13 psi	13 psi

- NOTE:** #1. 90 lb. (New) - 70 lb. (Used) using strand tension gauge J-7316. Less than 1,000 miles is considered new.  
 #2. Paper Element - Service at 15,000 miles initially - check every 5,000 thereafter.  
 Polyurethane (Oil Wetted) - Service every 4,000 miles.  
 #3. One pint in 30 to 45 seconds.  
 #4. Disconnect spark vacuum line - cover opening on carburetor or manifold.



## AIR CLEANER

### Polyurethane, (Oil Wetted)

This type cleaner element, standard equipment on L-6 passenger car engines, is re-useable and should be removed, cleaned, reoiled and re-installed after each 4,000 miles. Under dusty or other adverse driving conditions the element should be cleaned more often. Refer to Section 10 for recommended detailed service information.

## IGNITION TIMING SETTING—RANGE

To enable service personnel to adjust ignition timing to provide the maximum in fuel economy and engine performance, the Specifications Chart lists usable ignition timing setting ranges for several Chevrolet engines. The maximum degree of timing advance that can be beneficially utilized will be dependent on altitude, temperature and octane rating of fuel used in the particular area in which the vehicle operates; while the final determining factor limiting advance will still be the 'knock point' of the individual engine.

# SECTION 8

## ENGINE MECHANICAL

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## GENERAL DESCRIPTION

### 235 CUBIC INCH L-6

The 1962 six cylinder engine (fig. 1) incorporates a new water outlet housing and a modified carburetor choke housing and air horn to accommodate a new concentric polyurethane air cleaner (see Section 10).

Service procedures remain the same as outlined

in the 1961 Shop Manual except those described under Service Operations. 1962 Specifications are shown in Section 16 of this supplement.

### 283 CUBIC INCH V-8

The Turbo-Fire 283 cubic inch V-8 engine (fig. 2) offered for 1962 is equipped with a two-barrel carburetor.

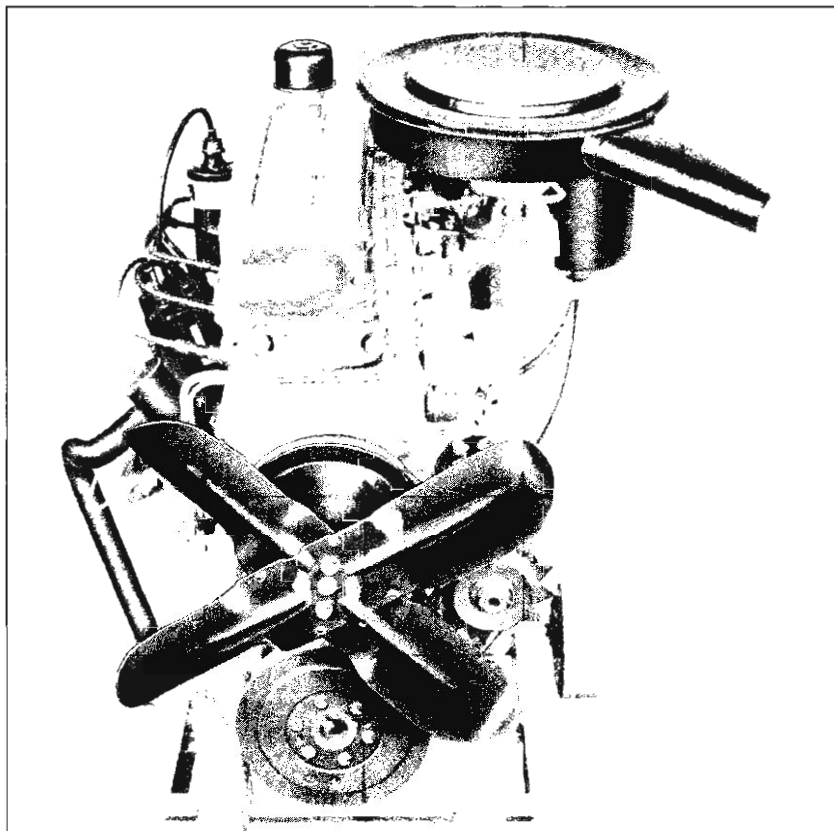


Fig. 1—235 Cubic Inch, L-6

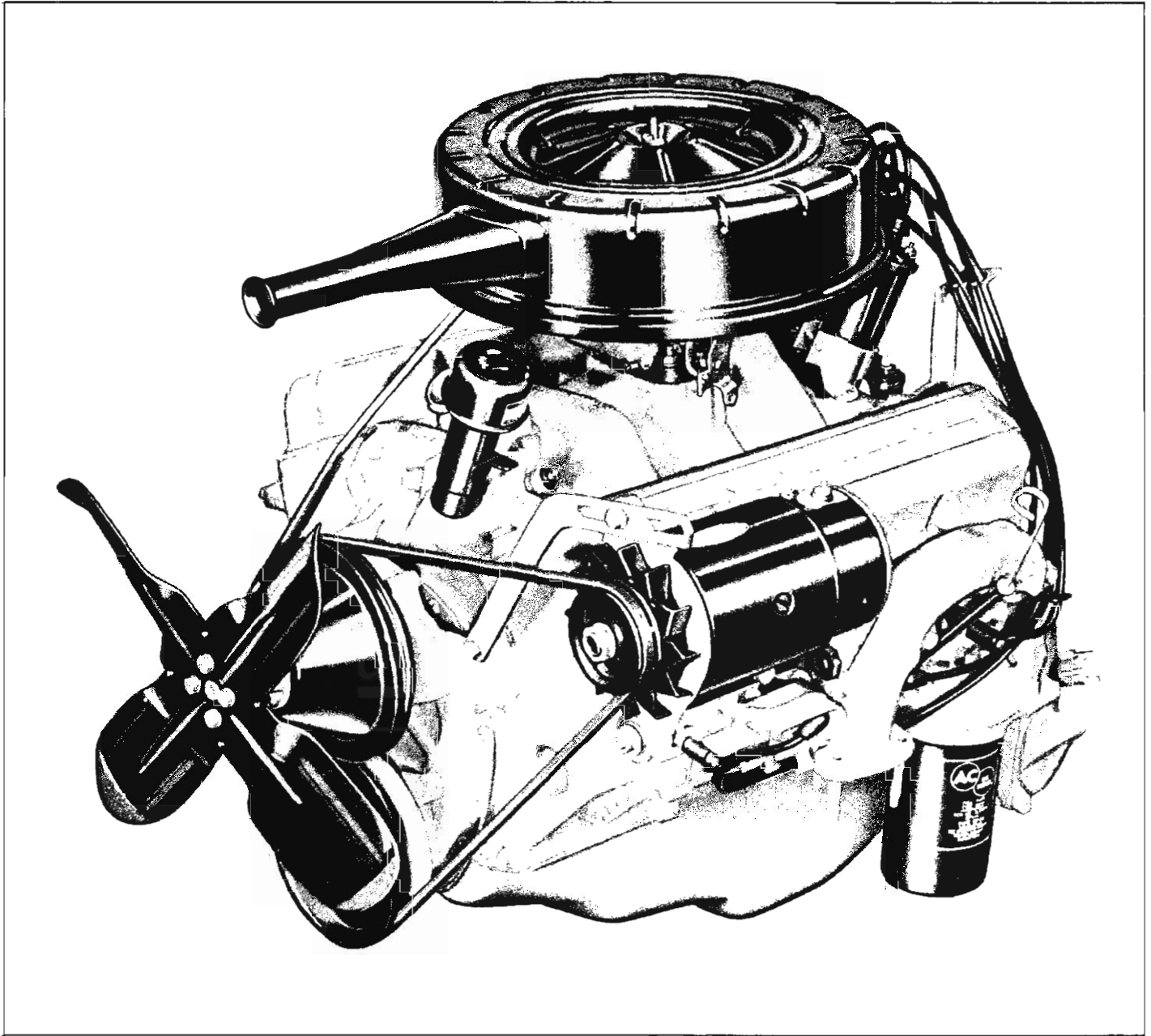


Fig. 2—283 Cubic Inch, V-8

retor and single exhaust system as is teamed with a 3-speed Overdrive or Powerglide transmission. This engine is essentially the same as in 1961 but incorporates a new carburetor choke clean air system (see Section 10).

### 327 CUBIC INCH V-8 (fig. 3)

Two 327 cubic inch V-8 engines (fig. 3) named Turbo-Thrust (RPO 300) and Super Turbo-Thrust (RPO 397) are offered for 1962. The Turbo-Thrust is equipped with a four-barrel carburetor, 2" dual exhaust and hydraulic lifters. The Super Turbo-Thrust

is equipped with a Carter Aluminum Four-Barrel (AFB) carburetor, 2 1/2" dual exhaust and hydraulic lifters. Both engines have a compression ratio of 10.5:1.

The 327 cubic inch engines are basically a further development of the 283 cubic inch engine design. Although this engine is similar to the 283 cubic inch engine, the four-barrel carburetor, new design rocker arm covers, nameplate and thermo-modulated cooling fan, distinguish it as a 327 cubic inch engine.

The Turbo-Thrust engines have a larger bore and stroke, a higher compression ratio and require

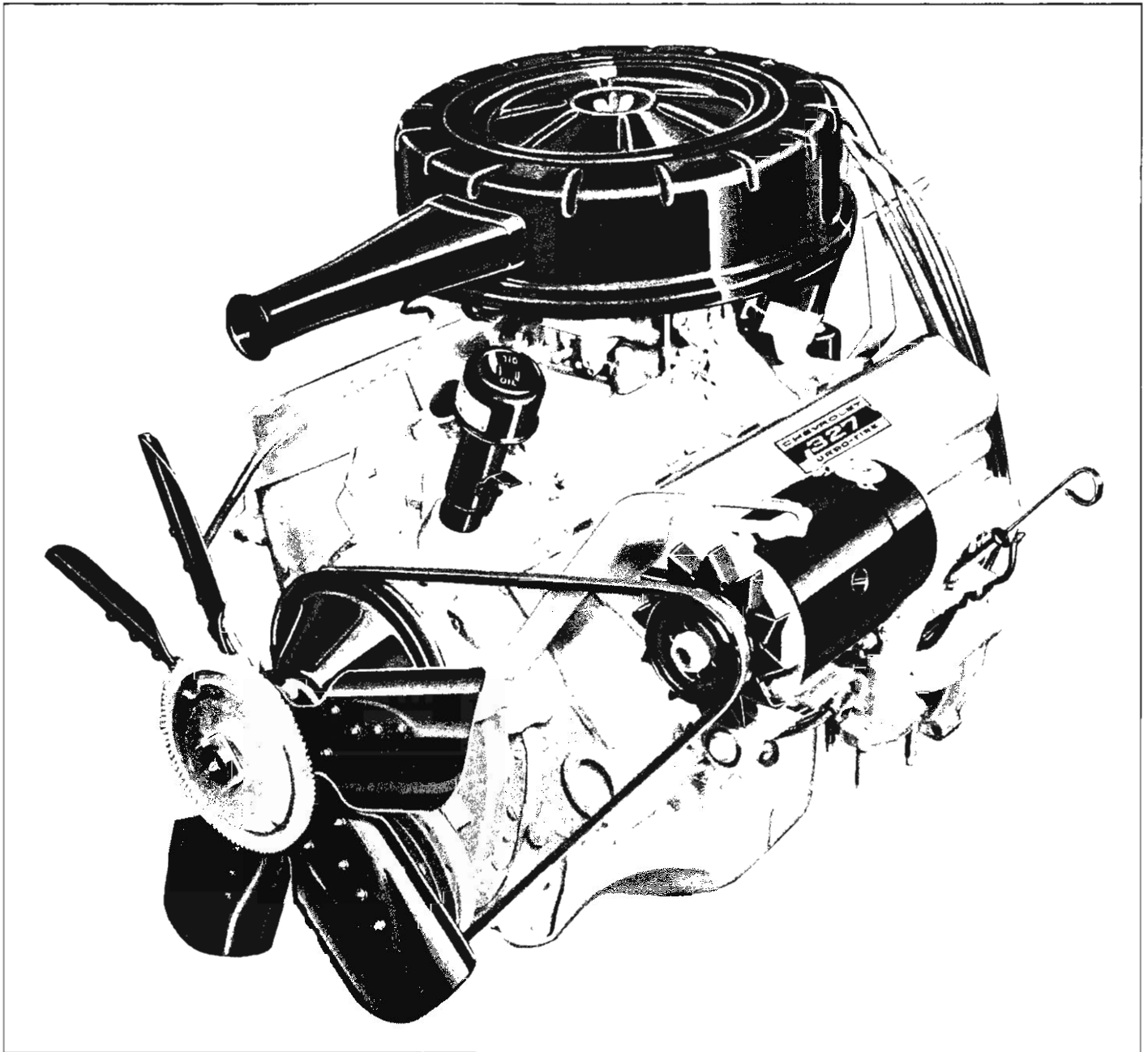


Fig. 3—327 Cubic Inch, V-8

premium fuel. Specifications are shown in Section 16 of this supplement.

#### 409 CUBIC INCH V-8 (fig. 4)

The 409 cubic inch V-8 engine (fig. 4) is basically the same as the 348 cubic inch engine and was made available as a mid-year release for 1961. In 1962 two 409 cubic inch engines named Turbo-Torque and Super Turbo-Torque are available to be teamed with a 3-speed or 4-speed transmission.

The Turbo-Torque engine is equipped with an

aluminum four-barrel (AFB) Carter Carburetor. The Super Turbo-Torque is equipped with two 4-barrel (AFB) Carter Carburetors. Both are equipped with special camshaft, mechanical lifters, dual snorkel paper element air cleaners and aluminum pistons.

Both engines are equipped with 2 1/2" dual exhaust, large valves, aluminum intake manifolds, a new carburetor choke clean air system a thermo-modulated fan and dual distributor points advanced centrifugally only.

Specifications for the 409 cu. in. engines are shown in Section 16 of this supplement.

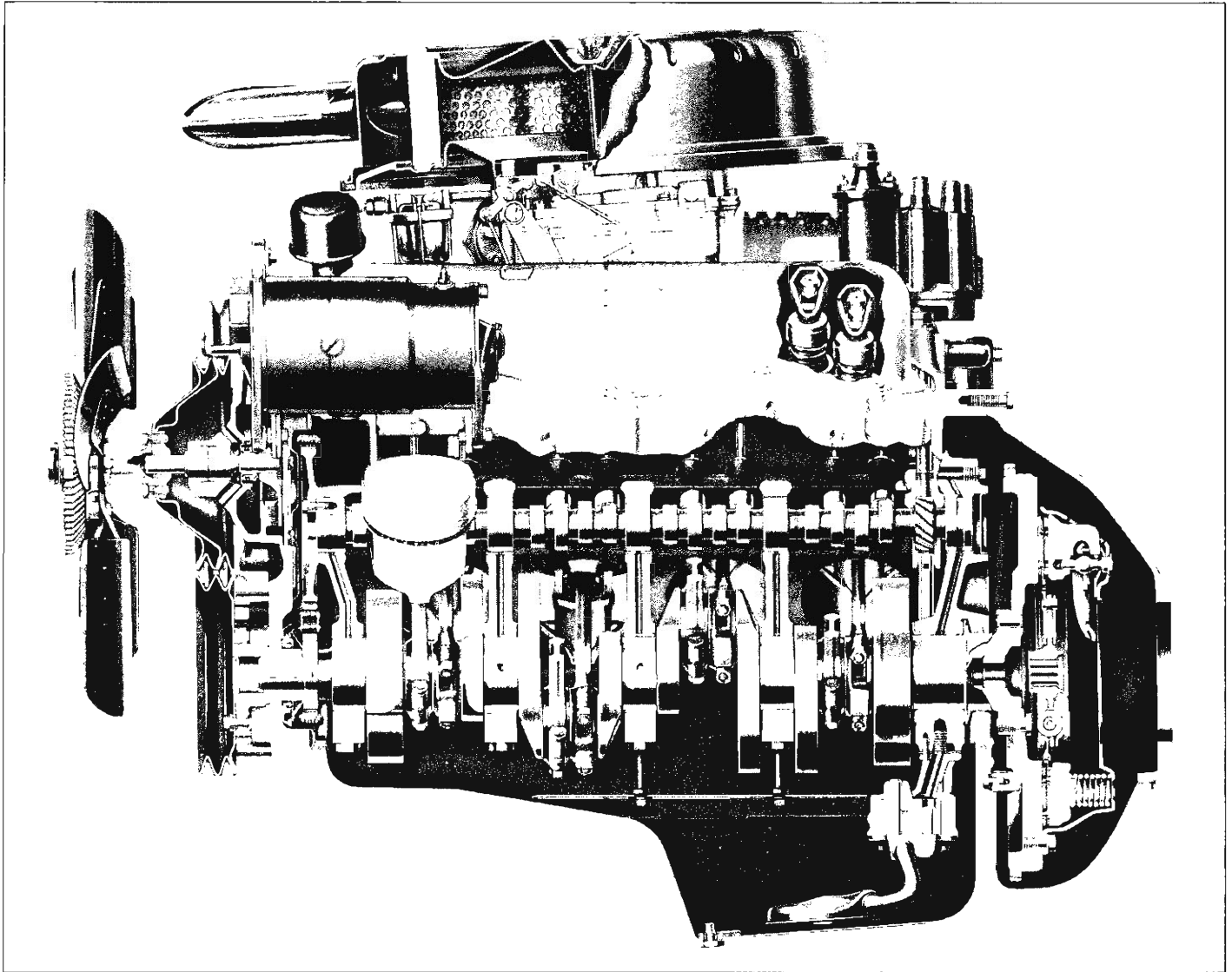


Fig. 4—409 Cubic Inch, V-8

## ENGINE COOLING

### Thermo—Modulated Fan

The thermo-modulated fan is standard equipment on 327 and 409 cubic inch engines. The fan is mounted to a slip clutch unit which in turn is mounted to the water pump pulley. Silicone fluid in the clutch

assembly acts to limit the maximum fan speed to 3500 rpm. The temperature sensing modulating device further limits fan speed to 1600 rpm until the engine compartment temperature at the modulating device reaches 120°F., at which time the fan speed will begin increasing to its maximum of 3500 rpm, reached at approximately 150°F temperature at thermostat.

## SERVICE OPERATIONS

Service operations for the L-6, 283 and 327 cubic inch engines are essentially the same as outlined in the 1961 Shop Manual and service operations for the 409 cubic inch engine are essentially the same as outlined for the 348 cubic inch engine except as noted below.

### OIL PAN REMOVAL (L-6 WITH POWERGLIDE)

Six cylinder engines with Powerglide transmissions must be removed from the vehicle to replace the oil pan or to remove it for a bearing job.

However, when a job requires pan removal and also requires head removal (ring job), the pan can be removed as outlined in the manual after the head has been removed. It may be necessary to rotate the crankshaft to position the front crankthrow and counterweights crossways to the engine for pan removal clearance.

Oil pan gaskets and seals or the rear main bearing oil seal can be replaced without the oil pan being completely removed from the vehicle as follows:

1. Raise the vehicle and place on stand jacks.
2. Drain crankcase.
3. Remove rocker arm cover.
4. Disconnect exhaust pipe at manifold and transmission shifter bell crank at transmission.
5. Loosen engine rear mount and remove through bolts at engine front mounts.
6. Raise engine front end (jack under pan or balancer) high enough to place a 2" spacer block (wood is good) under each engine front mount.

**NOTE:** While raising engine slowly, carefully observe fan and radiator hoses clearances.

7. Place blocks under front mounts and remove jack.
8. Remove oil pan screws and lower oil pan to frame.
9. Move oil pan forward between sway bar and harmonic balancer to gain approximately 4" to 6" clearance for rear main bearing oil seal replacement. Replace the seal in ordinary manner using wire to pull upper half into position.
10. To replace oil pan gaskets and seals, the oil pan can be manipulated to gain access to each piece and to wipe the pan clean. There is adequate clearance to scrape gasket surfaces if necessary.

### PISTON PIN INSTALLATION (283 and 327 cu. in.)

Piston pins are pressed into the connecting rod as in 1961 but a new support tool is necessary due

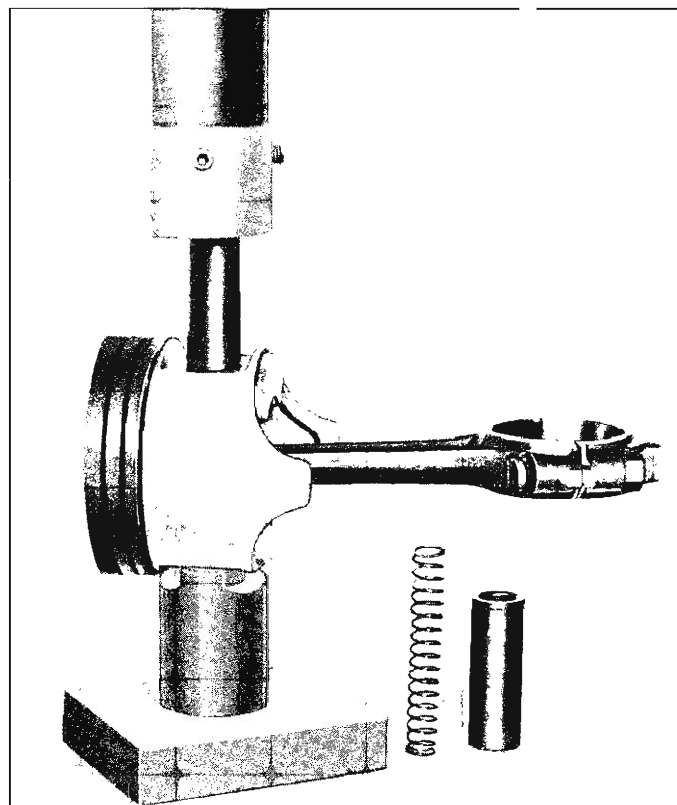


Fig. 5—Piston Pin, Removal

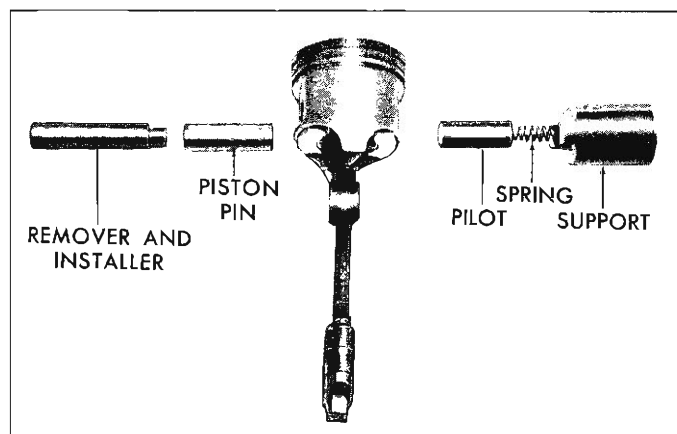


Fig. 6—Piston Pin Installation

to piston design changes. Tool J-9510 is used for both 283 and 327 cubic inch engines (figs. 5 & 6).

### PISTON PIN INSTALLATION (409 cu. in.)

Piston pins are pressed in the connecting rod as in 348 cubic inch engines but a new support tool is required to clear lower ring land on the larger 4 5/16" piston. See Tool J-6994-5 (figs. 7 & 8).

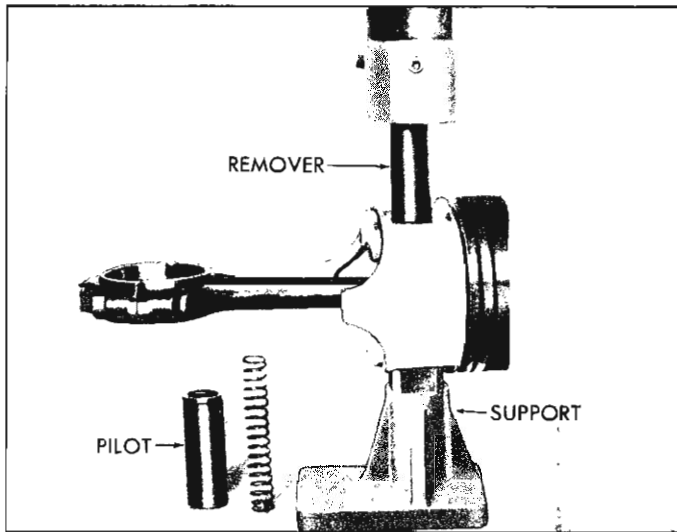


Fig. 7—Piston Pin, Removal

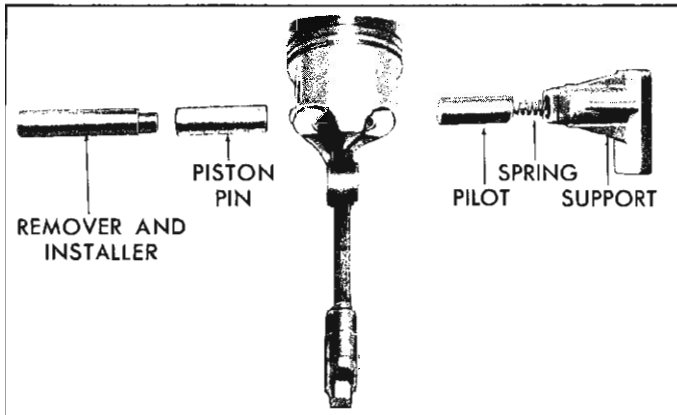


Fig. 8—Piston Pin, Installation

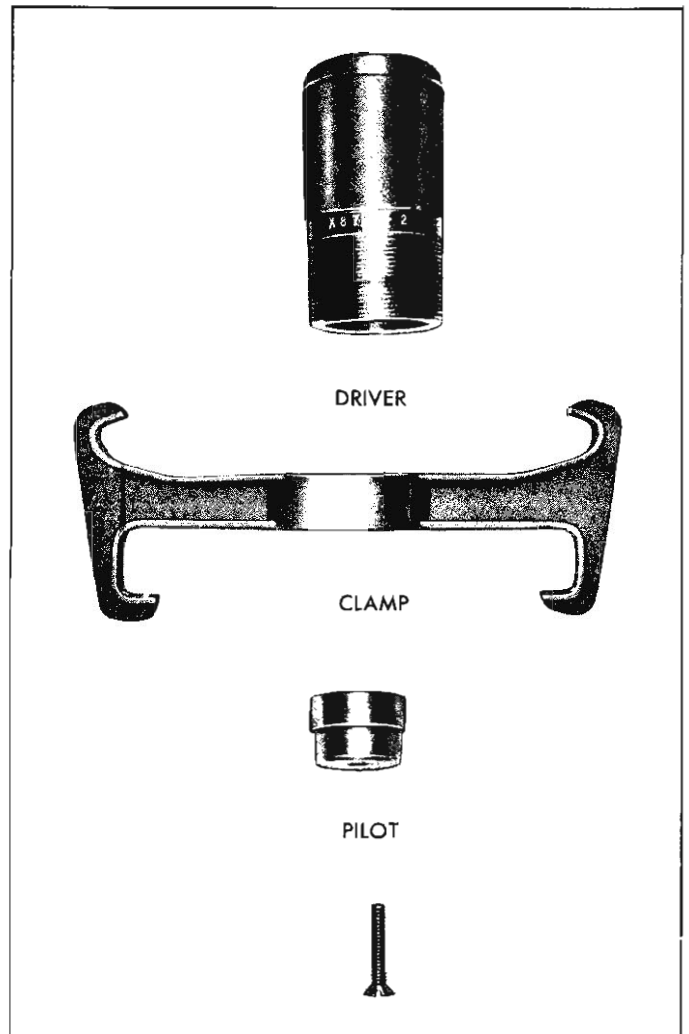


Fig. 9—Balancer Tool-Assembly, for V-8

### HARMONIC BALANCER INSTALLATION

On V-8 engines equipped with a balancer, having the inertia weight pressed on the hub it is necessary to use installer Tool J-8792 to prevent the inertia weight section from "walking" off the hub during installation of balancer. This tool is designed to be used on L-6 (194 cu. in.) engines as well as V-8 and care should be taken to proceed as follows when installing the balancer:

1. Thread the driver section of Tool into clamp section from shallow fingers to deep fingers (fig. 9).
2. Arrange adapter pilot into end of driver with flat end out and lock in place with screw.
3. Install tool over balancer as shown in Figure 10 with pilot adapter in the bore of hub. Tighten threaded driver only finger tight to keep from pulling balancer apart.

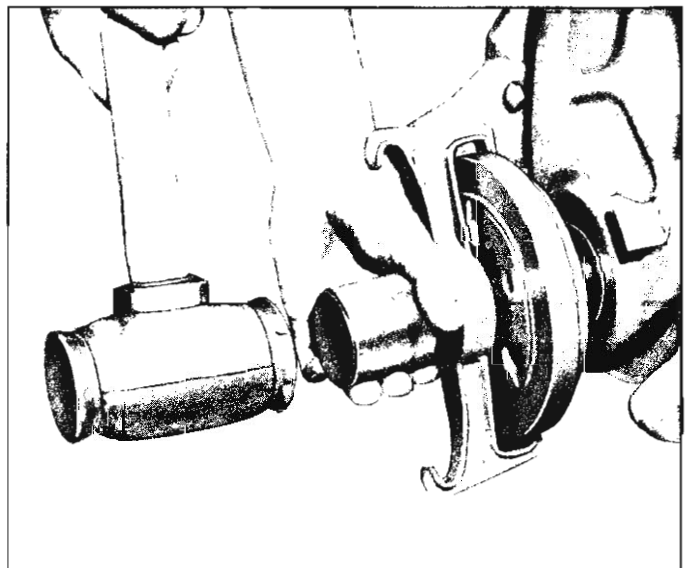


Fig. 10—Installer Tool in Place

4. Lubricate seal surface of balancer, then carefully start balancer over crankshaft while lining up the keyway with key on shaft.
5. Using a heavy (rubber lead, brass, or plastic) mallet, drive the balancer into place against shoulder on crankshaft.
6. Remove installer tool.

### POSITIVE CRANKCASE VENTILATION (Refer to fig. 11)

On all 1962 V-8 engines equipped with positive (closed) crankcase ventilation systems, the valve assembly is located at the carburetor base for easier servicing during tune-up operations.

Service procedure is as follows:

1. Remove carburetor air cleaner.
2. Disconnect ventilation hose from valve at carburetor base.
3. Remove valve.
4. Disassemble valve and clean thoroughly in solvent.

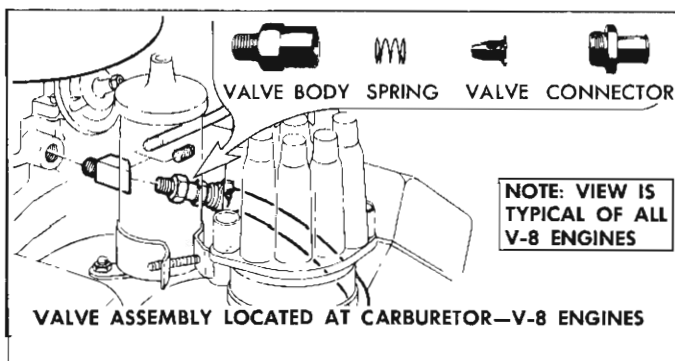


Fig. 11—Positive Ventilation System

5. Blow dry and reassemble (Fig. 11).
6. If valve was completely clogged, it will be necessary to remove hose and engine adapter and clean with solvent.

7. Install valve, connect ventilator hose and install air cleaner.
8. Check and adjust engine speed and idle mixture.

### FLYWHEEL INSTALLATION (Refer to fig. 12)

The crankshaft flywheel flange does not have a dowel pin to align flywheel during installation but the dowel hole is still in the flange. To install flywheel, line up dowel hole in crankshaft flange with dowel hole in flywheel using a drift punch, then install flywheel mounting bolts.

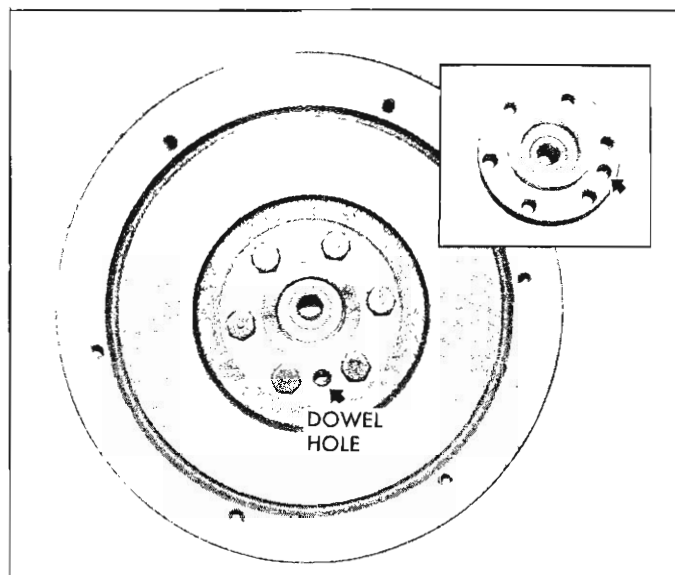


Fig. 12—Align Dowel Holes

### FAN HUB LOCATION

Fan hub has been located closer to the engine for radiator clearance on 1962 Passenger Car V-8 engines. Tool J-9608 locates the hub properly during pump assembly. Service pumps will have hubs located for 1962 engines and should be relocated when used on 1961 or earlier engines. Existing tools (J-5775 for 235 and 283 pumps and J-7034 for 348 pumps) should be used for this purpose.



## SPECIAL TOOLS

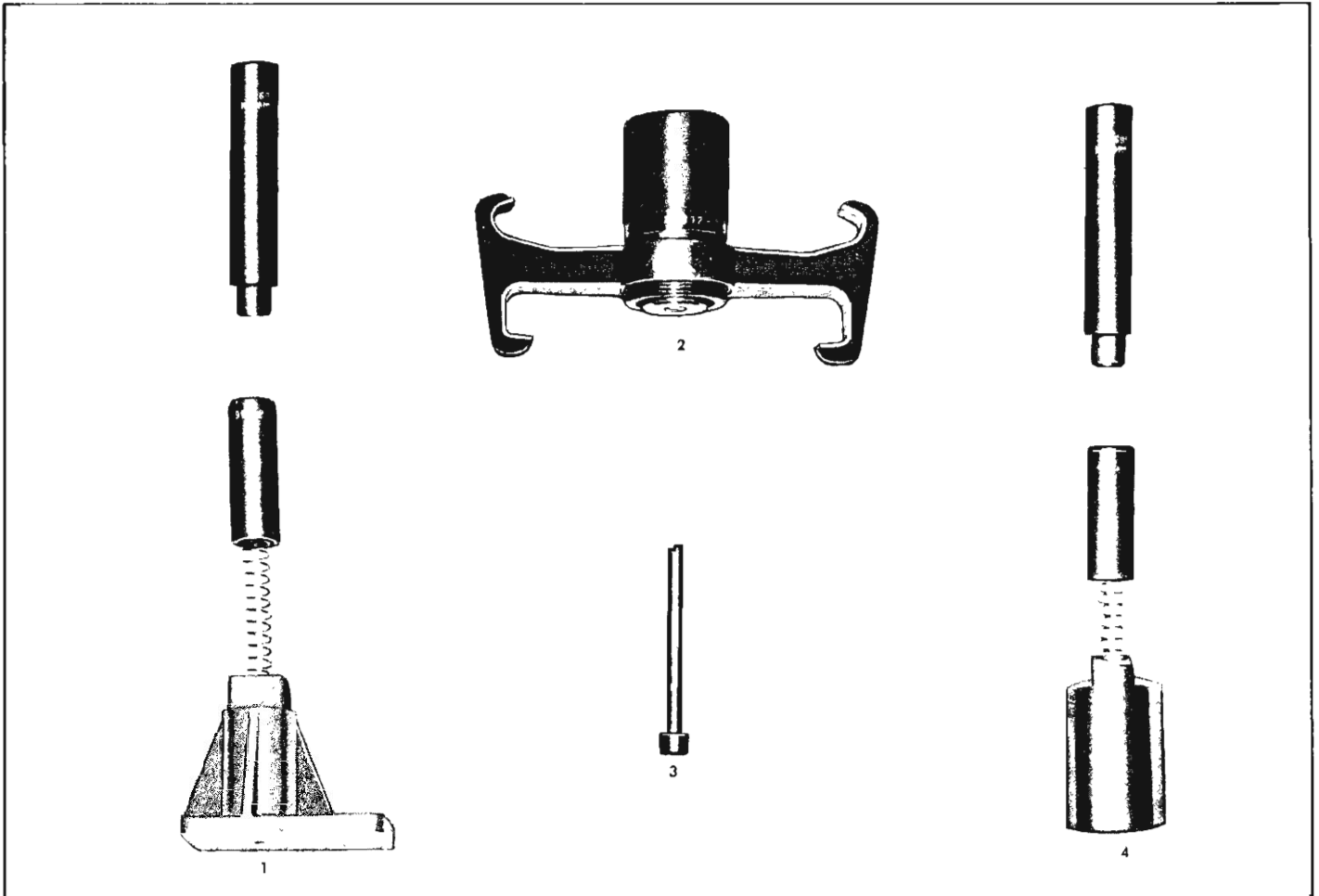


Fig. 13—Special Tools

1. J-6994, Piston Pin Replacer
2. J-8792, Harmonic Balancer Installer

3. J-9608, Fan Hub Locating Tool
4. J-9510, Piston Pin Replacer

# SECTION 9

## ELECTRICAL SYSTEMS

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## AC CHARGING SYSTEM-DELCOTRON

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## GENERAL DESCRIPTION

The New Delcotron (fig. 1) optional available on the 1962 passenger Car Models consists of two main parts, the rotor and the stator.

The rotor is mounted on ball bearings located in each end frame, and consists of multi-segmented north and south poles strengthened by field windings wound concentric with the rotor shaft. The field

windings are energized by two brushes riding on slip rings pressed on the rotor shaft.

The stator windings are assembled on the inside of a laminated core that forms the Delcotron frame. Six rectifier diodes are mounted into two heat sinks located in the slip ring end frame. The diodes change the A.C. voltage to D.C. voltage which appears at the output terminal of the Delcotron.

## MAINTENANCE AND ADJUSTMENTS

### GENERATOR

At regular intervals, inspect the terminals for corrosion and loose connections, and the wiring for frayed insulation. Check mounting bolts for tightness. Check the belt for alignment, proper tension and wear. Because of the higher inertia and load capacity of the rotor used in A.C. generators, proper belt tension is more critical than on D.C. generators.

Since the generator and regulator are designed for use on only negative polarity systems, the following precautions must be observed. Failure to observe

these precautions will result in serious damage to the Delcotron.

1. When installing a battery, always make absolutely sure the ground polarity of the battery, generator and regulator are the same.
2. When connecting a booster battery, make certain to connect the correct battery terminals together.
3. When connecting a charger to the battery, connect the correct charger leads to the battery terminals.

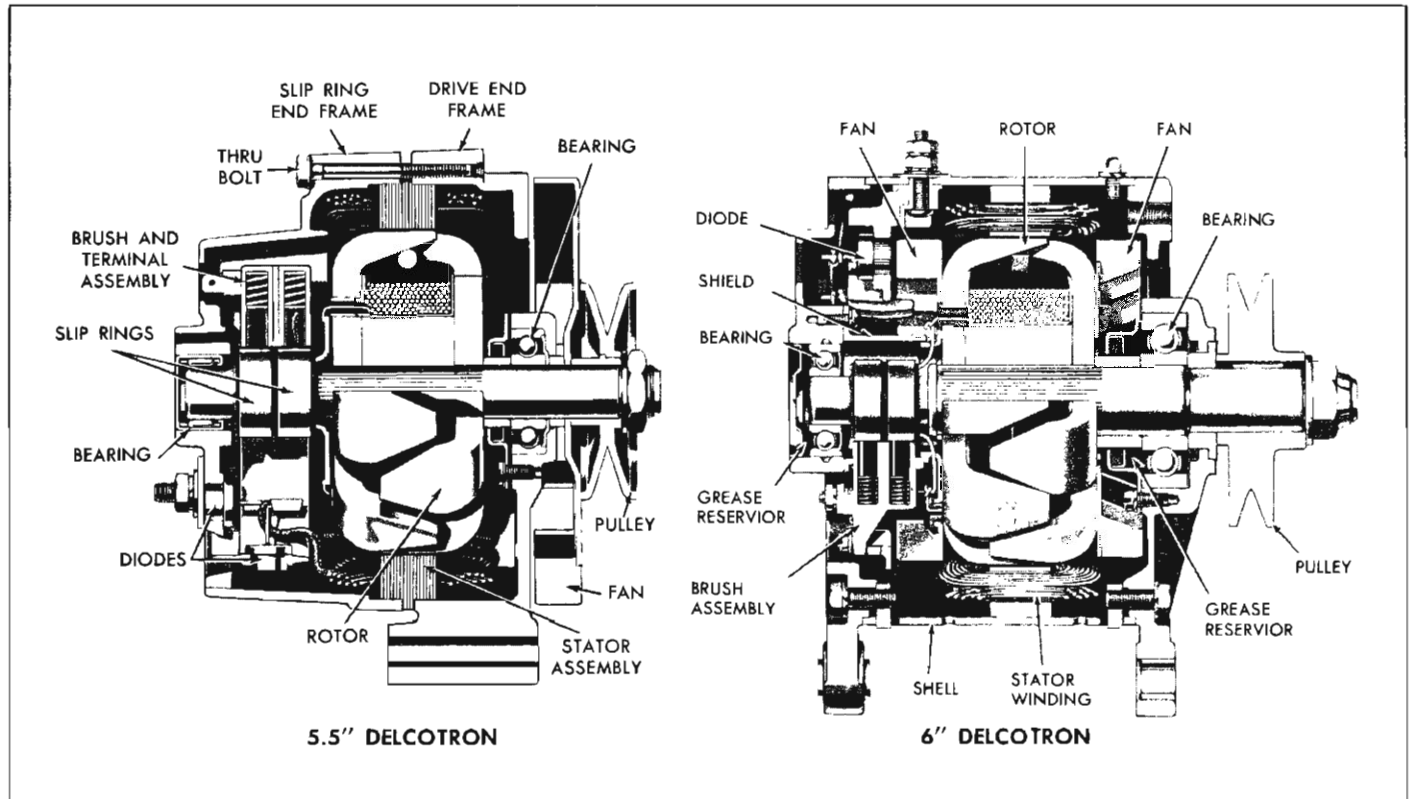


Fig. 1—Delcotron Cross-Section

4. Never operate the generator on open circuit. Make absolutely certain all connections in the circuit are secure.
5. Do not short across or ground any of the terminals on the generator or regulator.
6. Do not attempt to polarize the generator.

## OUTPUT CHECK

An on-the-vehicle check to determine if the generator is performing properly can be made as follows:

1. Connect an ammeter in the circuit at the "Bat" terminal of the generator, and a voltmeter from "Bat" terminal of generator to ground.
2. Remove lead from regulator "F" terminal and connect with a jumper lead to regulator "V" terminal (fig. 2). Slowly increase generator speed and check rated output (see Specifications-Section 16).

**CAUTION:** Load the battery with a carbon pile rheostat to prevent high voltage. Do not allow the generator voltage to exceed the recommended voltage setting of the regulator.

If the generator does not provide rated output, it should be checked further as outlined under Service Operations.

## INDICATOR LIGHT CHECK

The indicator light relay circuit may be checked

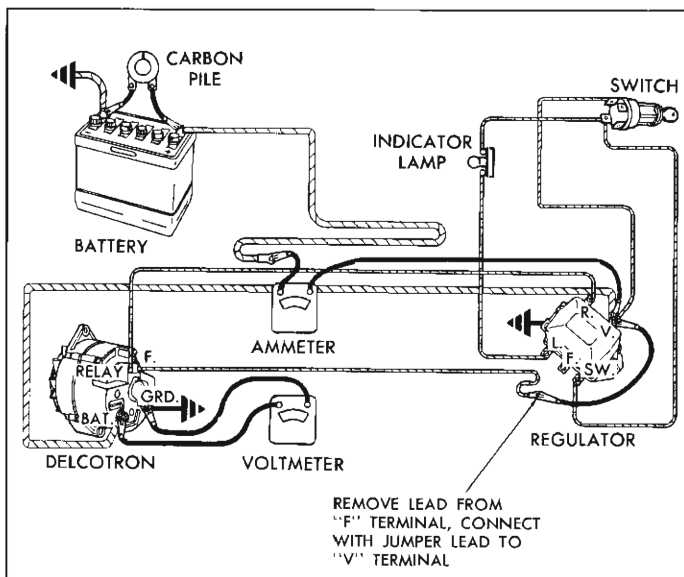


Fig. 2—Checking 5.5" Generator Output

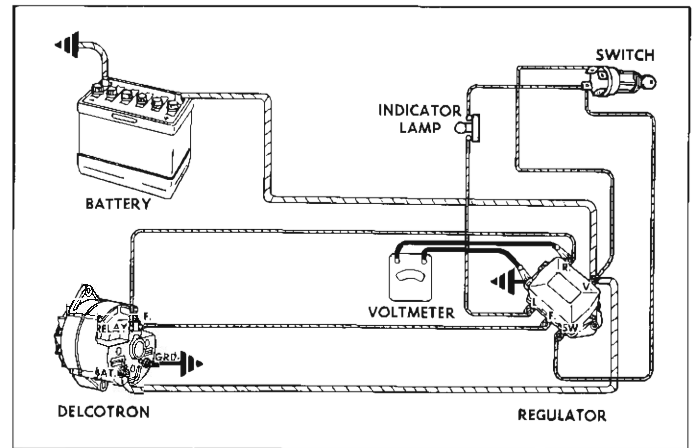


Fig. 3—Checking Indicator Light Relay

on the vehicle as follows:

1. Turn on ignition switch, but do not start the engine. If the light does not come on, check for a burned out bulb.
2. If the light comes on and continues to glow with the generator operating at moderate speed, check the voltage from regulator "R" terminal to ground with the generator in operation (fig. 3). If the reading is more than 5 volts, the indicator relay is defective. Check further as outlined under regulator Service Operations. If the reading is 5 volts or less, trouble elsewhere in the system is indicated. See regulator service procedure.

## LUBRICATION

Under normal operating conditions, the generator will not require lubrication. The grease reservoir in each end frame provides an adequate supply of lubricant for long periods of operation.

If the bearings are found to be in satisfactory condition at time of generator overhaul, they should be repacked with high melting point ball bearing lubricant. Make sure that the reservoirs are filled to one quarter capacity. Overfilling will cause the bearings to overheat.

## DOUBLE-CONTACT REGULATOR

The three unit, double contact regulator (fig. 4) used with the Delcotron may be checked on the vehicle as outlined below. All precautions listed under Delcotron generator regarding polarity and open circuits apply also to regulator checking and servicing. These precautions must be observed to assure safe Delcotron operation.

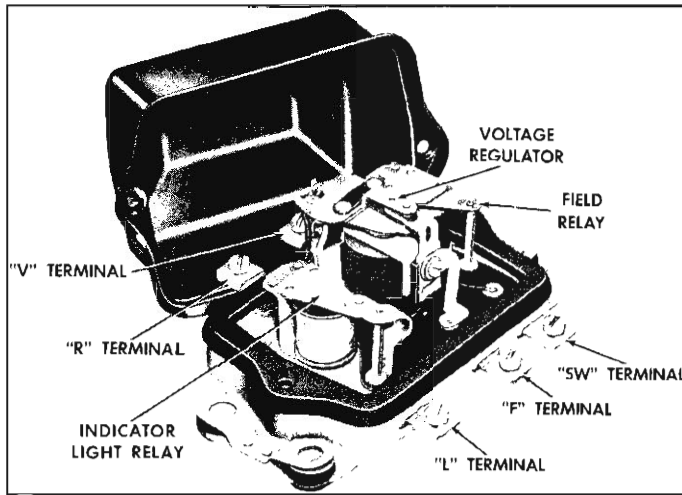


Fig. 4—Double Contact Regulator

**TROUBLE SHOOTING THE CHARGING SYSTEM**

Trouble in the charging system will normally appear as faulty indicator light operation, an undercharged battery or an overcharged battery.

**Indicator Light Relay**

To check the indicator light relay circuit, proceed as follows:

1. Turn on ignition switch, but do not start the engine. If the light does not come on, check for a burned out bulb.
2. If the light comes on and continues to glow with the generator operating at moderate speed, check the voltage from regulator "R" terminal to ground with the generator in operation (fig. 3). If the reading is more than 5 volts, the indicator relay is defective. Check further as outlined under Service Operations. If the reading is 5 volts or less, trouble elsewhere in the system is indicated. Check further as outlined below.

**Undercharged Battery**

An undercharged battery condition may be caused by one or more of the following factors:

1. **LOOSE GENERATOR FAN BELT** - tighten according to specifications in Tune-Up Section.
2. **DEFECTIVE BATTERY** - check for sulphated condition, loose terminal posts or cell connectors, cracked case (see battery tests under Electrical Section).
3. **MALFUNCTION OF FIELD RELAY** - to check the field relay, connect a voltmeter from regulator "F" terminal to ground (fig. 5). Turn on ignition switch, but do not start engine. The voltmeter should read battery voltage. If it reads

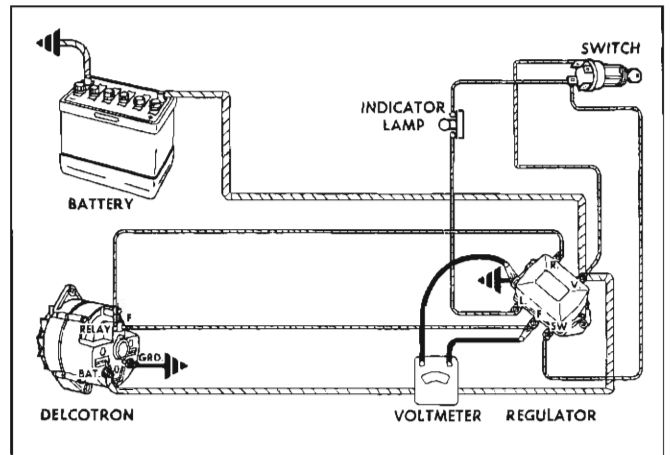


Fig. 5—Checking Field Relay

zero volts, the field relay contacts are not closed. In this case, check field relay as covered in Service Operations.

4. **EXCESSIVE CIRCUIT RESISTANCE** - to check for excessive circuit resistance, connect a voltmeter from the insulated battery post to the field terminal on the generator (fig. 6). Turn on switch, but do not start engine.

**NOTE:** If the generator field terminal is not accessible, connect to the regulator "F" terminal.

- a. If the reading exceeds 0.3 volts, excessive line resistance is indicated. Clean and tighten all connections at and between the battery insulated post and the regulator "V" terminal, and at the regulator "F" terminal and the generator field terminal.
- b. If the voltage reading still exceeds 0.3 volts, clean the generator "BAT" terminal, field relay contacts and voltage regulator contacts as outlined in the Service Operations Section.

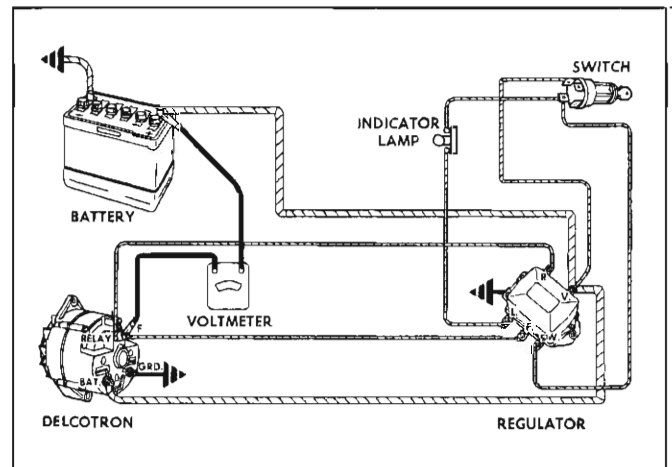


Fig. 6—Checking Circuit Resistance

c. If the voltage reading still exceeds 0.3 volts, check the generator for shorted or grounded fields. Remove the lead from the generator field terminal and connect an ammeter in series with the field winding. (See Specifications - Section 16, for field winding ampere ratings.) Refer to A.C. Generator Section for detailed service procedures.

5. **DEFECTIVE GENERATOR** - to determine if the generator is operating properly, proceed as follows:

- a. Connect an ammeter in the circuit at the "BAT" terminal of generator and a voltmeter from "BAT" terminal of generator to ground.
- b. Remove lead from regulator "F" terminal and connect with a jumper lead to regulator "V" terminal (fig. 2). Slowly increase generator speed and check rated output. (See Specifications - Section 16.)

**CAUTION:** Load the battery with a carbon pile rheostat to prevent high voltage. Do not allow the generator voltage to exceed the recommended voltage setting of the regulator.

If the generator does not provide rated output, it should be checked further as outlined under A.C. Generator Section.

6. **LOW VOLTAGE REGULATOR SETTING** - if no circuit defects are found, yet the battery remains undercharged, the cause most likely is a low voltage setting. Refer to section covering "tailoring the voltage setting."

## Overcharged Battery

An overcharged battery may be caused by one or more of the following conditions:

1. **SHORTED BATTERY CELL** - check for shorted battery cells as outlined under Battery Test Section.
2. **EXCESSIVE CIRCUIT RESISTANCE** - check for excessive circuit resistance as outlined under "Undercharged Battery" above.
3. **HIGH VOLTAGE REGULATOR SETTING** - if no circuit defects are found, yet the battery remains overcharged, refer to Section entitled "Tailoring the Voltage Setting."

## Voltage Setting

The voltage at which the regulator operates varies with changes in regulator ambient temperature (temperature of air measure 1/4 of an inch from

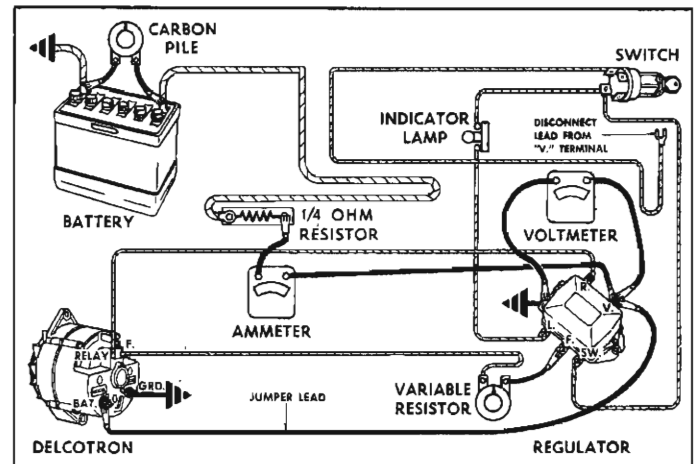


Fig. 7—Checking Voltage Setting

regulator cover). Refer to Specifications - Section 16 for correct regulator setting. To check and adjust the voltage setting, proceed as follows:

1. Connect an ammeter and a 1/4 ohm resistor with a rating of 25 watts or more in the circuit of the "BAT" terminal of the generator (fig. 7). The 1/4 ohm resistor will limit the generator output to 10 amperes or less, which is required when checking and adjusting the voltage setting.
2. Connect a 25 ohm, 25 watt variable resistor in series with the generator field winding at the "F" terminal on the regulator. Turn to the closed or "no resistance" position.
3. Disconnect the lead at the "V" terminal on the regulator, and connect a jumper lead from the "V" terminal to the "BAT" terminal on the generator.
4. Connect a voltmeter from the regulator "V" terminal to ground.
5. Operate the generator for 15 minutes at approximately 3000 rpm so that the regulator is operating on the upper set of contacts.

**NOTE:** Leave cover on regulator to establish operating temperature.

6. After the 15 minute warm-up period, cycle generator (turn off ignition switch and stop generator). Disconnect jumper lead from "V" terminal to "BAT" terminal.

**CAUTION:** Turning the field rheostat connected at the regulator "F" terminal will not cycle the generator - leave rheostat in closed position.

7. Reconnect jumper lead, re-run generator at moderate speed (approximately 3000 rpm) and note voltage reading. See Specifications - Section 16.

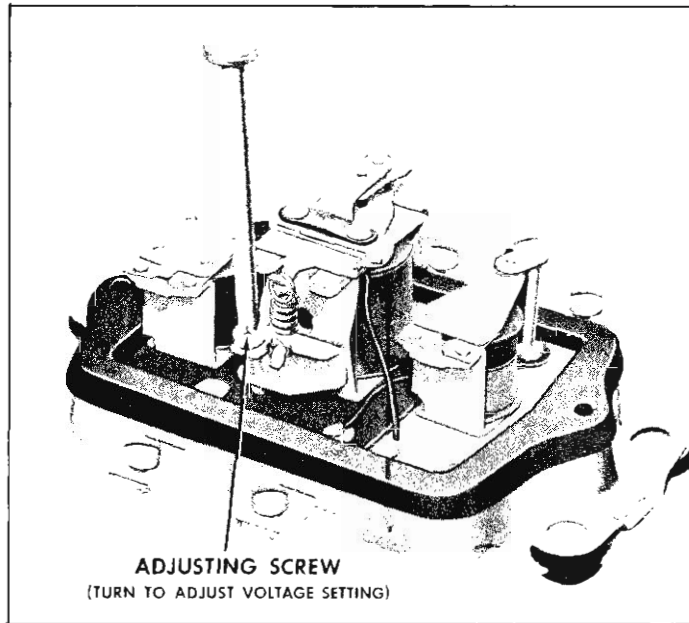


Fig. 8—Adjusting Voltage Setting

8. To adjust the voltage setting while operating on the upper set of contacts, turn the adjusting screw as shown in Figure 8.

**CAUTION:** Always make final setting by turning screw clockwise. This insures that the spring holder will be against the head of the screw. After turning screw counter-clockwise, pry holder up against screw head, then turn clockwise to make setting.

9. After making setting, re-cycle the generator, again operate generator at 3000 rpm and note voltage setting - readjust if necessary.

**NOTE:** Always cycle the generator before taking the final voltage setting reading.

10. After making the voltage setting while operating on the upper set of contacts, check the voltage setting while operating on the lower set of contacts as follows:

- a. Slowly increase the resistance of the variable resistor with the engine operating at 3000 rpm until the regulator begins to operate on the lower set of contacts. Note voltage reading and compare to those given in Specifications - Section 16.

**NOTE:** Turning the variable resistor does not cause the regulator to operate on the lower set of contacts, return the variable resistor to the "no resistance" position, turn the carbon pile to slightly load the battery, and then adjust the variable resistor to cause the regulator to operate on the lower set of contacts.

Usually, turning on the headlights will substitute for the carbon pile.

11. Lower set of contacts - the difference in voltage between the operation of the upper set of contacts and the lower set is increased by slightly increasing the air gap between the armature and center of core and decreased by slightly decreasing the air gap (see Air Gap Setting procedure).

**NOTE:** This setting may be made while the regulator is operating. It will be necessary to recheck the voltage setting of both contact sets if the air gap is changed.

### Tailoring the Voltage Setting

It is important to remember that the voltage setting for one type of operating condition may not be satisfactory for a different type operating condition. Vehicle underhood temperature, operating speeds, and night time service all are factors which effect the proper voltage setting. The proper setting is obtained when the battery remains fully charged with a minimum use of water.

If no circuit defects are found, yet the battery remains undercharged, raise the setting by 0.3 volts, then check battery over a period of time to see if improvements were achieved - reset regulator if necessary.

### Field Relay Unit

The closing voltage of the field relay should be checked as follows:

1. Make connections as shown in Figure 9 using a 50 to 75 ohm variable resistor.
2. Turn resistor to "open" position.

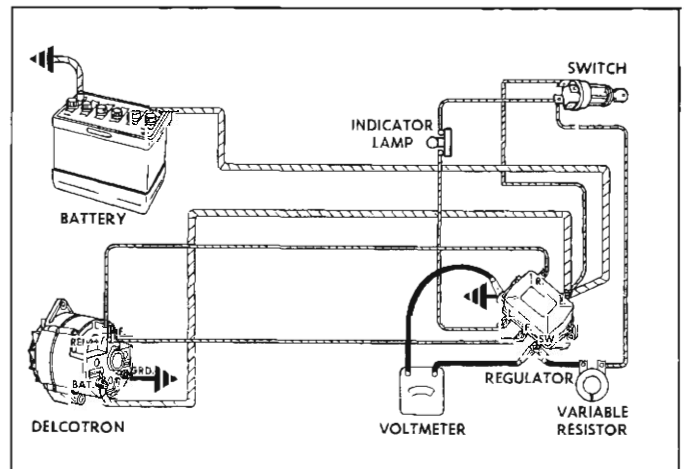


Fig. 9—Checking Field Relay Closing Voltage

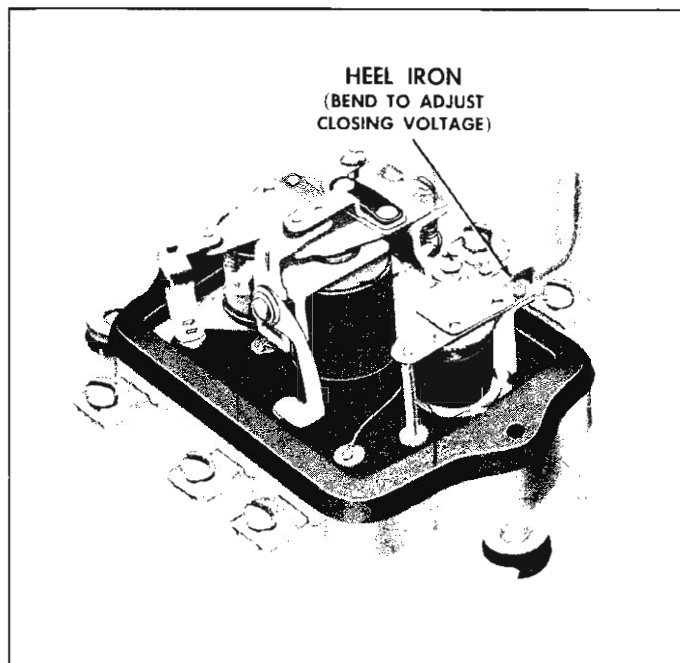


Fig. 10—Adjusting Field Relay Unit

3. Turn ignition switch on.

**NOTE:** If oil pressure switch is used, temporarily place jumper across terminals.

4. Slowly decrease resistance and note closing voltage of relay. Adjust by bending heel iron in manner illustrated in Figure 10.

### Indicator Light Relay Unit

The opening voltage of the indicator light relay should be checked as follows:

1. Connect a 50-75 ohm variable resistor between the regulator "V" and "R" terminals, and turn the resistor to the open or maximum resistance position.
2. Connect a voltmeter from regulator "R" terminal to ground (fig. 3).
3. Slowly decrease resistance and note the opening voltage. Adjust by bending the heel iron in the same manner as for the field relay (fig. 10).

## TRANSISTORIZED REGULATOR

The two-unit transistorized regulators (fig. 11) used with the Delcotron contain a single transistor and two diodes. The transistor works in conjunction with the conventional voltage unit to limit voltage to a pre-set value. The diodes prevent damage from transient voltages which may occur in the system. Wiring diagrams which follow in this sub-section

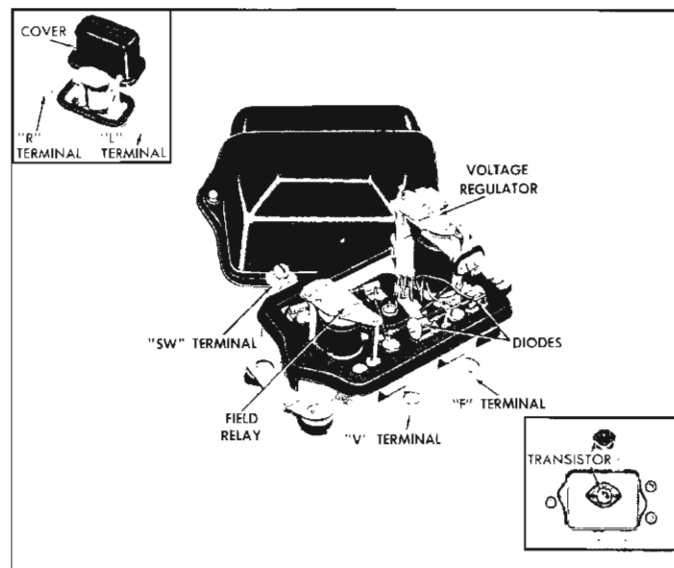


Fig. 11—Transistorized Regulator

show an indicator lamp connected to the Delcotron relay terminal. Connection for an indicator lamp to a transistorized regulator is external. All precautions pertaining to the Delcotron system concerning polarity and open circuits must also be observed when working on the transistorized regulator to assure continued safe Delcotron operation.

## TROUBLE SHOOTING THE CHARGING SYSTEM

### Indicator Light Relay Check

If the indicator light lights when the Delcotron is in operation, connect a voltmeter from the lamp relay "R" terminal and observe the voltage with the Delcotron in operation. If the voltage is above 11 to 11.6 and the lamp stays on, the relay is defective and should be replaced.

### Undercharged Battery Check

Check for loose drive belt and defective battery as outlined under Double-Contact Regulator.

### Delcotron Output Checks

- a. Connect an ammeter in the circuit at the "BAT" terminal of the generator, and a voltmeter from the "BAT" terminal of the generator to ground.
- b. Remove lead from regulator "F" terminal and connect to regulator "V" terminal. Slowly increase generator speed, and check output (fig. 12). See Specifications, Section 16.



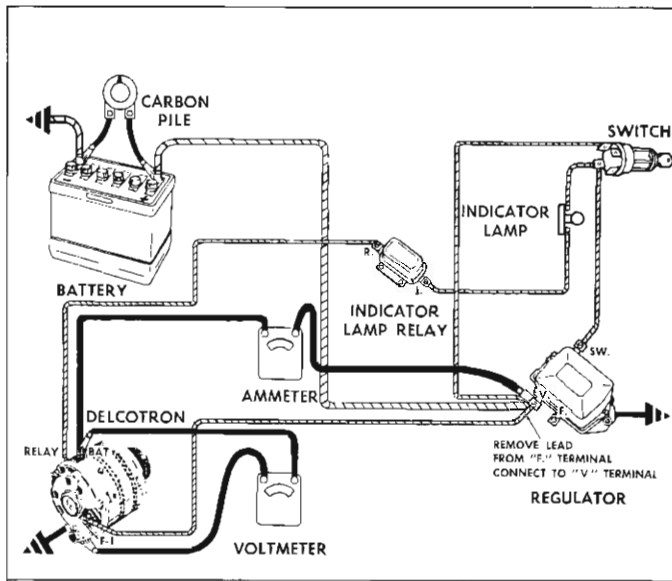


Fig. 12—Checking 6" Generator Output

**CAUTION:** Load the battery with a carbon pile rheostat to prevent high voltage. Do not allow Delcotron voltage to exceed the recommended voltage setting of the regulator.

**Excessive Circuit Resistance Check**

Check for excessive circuit resistance by making connectings shown in Figure 13. Turn on ignition switch, but do not start the engine, and note the voltage drop in the wiring between the regulator "V" terminal and battery insulated post. If drop exceeds .3 volt, excessive line resistance is indicated. Check connections and replace damaged wiring. If this does not correct excessive line drop, check Delcotron as covered in Service Operations - AC Generator.

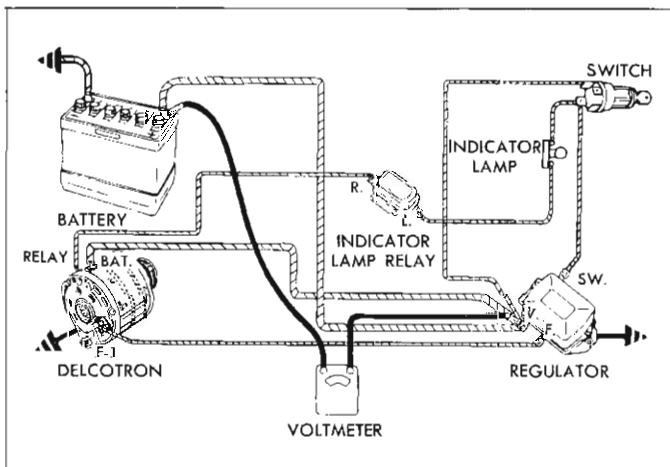


Fig. 13—Checking Circuit Resistance

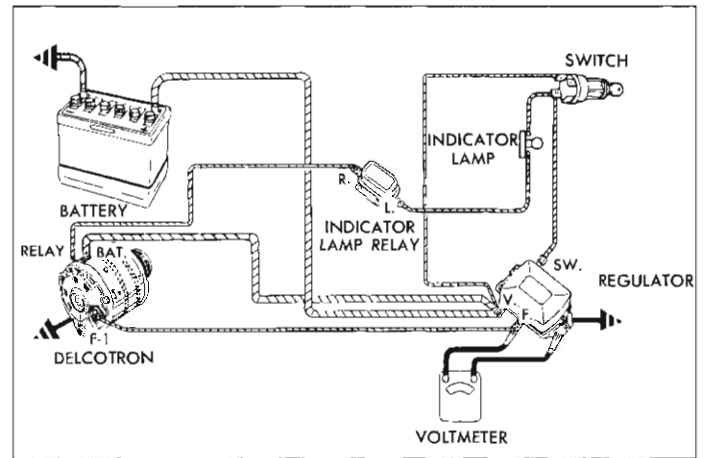


Fig. 14—Checking Voltage Regulator Setting

**Low Voltage Regulator Setting**

Check for low voltage regulator setting by connecting a voltmeter from regulator "F" terminal to ground (fig. 14) and turn on ignition switch. Place jumper across oil pressure switch terminals. If the voltmeter reads 9 volts or above, the regulator is not defective and the cause of the undercharged battery condition is probably a low voltage setting. Refer to Tailoring the Voltage Setting, Double Contact Voltage Regulator. If reading is less than 9 volts, either the field relay contacts are not closed, or the resistor and transistor are burned open. To check field relay, refer to Field Relay Checks. To replace transistor and resistor, refer to Service Operations.

**Regulator Diode Check**

To check the diodes, disconnect "V" and "F" leads from regulator, remove cover, and unsolder the two diode leads. Then connect an ohmmeter to the field discharge diode as illustrated in Figure 15 and note the reading. Then reverse the ohmmeter lead connections to the field discharge diode, and note the reading. If both readings are less than two ohms, the diode is defective. Also, the diode is defective if both readings are very high (infinite). A normal diode will give one low reading and one high reading. Check the suppression diode in the same manner. Use an ohmmeter with 1 1/2 volt cell, and use the lowest range scale on the ohmmeter. When replacing the diode, limit solder time to a minimum as excessive heat may damage the diode.

**Overcharged Battery**

Check for battery shorts, excessive circuit resistance, defective diodes and high voltage regulator settings in the same manner as outlined under Undercharged Battery.

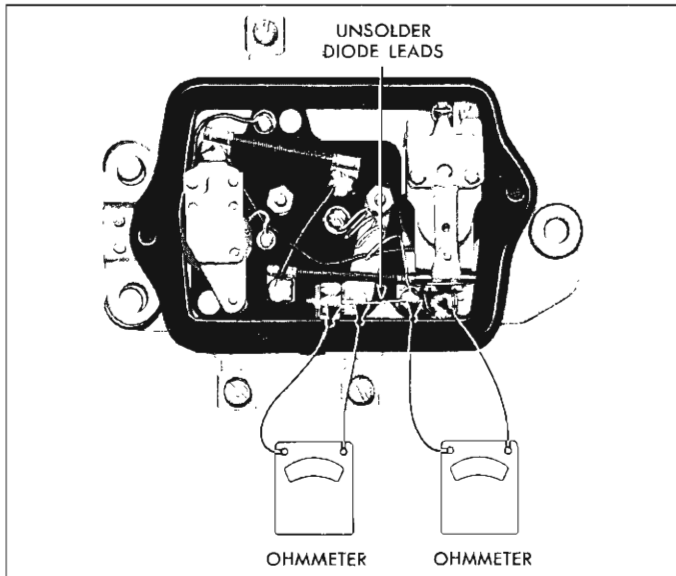


Fig. 15—Regulator Diode Check

**Shorted Transistor**

To check for a shorted transistor, make connections as shown in Figure 16, remove the regulator cover, hold the voltage contacts open, and note the reading. If the reading is above 9 volts, the transistor is shorted and must be replaced. To replace the transistor, remove the two attaching screws and unsolder the connections directly above the transistor.

**CAUTION:** Limit solder time to a minimum as transistors can be damaged by excessive heat.

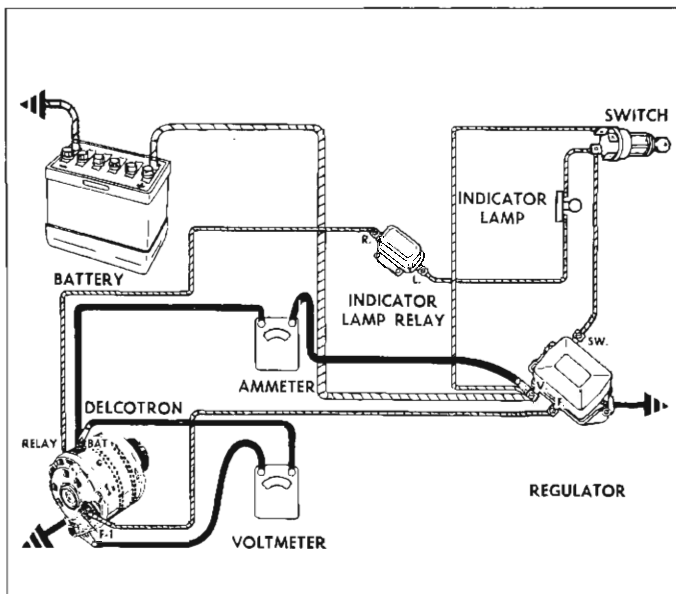


Fig. 16—Checking Transistor

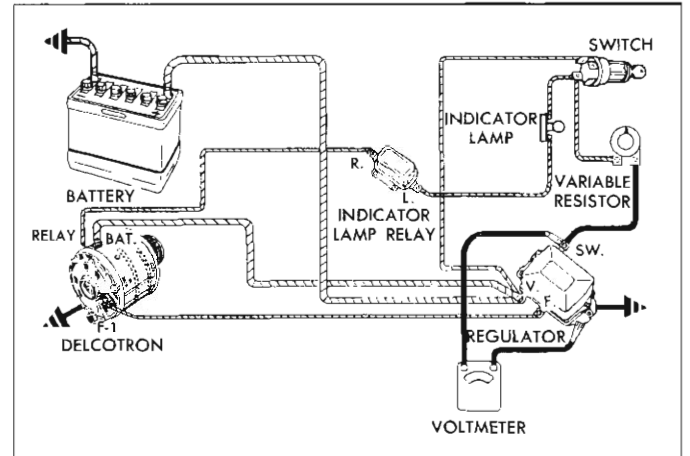


Fig. 17—Checking Field Relay Unit Closing Voltage

**Field Relay Unit Check**

1. Make connections as shown in Figure 17, using a 50 ohm variable resistor.
2. Turn resistor to "open" position.
3. Turn ignition switch on. If oil pressure switch is used, temporarily jumper across terminals.
4. Slowly decrease resistance and note closing voltage of the relay. Adjust by bending heel iron in the manner illustrated in Figure 18.

**Indicator Light Relay Circuit Check**

Test the indicator light relay circuit the same as

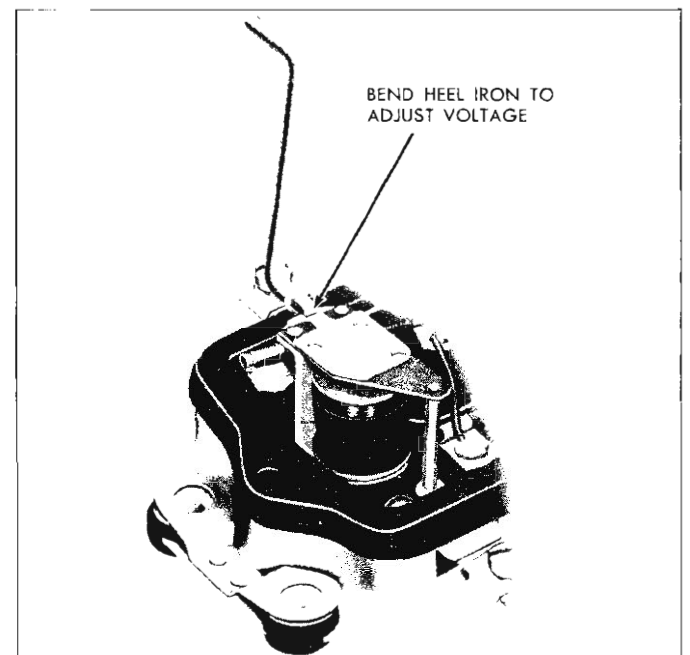


Fig. 18—Adjusting Field Relay Unit Closing Voltage

outlined under Double-Contact Regulator Maintenance and Adjustments.

**Voltage Regulator Voltage Setting**

The voltage at which the regulator operates varies with changes in regulator ambient temperatures. The ambient temperature is the temperature of the air measured 1/4 of an inch from the regulator cover. If the ambient temperature is not 125°F, and a new setting is desired, the chart below may be used to make the desired setting.

As an example, if a voltage setting of 13.7 volts is desired, and the ambient temperature is 85°F, a setting of 14.1 volts at this temperature will result in the regulator operating at the desired setting of 13.7 volts when the ambient temperature rises to 125°F.

To check and adjust the voltage setting, proceed as follows:

Voltage Regulator Specifications vs. Regulator Ambient Temperatures				
Regulator Ambient Temperature	Voltage			
165°F	13.0	13.2	13.4	13.6
145°F	13.2	13.4	13.6	13.8
125°F	13.3	13.5	13.7*	13.9
105°F	13.5	13.7	13.9	14.1
85°F	13.7	13.9	14.1	14.3
65°F	13.8	14.0	14.2	14.4
45°F	13.9	14.1	14.3	14.5

\* Normal Specification Range

<b>EXAMPLE:</b>	12.8 Volts @ 165°
	13.1 Volts @ 145°
Voltage Regulator Setting of 13.4 Volts @ 125°	13.7 Volts @ 105°
	14.0 Volts @ 85°
	14.3 Volts @ 65°
	14.6 Volts @ 45°

1. Make connections as shown in Figure 19.
2. With switch on, operate generator at 3000 rpm for 15 minutes with 3 to 10 amperes output. Use 1/4 ohm resistor of at least 25 watt rating in series with ammeter as illustrated to reduce output to 10 amperes or less. Leave cover on regulator.
3. After the 15 minute warm-up period, cycle the generator by turning off the switch, stopping the

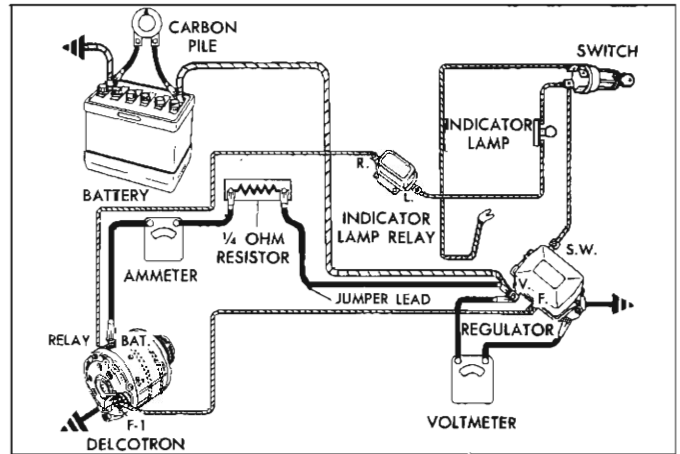


Fig. 19—Checking Voltage Regulator Setting

generator, and temporarily disconnecting the jumper lead from the generator. Then reconnect jumper lead, re-run generator at 3000 rpm, and note voltage setting.

4. To adjust voltage setting, remove cover and turn screw on back of regulator unit as shown in Figure 20.

**CAUTION:** Always make final setting by turning the screw clockwise. This insures that the springholder will be against the head of the screw. After turning screw counter-clockwise, pry holder up against screw head, then turn clockwise to make setting.

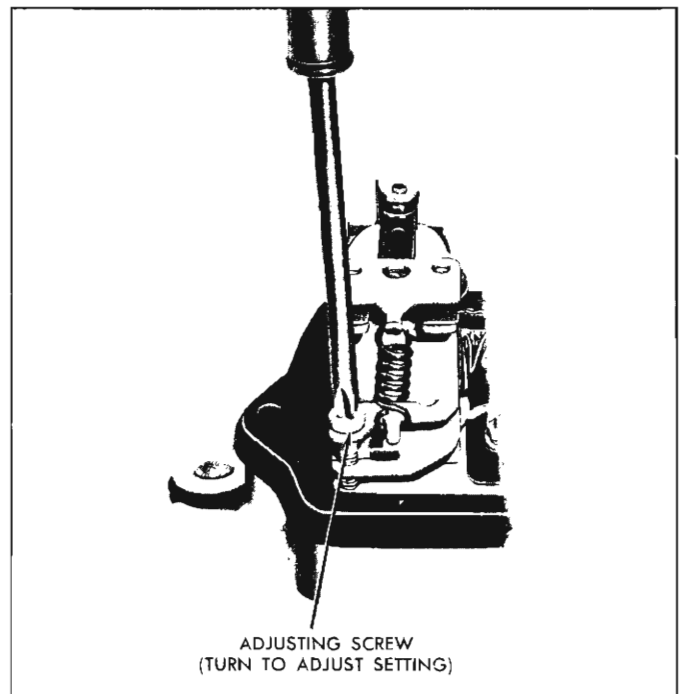


Fig. 20—Adjusting Voltage Setting

5. After making the setting, cycle the generator as covered in Step 3 above.
6. Then turn on switch, operate generator at 3000 rpm and note voltage setting. Readjust if necessary.
7. Always cycle the generator before reading the final voltage setting on the voltmeter.

**NOTE:** When decreasing the voltage, the generator output may decrease to below the 3 amperes minimum allowable, or even to no output. If this happens, load the battery with a carbon pile rheostat connected across its posts, or turn on electrical accessories in order to obtain the 3 to 10 amperes generator output required when adjusting the voltage setting.

## SERVICE OPERATIONS

Service operations described below are for the 6 perforated stator (fig. 21) and 5.5" aluminum Delcotrons (fig. 22). Where important differences in testing and/or service operations are encountered, separate mention will be made of the two generators.

### GENERATOR

#### Removal

To remove the generator from the vehicle, proceed as follows:

**CAUTION:** Disconnect the battery ground strap to prevent accidentally reverse polarizing the system and damaging diodes.

1. Disconnect the "BAT", light relay and "GRD" leads from generator terminals, disconnect the harness connector from field terminals at brush holder.

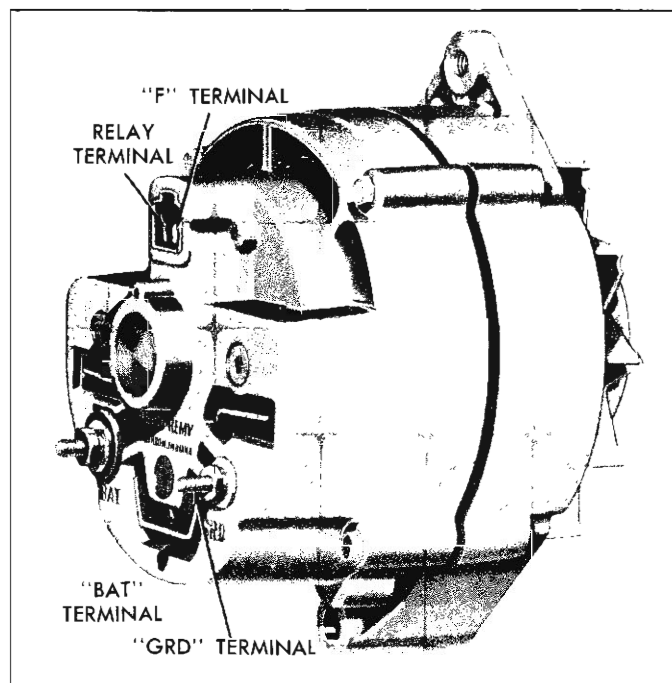


Fig. 22—Aluminum Delcotron (5.5")

2. Remove generator brace bolt, detach fan belt from pulley and lower generator.
3. Remove generator-to-support bracket bolt and nut and remove generator from vehicle.

**NOTE:** Remove two generator-to-support bolts on 6" Delcotron.

#### Disassembly

1. Remove four thru bolts and separate the drive end frame and rotor assembly from the stator assembly by prying apart at the stator slot. Note that the separation is to be made between the stator frame and drive end frame. After disassembly, place piece of tape over the slip ring end frame bearing to prevent entry of dirt or other foreign material.

**CAUTION:** Brushes may drop onto rotor shaft and become contaminated with bearing

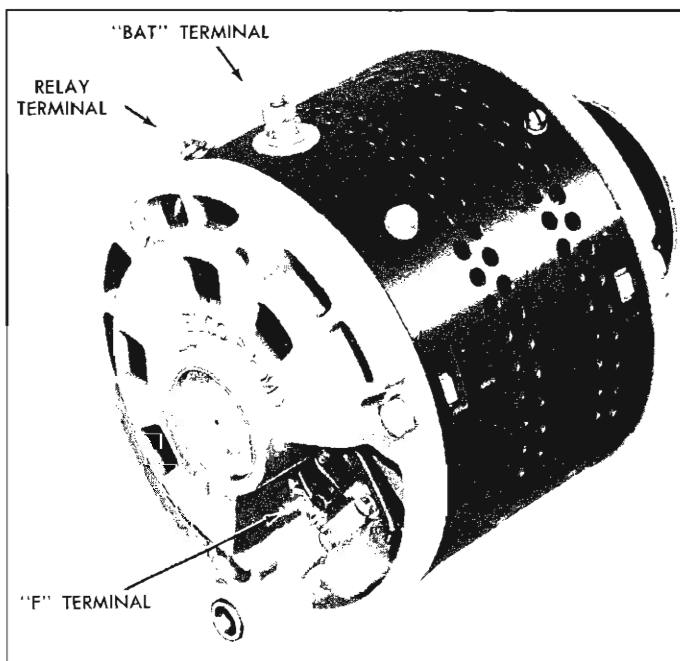


Fig. 21—Perforated Stator Delcotron (6")

## ENGINE ELECTRICAL 9-12

lubricant. Clean brushes prior to installing with a non-toxic cleaner such as trichlorethylene.

2. Separate rotor from drive end frame by removing shaft nut, washers, pulley and woodruff key.
3. Remove drive end frame bearing by removing retainer plate screws and separating retainer plate from end frame.
4. Remove slip ring brush holder from end frame.
5. Separate stator assembly and end frame by first cutting three diode connectors just below the crimp mark (fig. 23) with end cutters on 5.5" aluminum Delcotron. If the connectors are full of solder melt the solder and then remove the connectors with pliers. Cut diode leads as close to the diode as possible on 6" perforated stator Delcotron. Separate stator frame from end frame.

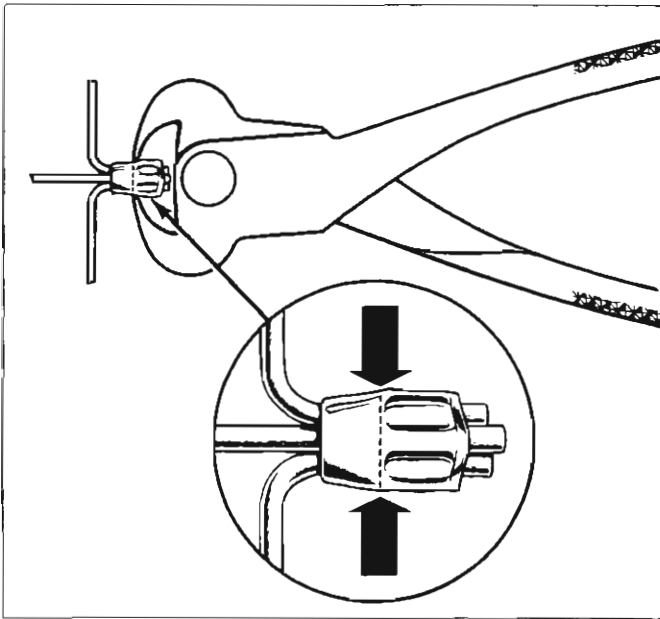


Fig. 23—Cutting Diode Connectors - 5.5" Delcotron

**NOTE:** On 6" perforated stator Delcotron, note very carefully the stator lead locations, and the location of the heat sinks with respect to the end frame locating notch on the shell. Also note carefully the proper position of the output terminal and the insulating washers used on the heat sink.

**CAUTION:** Do not move diode stems excessively or internal damage to diode may result.

## CLEANING AND INSPECTION

With generator completely disassembled, except

for removal of diodes, the components should be cleaned and inspected.

1. Wash all metal parts except stator and rotor assemblies.
2. Clean bearings and inspect for searing, pitting or roughness.
3. Inspect rotor slip rings, they may be cleaned with 400 grain polishing cloth. Rotate rotor for this operation to prevent creating flat spots on slip rings.
4. Slip rings which are out of round may be trued in a lathe to .001" maximum indicator reading. Remove only enough material to make the rings smooth and concentric. Finish with 400 grain polishing cloth and blow dry.

## TESTING

### Rotor

The rotor may be checked electrically with a 110-volt test lamp or an ohmmeter.

### Grounds

Connect test lamp or ohmmeter from either slip ring to the rotor shaft or to the rotor poles. If the lamp lights or if the ohmmeter reading is low, the field windings are grounded (fig. 24).

### Opens

Connect the test lamp or ohmmeter to each slip ring. If the lamp fails to light or if the ohmmeter

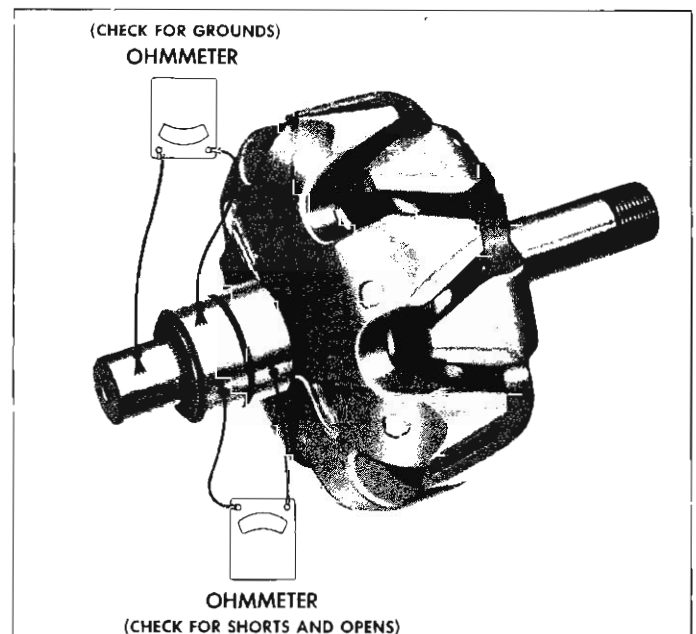


Fig. 24—Checking Rotor for Grounds and Opens

reading is high, the windings are open (fig. 24).

### Short Circuits

The windings are checked for shorts by connecting a battery and ammeter in series with the two slip rings. Note the ammeter reading. An ammeter reading above 1.5 amps indicates shorted windings. An alternate method is to check the resistance of the field by connecting an ohmmeter to the two slip rings (fig. 24). If the resistance reading is below 6.0 ohms, the winding is shorted.

### Stator

#### Grounds

Connect a 110-volt test lamp or an ohmmeter from any stator lead to the stator frame. If test lamp lights or if ohmmeter reads low, the windings are grounded (fig. 25).

#### Opens

If lamp fails to light or if ohmmeter reads high when successively connected between each pair of stator leads, the windings are open (fig. 25).

#### Short Circuit

A short in the stator windings is difficult to locate without special test equipment due to the low resistance of the windings. However, if all other electrical checks are normal and the generator fails to supply rated output, shorted stator windings are indicated.

### Diodes

Two methods may be used to check diodes for shorts or opens: ohmmeter or 12-volt test lamp.

**CAUTION:** Do not use a 110-volt test lamp to test diodes.

#### Ohmmeter

Use an ohmmeter with a 1-1/2 volt cell and use the lowest range scale.

With the stator previously disconnected, check a diode in the heat sink by connecting one of the ohmmeter leads to the heat sink and the other lead to the diode lead and note the reading (fig. 26). Reverse the ohmmeter leads and note the reading. If both readings are very low, or if both readings are very high, the diode is defective. A good diode will give one low reading and one high reading. Check the other two diodes in the heat sink in the same manner.

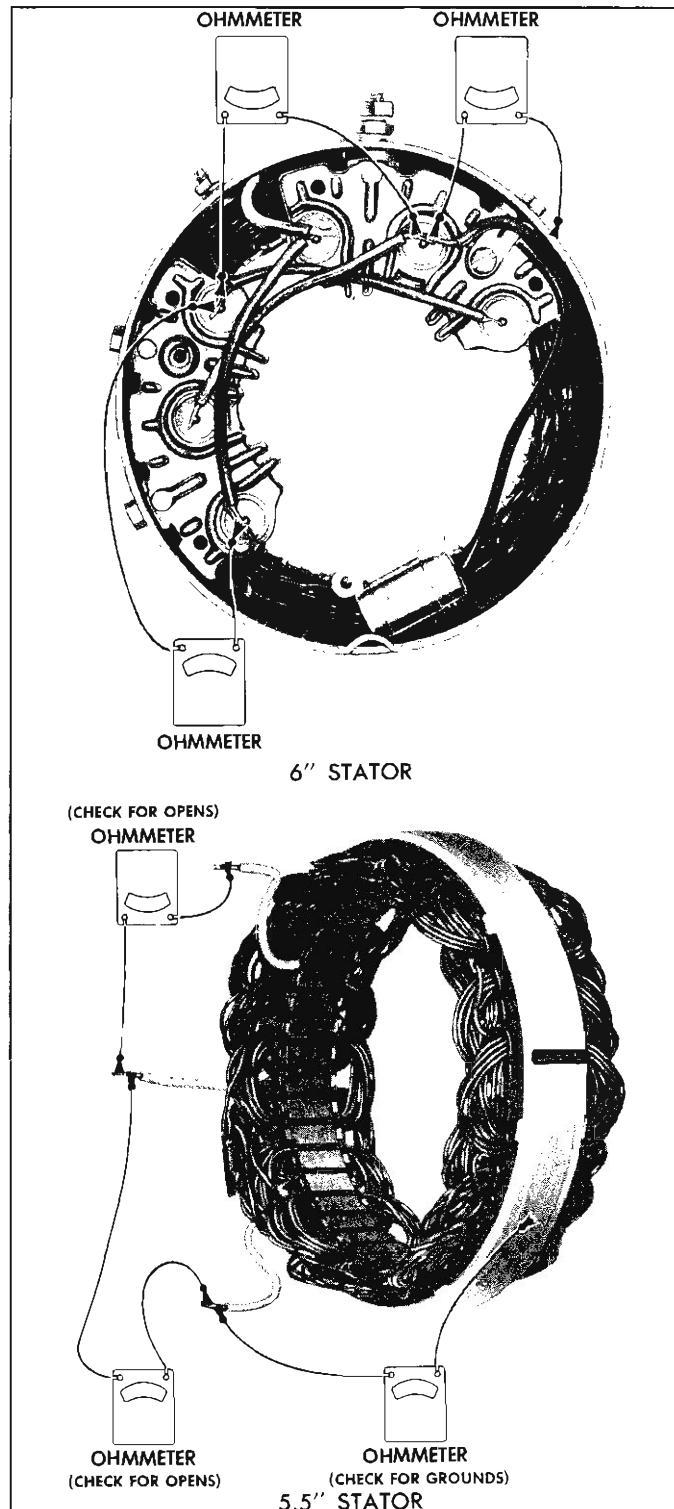


Fig. 25—Checking Stator for Grounds and Opens

To check a diode mounted in the end frame, connect one of the ohmmeter leads to the end frame and the other ohmmeter lead to the diode lead (fig. 26), and note the reading. Reverse the ohmmeter lead connections, and note the reading. If both readings are very low, or if both readings are very high, the

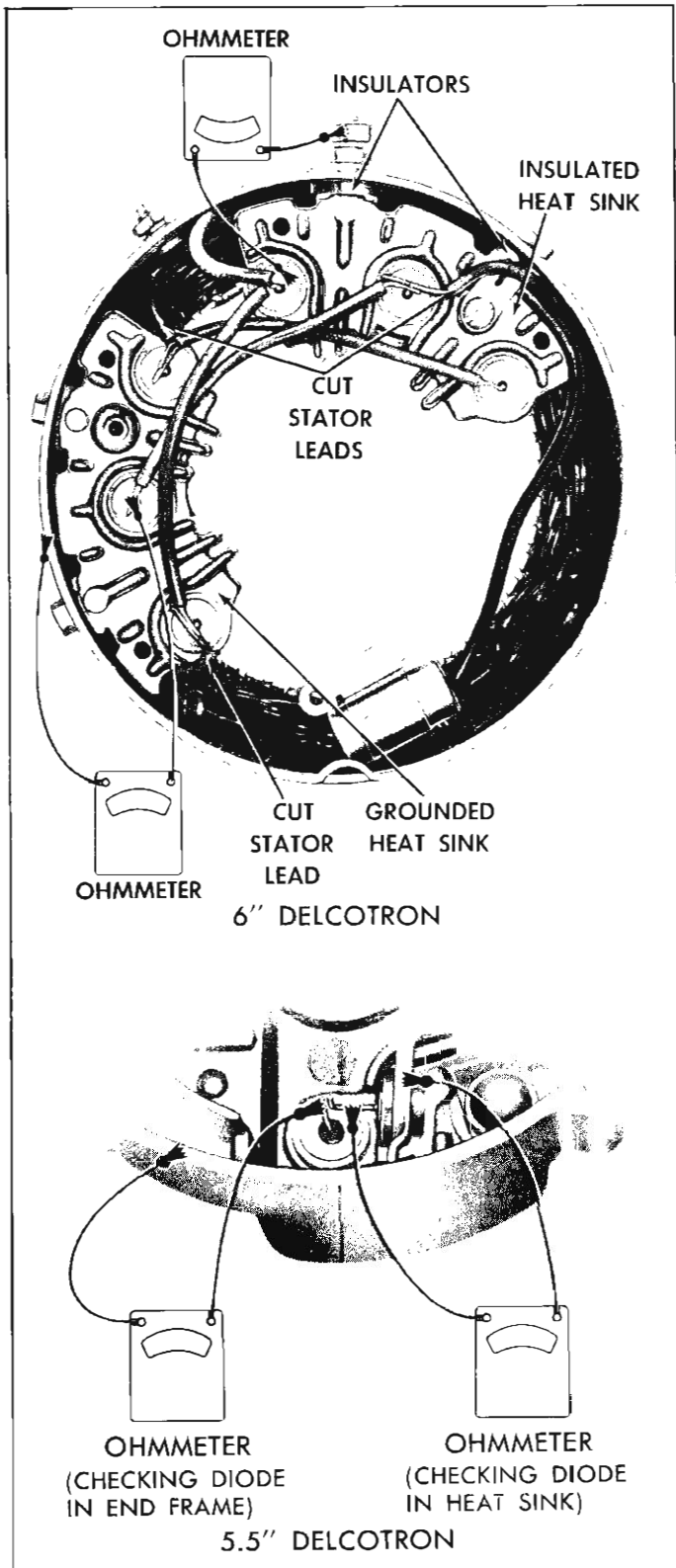


Fig. 26—Checking Diodes

diode is defective. A good diode will give one low reading and one high reading. Check the other two diodes in the end frame in the same manner.

### Test Lamp

Check as above with a 12-volt test lamp. When checking a diode the lamp will light in only one of the diode checks. If lamp lights when diode is checked in both directions, the diode is defective.

### Repairs

#### Diode Replacement

1. Support end frame with support Tool J-9600-3 and press out diode with diode removal Tool J-9600-1 and an arbor press.

**CAUTION:** do not strike diode, as shock may damage other diodes.

2. Support outside of end frame around diode hole on a flat, smooth surface and press diode into position with J-9600-2 and an arbor press. Make sure diode is square with end frame and started straight.

**CAUTION:** Avoid bending or moving diode stem as excessive movement can cause internal damage and result in diode failure.

#### Heat Sink Replacement

1. Detach heat sink from end frame by removing the two terminal bolts. Note carefully the proper stack-up of parts so the "BAT" and "GRD" terminal bolts can be reassembled in the same manner.
2. Replace diodes, if necessary, as outlined above in Diode Replacement.
3. Assemble heat sink to the end frame, following carefully the proper stack-up of parts as noted in step 1.

#### End Frame Replacement

1. Remove heat sink as outlined above in Heat Sink Replacement.

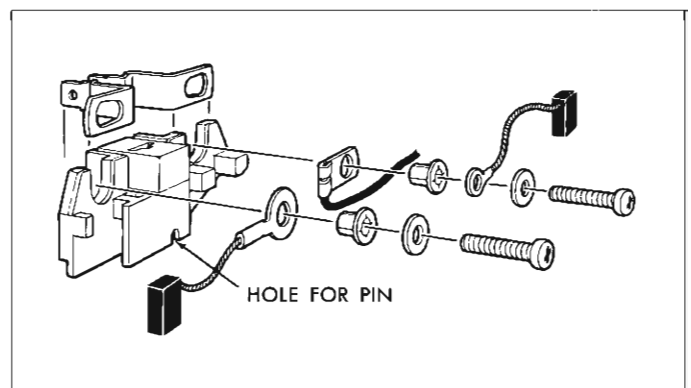


Fig. 27—Installing Brushes - 5.5" Delcotron

2. Attach brush holder assembly to the new end frame noting carefully proper parts stack-up (fig. 27), and insert pin or wire through the hole (fig. 27) to hold the brushes in the holder. After the unit has been completely assembled, withdraw the pin or wire from the end frame hole to allow the brushes to drop down onto the slip rings.
3. Replace heat sink to end frame as outlined above in Heat Sink Replacement.

## Bearing Replacement

### Drive End Frame

1. Drive end frame bearing can be removed by detaching the retainer plate bolts and separating retainer plate from end frame, and then pressing bearing out using suitable tube or pipe on outer race.
2. Refill bearing one-quarter full with Delco-Remy No. 1948791 grease. Do not overfill.
3. Press bearing into end frame using tube or pipe as in Step 1.
4. Install retainer plate. Use new retainer plate if felt seal is hardened or excessively worn.

### Slip Ring End Frame

#### 6" Perforated Stator Delcotron

1. Press bearing off rotor shaft using Tool J-5855 with J-358-1 and an arbor press.
2. Install bearing over shaft using Tool J-9610 or tube or pipe of suitable diameter over inner race.

#### 5.5" Aluminum Delcotron

1. Replace the bearing if the grease supply is exhausted. Make no attempt to re-lubricate and re-use the bearing.
2. Press out from inside of housing, using suitable tool over outer race of bearing.
3. To install, place a flat plate over the bearing and press in from outside of housing until bearing is flush with the outside of the end frame. Support inside of end frame around bearing bore with a pipe to prevent distortion. Use extreme care to avoid misalignment.

## Brush Replacement

### 6" Perforated Stator Delcotron

1. Remove brush holder assembly and capacitor from the slip ring end frame (fig. 28).

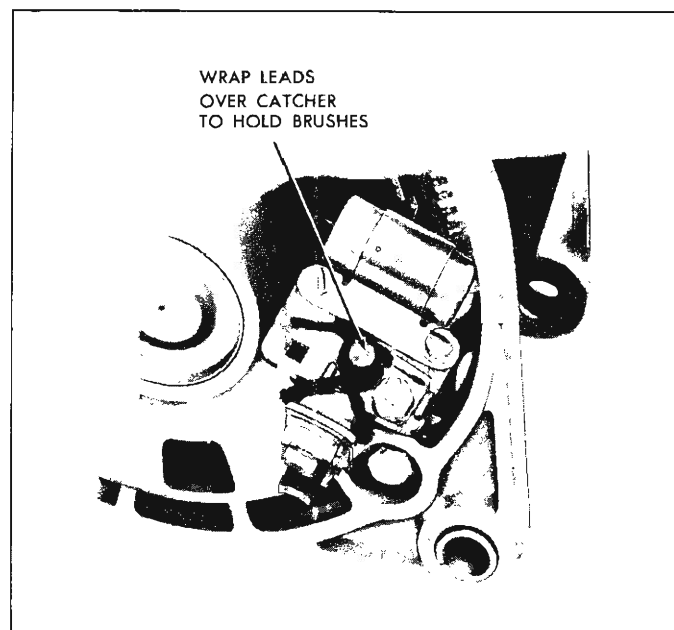


Fig. 28—Brush Replacement - 6" Delcotron

2. Inspect brushes for wear. If they are worn half-way, replace. Inspect brush springs for discoloration or weakening. If brushes appear satisfactory and move freely in brush holder, springs may be re-used.
3. To install, push brushes up into holder and loop the brush leads over the catcher (fig. 28) to keep the brushes in the holder. Attach the assembly to the end frame and lift the brush leads of the catcher to allow brushes to ride on slip rings.

### 5.5" Aluminum Delcotron

Replace brushes as outlined under End Frame Replacement.

## ASSEMBLY

1. Install stator assembly in slip ring end frame and locate diode connectors over the relay, diode and stator leads.
2. Crimp leads with pliers only tight enough to hold the connector onto the leads. This will permit removal of connector later on if necessary.
3. Fill the connectors with rosin core 60% tin 40% lead solder.

**CAUTION:** Do not use excessive heat for this operation, and carefully inspect to make sure no solder has run down onto the diode.

**NOTE:** Necessary connector slips and further instructions are included in diode service replacement kit.



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4. Position rotor and drive end frame assembly into slip ring end frame and stator. Install and tighten through bolts.
5. Install brush holder on slip ring end frame, where necessary.

## INSTALLATION

1. Position generator to support bracket, install and tighten bolt and nut.

**NOTE:** Two support bracket bolts required on 6" Delcotron.

2. Place fan belt in pulley "V" groove, install generator brace bolt, tighten fan belt to specifications, tighten brace bolt.
3. Reconnect "Bat", light relay and "Grd" leads to generator. Connect field terminal connector to brush holder.
4. Attach battery ground strap, start engine, check generator for correct operation.

**CAUTION:** Do not polarize Delcotron.

## DOUBLE CONTACT REGULATOR

While most regulator adjustments are made on the vehicle as outlined under Maintenance and Adjustments, the regulator must be removed for point cleaning and air gap adjustment.

## REMOVAL

To remove the regulator assembly, disconnect the leads at the regulator terminals and remove the screws securing the regulator to the vehicle.

**CAUTION:** Disconnect battery ground terminal to prevent accidentally grounding leads from regulator and causing damage to diodes.

## INSPECTION AND ADJUSTMENT

Electrical settings must be checked and adjusted after making mechanical adjustments described below. Before installing regulator cover, make sure the rubber gasket is in place on the regulator base.

## CLEANING REGULATOR CONTACT POINTS

The contacts on the double contact voltage regulator are of a soft material and must not be cleaned with a file. They may be cleaned with crocus cloth or other fine abrasive material, and should then be washed with tri-chlorethylene to remove any residue.

To clean field relay and indicator light relay

contacts, use a thin, fine-cut, flat file. Remove only enough material to clean the points.

**CAUTION:** Never use emery cloth or sandpaper to clean contact points.

## MECHANICAL ADJUSTMENTS

### Voltage Regulator Unit

Two mechanical adjustments can be made to the VR unit - point opening and air gap.

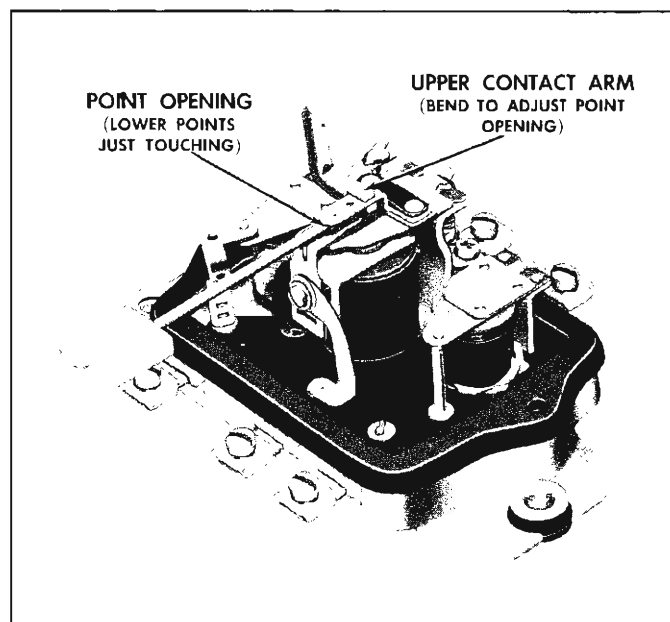


Fig. 29—Adjusting Voltage Regulator Point Opening

1. **POINT OPENING:** With the lower contacts touching, measure the point opening between the upper contacts as shown in Figure 29. Adjust by bending the upper contact arm (fig. 29).
2. **AIR GAP:** Measure the air gap between the armature and core with the lower contacts touching (fig. 30). To adjust the air gap, loosen the contact support bracket screw approximately 1/8 to 1/4 of a turn, place screwdriver in slot in contact support bracket and into the molded insulator as shown in Figure 33. Raise screwdriver handle to increase the air gap and lower handle to lower air gap.

## FIELD RELAY UNIT

Two adjustments can be made to the FR unit - point opening and air gap.

1. **POINT OPENING:** The point opening is checked

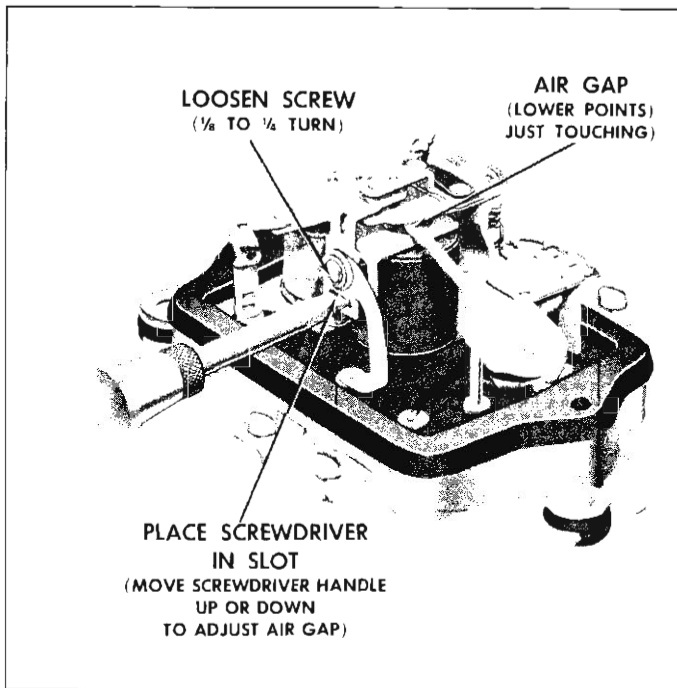


Fig. 30—Adjusting Voltage Regulator Air Gap

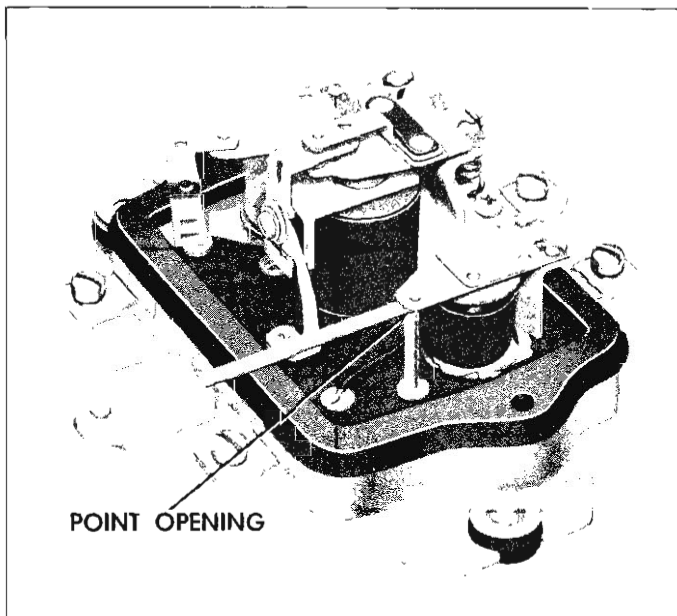


Fig. 31—Checking Field Relay Point Opening

as illustrated in Figure 31. If adjustment is necessary, carefully bend the flat contact support spring.

- AIR GAP: Check the air gap with the points just touching (fig. 32). The air gap normally need not be adjusted. If the point opening and closing voltages are within specifications, the relay will operate satisfactorily even though the air gap may not be exactly according to specifications.

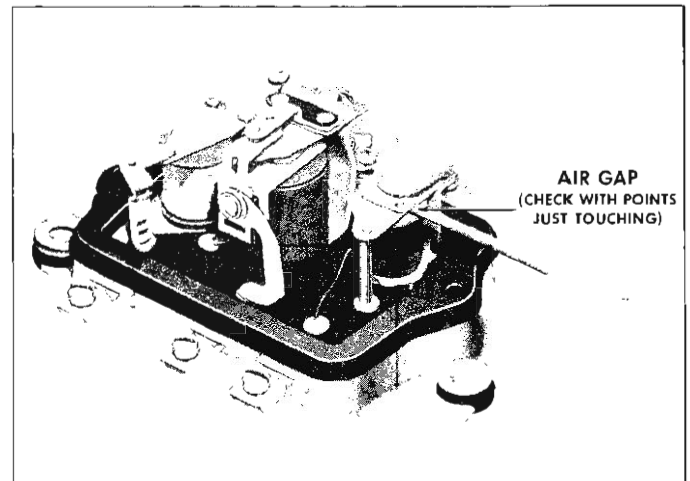


Fig. 32—Checking Field Relay Air Gap

### Indicator Light Relay Unit

A single mechanical check can be made on this unit - air gap.

- AIR GAP: To check the air gap, hold the armature down against a gauge of the specified thickness. The contacts should barely touch. If they do not, adjust by bending the upper contact support (fig. 33).

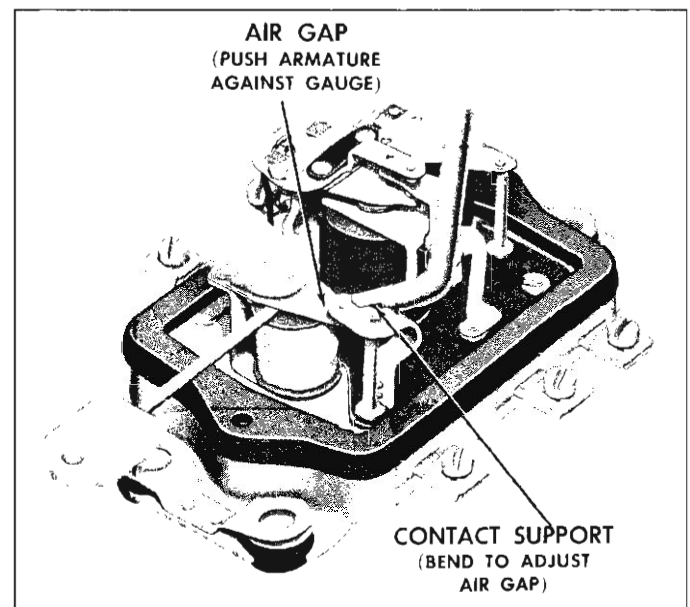


Fig. 33—Adjusting Indicator Light Relay Air Gap

### REPAIRS

See Double Contact Regulator Repair.

### INSTALLATION OF REGULATOR IN VEHICLE

- Make sure attaching area is clean for proper

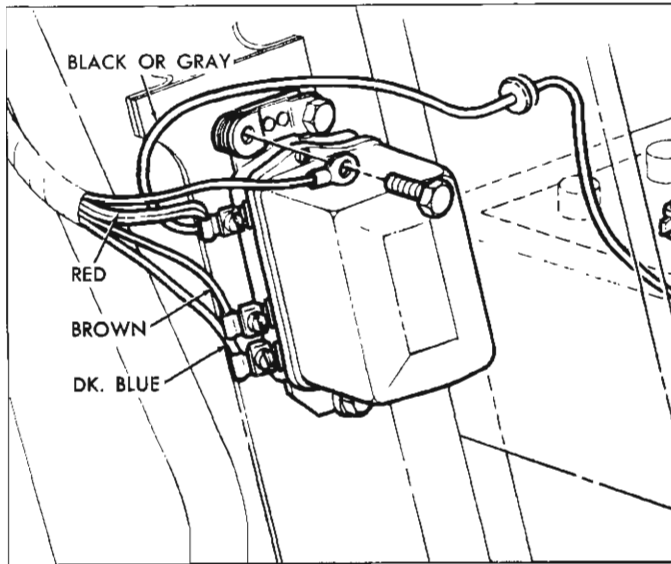


Fig. 34—Regulator Installed

ground, then install regulator and tighten mounting screws.

**CAUTION:** Do not tighten the mounting screws excessively as this will destroy the cushioning effect of rubber grommets in the mounting.

2. Attach regulator leads to proper terminals (see fig. 34).

**CAUTION:** Do not polarize the generator. Connect battery ground terminal.

3. Check and adjust electrical settings of regulator as outlined under Maintenance and Adjustments.

## TRANSISTORIZED REGULATOR

### REMOVAL

Remove regulator from vehicle using the same procedure as outlined under Double-Contact Regulator - Removal.

### VOLTAGE REGULATOR AIR GAP

With the regulator removed from the vehicle, the air gap may be adjusted as illustrated in Figure 35. Push the armature (not the flat spring) down against a suitable gauge, and adjust the upper contact support so that the contacts are aligned squarely and just touch when the contact support screws are tightened.

### CLEANING CONTACT POINTS

On voltage regulator units, the large contact point,

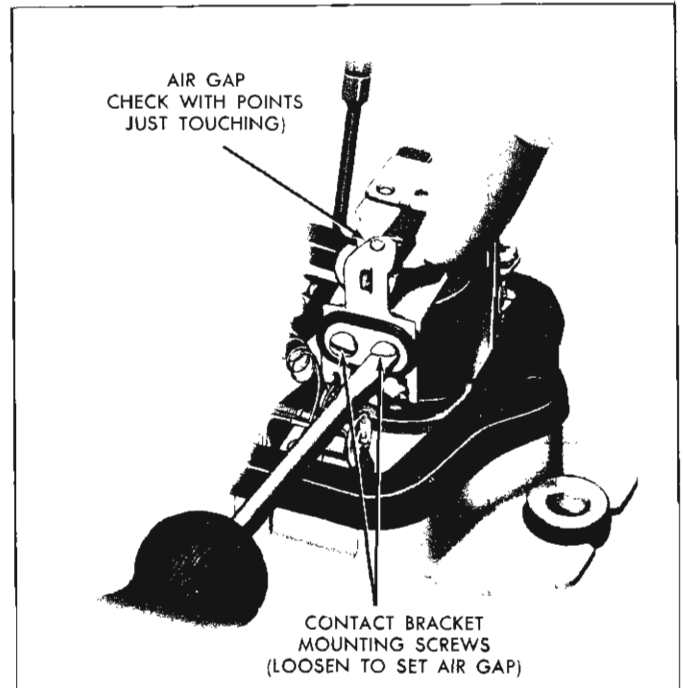


Fig. 35—Adjusting Voltage Regulator Air Gap

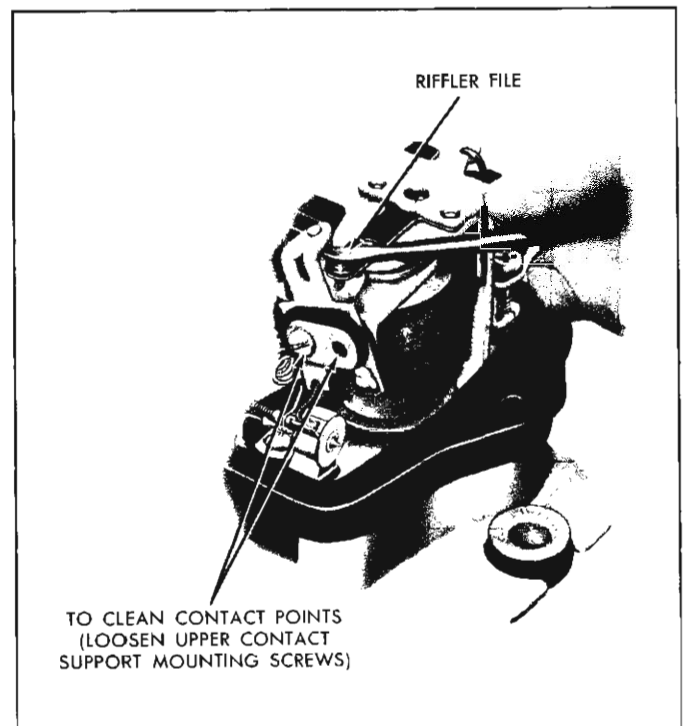


Fig. 36—Cleaning Contact Points

when mounted on the armature, should be cleaned with a spoon or riffler file in the manner illustrated in Figure 36.

If the large contact is mounted on the upper contact

support, the support must be removed for the cleaning operation. All oxides should be removed, but it is not necessary to remove any cavity that may have developed.

The small soft-alloy contact does not oxidize and may be cleaned with crocus cloth or other fine abrasive material. After contacts have been cleaned, they should be washed with trichlorethylene or some other non-toxic cleaning solution to remove any foreign material. Never use emery cloth to clean contacts.

Field relay contacts may be cleaned with a thin fine-cut file. Remove only enough material to clean the points.

Since contact point cleaning often changes mechanical adjustments and electrical settings, it is necessary to make new adjustments and settings as described in preceding paragraphs after the cleaning operation.

### Field Relay Unit

**AIR GAP:** With the regulator removed from the vehicle, check the air gap with the points just touching as shown in Figure 37. If adjustment is necessary, carefully bend the flat contact support spring.

**POINT OPENING:** The point opening is checked as illustrated in Figure 38. The point opening normally need not be adjusted. If the air gap and closing voltage are within specifications, the relay will operate satisfactorily even though the point opening may not be exactly according to specifications.

### REPAIRS

Refer to appropriate section covering diode and transistor checking and replacing.

### INSTALLATION

Refer to Double Contact Regulator Installation.

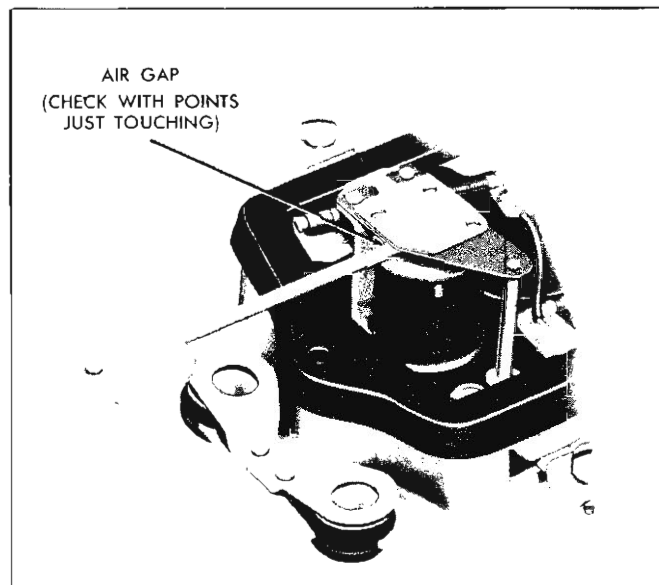


Fig. 37—Checking Field Relay Air Gap

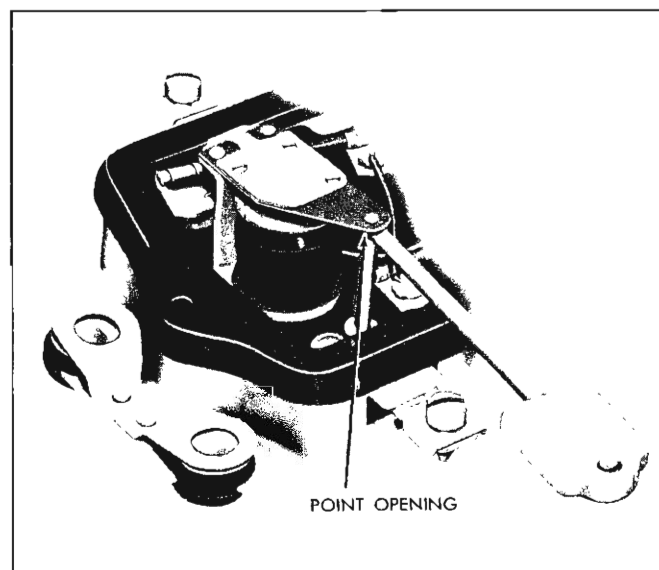


Fig. 38—Checking Field Relay Point Opening

# CHASSIS ELECTRICAL

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## LIGHTING SYSTEM

### PARKING LAMP SERVICE

To replace bulb and/or lens:

1. Remove 4 headlamp bezel retaining screws, remove bezel.
2. Remove 4 parking lamp lens retaining screws, lens and/or bulb.
3. Install new lens or bulb, reverse above procedure to complete job.

## INSTRUMENTS AND GAUGES

### TEMPERATURE INDICATOR GAUGE

The indicator gauge consists of two lights. A green light appears when the engine is cold and remains on until the engine begins to approach operating temperature. A red light will appear when the engine becomes overheated. To check the bulb operation, the red light will momentarily flash on while cranking the engine. When both lights are off, normal engine operating temperature is indicated. Refer to Trouble Shooting Section for servicing procedures.

- BULB REPLACEMENT consists of merely snapping socket assembly out from rear of gauge and inserting new bulb.
- TO REPLACE ENGINE SENDER UNIT -
  1. Drain engine cooling system to a level below unit.
  2. Remove sender unit, replace with new unit.
  3. Refill cooling system and check operation of unit.

### WINDSHIELD WIPER—SINGLE SPEED

#### GENERAL DESCRIPTION

The regular production, single-speed electric

windshield wiper assembly available on the 1962 Chevrolet Passenger Car incorporates a new design, non-depressed type (blades park approximately 2" above windshield moulding) motor and gear drive. The rectangular, 12 volt, shunt wound motor is similar to 1961 models, but is coupled to a new type gear train consisting of a helical drive gear at the end of the motor armature shaft, an intermediate gear and pinion assembly, and an output gear and shaft assembly. The crank arm is attached to the output gear shaft.

Two switches, connected in parallel, control the starting, stopping and parking of the wiper motor. The manually operated start, stop switch is located on the instrument panel, while the cam operated park switch is located in the wiper gear box.

The optionally available 1962 model two-speed, electric windshield wiper and washer assembly remains the same as 1961 models.

## SERVICE OPERATIONS

### Wiper Transmission Assembly

#### Removal and Installation

1. Make certain motor is in park position, remove wiper arm and blade assemblies from transmission shaft.
2. Remove plenum chamber ventilator grille.
 

**NOTE:** Remove windshield washer nozzles if present.
3. Remove special clips retaining transmission drive arm to motor crank arm and left wiper transmission drive arm to right wiper drive arm (fig. 39).
4. Remove two retaining screws, remove wiper transmission (one side).
5. Install new transmission using reverse of above procedure.

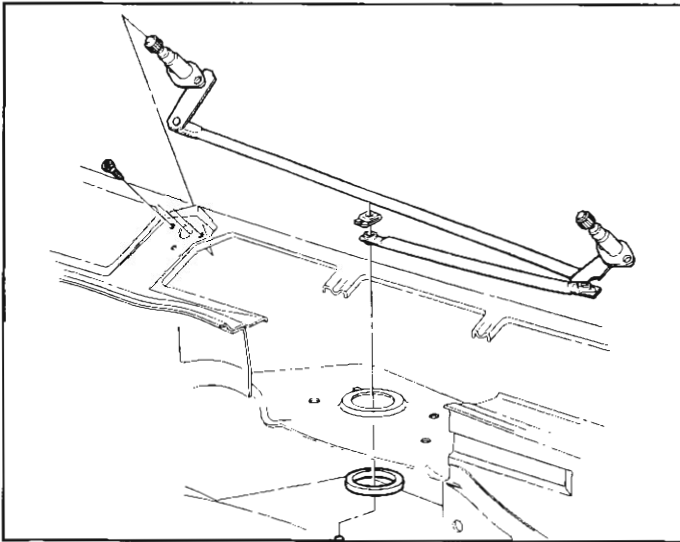


Fig. 39—Wiper Transmission Removal

### Wiper Motor Assembly Refer to Figure 40

#### Removal and Installation

1. Make certain motor is in parked position.
2. Remove plenum chamber ventilator grille.
 

**NOTE:** Remove windshield washer nozzles if present.
3. Remove ground strap retaining screw, washer hoses if present, all electrical connectors and wiper transmission drive arm to motor crank arm retaining clip.

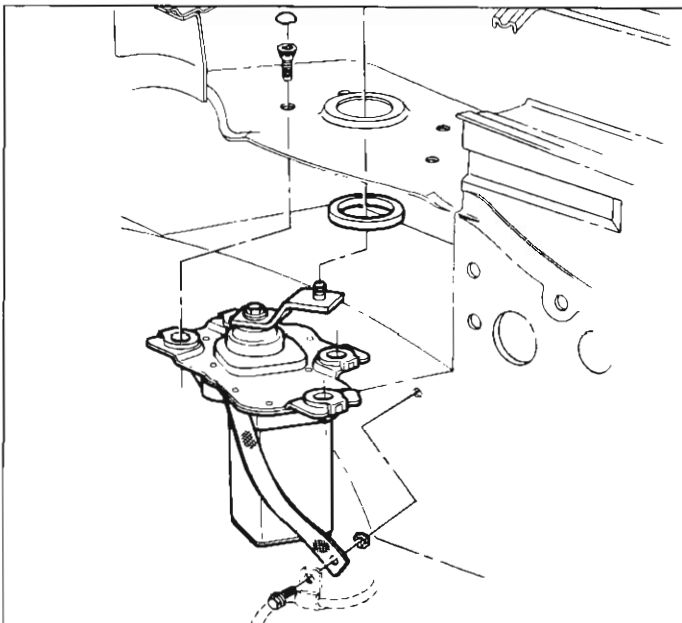


Fig. 40—Wiper Motor Removal

**NOTE:** Mark washer hoses for correct re-installation.

4. Remove motor retaining screws, lower and remove motor from vehicle.
5. To install, check sealing gaskets at motor and retaining screws, replace as necessary. Then use reverse of above procedure to install motor.

**NOTE:** Check wiper operation prior to installing chamber ventilator grille. Make sure motor is properly grounded.

### DISASSEMBLY

#### Gear Box

Refer to Figure 41 for explode of motor and gear train gear box.

1. Clamp crank arm in a vise and remove crank arm retaining nut.
2. Remove crank arm, seal cap, Tru-Arc retaining ring, and flat washer.
3. Drill out gear box cover retaining rivets, remove cover from gear train.
4. Remove output gear and shaft assembly and slide intermediate gear and pinion assembly off shaft.
 

**NOTE:** Mark ground strap location for proper reinstallation.
5. If necessary, remove terminal board and park switch assembly as follows:
  - a. Unsolder motor leads from terminals. Coding of motor leads not necessary on 1962 model single-speed wipers.
  - b. Drill out rivets securing terminal board and park switch ground strap to mounting plate.

#### Motor

Refer to Figure 41.

1. Remove motor thru bolts, tap motor frame lightly, remove motor from mounting plate.
2. Release brush spring tension (fig. 42), slide armature and end plate from motor frame. Pull end plate from armature.

**NOTE:** Thrust plug located between armature shaft and end plate.

3. Remove end play adjusting washers from armature, noting arrangement for proper re-installation.

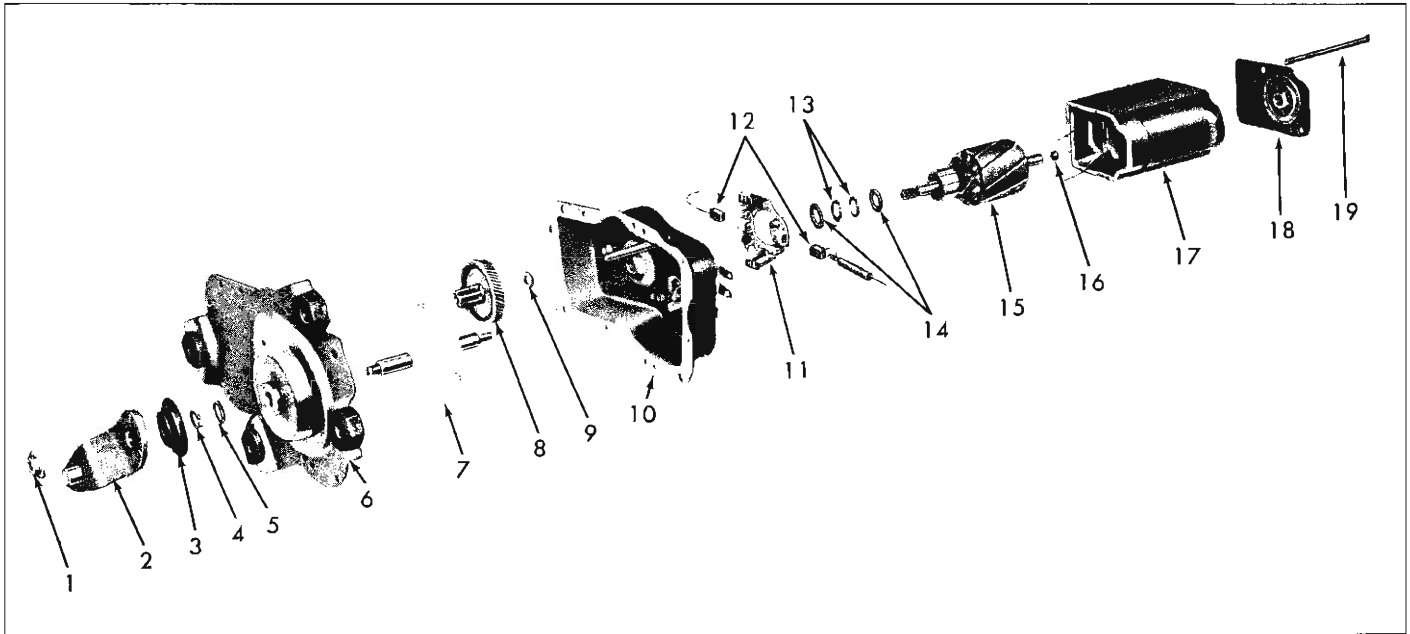


Fig. 41—Wiper Motor and Gear Box Exploded View

- |                   |                                   |  |                              |
|-------------------|-----------------------------------|--|------------------------------|
| 1. Nut            | 6. Gear Box Cover                 | 10. Gear Box Housing                           | 14. Flat Washers             |
| 2. Crank Arm      | 7. Output Gear and Shaft Assembly | 11. Brush Plate Assembly and Mounting Brackets | 15. Armature                 |
| 3. Seal Cap       | 8. Intermediate Gear              | 12. Brushes                                    | 16. Thrust Plug              |
| 4. Retaining Ring | 9. Wave Washer                    | 13. Wave Washers                               | 17. Frame and Field          |
| 5. Washer         |                                   |  | 18. End Plate                |
|                   |                                   |  | 19. Tie Bolts (Two required) |

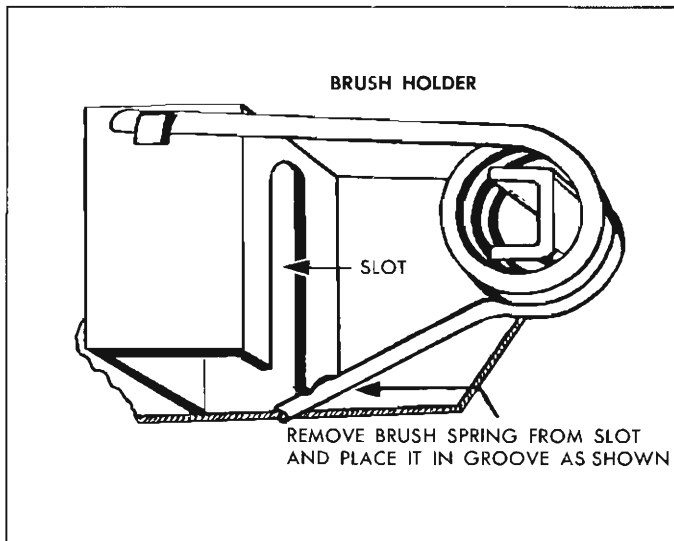


Fig. 42—Releasing Brush Spring Tension

### Inspection

Check and inspect all parts for serviceability, replace as necessary. All parts can be replaced individually except motor frame and field, which is serviced as an assembly. Service kits also provide screws, nuts and washers to replace gear cover and terminal board rivets.

### Assembly

Refer to Figure 41 for explode of motor and gear train.

### Motor

Reassemble motor using reverse of disassembly procedure outlined above.

**NOTE:** Lubricate armature shaft bushings with light machine oil. Armature end play is automatically adjusted by the proper installation of end play wave washers (fig. 43).

### Gear Box

1. Assemble gear box using reverse of disassembly procedure.

**NOTE:** Lubricate gear teeth with Delco Cam and Ball Bearing Lubricant. Be sure cover is properly located over dowel pins and be sure to reinstall ground strap.

2. Place wiper in park position and install crank arm on output shaft, rotate crank so alignment marks line up with those on cover (fig. 44). Replace retaining nut, place crank arm in vise, tighten retaining nut.

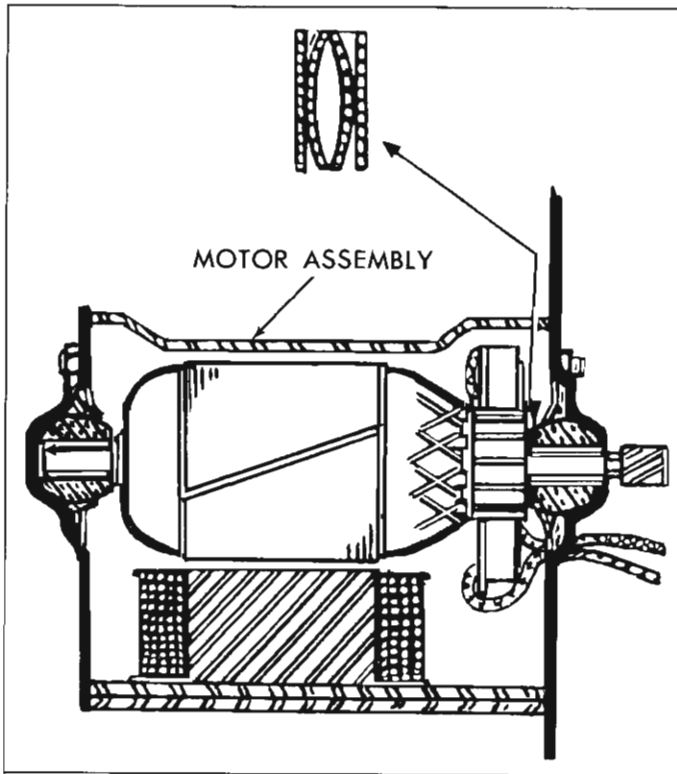


Fig. 43—End Play Wave Washers Installed

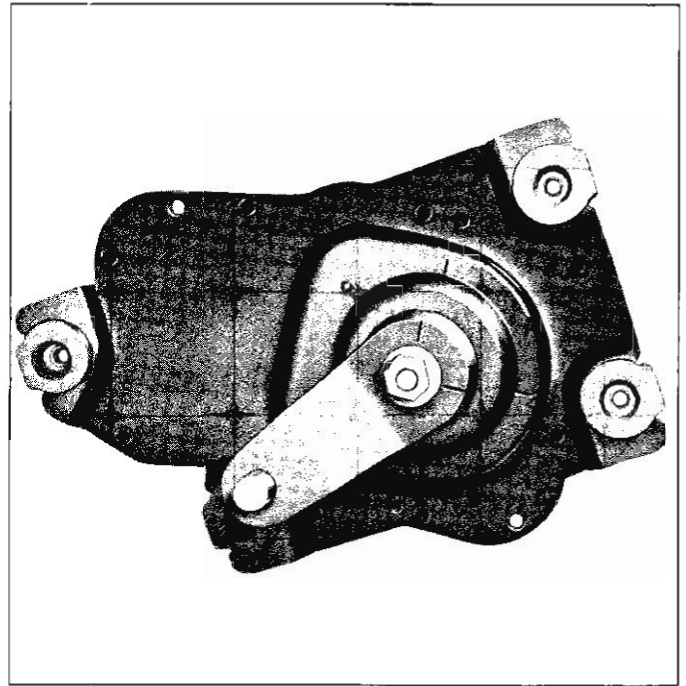


Fig. 44—Wiper Crank in Park Position

## TROUBLE SHOOTING PROCEDURES

**NOTE:** Should the wiper motor stall under severe operating conditions, the wiper blades will not necessarily return to park position automatically and motor will continue to operate. Turning the dash switch "off" will not de-energize the circuit and the wiper arms will have to be parked manually or the wiper motor must be allowed to cool. The wiper motor will recover without damage after cooling.

Trouble Condition	What to Check	
	WIPER INSTALLED IN CAR	WIPER DETACHED
A. WIPER INOPERATIVE—Important: Ignition switch must be on to make electrical tests.	1. Check the following: (1) Car wiring harness is properly attached to wiper terminals and dash switch. (2) Wiper ground strap properly connected to wiper and car body. (3) Dash switch is mounted securely in dash. (4) Check fuse.  2. If everything checks out in Step 1 and wiper fails to operate, disconnect wiring harness from wiper and check for 12 volts at harness terminal that connects to wiper terminal No. 2, Figure 46. No voltage indicates defective car wiring.	<b>CURRENT DRAW—0</b> 1. Check solder connection at terminal board.  2. Disassemble motor section and check all splice connections (Figure 45).  <b>—CURRENT DRAW—2-3 amps</b> 1. Disassemble motor and check for the following items: a. Open armature. b. Brushes sticking. c. Brush springs improperly positioned (See Figure 42). d. Brush pigtail connections at splice joints (Figure 45).



Trouble Condition	What to Check	
<p>A. WIPER INOPERATIVE— (Cont'd)</p>	<p>WIPER INSTALLED IN CAR</p>	<p>WIPER DETACHED</p>
	<p><b>CAUTION:</b> DO NOT connect hot line to No. 1 Terminal.</p> <p>3. Connect 12 volt supply to No. 2 wiper terminal and connect a jumper wire from terminal No. 1 to ground (Figure 46). If wiper operates, the dash switch or wiring between dash switch and wiper is defective.</p> <p>4. If wiper fails to operate in Step 3 remove body parts as required to disconnect wiper transmission from wiper crank arm. Recheck wiper operation as explained in Step 3. If wiper operates correctly a defective transmission or binding condition exists. If wiper still fails to operate, remove wiper from car and follow instructions under trouble shooting—wiper detached.</p>	<p>—CURRENT DRAW—10-12 Amps</p> <p>1. Check for open shunt field circuit.</p> <p>2. Check for broken gear.</p>
<p>B. WIPER WILL NOT SHUT OFF</p>	<p>1. Disconnect wiring from dash switch. If wiper shuts off, a defective dash switch is indicated.</p> <p>2. If wiper still operates in Step 1, disconnect wiring from wiper and connect 12 volt supply direct to wiper terminal No. 2 (Figure 46). DO NOT connect any jumper wire to terminal No. 1.</p> <p>—Wiper shuts off correctly—check for grounded lead that extends between wiper terminal No. 1 and dash switch.</p> <p>—Wiper fails to shut off—remove wiper from car and follow instructions under “Trouble Shooting Wiper Detached.”</p>	<p>Wiper crank arm fails to stop in park position when jumper wire is removed from wiper Terminal No. 1. (Figure 49.)</p> <p>1. Check that park switch contacts are opening.</p> <p>2. Check for grounded condition in the internal motor lead that connects to terminal No. 1 (Figure 46).</p>
<p>C. INTERMITTENT OPERATION</p>	<p>1. Check the following: Loose ground strap, loose dash switch mounting, loose connection.</p>	<p>1. Check for sticking brushes, loose splice joint, etc.</p>

Trouble Condition	What to Check	
D. BLADES DO NOT RETURN TO PARK POSITION WHEN WIPER IS TURNED OFF	WIPER INSTALLED IN CAR	WIPER DETACHED
	<ol style="list-style-type: none"> <li>1. Check wiper ground strap connection to car body.</li> <li>2. Remove wiper from car and check for a dirty or broken park switch. (See Figure 47 for park switch location).</li> </ol>	
E. WIPER RUNS SLOW, VIBRATES AND CURRENT DRAW APPROX. 7-9 AMPS.		<ol style="list-style-type: none"> <li>1. Check for binds in gear train.</li> <li>2. Check for shorted armature. (Armature may be checked on a growler).</li> <li>3. Check armature bearings for lubricant.</li> </ol>
F. WIPER SHUTS OFF BEFORE CRANK ARM REACHES PARK POSITION.		<p>Wiper crank arm stops rotating immediately when jumper wire is disconnected from wiper terminal No. 1 (Figure 49). Note: When crank arm has reached park position the crank arm index grooves will lineup approx. with the ridges on the gear box cover (Figure 47).</p> <ol style="list-style-type: none"> <li>1. Check for dirty, broken or bent part switch contacts.</li> </ol>

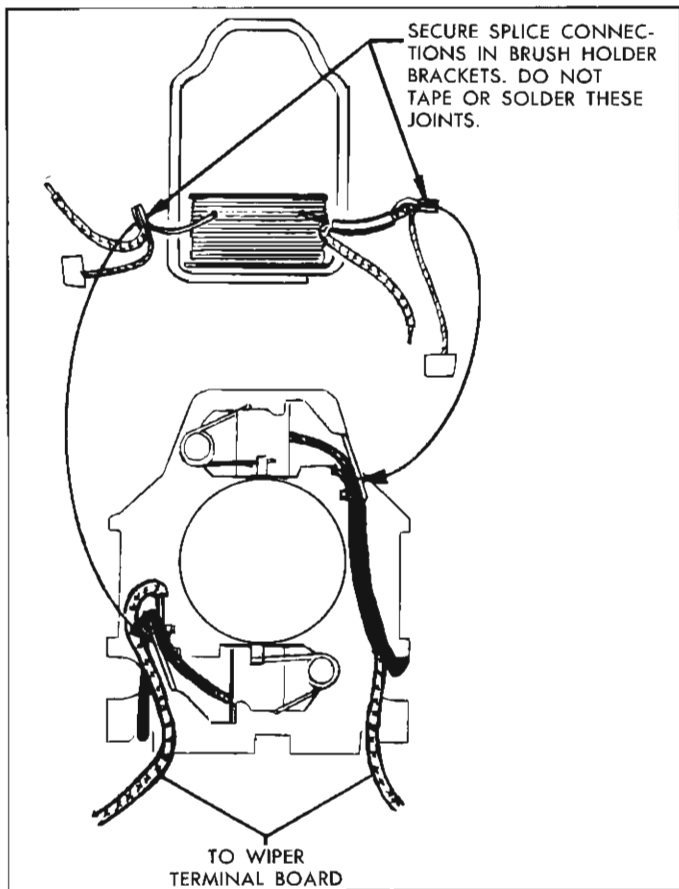


Fig. 45—Checking Motor Splice Connections

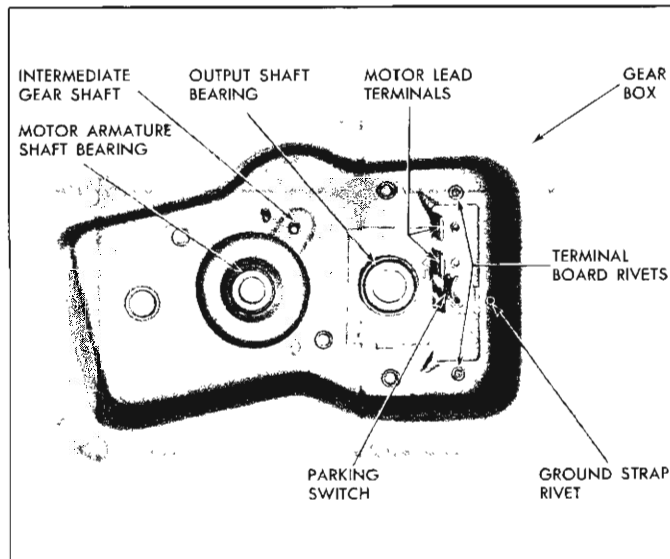


Fig. 47—Terminal Board - Single Speed

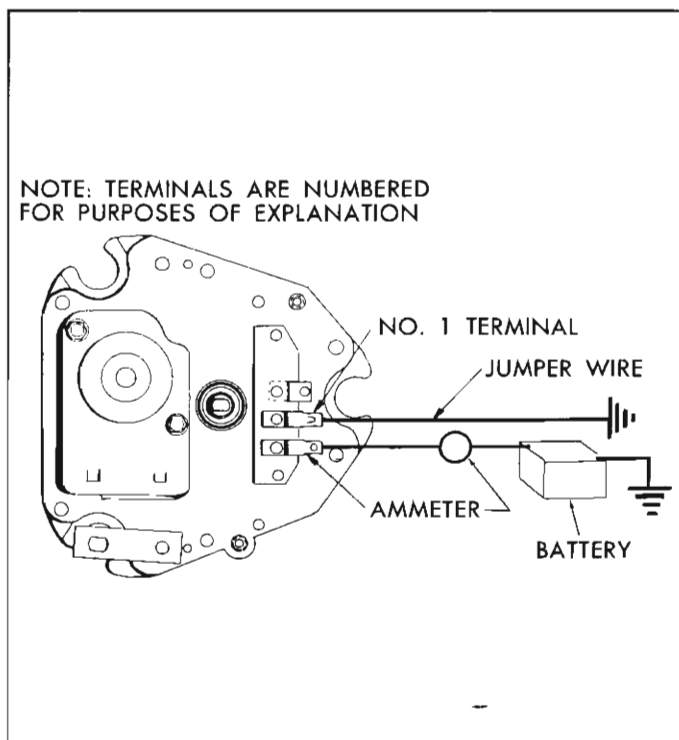


Fig. 46—Checking Single Speed Wiper Circuit

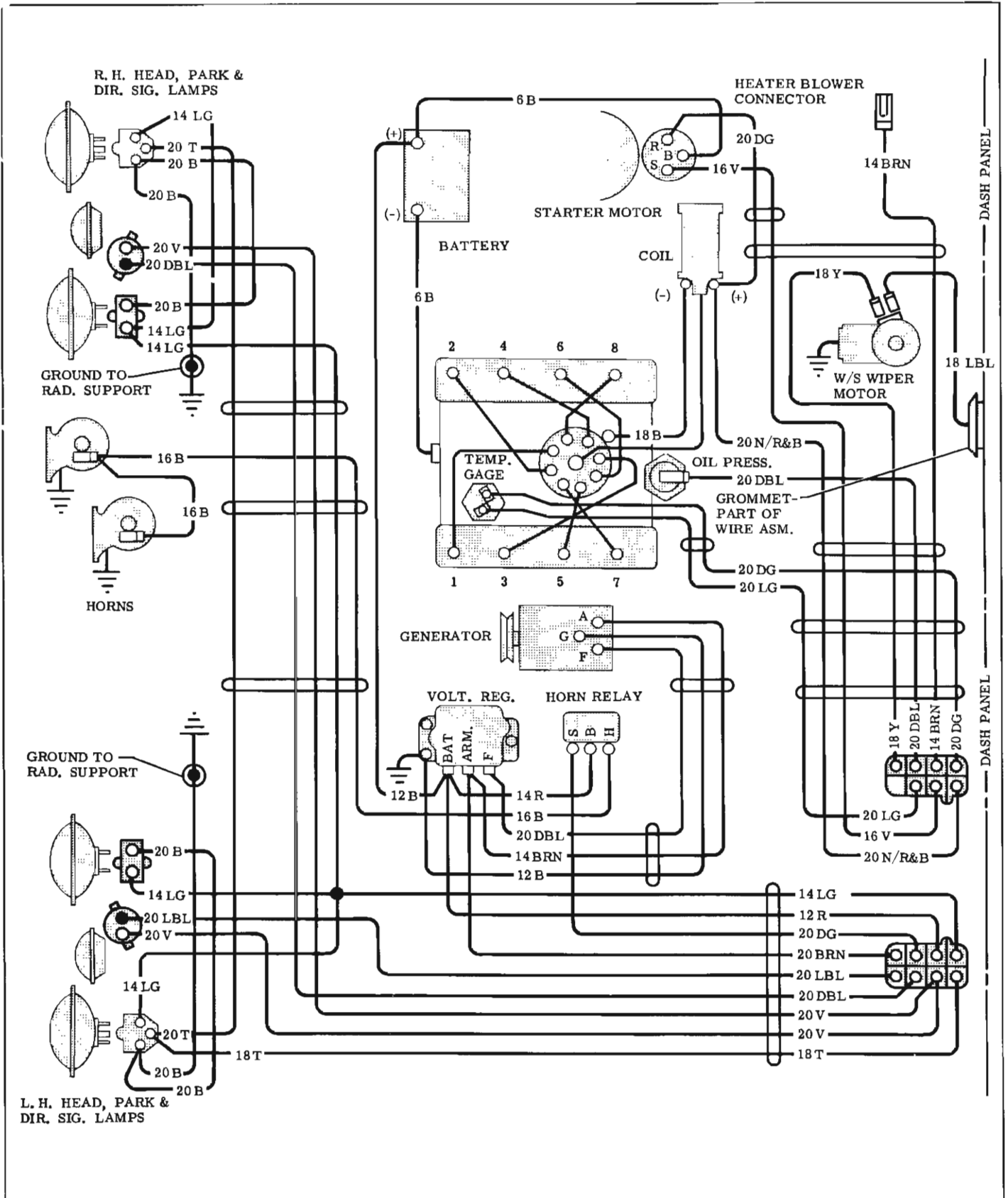
## TROUBLE SHOOTING PROCEDURES

Condition	Check	Possible Trouble
<p style="text-align: center;"><b>GREEN LIGHT</b></p> <p>a. Ignition switch in on position - bulb stays on after warm-up.</p>	<ol style="list-style-type: none"> <li>1. Disconnect sender lead wire, bulb stays on shorted wire.</li> <li>2. Disconnect sender lead wire, bulb goes off - defective sender unit.</li> </ol>	<p>Short in sender lead wire</p> <p>Defective sender unit</p>
<p>b. Ignition switch off - bulb lights.</p>	<ol style="list-style-type: none"> <li>1. Check continuity between ignition switch battery terminal and gauge lead terminal - should have no reading with switch off.</li> </ol>	<p>Defective ignition switch</p>
<p>c. Ignition switch in on position - bulb does not light.</p>	<ol style="list-style-type: none"> <li>1. Engine temperature above 110° - normal condition.</li> <li>2. Remove and check bulb - should light.</li> <li>3. Engine cold, bulb checked good - ground lead at sender unit - bulb lights.</li> <li>4. Engine cold, bulb checked good, ground lead at sender unit, bulb stays off.</li> </ol>	<p>Bulb defective</p> <p>Sender unit defective</p> <p>Open in sender unit lead wire</p>
<p style="text-align: center;"><b>RED LIGHT</b></p> <p>a. Ignition switch in start position - bulb lights.</p>	<ol style="list-style-type: none"> <li>1. Normal testing procedure to check bulb operation - bulb should light.</li> </ol>	
<p>b. Ignition switch in start position - bulb does not light.</p>	<ol style="list-style-type: none"> <li>1. Remove and check bulb.</li> <li>2. Disconnect and ground lead at sender unit - bulb should light.</li> </ol>	<p>Bulb defective</p> <p>Poor ignition switch ground or defective switch</p>
<p>c. Ignition switch in run position - bulb stays on.</p>	<ol style="list-style-type: none"> <li>1. Check and repair engine cooling system as necessary.</li> <li>2. Disconnect sender and ignition lead wires - bulb stays on.</li> <li>3. Engine temp normal - disconnect sender unit lead wire - light goes off.</li> <li>4. Engine temp normal - lead wires check good - disconnect sender lead wire - light stays on.</li> </ol>	<p>Engine overheated</p> <p>Short in wiring</p> <p>Sender unit defective</p> <p>Defective ignition switch</p>

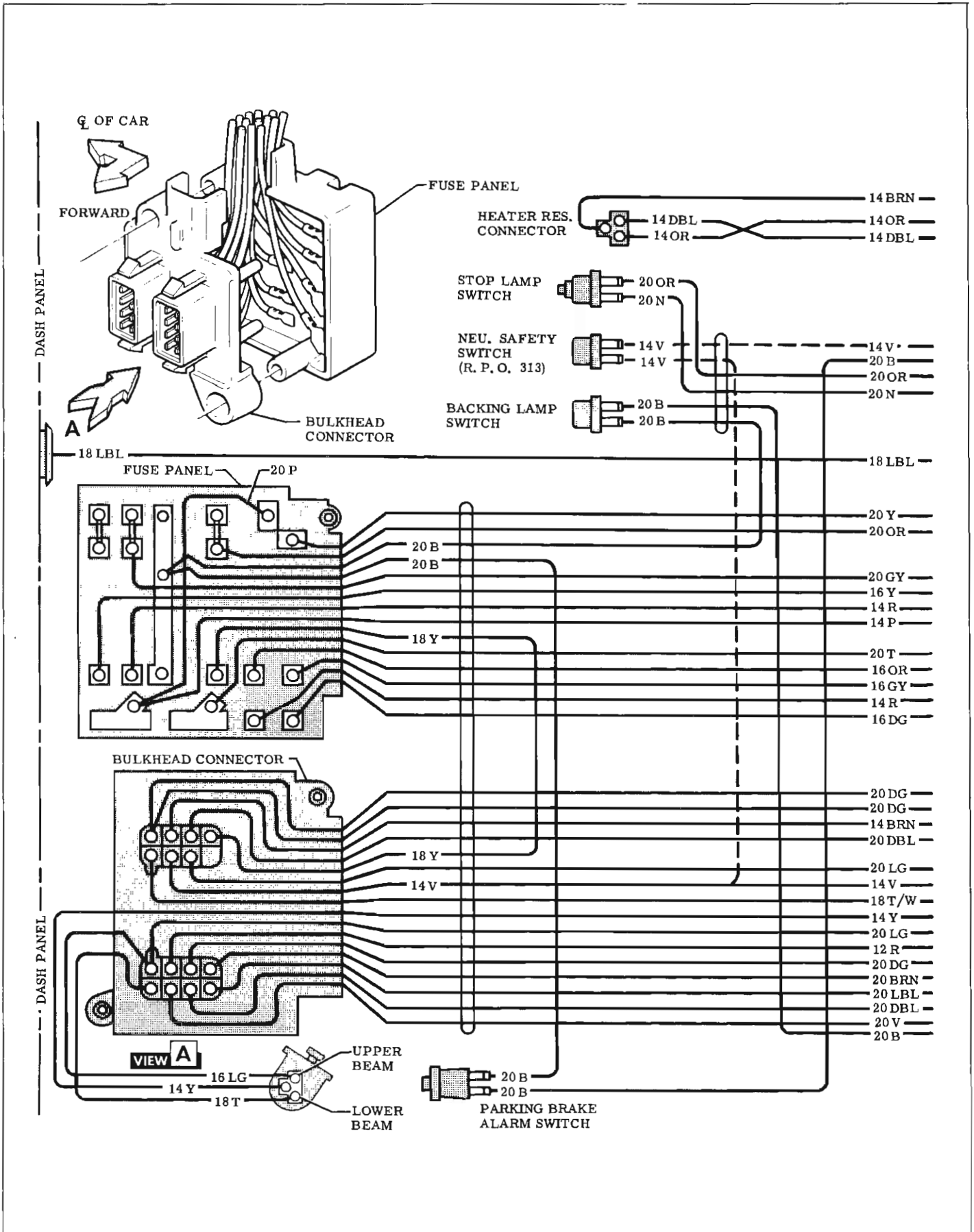
## SPECIFICATIONS

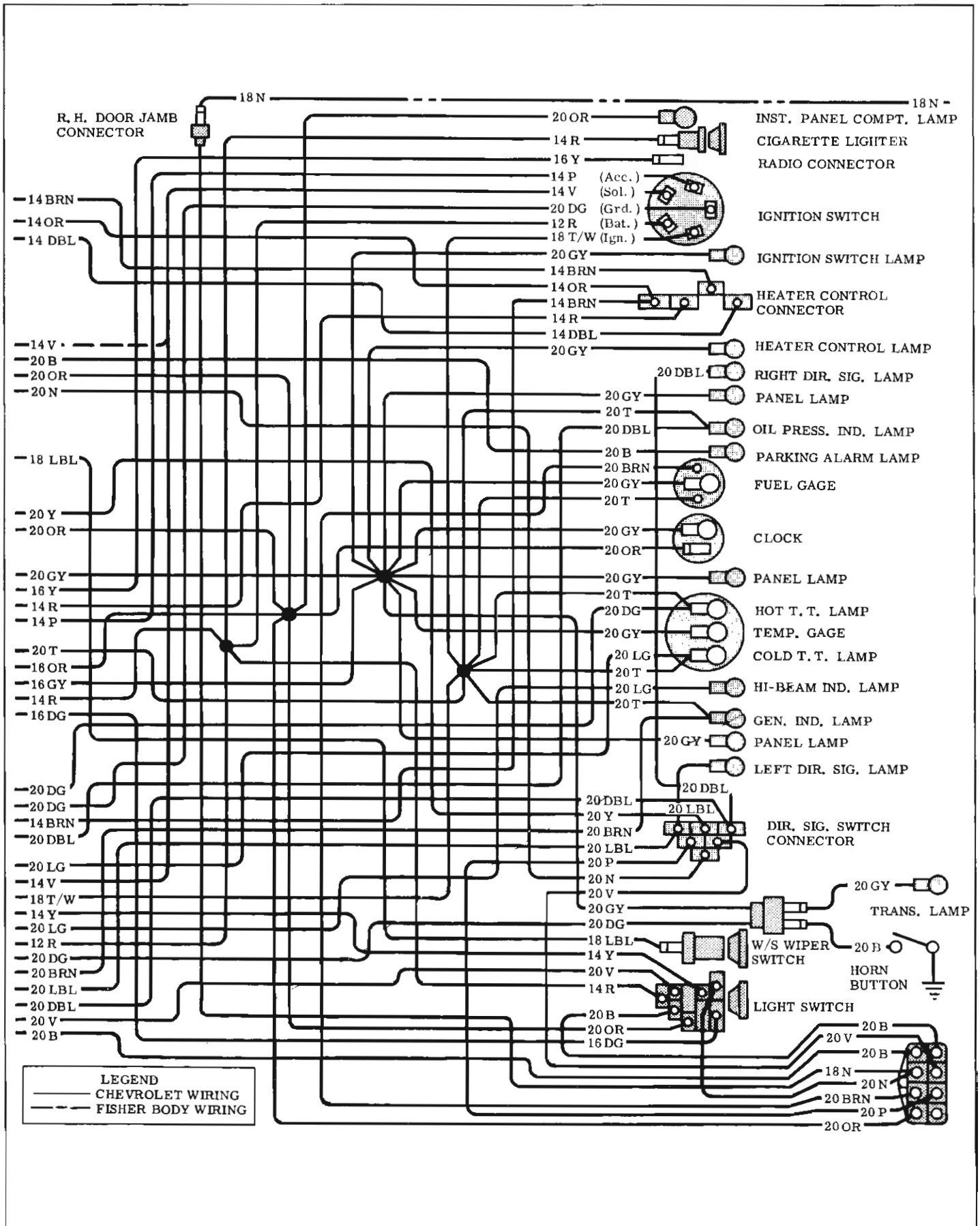
Refer to Section 16 for Electrical Systems Specifications.

# WIRING DIAGRAMS



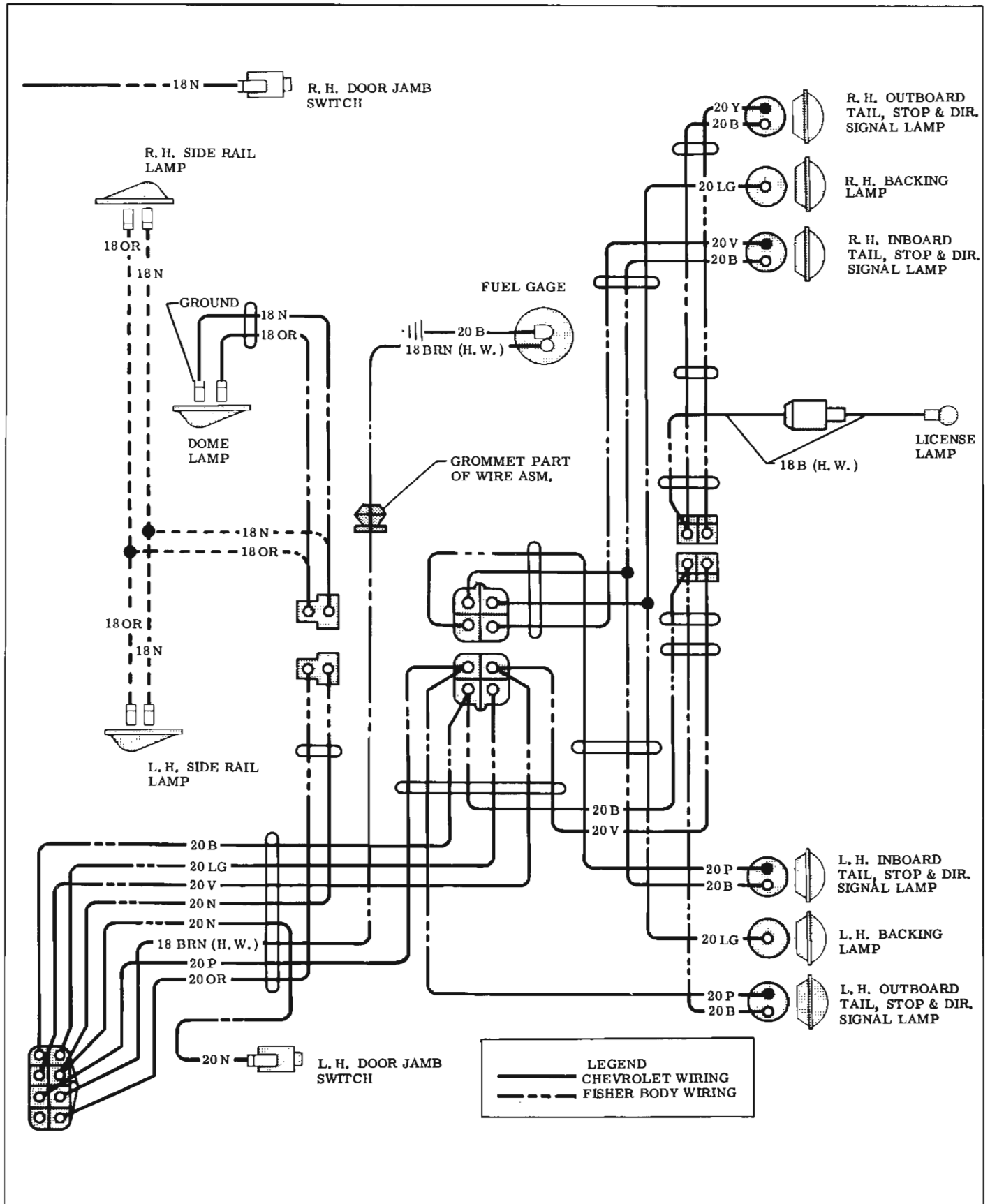
WIRING DIAGRAMS 9-30







WIRING DIAGRAMS 9-32



# SECTION 10 FUEL AND EXHAUST

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## BC CARBURETOR

The Rochester "BC" Carburetor has been revised to locate the choke hot air inlet at the lower side of choke housing (fig. 1) and the top of air horn is notched to index a new polyurethane air cleaner. Service procedures remain the same as in 1961 shop manual. 1962 Specifications are shown in Section 16 of this supplement.

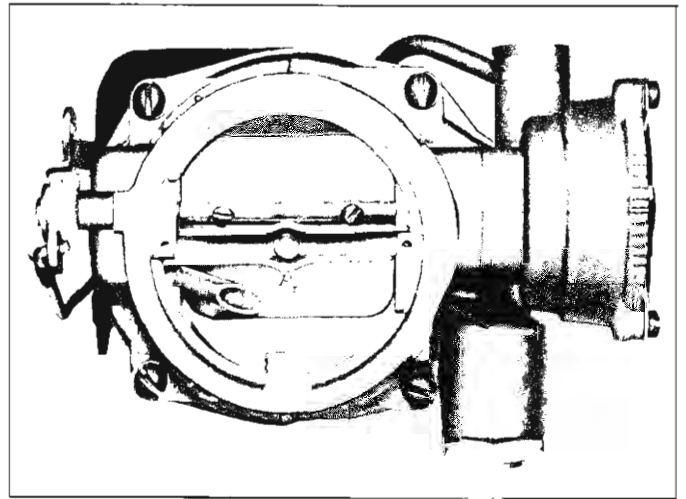


Fig. 1—Rochester BC Carburetor

## ROCHESTER 2GC, 4GC AND CARTER WCFB CARBURETORS

A clean air system (figs. 2, 3 & 4) to the automatic choke housing minimizes any tendency toward sticking parts due to dirt.

Clean air is drawn from an adapter tube in the carburetor air horn through a tube to the manifold choke stove, then through another tube to choke housing cover (fig. 5).

Service procedures remain essentially the same as in 1961 shop manual. 1962 Specifications are shown in Section 16 of this supplement.

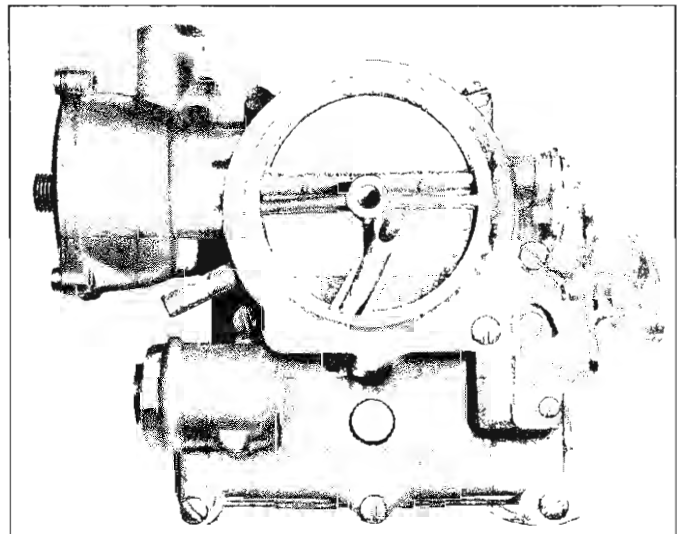


Fig. 2—Rochester 2GC Carburetor

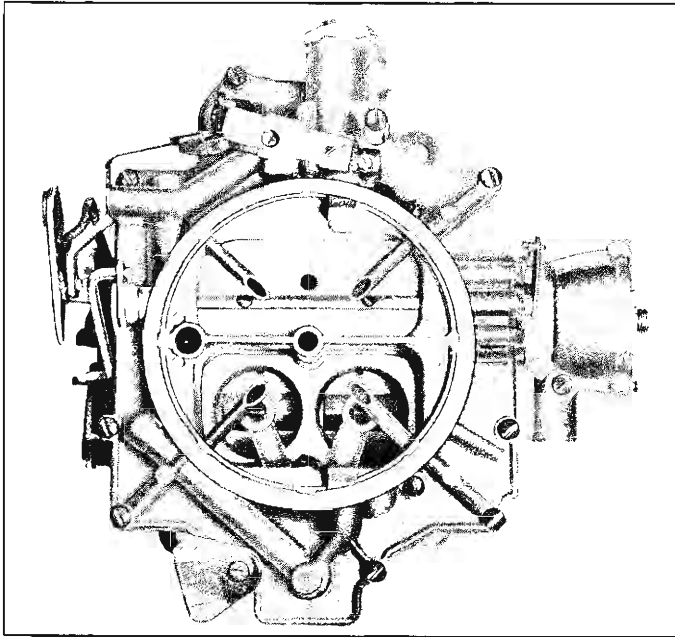


Fig. 3—Rochester 4GC Carburetor

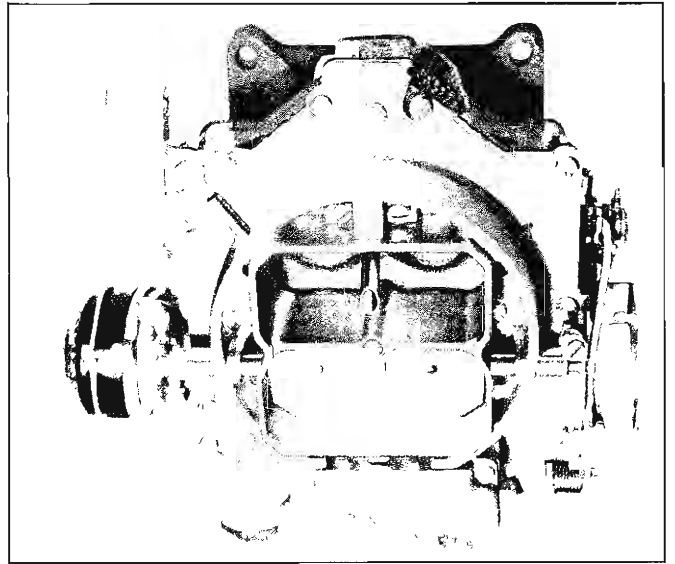


Fig. 4—Carter WCFB Carburetor

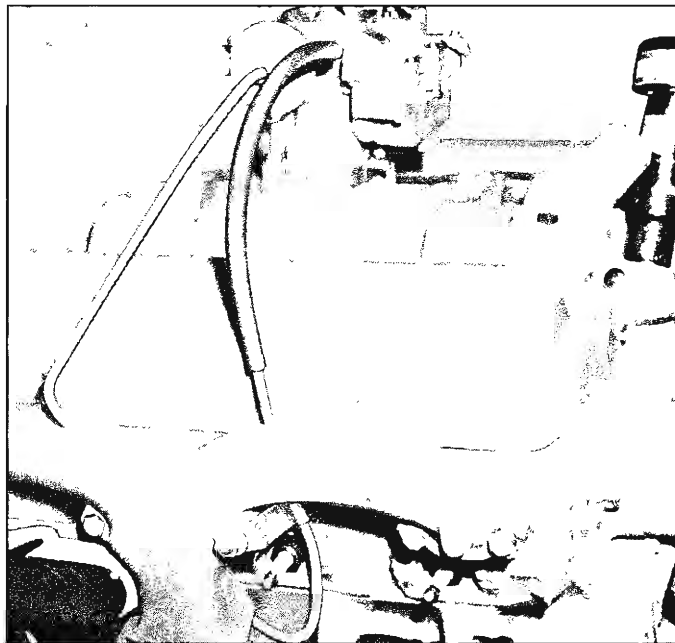


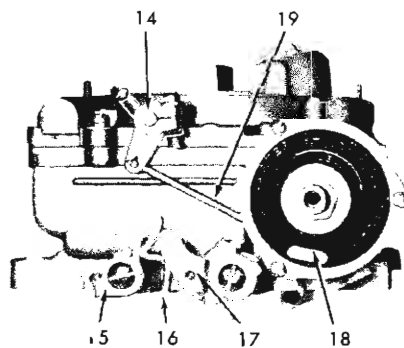
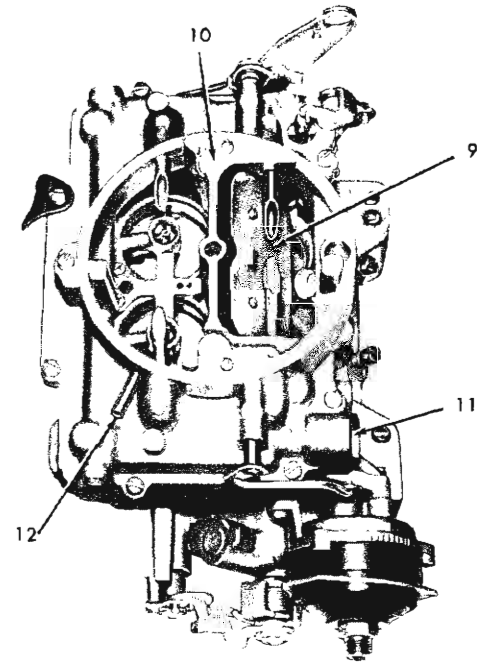
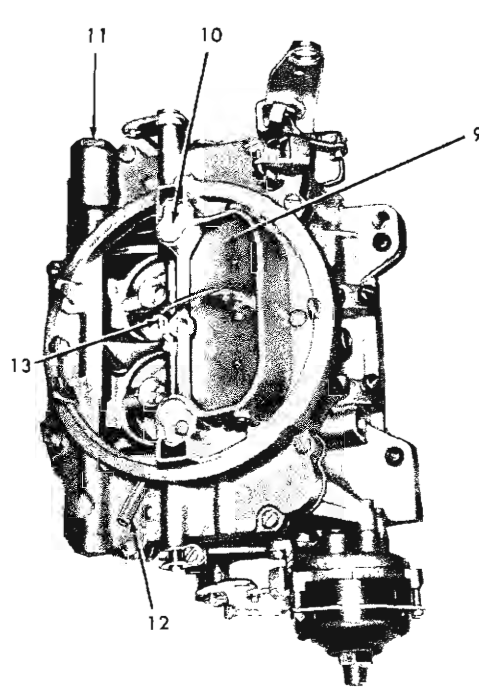
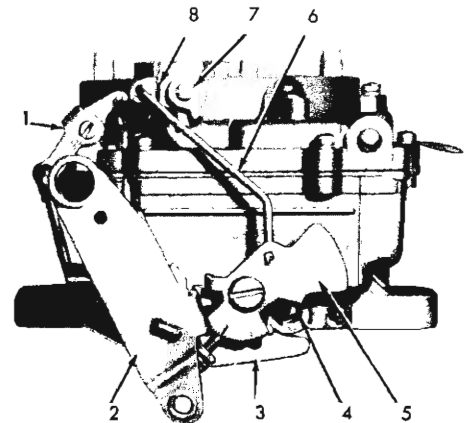
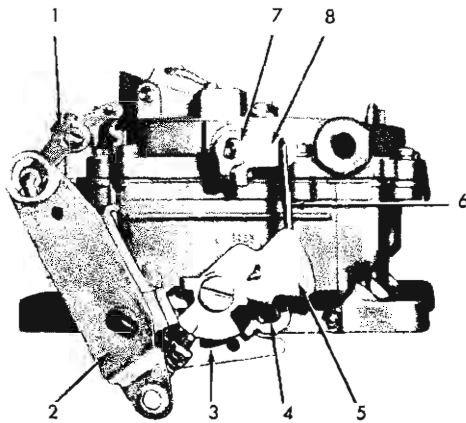
Fig. 5—Choke Clean Air System

## CARTER AFB CARBURETORS

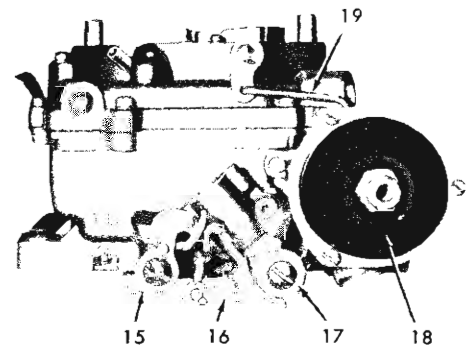
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1. Pump Lever
2. Primary Throttle Shaft Lever
3. Secondary Throttle Lockout Lever
4. Secondary Throttle Shaft Lever
5. Fast Idle Cam
6. Fast Idle Rod
7. Choke Shaft Outer Lever
8. Choke Shaft Kick Lever
9. Choke Valve
10. Piston Cover Plate
11. Fuel Inlet Fitting
12. Choke Clean Air Pickup Tube
13. Choke Valve Actuating Link
14. Choke Actuating Shaft Clamp Lever
15. Secondary Throttle Shaft Dog Lever
16. Secondary Throttle Trip Lever
17. Primary Throttle Shaft Lever
18. Choke Coil & Housing Cover
19. Intermediate Choke Rod



409 V-8  
(TYPICAL)



327 V-8  
(TYPICAL)

Fig. 6—Carter AFB Carburetors

## GENERAL DESCRIPTION

The Carter AFB (Aluminum Four-Barrel) Carburetor (fig. 6) is used as standard equipment on 409 cubic inch engines and as a high performance option on the 327 cubic inch engine. This carburetor is a 4-barrel downdraft type which provides the advantages of a dual 2-barrel installation in one compact unit. It is used in conjunction with a dual exhaust system on both engines.

A clean air system to the automatic choke housing minimizes any tendency toward sticking parts due to dirt.

Clean air is drawn from an adapter tube in the carburetor air horn through a tube to the manifold choke heat tube, then through another tube to choke housing cover.

## MAINTENANCE AND ADJUSTMENTS

### FUEL FILTER (fig. 7)

The fuel filter used with AFB Carburetors is a separate glass bowl unit installed between carburetor inlet and fuel line to carburetor.

1. Remove the glass bowl and paper filter element.
2. Replace paper filter element.
3. Reinstall with new gasket.

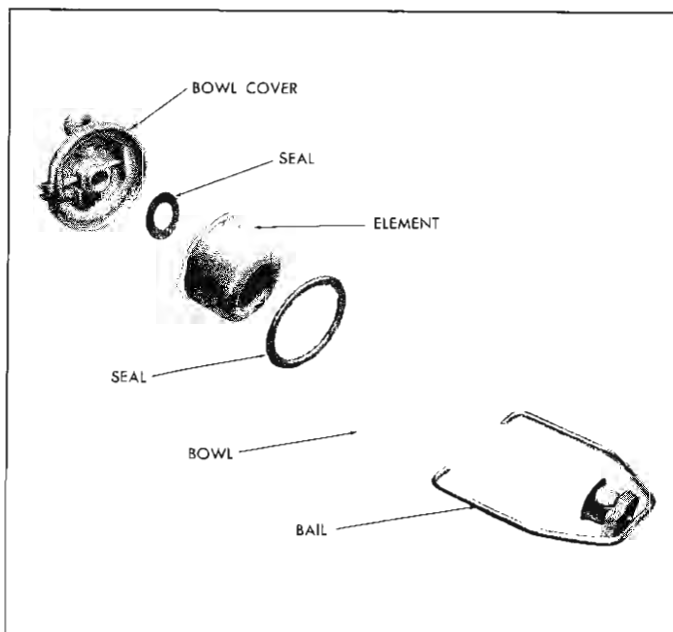


Fig. 7—Fuel Filter Assembly

### ADJUSTMENTS ON THE CAR

All adjustments listed below can be done without removing the carburetor from the engine. They should be performed in the following sequence:

1. Accelerator Linkage
2. Idle Speed and Mixture
3. Automatic Choke
4. Fast Idle

If trouble cannot be corrected with previous adjustments, continue with the following adjustments:

5. Float
6. Intermediate Choke Rod
7. Accelerator Pump
8. Unloader
9. Closing Shoe
10. Secondary Throttle Opening
11. Secondary Throttle Lockout
12. Repeat Adjustments 1, 2 and 3

### Accelerator Linkage

The length of the throttle linkage is adjustable to assure wide-open throttle with full accelerator pedal depression. To check, depress accelerator pedal fully and check to see if throttle is wide open. If not, adjust threaded swivel at throttle lever to suit. With the accelerator pedal fully depressed and the carburetor throttle valve fully open the threaded swivel should be adjusted for free entry into the throttle lever (fig. 8). The swivel should then be turned two full turns to lengthen the control rod.

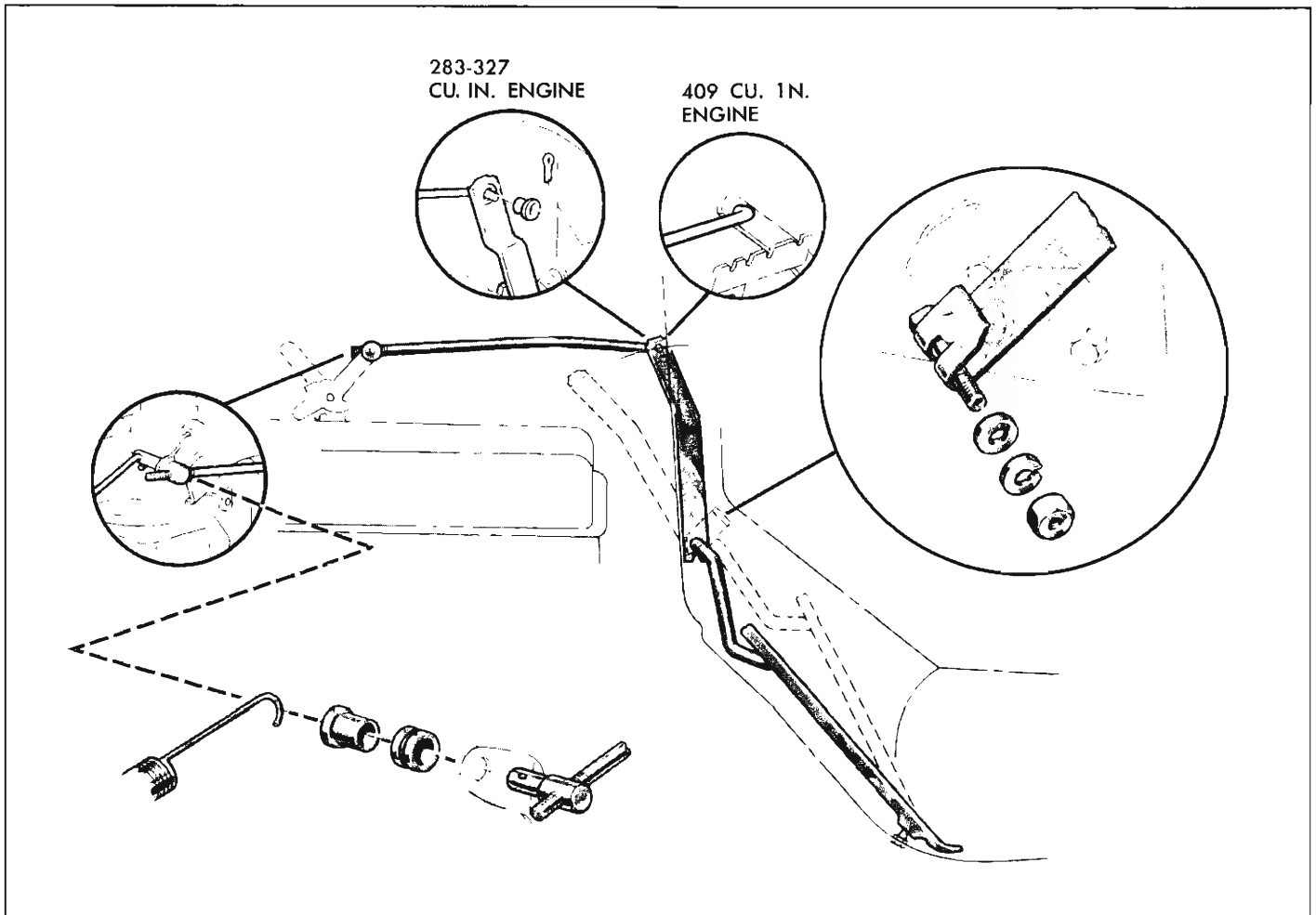


Fig. 8—Accelerator Linkages—283, 327 and 409 cu. in. engines

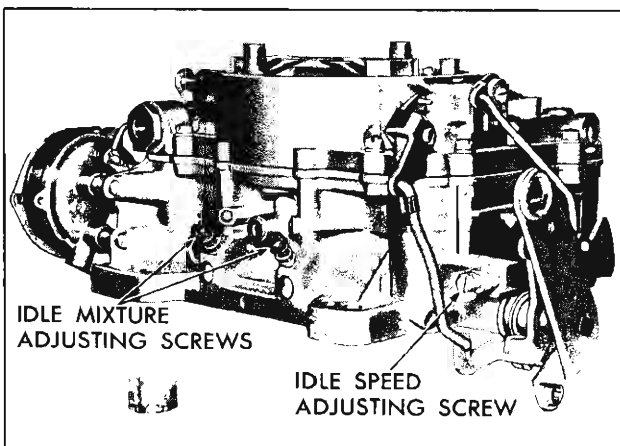


Fig. 9—Idle Speed and Mixture Adjustment Screws

1. Connect tachometer and vacuum gauge to engine. Set parking brake. Start engine, allow to idle and place transmission in neutral on manual shift and drive on automatic models.
2. With a thoroughly warmed-up engine, check to see that choke is fully off and carburetor is on slow idle.
3. Adjust idle speed adjustment screw (fig. 9) to give proper idle speed shown in tune-up chart.
4. Adjust each idle mixture adjustment screw to give peak steady vacuum at given idle speed.

### Idle Speed and Mixture

**NOTE:** Idle mixture adjustment should be performed with air cleaner installed.

### Automatic Choke

Make sure the scribe mark on the coil housing is in line with the center notch in the choke housing (fig. 10).

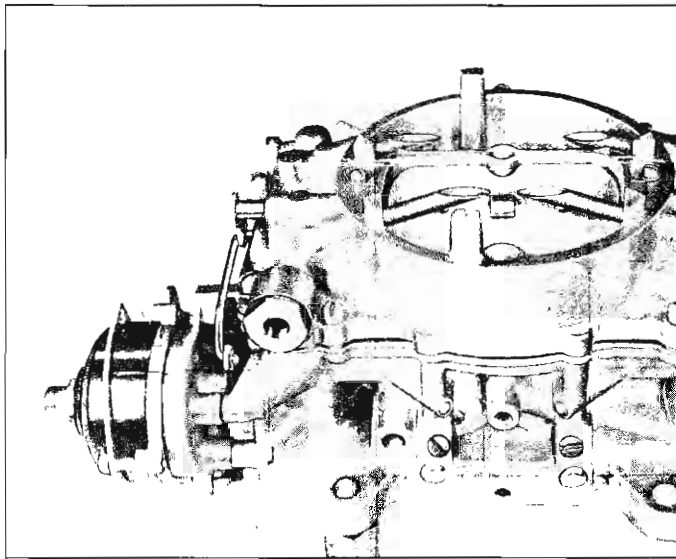


Fig. 10—Automatic Choke Adjustment

**Fast Idle  
(Refer to figure 11)**

1. While holding choke valve closed, fast idle cam index mark should line up with fast idle adjustment screw. If necessary, bend fast idle rod at lower angle (using Tool J-5197) to adjust.
2. Start engine and attach tachometer. With fast idle screw on index of cam, adjust fast idle screw to obtain approximately 1750 rpm with warm engine.

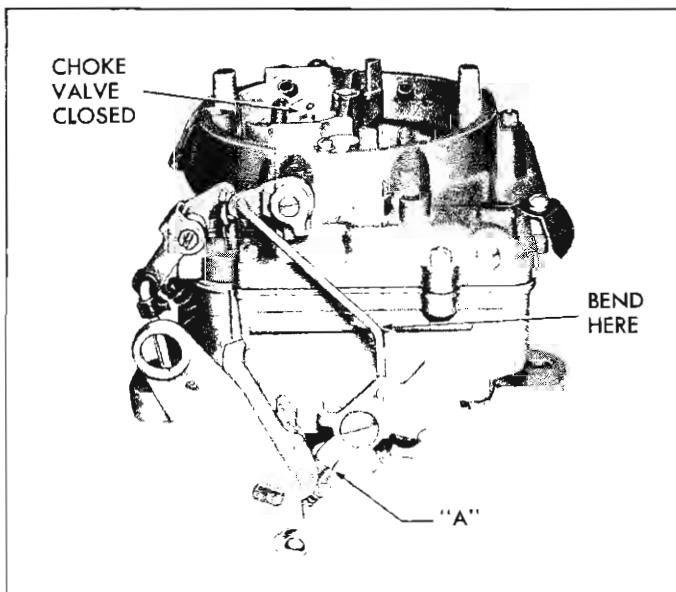


Fig. 11—Fast Idle Adjustment

**Float**

1. Remove air cleaner.
2. Disconnect intermediate choke rod, fast idle rod and accelerator pump rod at levers on bowl cover.
3. Remove step-up piston cover plates, pistons and metering rods (fig. 12).

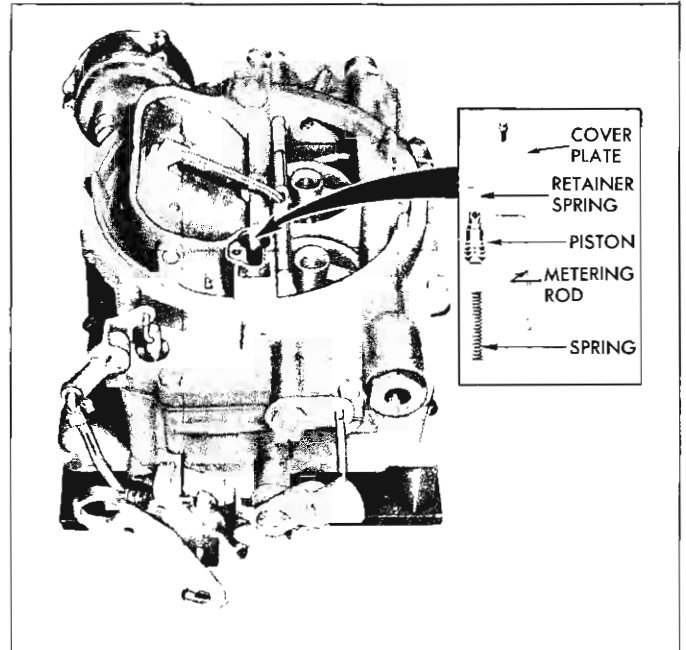


Fig. 12—Metering Rod Removal

4. Remove bowl cover attaching screws and carefully remove bowl cover (figs. 13 and 14).
5. Align Float. Sight down side of float to determine if side is parallel with outer edge of air horn. If adjustment is necessary, bend float lever by applying pressure to end of float with fingers while supporting float lever with thumb (fig. 15).

Remove any excess clearance between arms of float lever and lugs on air horn by bending float lever arms. Arms should also be parallel to inner surface of lugs. After aligning, each float must operate freely.

6. Adjust Float Level. With air horn inverted and air horn gasket in place, check clearance between each float (at outer end) and air horn gasket using Float Gauge J-9550 chain set or a 7/32" drill (fig. 16) - (5/16" on 327 carburetor). To adjust, bend float lever. After any adjustment, recheck float alignment.

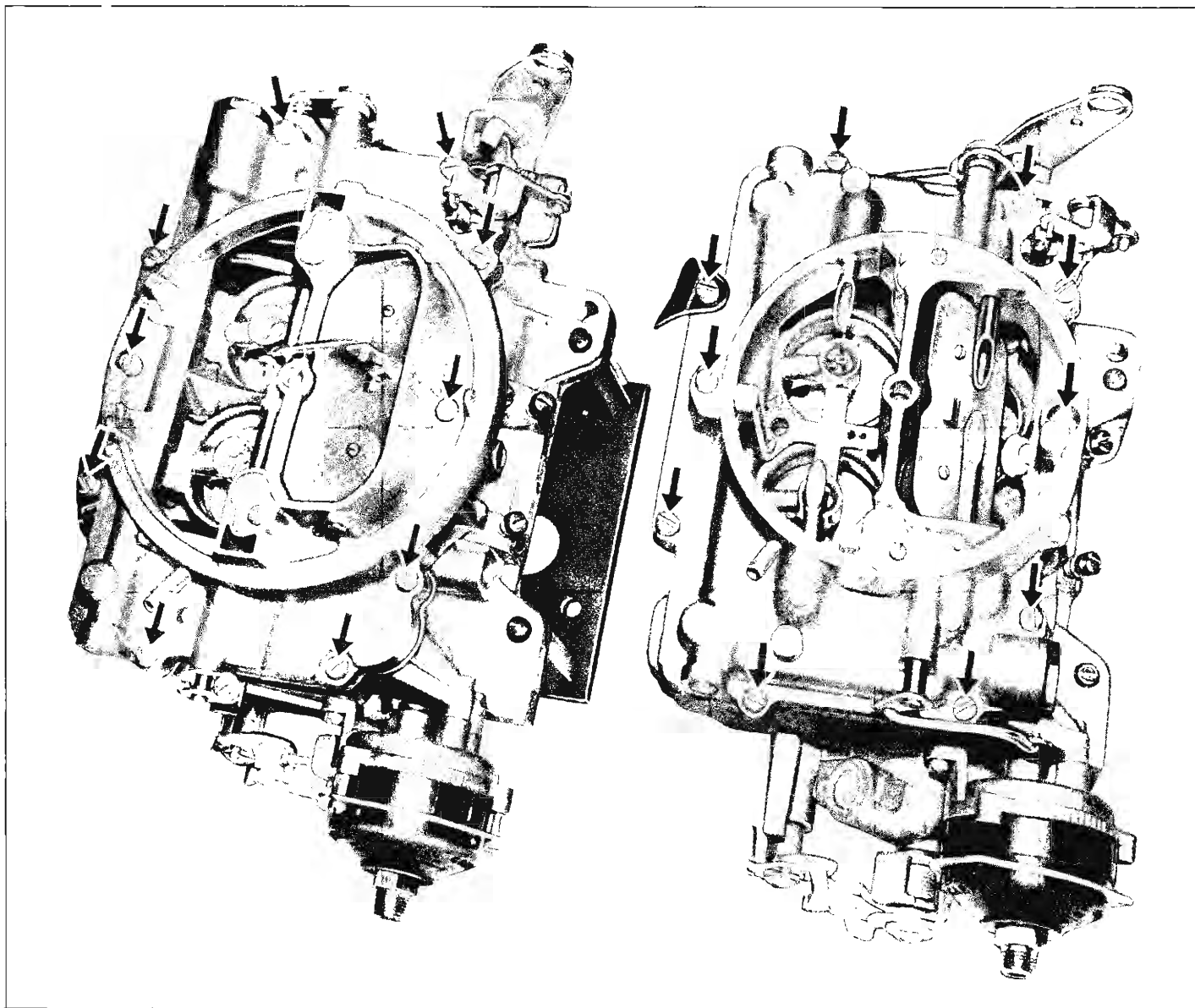


Fig. 13—Bowl Cover Attaching Screws

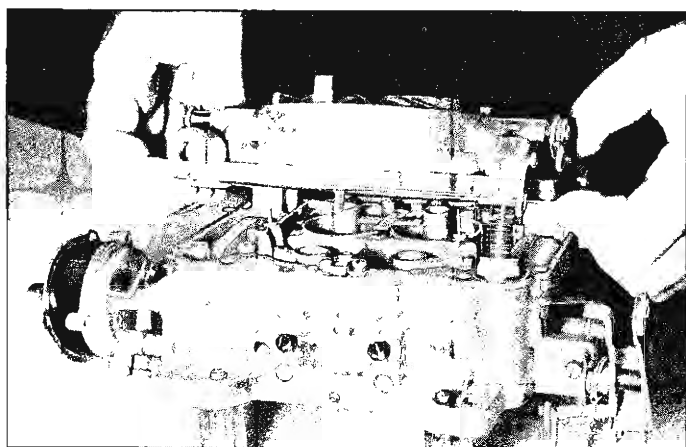


Fig. 14—Removing Bowl Cover

7. Adjust Float Drop. With air horn held in upright position, measure vertical distance from air horn gasket to outer end of each float using a scale. Bend float arm tang as required to obtain  $3/4$ " measurement (fig. 17).
8. Reverse Steps 1, 2, 3 and 4 to reassemble.



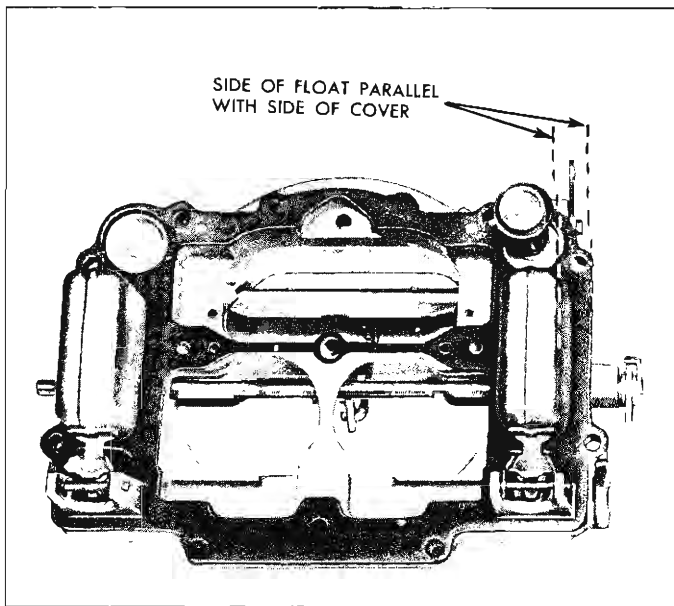


Fig. 15—Aligning Floats

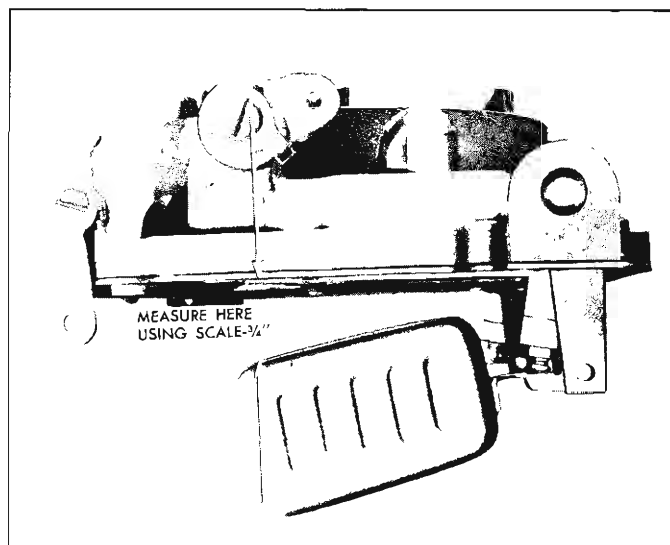


Fig. 17—Adjusting Float Drop

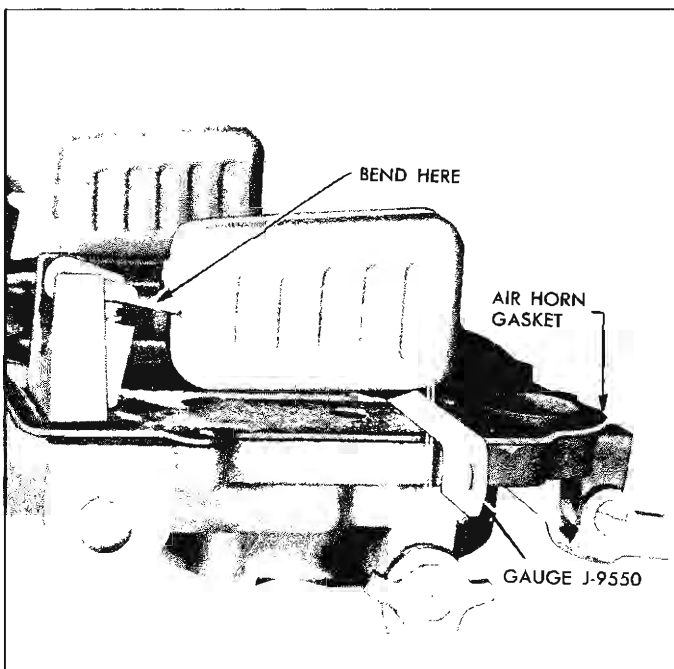


Fig. 16—Adjusting Float Level

### Intermediate Choke Rod

1. Remove three choke coil housing screws and remove retainer ring, and choke coil housing assembly.
2. Remove coil housing gasket and baffle plate.
3. Open choke valve and insert .026" wire gauge, J-9550 between bottom of slot in piston and top of slot in choke piston housing (fig. 18). Close choke piston against this gauge (using a rubber band doubled will keep tension of piston against wire gauge leaving one hand free for adjustment while gauging choke valve, and check clearance between top of choke valve and web of air horn casting, using J-9550 wire gauge .210" for 409 carburetor and .0825" for 327 carburetor.
4. If adjustment is required bend intermediate choke rod using Bending Tool J-4552 on 327 AFB. On 409 AFB loosen choke control shaft clamp lever screw and rotate lever on shaft, then tighten screw.
5. Remove gauges and rubber band from choke piston lever.
6. Install choke baffle plate, gasket and thermo-static coil housing assembly retainer ring and screws.
7. Adjust index on coil housing to index on choke housing.

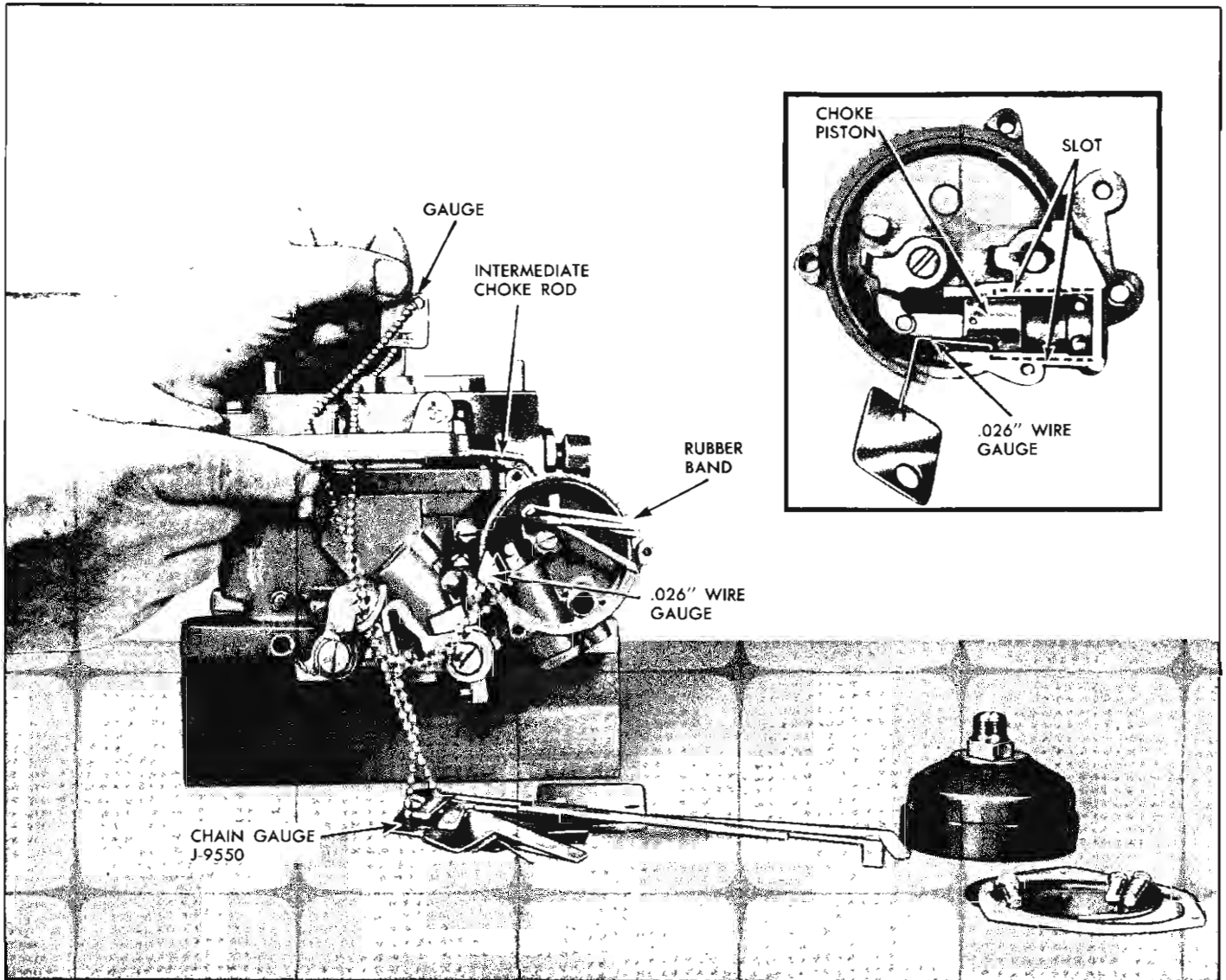


Fig. 18—Intermediate Choke Rod Adjustment

**Accelerator Pump**

Push fast idle cam aside and back out throttle stop screw until throttle valves seat in throttle bores. Measure from air horn to top of plunger shaft with

scale. Bend pump rod at lower angle as required to obtain 1/2" measurement using Tool J-4552 (fig. 19). Turn throttle stop screw in (from fully closed throttle position) 1/2 turn which should provide an initial idle adjustment.

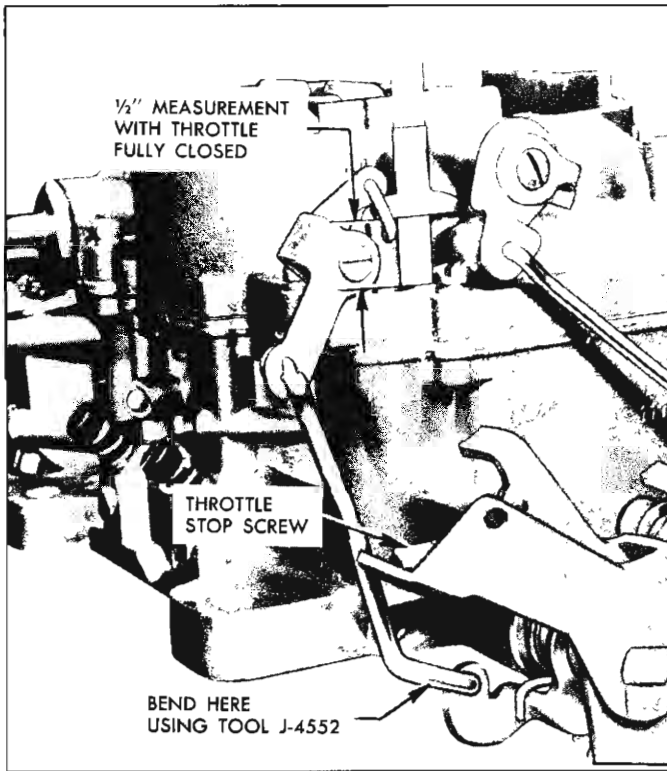


Fig. 19—Pump Adjustment

**Unloader**

Hold throttle wide open and check clearance between upper edge of choke valve and inner wall of air horn using a 3/16" drill. Bend unloader tang on throttle shaft lever as required to obtain clearance (fig. 20).

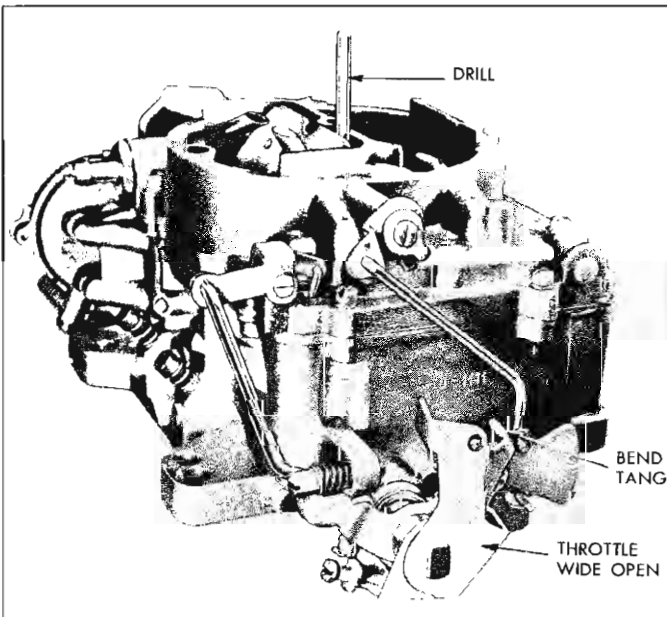


Fig. 20—Unloader Adjustment

**Closing Shoe**

With primary and secondary throttle valves closed, check clearance between positive closing shoes on primary and secondary throttle levers using chain gauge J-9550 or a .020" feeler gauge. Bend secondary closing shoe as required to obtain this clearance (fig. 21).

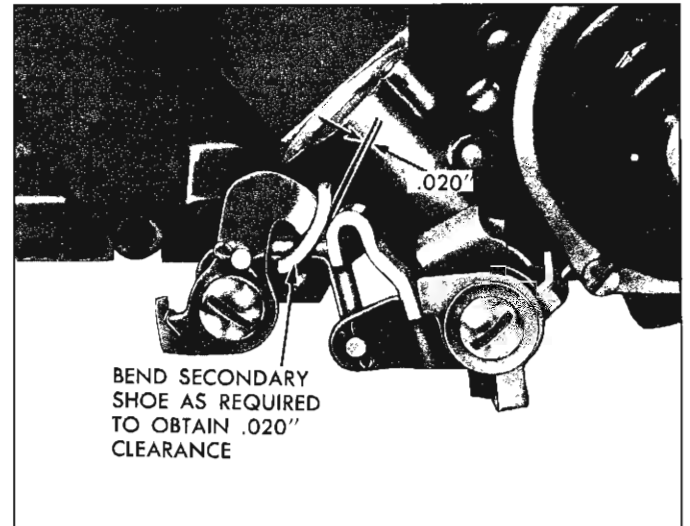


Fig. 21—Closing Shoe Adjustment

**Secondary Throttle Opening**

The pick-up lever located on the primary throttle shaft has two points of contact with the loose lever on the primary shaft. Caution should be taken that the pick-up lever contacts the loose lever at both points at the same time (fig. 22). If they do not make this contact, bend pick-up lever to obtain proper engagement.

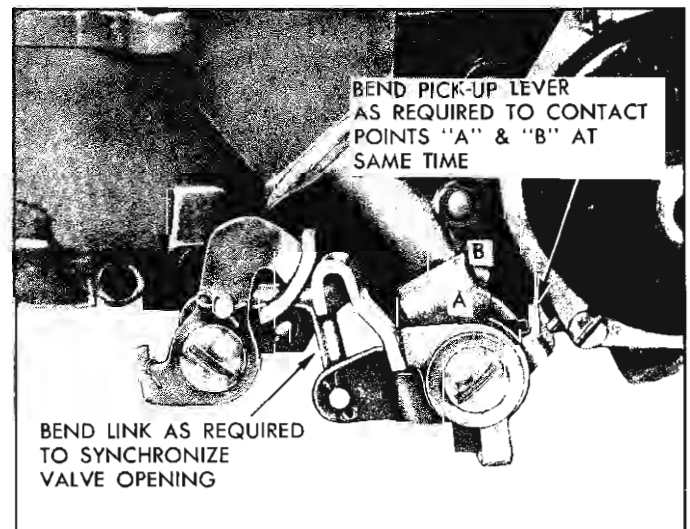


Fig. 22—Secondary Throttle Opening Adjustment

The primary and secondary throttle valve must come to the wide open position simultaneously. If the secondary throttle valve opening is not synchronized with that of the primary, bend the connecting link.

### Secondary Throttle Lock-Out

Open primary throttle valves slightly and manually open and close choke valve. Tang on secondary throttle lever should freely engage in notch of lockout dog while barely missing edge of notch. If necessary to adjust, bend tang on secondary throttle lever using Tool J-9550 (fig. 23).

### Additional Adjustments

If additional adjustments are necessary, repeat accelerator linkage, idle speed and mixture, automatic choke and fast idle adjustments.

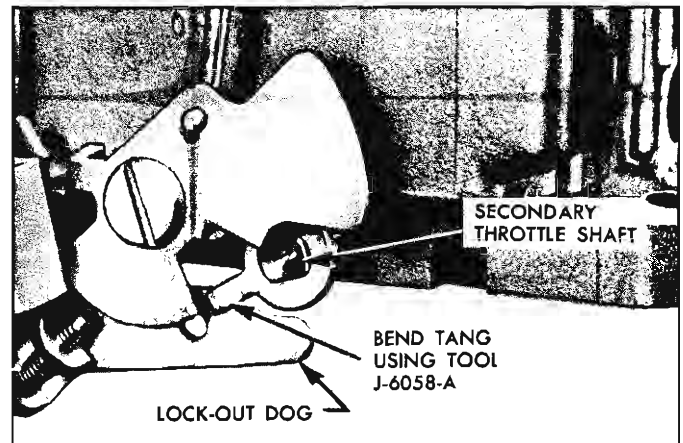


Fig. 23—Secondary Throttle Lock-Out Adjustment

## SERVICE OPERATIONS

### REMOVAL FROM ENGINE

1. Remove air cleaner, gasket and stud.
2. Disconnect vacuum, fuel and choke pipes at carburetor. On models equipped with positive ventilation, disconnect ventilation hose at valve on carburetor base.)
3. Disconnect accelerator rod and throttle return spring at carburetor. (On automatic transmission models, disconnect TV rod at carburetor.)
4. Remove mounting nuts and lift carburetor from manifold.

### DISASSEMBLY

#### Bowl Cover Components

(Refer To Fig. 24)

1. Remove retainer from upper end of pump rod and disconnect pump rod from arm.
2. (327) Remove hairpin clip from upper end of intermediate choke rod and disconnect rod.  
(409) Remove hairpin clip from upper end of fast idle rod and disconnect rod. Replace clip on rods for safe keeping.
3. (327) Remove screw from end of choke shaft and remove outer lever and washer. Then remove inner lever and fast idle rod from carburetor as an assembly.  
(409) Loosen choke control shaft clamp lever screw and remove lever and intermediate choke rod from carburetor as an assembly.

4. Remove screws holding two step-up position cover plates to air horn and remove cover, piston, step-up rod and spring (fig. 12).
5. Remove fuel inlet fitting, gasket and strainer. Remove bowl cover screws and carefully lift cover from Body Section (fig. 14) to avoid damaging floats or pump plunger.
6. Remove float lever pins and floats. Remove float needles, seats and gaskets. Keep float system parts separate so they may be reinstalled with minimum adjustment.
7. Remove pump plunger lever screw and lever. Remove "S" link and plunger. Remove cover gasket.

Ordinarily the carburetor bowl covers are disassembled as far as is necessary during an overhaul procedure. The choke valve and shaft (or shafts) should not be removed unless shaft is binding or valve is damaged. If either condition exists, disassemble as follows:

8. (327) File choke valve screws (staked ends) level with shaft to avoid damaging threads in shaft; then remove the screws and choke valve. Slide shaft from cover.

(409) Remove link from choke valve end and rotate to remove from control shaft. Proceed as above to remove choke valve and shaft. To remove choke control shaft, remove link lever screw and slide shaft from cover.

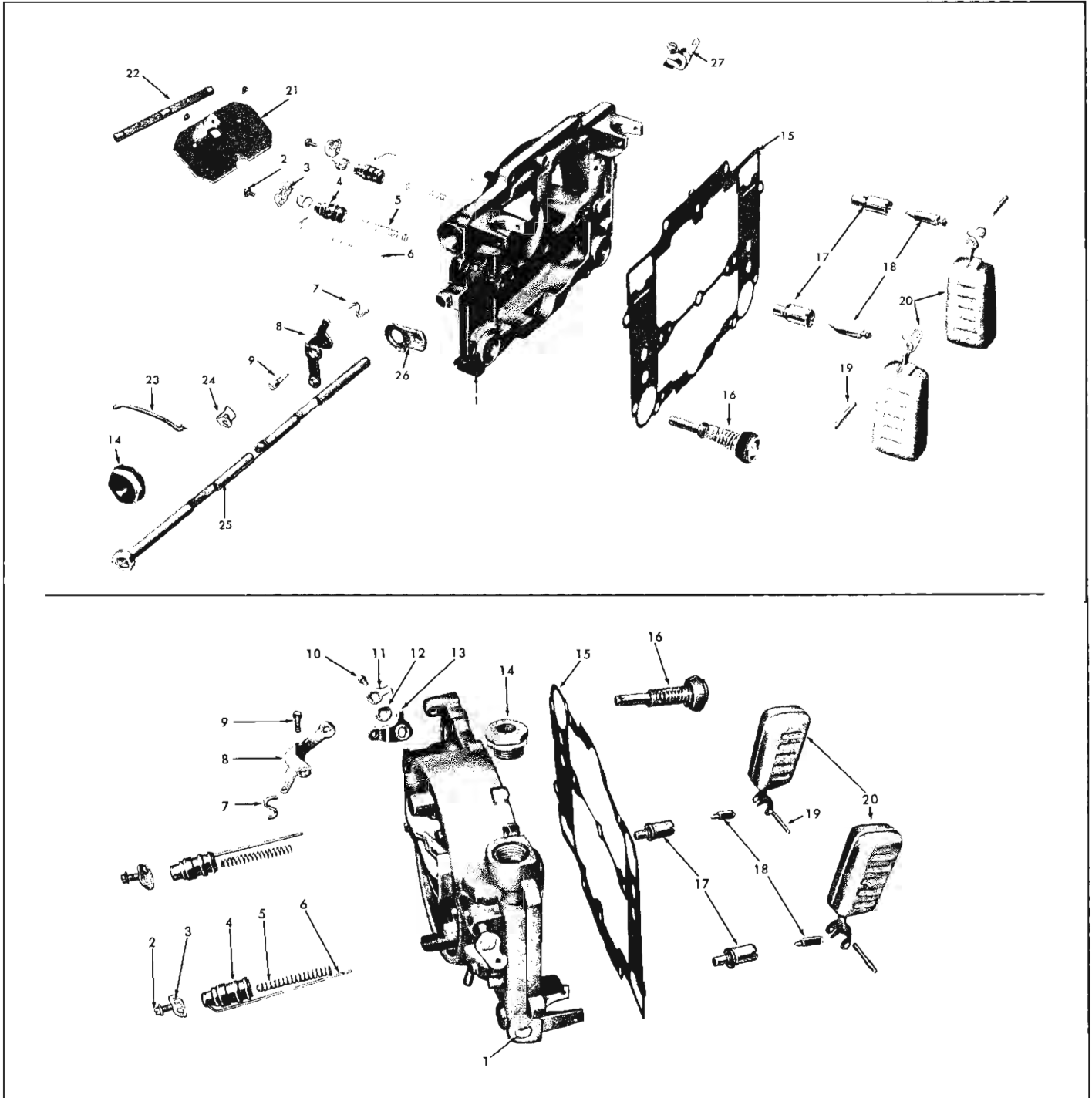


Fig. 24—Bowl Cover Components

- |                        |                             |   |  |
|------------------------|-----------------------------|---|--|
| 1. Bowl Cover Assembly | 9. Pump Lever Pivot Screw   | 17. Float Needle Seat                     | 24. Choke Valve Actuating Shaft Lever (409 only) |
| 2. Screw               | 10. Screw                   | 18. Float Needle                          | 25. Choke Valve Actuating Shaft (409 only)       |
| 3. Piston Cover Plate  | 11. Choke Shaft Outer Lever | 19. Float Hinge                           | 26. Kick Lever (409 only)                        |
| 4. Power Piston        | 12. Washer (Spacer)         | 20. Float                                 | 27. Choke Actuating Shaft Clamp Lever            |
| 5. Spring              | 13. Choke Shaft Kick Lever  | 21. Choke Valve                           |  |
| 6. Metering Rod        | 14. Fuel Inlet Fitting      | 22. Choke Valve Shaft                     |  |
| 7. Pump Link           | 15. Cover Gasket            | 23. Choke Valve Actuating Link (409 only) |  |
| 8. Pump Lever          | 16. Pump Plunger Assembly   |   |  |

### Body Components

(Refer To Fig. 25)

1. Remove accelerator pump lower spring.
2. Check the fuel in the bowl for contamination by dirt, gum or other foreign matter, then empty fuel from bowl.

NOTE: A magnet swept around the bottom of the bowl while fuel is still present will

pick up iron oxide dust or metal particles which have a tendency to cause leakage at needle seats.

3. Remove choke housing cover retainer, cover, cover gasket, and baffle plate.
4. Remove choke housing mounting screws and housing. Remove "O" ring seal from vacuum opening of housing mounting boss.

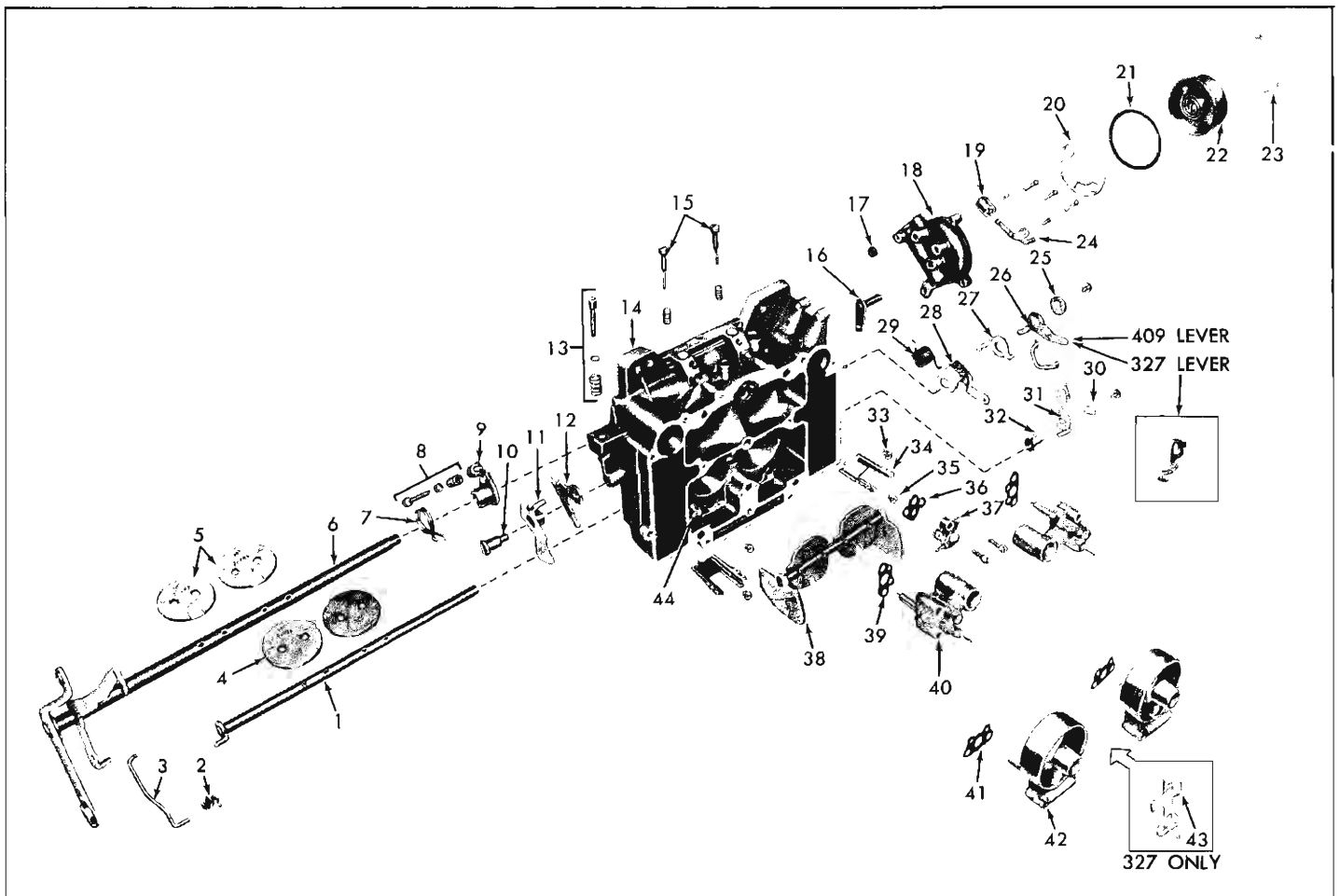


Fig. 25—Body Components

- |                                      |                                  |  |   |
|--------------------------------------|----------------------------------|--|---|
| 1. Secondary Throttle Shaft          | 13. Idle Speed Screw Assembly    | 25. Washer                             | 35. Secondary Metering Jet              |
| 2. Clip                              | 14. Carburetor Body              | 26. Primary Throttle Shaft Arm         | 36. Pump Discharge Nozzle Gasket        |
| 3. Fast Idle Rod                     | 15. Idle Mixture Screws          | 27. Throttle Shaft Spring              | 37. Pump Discharge Nozzle               |
| 4. Secondary Throttle Valves         | 16. Choke Piston Outer Lever     | 28. Secondary Throttle Trip Lever      | 38. Auxiliary Valves                    |
| 5. Primary Throttle Valves           | 17. "O" Ring Seal                | 29. Spring                             | 39. Primary Venturi Cluster Gasket      |
| 6. Primary Throttle Shaft            | 18. Choke Housing                | 30. Washer                             | 40. Primary Venturi Cluster             |
| 7. Primary Throttle Shaft Spring     | 19. Choke Piston                 | 31. Secondary Throttle Shaft Dog Lever | 41. Secondary Venturi Cluster Gasket    |
| 8. Fast Idle Screw Assembly          | 20. Choke Baffle Plate           | 32. Spring                             | 42. Secondary Venturi Cluster Gasket    |
| 9. Fast Idle Screw Plate             | 21. Gasket                       | 33. Primary Metering Jet               | 43. Secondary Venturi T-Strip Deflector |
| 10. Screw                            | 22. Choke Coil and Housing Cover | 34. Fuel Splash Shield                 |   |
| 11. Fast Idle Cam                    | 23. Retainer Ring                |  |   |
| 12. Secondary Throttle Lockout Lever | 24. Choke Piston Inner Lever     |  |   |

## FUEL AND EXHAUST 10-14

5. Remove choke piston lever screw and remove piston and two levers.
6. Remove pump cluster attaching screws, pump cluster and gasket. Remove pump discharge needle.
7. Remove venturi cluster attaching screws and clusters. (On 327 carburetor also remove T-strip deflector over secondary clusters.)

**NOTE:** Each venturi assembly is different and can be assembled to body in one location only.

**NOTE:** Primary venturi gaskets are different from secondary.

8. Lift secondary auxiliary valves from carburetor body.
9. Remove idle mixture screws and springs.
10. Remove all four metering jets.

**NOTE:** Primary metering jets are larger because metering rods (step-up rods) are used in them.

11. Remove pump intake check ball and seat assembly.

For normal cleaning and inspection, it is not necessary to disassemble the carburetor body any further. However, if throttle valves or linkage are worn or damaged, complete disassembly as follows:

12. Remove fast idle cam screw and cam.
13. Remove primary to secondary connecting link. Remove primary and secondary throttle dog lever screws and remove levers, and springs.
14. File off staked ends of throttle valve attaching screws and remove screws and throttle valves from bores. Slide throttle shafts from carburetor body.

## CLEANING AND INSPECTION

The most frequent causes of carburetor malfunction are gum, dirt, carbon, and water. For this reason, carefully clean and inspect all parts and castings while the carburetor is being serviced.

1. a. Wash all parts in carburetor cleaning solution except coil housing assembly and pump plunger.  
b. Choke coil housing assembly should be cleaned in gasoline.
2. Inspect holes in all operating levers and castings for excessive wear.

3. Inspect bearing surfaces of all shafts for excessive wear.

**NOTE:** If excessive wear is noted to the extent of improper operation of the carburetor, the worn parts should be replaced.

4. Inspect floats for bad dents and/or possible leaks.
5. Inspect pump plunger leather for cracks or creases.

To check pump system: Pour 1/2 inch of gasoline into carburetor bowl. Take pump plunger from can of gasoline or kerosene and slide into pump cylinder. Place the discharge check ball into body. Raise plunger and press lightly on shaft to expel air from the pump passage. Using a small clean brass rod, hold the discharge ball down firmly on its seat. Again raise plunger and press downward. No fuel should be emitted from either the intake or discharge passage. If any fuel does emit from either passage, the presence of dirt or a damaged check ball are indicated. Clean the passage again and repeat the test. If leakage is still present, replace the check valve.

6. If choke piston sticks in cylinder, remove welch plug in bottom of housing for inspection of cylinder and air slots. If carbon or dirt is present, remove carbon from cylinder with sandpaper (DO NOT USE EMERY CLOTH) and clean slots. Carefully install new welch plug. Be certain welch plug seat is carefully cleaned before installing new plug.

**NOTE:** Removal of the welch plug to clean the choke piston housing should be done only if the choke piston does not move freely in its cylinder.

7. Inspect float needles and seat for burrs and ridges. If present, replace both the needle and seat; never replace either alone.
8. Inspect metering rods and jets. If either are bent, burred, or distorted, replace both rod and jet.
9. Inspect edges of primary and secondary throttle valves for gouges and other deformations. If these or any other conditions exist which would prevent full seating, replace the faulty valve.
10. Check pump plunger return spring and vacuum piston spring for weakness and distortion.
11. Inspect all mating surfaces of choke housing, bowl cover, carburetor body, and throttle flange for burrs, gouges, or other surface irregularities. All surfaces must be smooth to prevent leaks.

## ASSEMBLY ADJUSTMENT

During assembly of carburetor, use all new gaskets and any additional new parts found to be necessary during inspection. Calibrated parts must be as specified for carburetor CODE number which is stamped in red on mounting flange at rear center, or on identification tag.

### Carburetor Body

1. Install primary and secondary throttle shafts.
2. Install primary throttle shaft dog levers and spring (fig. 26).

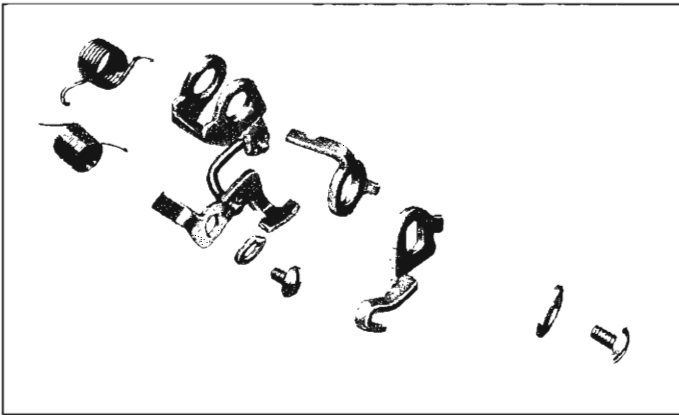


Fig. 26—Throttle Shaft Levers

3. Install secondary throttle shaft dog lever and spring. Wind spring one turn (fig. 27).

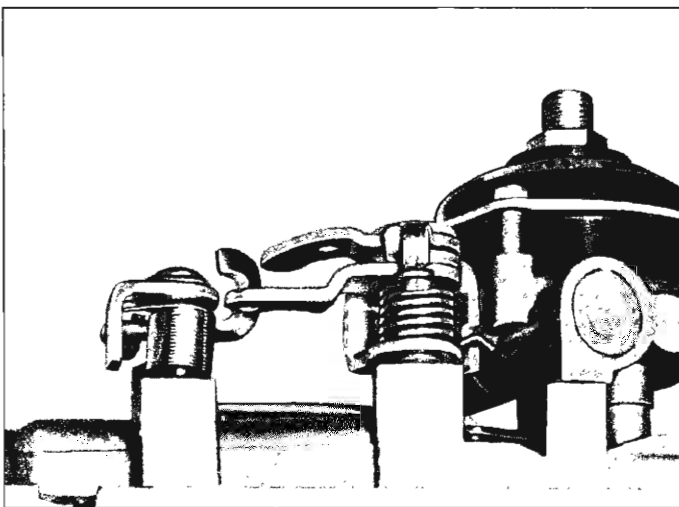


Fig. 27—Throttle Shaft Levers—Installed

4. Install throttle valves in shafts with part number identification toward bottom of flange and secure with new screws (fig. 28).

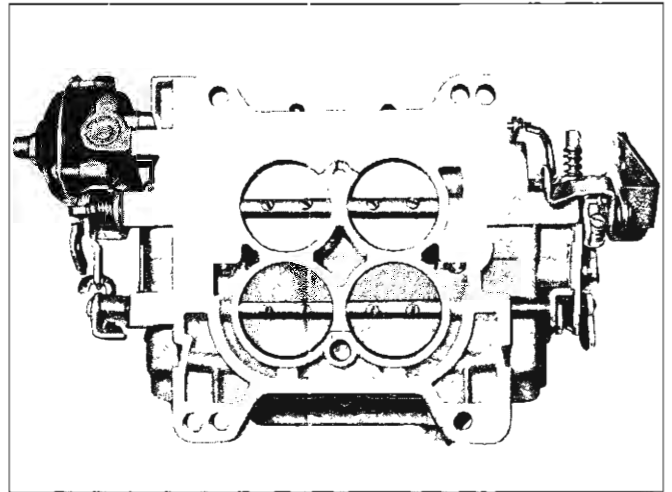


Fig. 28—Throttle Valve Position

5. Install pump intake check ball and ball seat assembly with a new gasket (fig. 29). Install primary and secondary metering jets and tighten securely.

**NOTE:** The primary jets are the two having the larger orifices.

6. Install pump discharge check needle point down. Install pump jet housing and gasket.
7. Install auxiliary valve assembly with screw heads down (fig. 30). Then install secondary and primary venturi assemblies, using new gaskets (fig. 31).

**NOTE:** If a primary venturi assembly does not fit in place, flush with top of main body, it belongs on the other side.

8. Install idle mixture adjustment screws. Seat lightly and back out 1-1/2 turns, which will provide an average initial adjustment.

9. Install choke piston housing shaft, lever and rod assembly in piston housing with lever and rod pointing away from heat pipe connector. Install small round rubber gasket in housing recess, then install piston housing on main body using three screws. Install choke piston, pin link, and lever assembly in piston housing. Install piston lever on flats of shaft in such a way that inner and outer levers are pointing in same general direction. Then install special washer and screw.



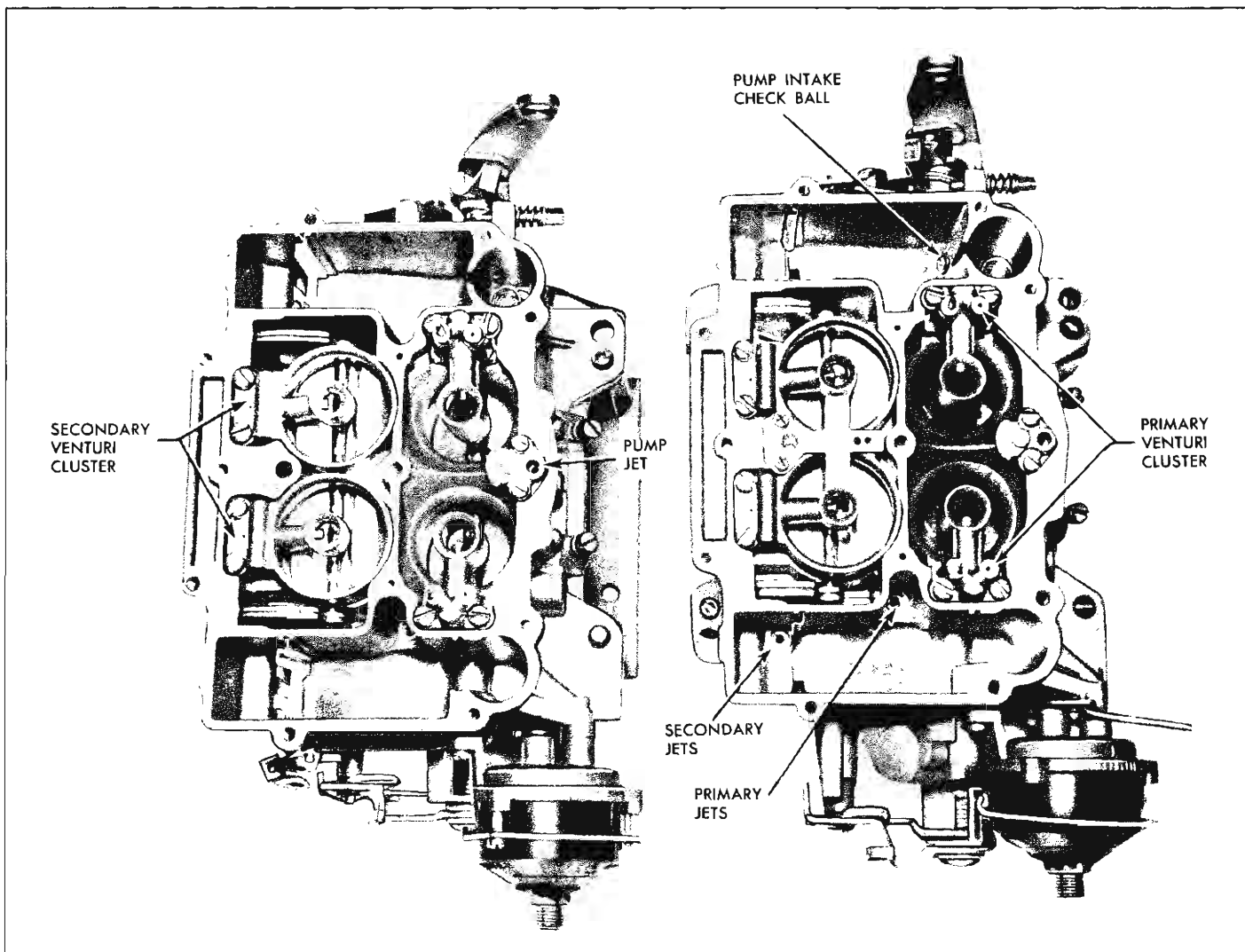


Fig. 29—Body Components

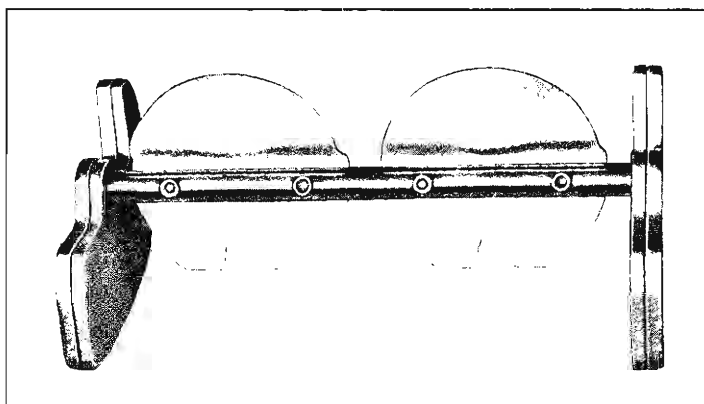


Fig. 30—Auxiliary Valve Assembly

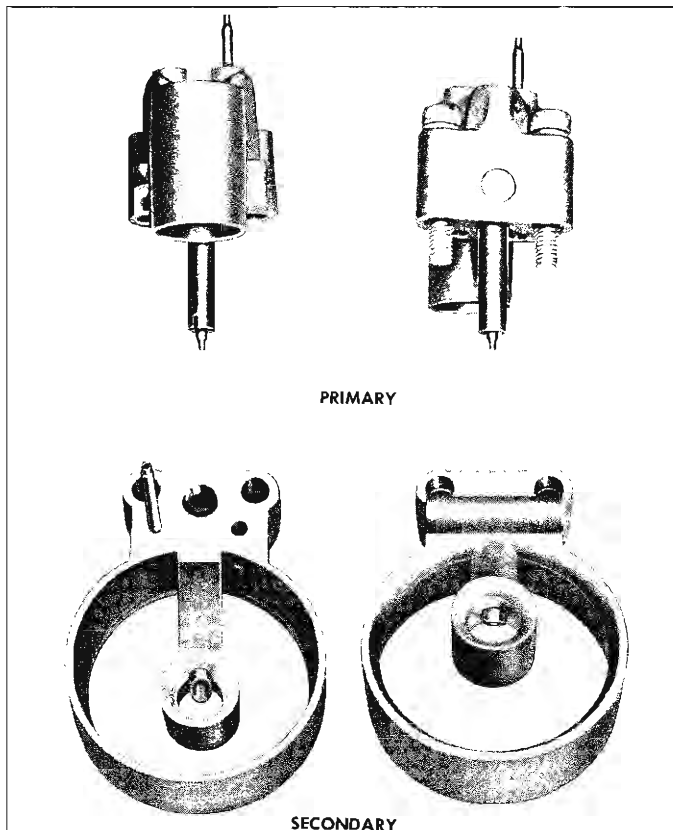


Fig. 31—Venturi Identification

### Carburetor Bowl Cover

1. Place pump plunger assembly in position in air horn and install pump link. Install pin spring in upper end of link. Invert air horn and install new air horn gasket.
  2. Install float needle seats and gaskets. Install float needles, floats, and lever pins, making sure they are installed in original locations.
  3. Perform float adjustments as outlined under "Maintenance and Adjustments".
  4. Place lower pump spring in pump well. Install bowl cover assembly on main body, using care to avoid distortion of floats. Install bowl cover screws and tighten evenly. (Two longer screws go in middle holes). Install fuel inlet strainer in fuel inlet and install inlet in air horn.
  5. Install choke shaft in air horn with attached lever toward choke piston housing. Install choke valve with markings up and install new screws loosely. Align choke valve by working choke shaft endwise while maintaining an upward pressure on choke shaft lever. Tighten and stake choke valve screws. Check for uniform clearance and freedom from sticking, as improper fit or binding may cause hard starting. Mechanism is free if choke valve will fall open from its own weight.
6. Install assembled fast idle rod and choke lever by first engaging fast idle rod in fast idle cam. Then place lever over end of choke shaft so that it points toward accelerator pump. Install special washer on shaft and then install choke shaft outer lever so that tang on outer lever is above tang on inner lever when choke valve is open.
  7. Install two step-up piston springs. Install each assembled step-up piston, rod and rod retainer spring. Carefully push down on each step-up piston and rod until rod enters metering jet. Use care to avoid bending metering rods. Then install cover plates, holding plates down while tightening screws.
  8. Install upper end of pump rod in pump arm.
  9. Install upper end of choke rod in choke shaft lever, using pin spring on rod.
  10. Perform the following adjustments as described in Maintenance and Adjustments.
    - Accelerator Pump
    - Intermediate Choke Rod Adjustment
    - Automatic Choke Adjustment
    - Fast Idle Rod
    - Unloader
    - Closing Shoe
    - Secondary Throttle Opening
    - Secondary Throttle Lockout

### TEST BEFORE INSTALLATION ON ENGINE

It is good shop practice to fill the carburetor bowl before installing the carburetor. This reduces the strain on the starting motor and battery and reduces the possibility of backfiring while attempting to start the engine. A fuel pump clamped to the bench, a small supply of fuel and the necessary fittings enable the carburetor to be filled and the operation of the float and intake needle and seat to be checked. Operate the throttle several times and check the discharge from the pump jets before installing the carburetor.

### INSTALLATION

1. Be certain throttle flange and intake manifold gasket surfaces are clean.
2. Install new carburetor to manifold gasket over manifold carburetor studs.
3. Start vacuum line fitting into carburetor fitting.
4. Lower carburetor onto manifold studs, choke housing to right side of vehicle.
5. Install and tighten securely four nuts, using a short open end wrench.

- 6 Tighten vacuum line fitting and connect and tighten choke heat tube, and fuel line.
7. Install throttle rod and throttle return spring.
8. Install air cleaner gasket, stud, air cleaner and

- two wing nuts. Tighten securely.
9. Adjust idle speed and mixture.
10. Adjust fast idle.

## DUAL CARBURETORS (RPO 587)

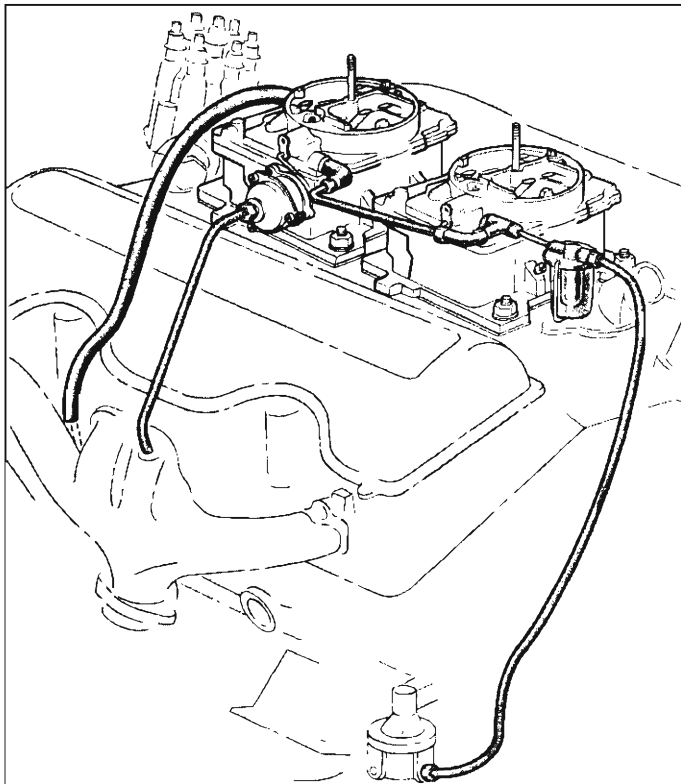


Fig. 32—RPO 587—Carburetor Installation

RPO 587 (409 cubic inch) engine is equipped with two Carter AFB carburetors. The rear carburetor only is equipped with an automatic choke and clean air system (fig. 32). These carburetors are similar to the single 4 barrel AFB. Follow service and adjustment procedures outlined for single AFB installation except as follows:

### ACCELERATOR LINKAGE ADJUSTMENT

1. Remove carpet adjacent to area around accelerator pedal to allow for clearance measurement between toe-board and accelerator pedal.
2. Remove air cleaner (fig. 33) and both throttle pull-back springs.
3. Disconnect front carburetor throttle rod at rear carburetor.
4. With rear carburetor at wide open throttle, accelerator pedal should be 1/2" to 3/4" from the toe-board measured at middle of pedal.

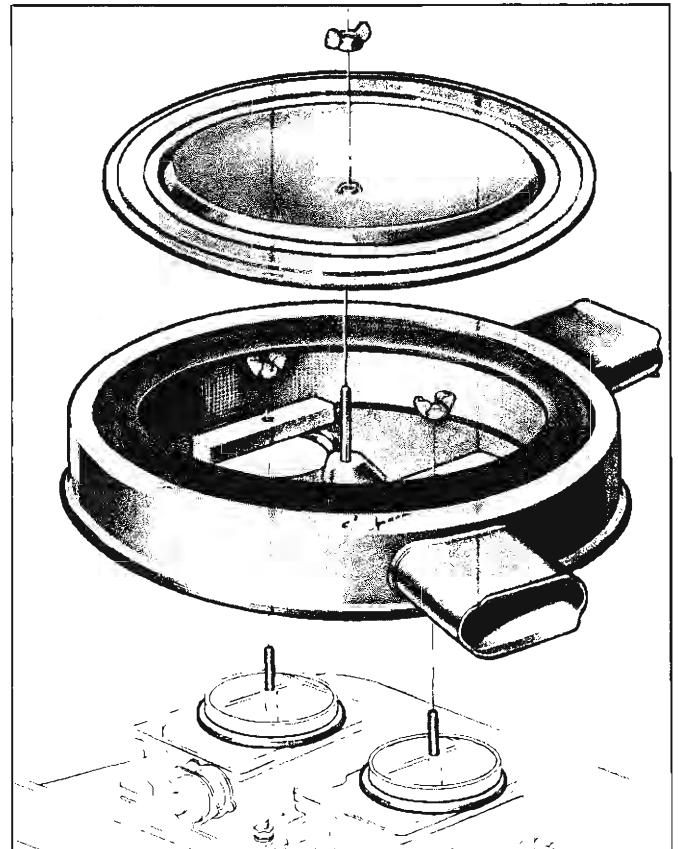


Fig. 33—RPO 587—Air Cleaners

5. If necessary to adjust, disconnect accelerator rod at carburetor and adjust swivel so it freely enters hole in carburetor throttle lever (fig. 34), then connect and secure accelerator rod with retainer clip.
6. With both carburetors held at wide open throttle, front carburetor throttle rod trunion eye should slide freely over accelerator rod swivel pin.
7. If necessary to adjust, loosen trunion lock nut and adjust trunion, then tighten lock nut while holding front throttle rod hex head at front carburetor.
8. When linkage is properly adjusted, front carburetor will begin to open when rear carburetor is at approximately half throttle.
9. Reinstall accelerator return springs and air cleaner.

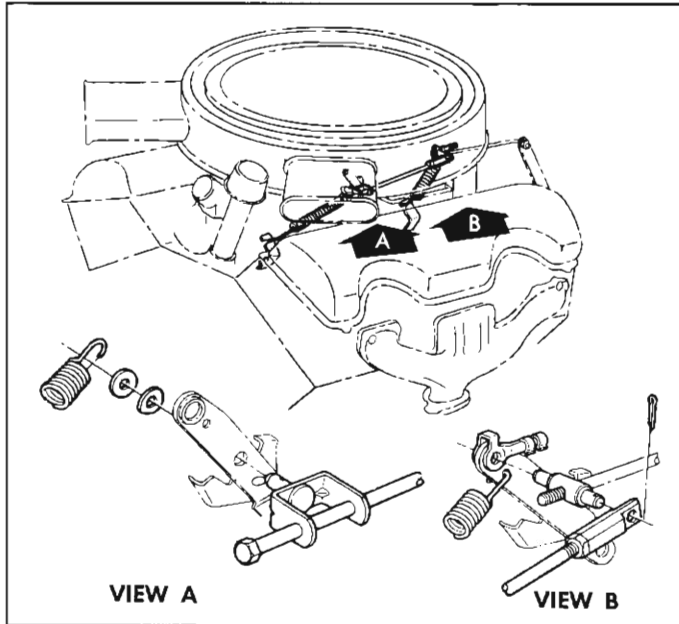


Fig. 34—RPO 587—Accelerator Linkage

## IDLE SPEED AND MIXTURE ADJUSTMENT

(Air Cleaner Removed)

1. Open and close throttle several times to make sure valves seat properly.

2. Connect tachometer and vacuum gauge.
3. As an initial adjustment, turn all four mixture screws equally  $3/4$  turns open from their seats.
4. Back both idle speed screws just off from throttle levers, then turn in  $1-1/2$  to 2 turns as an initial setting.
5. With transmission in neutral, start engine and bring to normal operating temperature. Adjust both idle speed screws equally to obtain 650 to 700 rpm.
6. Adjust each idle mixture screw separately to obtain highest vacuum and engine rpm. Readjust idle speed screws equally to maintain idle speed while adjusting mixture screws.

**NOTE:** Best idle will be obtained by repeating above adjustment.

## FAST IDLE ADJUSTMENT

Adjust fast idle (on rear carburetor only) to obtain 1750 rpm with fast idle screw aligned with index mark on fast idle cam.

# AIR CLEANER

## GENERAL DESCRIPTION

Paper element air cleaners are used on V-8 engines except RPO 580, 409 cu. in. engine.

A new oil wetted polyurethane element air cleaner (figs. 35 and 36) is standard equipment on L-6 and 409 cu. in. (RPO 580) engines. This type cleaner element is reusable and should be removed, cleaned, re-oiled and reinstalled after each 4,000 miles of driving. During dusty or other adverse driving conditions, the element should be cleaned more often.

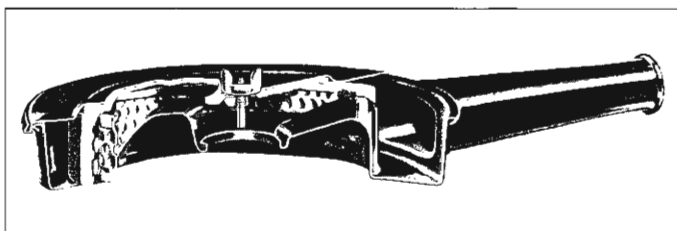


Fig. 35—Polyurethane Air Cleaner

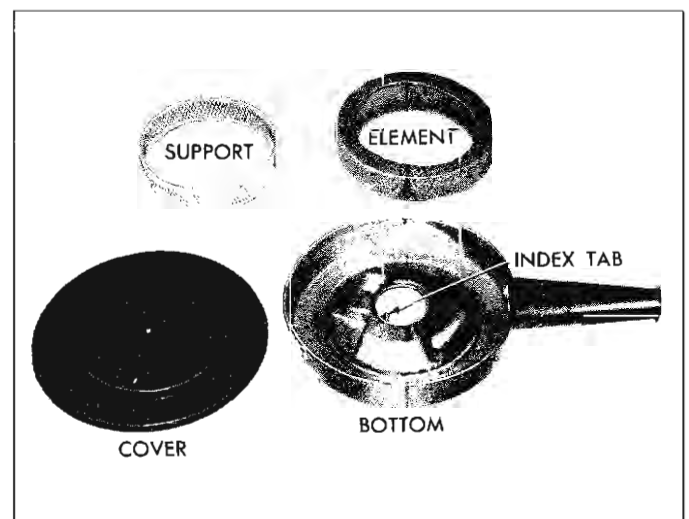


Fig. 36—Six-Cylinder Engine Air Cleaner

## SERVICE OPERATIONS

Operations outlined in this section are for the new polyurethane air cleaner only. For service procedures on paper element, refer to the 1961 Passenger Car Shop Manual.

### POLYURETHANE ELEMENT AIR CLEANERS

1. Remove cover wing nut, cover and filter element.



Fig. 37—Cleaning Polyurethane Element

2. Visibly check the element for tears or rips and replace if necessary.
3. Clean all accumulated dirt and grime from air cleaner body and cover. Discard air horn to air cleaner gasket.
4. Remove support screen from element and wash element in kerosene or mineral spirits; then squeeze out excess solvent (fig. 37).

**NOTE:** Never use a hot degreaser or any solvent containing acetone or similar solvent.

5. Dip element into light engine oil and squeeze out excess oil.

**NOTE:** Never shake, swing or wring the element to remove excess oil or solvent as this may tear the polyurethane material. Instead, "squeeze" the excess from the element.

6. Replace element onto screen support.
7. Using a new gasket, replace air cleaner body over carburetor air horn.
8. Replace the element in the air cleaners. Care must be taken that the lower lip of the element is properly placed in the assembly and that the filter material is not folded or creased in any manner that would cause an imperfect seal. Take the same precautions when replacing the cover that the upper lip of the element is in proper position.
9. Replace cover and wing nut.

## FUEL PUMP, FUEL TANK AND EXHAUST

Fuel pump, fuel tank and exhaust are essentially carryover from 1961 Passenger Car except that the mufflers are zinc treated for better resistance to

corrosion.

Refer to the 1961 Passenger Car Shop Manual for all service procedures.

## SPECIAL TOOLS

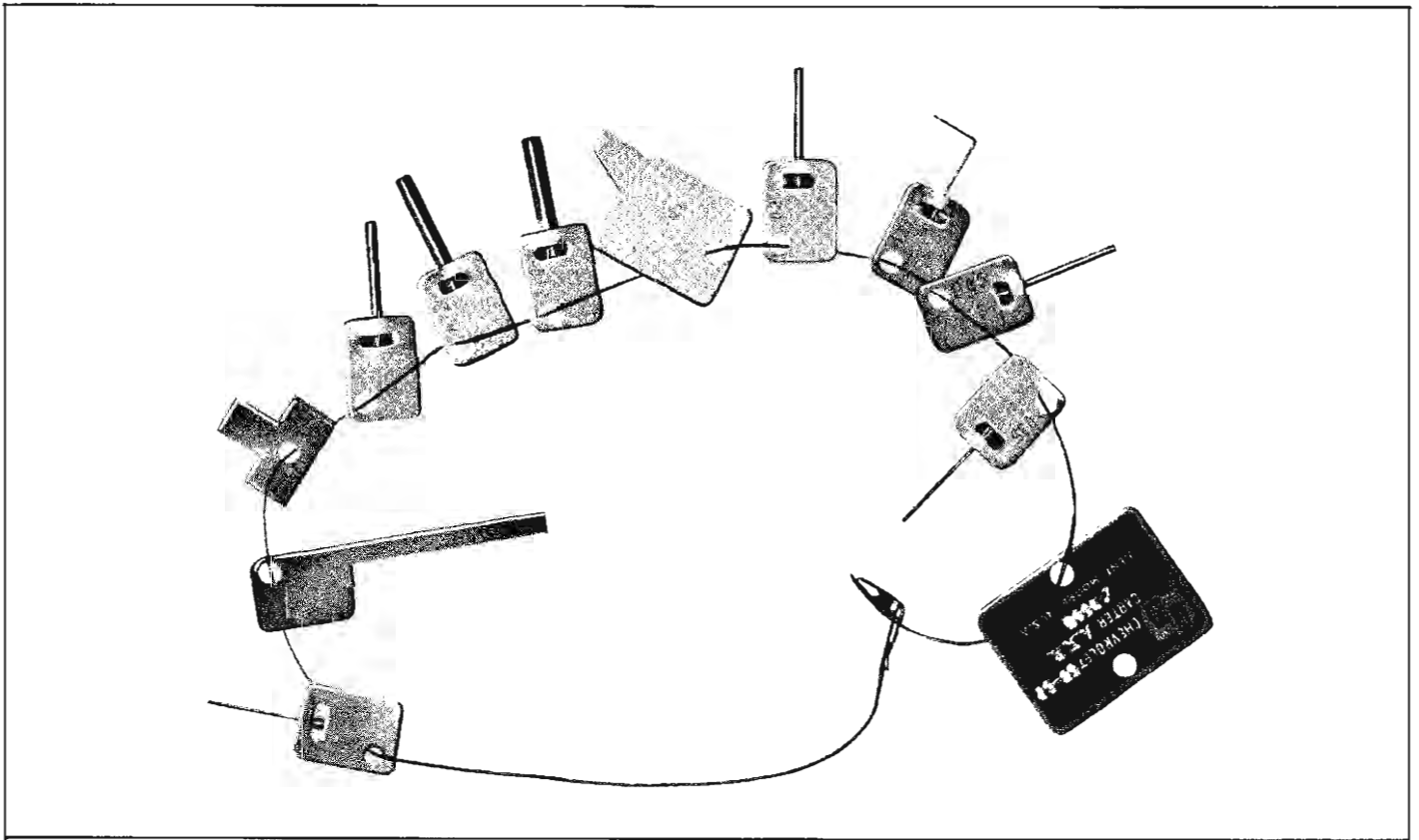


Fig. 38—AFB Carburetor Chain Gauge, J-9550

# SECTION 11

# CLUTCH

## INDEX

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Clutch Linkage Adjustment . . . . .	11-1		

## GENERAL DESCRIPTION

The clutch linkage used in 1962 has been revised, eliminating the clutch pedal overcenter spring and clutch pedal sleeve assembly. Adjustment is made on the lower end of the clutch pedal push rod.

Only service procedures that change from 1961 will be covered in this section. Refer to 1961 Shop Manual for other procedures, and to Section 16 of this supplement for specifications.

## MAINTENANCE AND ADJUSTMENTS

### CLUTCH LINKAGE ADJUSTMENT (Refer to Figure 1)

Clutch adjustment, for all normal wear, is made at swivel on lower end of pedal push rod as follows:

1. Remove clutch pedal return spring.
2. Loosen nut "A" and back off from swivel approximately 1/2 inch.
3. Hold clutch pedal push rod (1) so pedal is against bumper stop and cross-shaft lever (2) in the opposite direction so the throw-out bearing is against clutch fingers. Adjust nut "B" to obtain approximately 3/16" to 1/4" clearance between nut "B" and upper edge of swivel.
4. Release push rod and cross-shaft lever and tighten nut "A" to lock swivel against nut "B".

**NOTE:** Free pedal clearance should be 7/8" to 1 1/8".

5. Install pedal return spring.

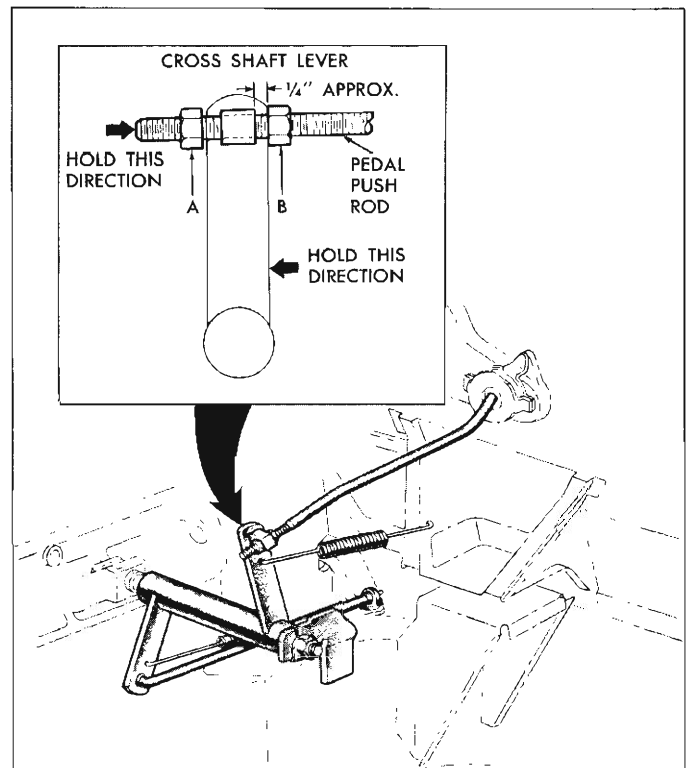


Fig. 1—Clutch Linkage

## SERVICE OPERATIONS

### CLUTCH AND BRAKE PEDAL (Refer to Figure 2)

#### Removal

1. Remove clip and washer and disconnect push rod from pedal.
2. Remove clutch pivot retaining spring clip and spring washer.
3. Remove clutch pedal by moving it out far enough to clear bumper bracket, then rotate pedal upward to clear push rod and remove pedal completely.

**NOTE:** Brake pedal will also fall free and push rod will hang from boot on master cylinder.

#### Inspection

1. Clean all metal parts with a good solvent.
2. Wipe nylon bushings clean with a clean cloth.  
**CAUTION:** Nylon bushings should not be treated with cleansing agents of any kind.
3. Inspect nylon bushings for wear or damage. Replace if necessary.
4. Inspect the mating surfaces of the bushings and replace necessary parts.

#### Installation

1. Install one nylon bushing on clutch pedal pivot shaft and one on opposite side of support bracket.

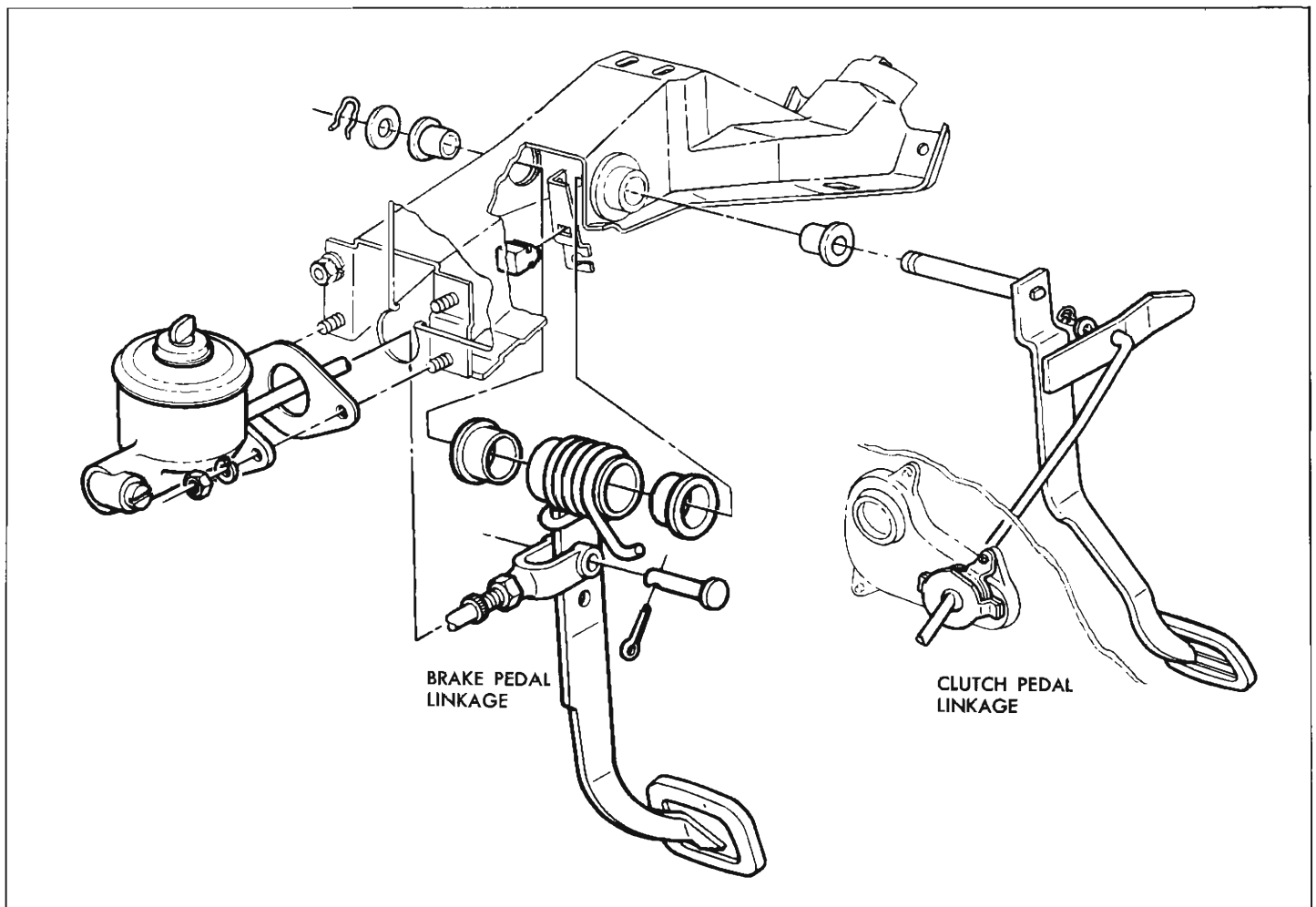


Fig. 2—Clutch and Brake Pedal



2. Position brake pedal, making sure two bushings are in brake pedal hub. Index the spring tip in notch of support brace and brake pedal push rod in master cylinder.
3. Reverse removal steps to complete installation.
4. Check clutch pedal free play and adjust if necessary.

5. Check brake pedal adjustment and adjust push rod if necessary.

**NOTE:** Check stop light switch adjustment for electrical contact when brake pedal is depressed approximately  $5/8$  .

## SECTION 12

# MANUAL TRANSMISSION

## THREE SPEED & OVERDRIVE TRANSMISSION

No changes affecting service procedures have been made on either the Three-Speed or the Overdrive transmissions. The information included in the 1961

Passenger Car Shop Manual will therefore apply as well to the 1962 model.

## FOUR-SPEED TRANSMISSION

The Four-Speed Synchromesh transmission remains basically the same as covered in the 1961 Passenger Car Shop Manual. Several minor re-

visions to the transmission which may cause slight variation in the suggested service procedures will be mentioned here.

### Transmission Case

The transmission case for use in passenger cars will be aluminum for 1962 contributing to a weight savings of 15 lbs. The aluminum case has been used in the Corvette transmission since 1961.

Other revisions to the transmission case include:

- Addition of bosses to accept the lower two extension attaching bolts. These bolts formerly attached directly to the rear bearing retainer. In the 1962 transmission all five bolts will attach the extension and retainer directly to the case.

- Use of the above bosses makes the self-locking rear bearing retainer-to-case attaching bolt unnecessary and it is therefore not found in the 1962 transmission.

### First Speed Gear Thrust Washer

In the 1961 Passenger Car Shop Manual mainshaft assembly procedure reference is made to the grooves in the first speed gear thrust washer. In the 1962 transmission this washer contains no grooves. The grooves are instead found on the rear face of the first speed gear.

# SECTION 13

## AUTOMATIC TRANSMISSIONS

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## POWERGLIDE

The Powerglide transmission as covered in the 1961 Passenger Car Shop Manual has been carried over unchanged for use in the 1962 model vehicle except for the elimination of the throttle valve (TV) test plug and the low servo apply test plug. The low servo apply test plug was eliminated since the reading is the same as obtained at the main line pressure check point. TV pressure checks have been eliminated since they serve only to point up a condition which should have made itself evident in improper upshifts and downshifts.

The Powerglide transmission will be available in 1962 as the automatic transmission option with six cylinder and 283 V-8 engines only. The 327 V-8 engine will offer the new aluminum Powerglide as optional equipment while the 409 V-8 engine will be available with manual transmissions only.

### BASIC PRESSURE CHECKS

Despite the elimination of the two test plugs, the basic pressure check information remains much the same. Differences are covered below.

- Pressure gauge hose connections should be installed at the following test plugs:
 

1. Front pump	3. Main line
2. Governor	4. Clutch apply
- In the Basic Pressure Check information found on pages 13-36 and 13-37 in the 1961 Passenger Car Shop Manual, all references to "low servo apply" pressure gauge may be read as "main line" pressure. In most cases this will be facilitated by the fact that the words "main line" follow the references to low servo apply.
- Reverse Pressure Check - with the parking brake applied and the vacuum hose disconnected, place the selector lever in "Reverse" and set idle speed to 1000 rpm. Pressure reading on the reverse servo or front pump gauge should be 240-275 psi on V-8 engine or 167-191 psi on 6-cylinder engines.

### ● Throttle Valve Adjustment

Throttle valve adjustment is generally made in conjunction with a shift pattern test.

If improper upshifts or downshifts occur, check TV linkage and then TV inner lever adjustment as described on Page 13-22, 1961 Passenger Car Shop Manual.

If these three items are correct, the trouble will usually be found in the low and drive valve body caused by faulty valve or spring operation and cleaning and overhaul of this unit is then indicated.

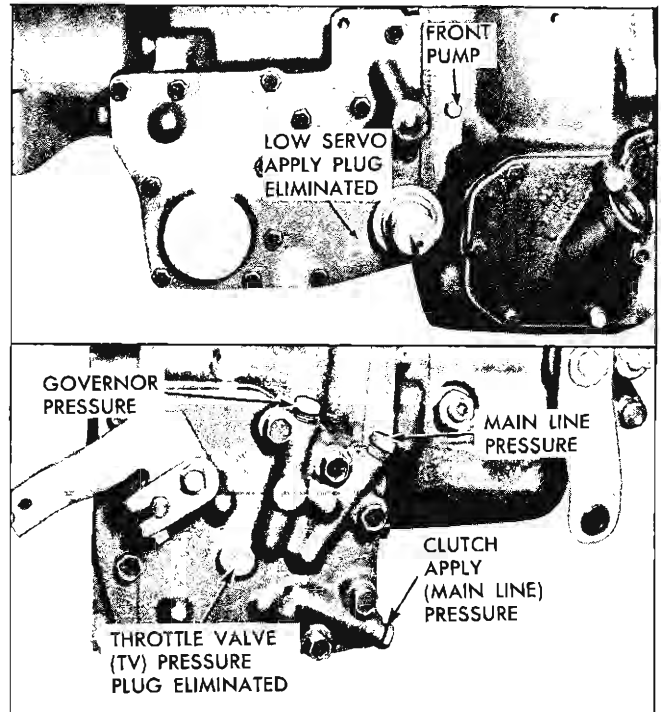


Fig. 1—Cast Iron Powerglide Test Fittings

# ALUMINUM POWERGLIDE

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## GENERAL DESCRIPTION

The new Aluminum Powerglide transmission, available as the automatic transmission option on regular passenger cars equipped with the 327 cubic inch Turbo-Thrust V-8 engine, is a new transmission which embodies many proven features of the familiar Powerglide, the discontinued Turboglide and the Corvair Powerglide transmissions. The new unit effects a weight savings of about 35% over the regular Powerglide due to the use of a one-piece cast aluminum case and an aluminum extension.

Driving characteristics remain the same as found in the regular Powerglide with the single shift occurring between low and drive. However, design and appearance of the internal components are somewhat changed. The conventionally arranged torque converter is a welded unit, eliminating the possibility of internal servicing. Low (band) and drive (disc clutch) functions are performed by a new clutch drum assembly which differs from the regular Powerglide primarily in that multiple release springs are incorporated in place of the large single spring.

The planetary gearset, while greatly strengthened, operates in the same manner as the regular Powerglide gearset. The reverse clutch is of the disc type operated by a reverse clutch piston and incorporating multiple return springs. The governor is radically different from that used in the regular Powerglide, completely encircling the output shaft and spinning with the shaft. The valve body has been relocated to the bottom of the case where service operations on it may be performed without the necessity of removing the transmission from the vehicle. A parking lock similar to that found in the Turboglide is used.

As in the regular Powerglide, the converter, bolted to the engine flywheel, drives through the two-speed planetary gearset. Maximum converter multiplication is 2.10:1 at stall, reducing to 1:1 at fluid coupling (cruise). The planet gearset ratios are 1.76:1 in low and 1:1 in drive. Transmission output torque (converter torque times gearset ratio) therefore ranges from 3.68:1 at stall to 1:1 at cruise.

## MAINTENANCE AND ADJUSTMENT

### OIL REQUIREMENTS

The Aluminum Powerglide transmission requires an oil known as Automatic Transmission Fluid, "Type A" bearing an "AQ-ATF-A" mark. This oil is available through Chevrolet dealers and oil company filling stations in sealed containers.

#### Oil Level

The transmission oil level should be checked every 1,000 miles. Oil should be added only when the level is near the "ADD" mark on the dip stick with oil hot or at operating temperature. The oil level dip stick is located at the right rear of the engine compartment.

In order to check oil level accurately, the engine should be idled with the transmission oil hot and the control lever in neutral (N) position.

It is important that the oil level be maintained no higher than the "FULL" mark on the transmission oil level gauge. DO NOT OVERFILL, for when the oil level is at the full mark on the dip stick, it is just slightly below the planetary gear unit. If additional oil is added, bringing the oil level above the full mark, the planetary unit will run in the oil, foaming and aerating the oil. This aerated oil carried through the various oil pressure passages (low servo, reverse servo, clutch apply, converter, etc.) may cause malfunction of the transmission assembly, resulting in cavitation noise in the converter and improper band or clutch application.

If the transmission is found consistently low on oil, a thorough inspection should be made to find and correct all external oil leaks. Transmission oil leakage is now easily identified as all automatic transmission fluid used in Chevrolet production is dyed red. The mating surfaces of servo cover, converter housing, transmission case and transmission case extension should be carefully examined for signs of leakage. The vacuum modulator must also be checked to insure that the diaphragm has not ruptured as this would allow transmission oil to be drawn into the intake manifold. Usually, the exhaust will be excessively smoky if the diaphragm ruptures due to the transmission oil added to the combustion. The transmission case extension rear oil seal should also be checked. All test plugs should be checked to make sure that they are tight and that there is no sign of leakage at these points. The converter underpan should also be removed. Any appreciable quantity of oil in this area would indicate leakage at the front pump square seal ring, front pump seal assembly, or front pump bolt "O" ring seals.

### Draining and Refilling

Transmission fluid installed at the assembly plant is good for the life of the vehicle. It is not necessary to replace the fluid except to make additions when needed to bring it to the proper level.

When the transmission is to be removed from the vehicle for repairs, drain and refill as follows:

To drain the transmission, carefully loosen the oil pan bolts. Position a pan or can to catch the draining oil. If the transmission is to be removed from the vehicle for repairs, the draining operation may be performed after removal if desired.

To refill the transmission, remove dipstick from oil filler tube and refill transmission with Automatic Transmission Fluid Type A with an AQ-ATF-A mark using filler tube and funnel J-4264. Then, after shifting into all ranges at idle speed to fill all oil passages, the engine should be run at 800-1000 rpm with the transmission in Neutral until the oil warms up, then add oil as required to raise the fluid level to the full mark on the dipstick. Refill capacity is 1-1/2 qts. Total capacity including converter is 9 qts.

### SERVICE ADJUSTMENTS

Four service adjustments are required for Aluminum Powerglide equipped cars: Shift linkage, throttle valve linkage, neutral safety switch and throttle return check valve (Dashpot) adjustment.

#### Shift Linkage Check and Adjustment

1. Check transmission shift linkage for proper adjustment as follows: With the engine stopped, lift up on the range selector lever and move the lever to the position where transmission DRIVE detent is felt. Slowly release the lever to feel if the shaft lever tang freely enters the lock plate. Check REVERSE range in a similar manner. If the tang does not freely enter the lock plate in both DRIVE and REVERSE ranges, it will be necessary to perform the linkage adjustment covered in the following steps.
2. Position range selector lever in driving compartment in "D" (Drive). Disconnect shift control rod at its swivel attachment to the shift control lever on the lower end of mast jacket by loosening the clamp nut.
3. Place transmission shift control outer lever (fig. 3) in Drive position.

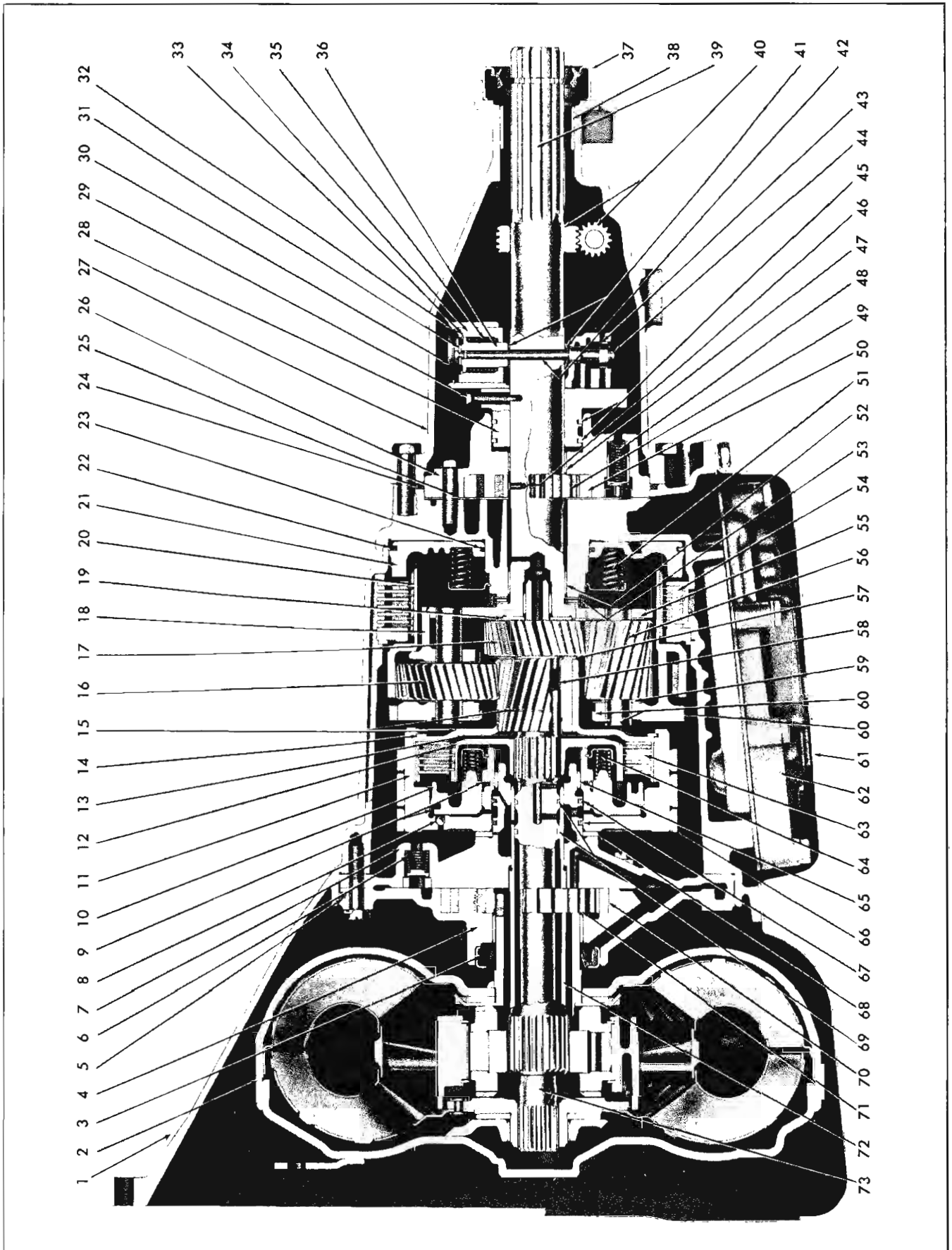


Fig. 2—Aluminum Powerglide - Sectioned View

- |   |   |
|---|---|
| 1. Transmission Case                        | 20. Ring Gear                           |
| 2. Welded Converter                         | 21. Reverse Piston                      |
| 3. Front Oil Pump Seal Assembly             | 22. Reverse Piston Outer Seal           |
| 4. Front Oil Pump Body                      | 23. Reverse Piston Inner Seal           |
| 5. Front Oil Pump Body Square Ring Seal     | 24. Extension Seal Ring                 |
| 6. Lube Relief Valve                        | 25. Rear Pump Wear Plate                |
| 7. Front Oil Pump Cover                     | 26. Rear Pump                           |
| 8. Clutch Relief Valve Ball                 | 27. Extension                           |
| 9. Clutch Piston Inner and Outer Seal       | 28. Governor Hub                        |
| 10. Clutch Piston                           | 29. Governor Hub Drive Screw            |
| 11. Clutch Drum                             | 30. Governor Body                       |
| 12. Clutch Hub                              | 31. Governor Shaft Retainer Clip        |
| 13. Clutch Hub Thrust Washer                | 32. Governor Outer Weight Retainer Ring |
| 14. Clutch Flange Retainer Ring             | 33. Governor Inner Weight Retainer Ring |
| 15. Low Sun Gear and Clutch Flange Assembly | 34. Governor Outer Weight               |
| 16. Planet Short Pinion                     | 35. Governor Spring                     |
| 17. Planet Input Sun Gear                   | 36. Governor Inner Weight               |
| 18. Planet Carrier                          | 37. Extension Rear Oil Seal             |
| 19. Planet Input Sun Gear Thrust Washer     | 38. Extension Rear Bushing              |
|   | 39. Output Shaft                        |

- |   |  |
|---|--|
| 40. Speedometer Drive and Driven Gear                         | 56. Planet Long Pinion                                       |
| 41. Governor Shaft Belleville Springs                         | 57. Low Sun Gear Thrust Washer                               |
| 42. Governor Shaft  | 58. Low Sun Gear Bushing (Splined)                           |
| 43. Governor Valve  | 59. Pinion Thrust Washer                                     |
| 44. Governor Valve Retaining Clip                             | 60. Parking Lock Gear  |
| 45. Governor Hub Seal Rings                                   | 61. Transmission Oil Pan                                     |
| 46. Rear Pump Drive Pin                                       | 62. Valve Body   |
| 47. Rear Pump Bushing   | 63. High Clutch Pack   |
| 48. Rear Pump Priming Valve                                   | 64. Clutch Piston Return Springs, Retainer and Retainer Ring |
| 49. Rear Pump Drive Gear                                      | 65. Clutch Drum Bushing                                      |
| 50. Rear Pump Driven Gear                                     | 66. Low Brake Band   |
| 51. Reverse Piston Return Springs, Retainer and Retainer Ring | 67. High Clutch Seal Rings                                   |
| 52. Transmission Rear Case Bushing                            | 68. Clutch Drum Thrust Washer (Selective)                    |
| 53. Output Shaft Thrust Bearing                               | 69. Turbine Shaft Seal Rings                                 |
| 54. Reverse Clutch Pack                                       | 70. Front Pump Driven Gear                                   |
| 55. Pinion Thrust Washer                                      | 71. Front Pump Drive Gear                                    |
|   | 72. Stator Shaft   |
|   | 73. Input Shaft  |

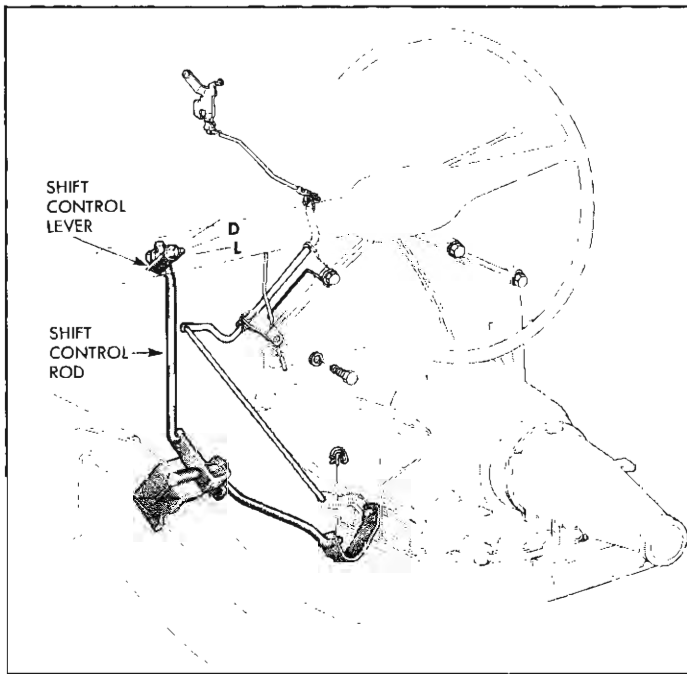


Fig. 3—Shift Linkage Adjustments

**NOTE:** DRIVE detent in the transmission is the first clockwise detent position from the fully counterclockwise detent or "L" position (see Figure 3).

4. Hold the shift control lever (at lower end of mast jacket), shown in Figure 3, against the DRIVE stop of the range selector lock plate and with control rod through swivel, tighten the clamp nut.
5. Test transmission shifts in all ranges.

### Throttle Valve Linkage Adjustment (See Fig. 4)

1. Install rod "C".
2. Thread one end of rod "E" approximately half way through swivel and install the other end in lever "F".
3. Place lever "F" in wide open position and move cross-shaft assembly "D" forward until stopped by the transmission internal stop. Adjust the swivel on rod "E" until the swivel freely enters cross-shaft assembly "D". Fix swivel in the cross-shaft.
4. Check adjustment by placing the linkage in the idle position, then return to wide open position

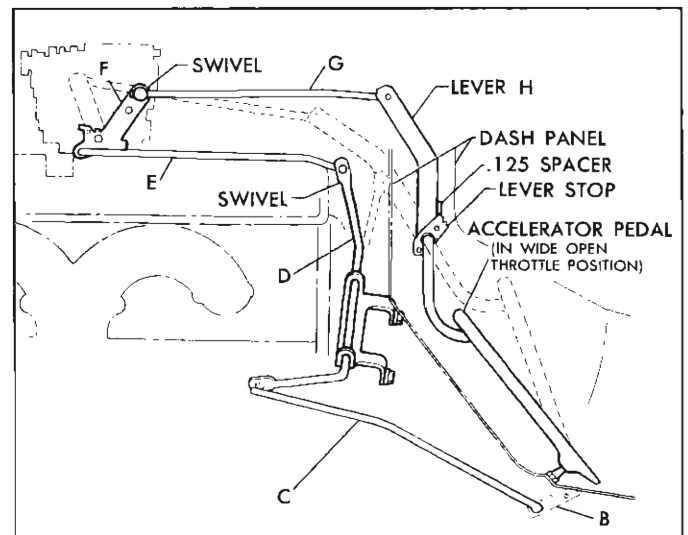


Fig. 4—TV Linkage Adjustments

by rotating lever "F". Push downward on lever "B" and note if rod "E" deflects, indicating that the transmission is not on the internal stop (approximately 12 lbs of pull are required). If the rod deflects or lever "F" will not reach wide open throttle position, repeat the above adjustment.

5. Depress the accelerator pedal until lever "H" contacts .125" spacer. Rotate lever "F" to wide open position. Then adjust swivel in rod "G" for free entry into lever "F" and install rod into lever.
6. Check the adjustment by releasing, then depressing, the accelerator pedal. Check lever "F" for wide open position. Repeat adjustment 5 if the lever will not reach wide open position.

### Neutral Safety Switch Adjustment

1. Place the gearshift lever in "N" (Neutral).
2. Loosen the screws securing the neutral safety switch retainer, then while holding the ignition switch in "START", adjust the position of the switch until the engine turns over.
3. Hold switch in this position and tighten retainer screws.
4. Check adjustment by testing for cranking in both Neutral and Park.

### Throttle Return Check Valve (Dashpot) Adjustment

The adjustment of the throttle return check valve is described in Section 10 for each carburetor installation.

## SERVICE OPERATIONS

### TRANSMISSION

#### Removal

1. Raise car on hoist (preferably) or on stand jack and remove oil pan to drain oil, then replace pan using several bolts.  
**NOTE:** If desired, the oil may be drained after transmission removal.
2. Disconnect the oil cooler lines, vacuum modulator line and the speedometer drive cable fitting at the transmission. Tie lines out of the way.
3. Remove crankcase ventilation tube clamp bracket bolt, washers and nut from transmission.
4. Disconnect manual and TV control lever rods from transmission.
5. Disconnect propeller shaft from transmission.
6. Install suitable transmission lift equipment to jack or other lifting device and attach on transmission.
7. Disconnect engine rear mount on transmission extension, then remove the transmission support crossmember. Observe that crossmember is attached to frame bracket at lower attaching holes.

**NOTE:** Use care to remove any shims which may be installed between the extension mounting boss and the crossmember. It is vital that exactly the same number of shims be reinstalled as these effect drive line angles.

8. Remove converter underpan, scribe flywheel-

converter relationship for assembly, then remove the flywheel-to-converter attaching bolts.

**NOTE:** The "light" side of the converter is denoted by a "blue" stripe painted across the ends of the converter cover and housing. This marking should be aligned as closely as possible with the "white" stripe painted on the engine side of the flywheel outer rim (heavy side of engine) to maintain balance during assembly.

9. Support engine at the oil pan rail with a jack or other suitable brace capable of supporting the engine weight when the transmission is removed.
10. Lower the rear of the transmission slightly so that the upper transmission housing-to-engine attaching bolts can be reached using a universal socket and a long extension. Remove upper bolts.

**CAUTION:** On V-8 engines, care must be taken not to lower rear of transmission too far as the distributor housing may be forced against the dash causing damage to the distributor. It is best to have an assistant observe clearance of all upper engine components while the transmission rear end is being lowered.

11. Remove remainder of transmission housing-to-engine attaching bolts.
12. Remove the transmission by moving it slightly to the rear and downward, then remove from beneath the car and transfer to a work bench.

**NOTE:** Observe converter when moving the transmission rearward. If it does not move



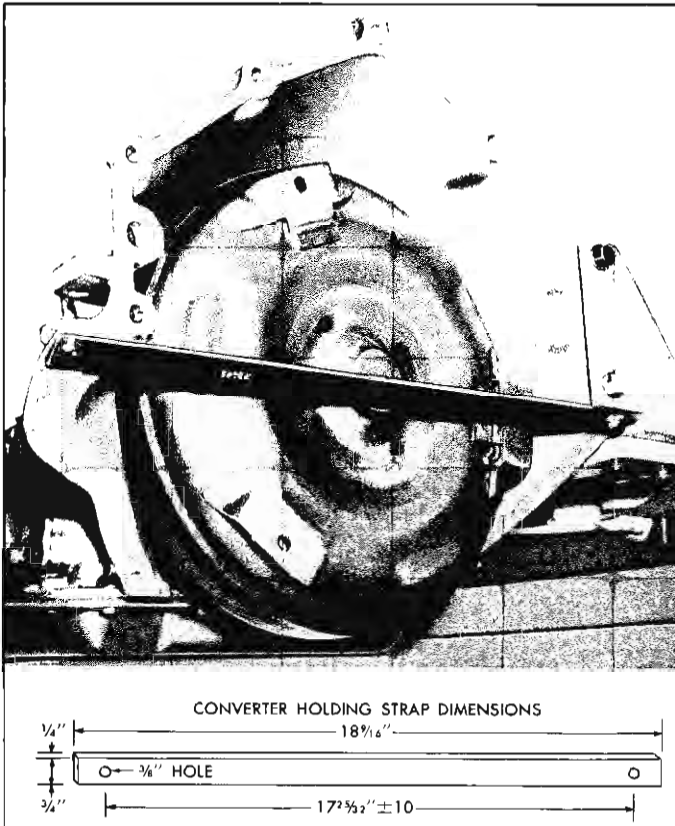


Fig. 5—Converter Holding Tool

with the transmission, pry it free of fly-wheel before proceeding.

**CAUTION:** Keep front of transmission upward to prevent the converter from falling out. Install converter Tool J-9549 (or a similar tool constructed as shown in Figure 5, or, in an emergency, a length of strong wire may be used) immediately after removal from the engine.

### Disassembly

1. Place transmission in holding fixture J-3289-01 and adapters J-9506 (fig. 6).

**NOTE:** Cleanliness is an important factor in the overhaul of the transmission. Before attempting any disassembly operation, the exterior of the case should be thoroughly cleaned to prevent the possibility of dirt entering the transmission internal mechanism. During disassembly, all parts should be thoroughly cleaned in cleaning fluid and then air dried. Wiping cloths or rags should not be used to dry parts as lint may be deposited on the parts which may cause later trouble.

**CAUTION:** Do not use solvents which could damage rubber seals or clutch plate facings.

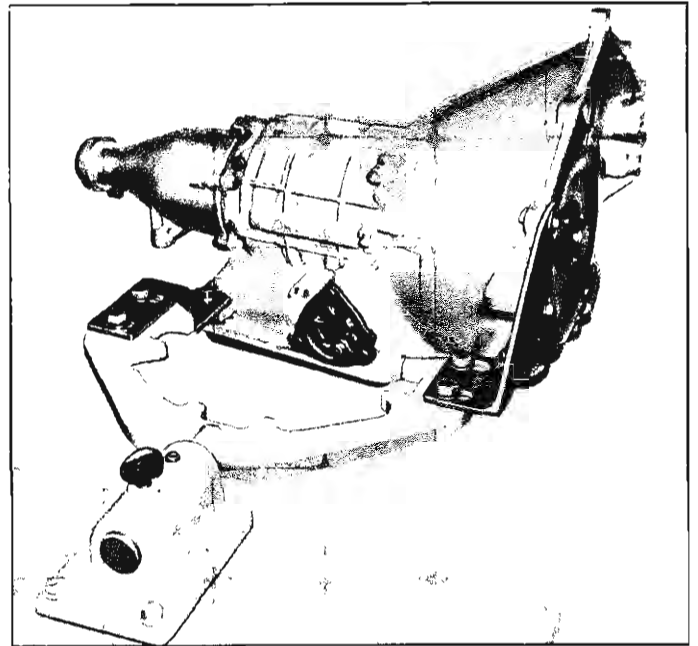


Fig. 6—Transmission Mounted in Fixture

2. Remove converter holding tool previously installed and remove converter assembly.

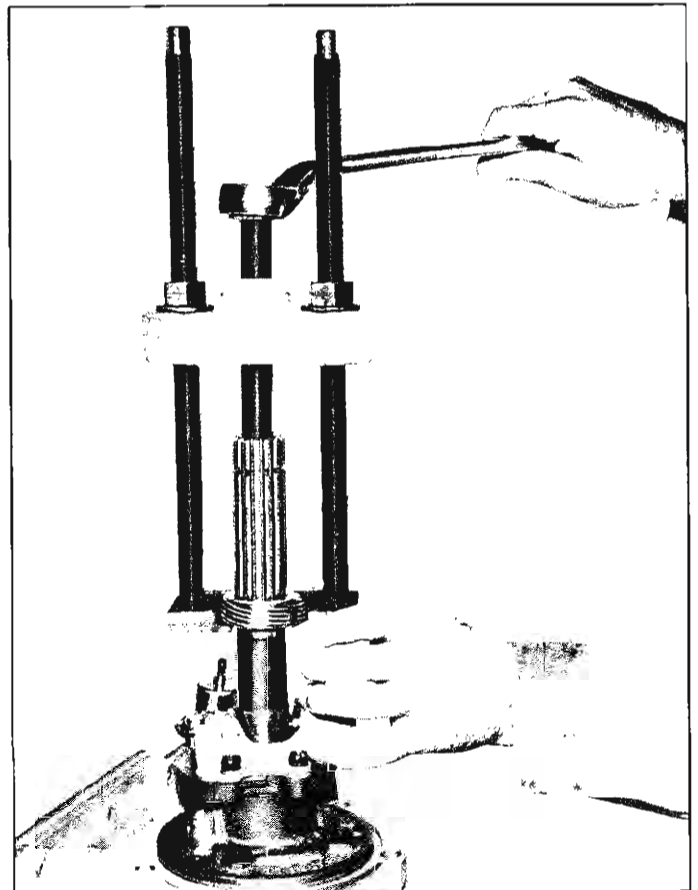


Fig. 7—Removing Speedometer Drive Gear

EXTENSION, GOVERNOR AND REAR OIL PUMP

3. If replacement is necessary, remove speedometer driven gear. Loosen capscrew and retainer clip holding speedometer driven gear in extension and remove gear.
4. Remove transmission extension by removing five bolts retaining extension to case. Note seal ring on rear pump body.
5. Remove the speedometer drive gear from output shaft, using J-5814 (fig. 7).
6. Remove the "C" clip from the governor shaft on the weight side of the governor, then remove the shaft and governor valve from the opposite side of the governor assembly (fig. 8) and the two Belleville springs.
7. Loosen the governor drive screw and remove the governor assembly over the end of the output shaft (fig. 9).
8. Remove the four bolts retaining the rear oil pump to the transmission case and remove the pump body, and drain back baffle extension seal ring, drive and driven gears.

**CAUTION:** When the drive gear is removed, the drive pin may fall out if the hole is on the bottom of the shaft and the shaft is horizontal.

9. Remove the oil pump drive pin (fig. 10). This is of extreme importance. Do not fail to remove this drive pin.

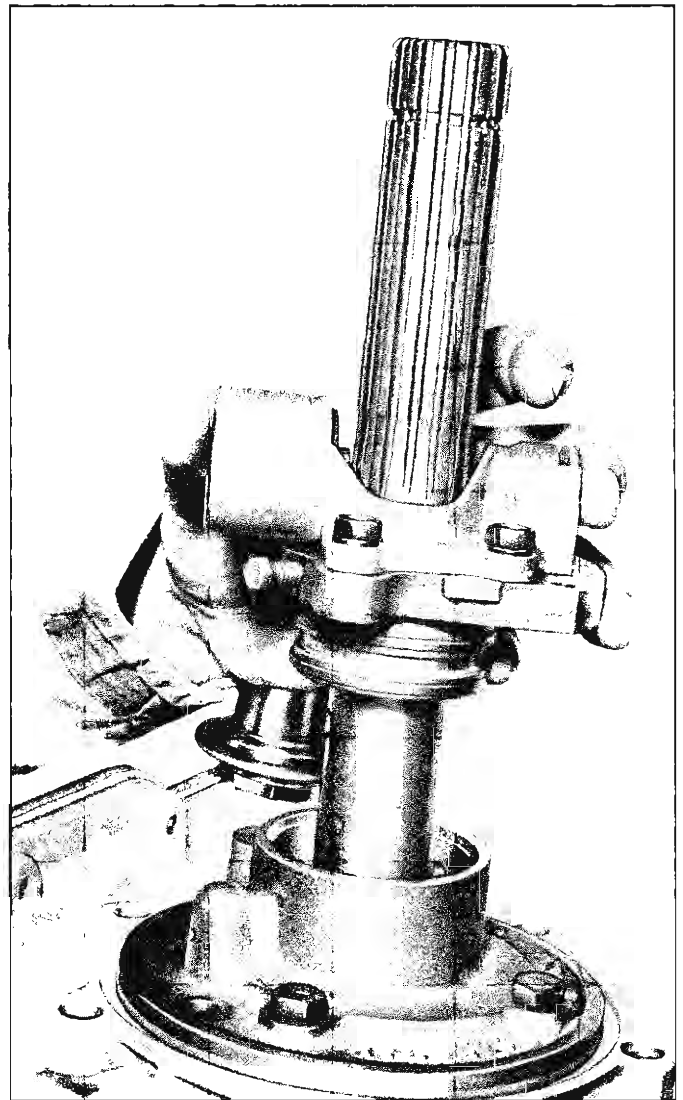


Fig. 9—Removing Governor Assembly

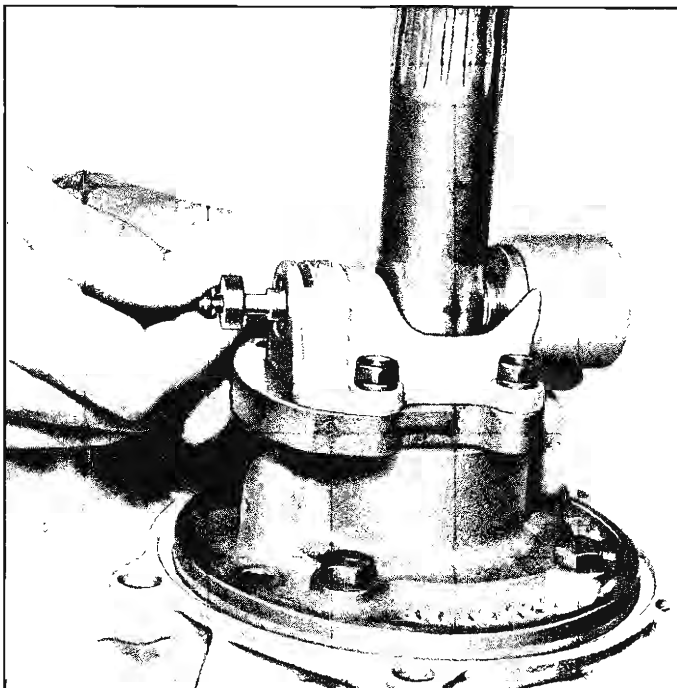


Fig. 8—Removing Governor Valve and Shaft

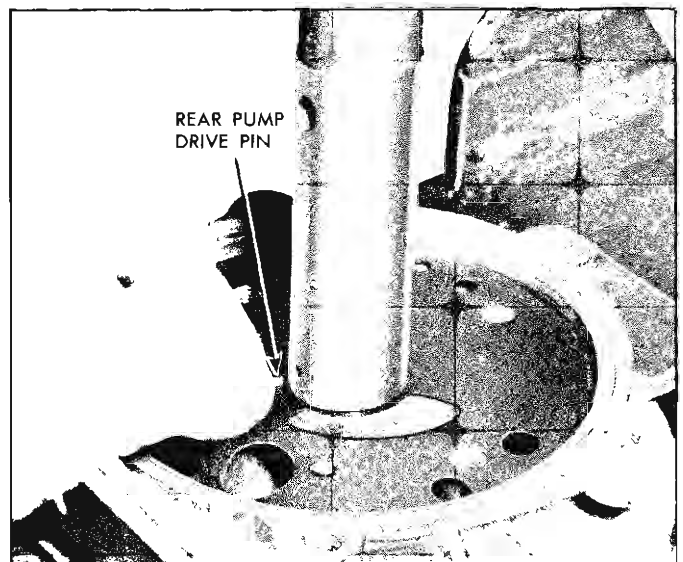


Fig. 10—Removing Rear Oil Pump Drive Pin

10. After removing the drive pin, remove the rear pump wear plate.

TRANSMISSION INTERNAL COMPONENTS

11. Rotate the holding fixture until the front of the transmission is pointing up and remove the seven front oil pump bolts. The bolt holes are offset to facilitate proper location upon installation.
12. Remove the front oil pump and stator shaft assembly and the selective fit thrust washer using J-9539 (or two 3-8" - 16 x 10" stove bolts) and the slide weights from Tool J-6565 (fig. 11). Note the two threaded holes in the pump to mount the pullers. Remove the front pump ring seal and gasket.

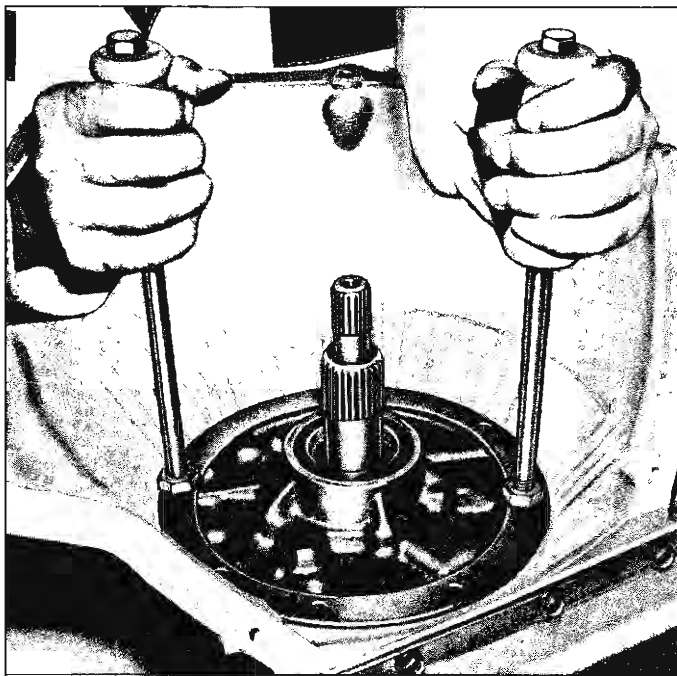


Fig. 11—Removing Front Oil Pump

**NOTE:** The front pump bolts have special "O" rings which must be in place upon installation.

13. Release the tension on the low band adjustment, then, with transmission horizontal, grasp the transmission input shaft and carefully work it and the clutch drum assembly out of the case (fig. 12). Use care so as not to lose the low sun gear (splined) bushing from the input shaft. The low sun gear thrust washer will probably remain in the planet carrier.

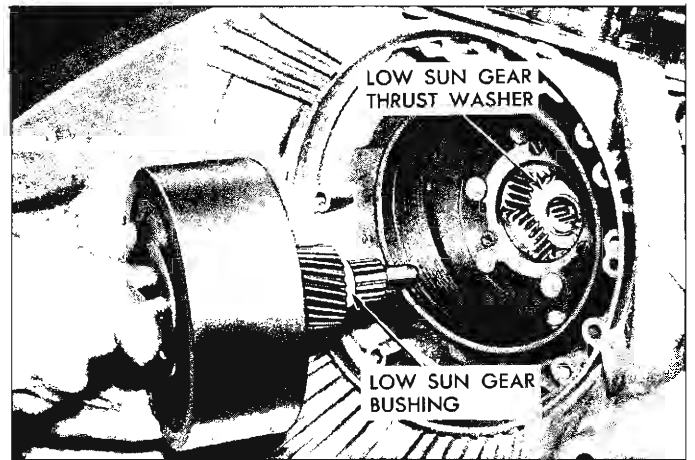


Fig. 12—Removing Clutch Drum and Input Shaft

14. The low brake band and struts may now be removed.
15. Make certain that the rear pump drive pin has been removed (Step 9 above), then remove the planet carrier and the output shaft thrust caged bearing from the front of the transmission.
16. Remove the reverse ring gear if it did not come out with the planet carrier.
17. Using a large screwdriver, remove the reverse clutch pack retainer ring and then lift out the



Fig. 13—Removing Rear Piston Spring Retainer Snap Ring

reverse clutch plates.

**NOTE:** If difficulty is experienced in getting the snap ring past the shoulder on the reverse pack pressure plate, a feeler gauge may be used as a guide.

18. Install Tool J-9542 through the rear bore of the case with the flat plate on the rear face of the case and turn down the wing nut to compress the rear piston spring retainer and springs, then remove the snap ring (fig. 13). Tool J-8039 may be used to remove the snap ring if desired.
19. Remove Tool J-9542, the reverse piston spring retainer and the 17 piston return springs.
20. Remove the rear piston by applying air to the reverse port in the rear of the transmission case as shown in Figure 14. Remove the inner and outer seals.
21. Remove the three servo cover bolts, servo cover, piston and spring.

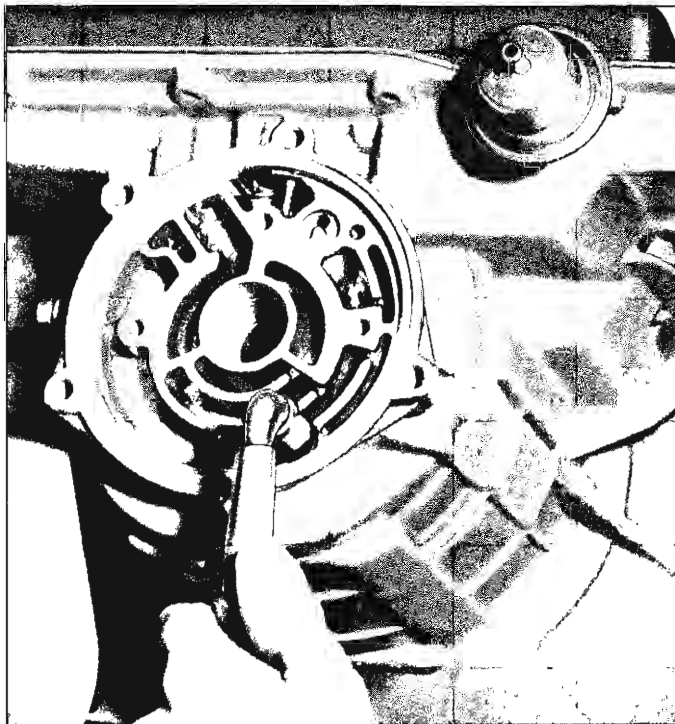


Fig. 14—Applying Air to Remove Rear Piston

#### OIL PAN AND VALVE BODY

**NOTE:** The oil pan and valve body may be serviced without the necessity of removing the extension and internal components covered in the preceding steps

22. Rotate the holding fixture until the transmission is upside down and the oil pan is at the top.

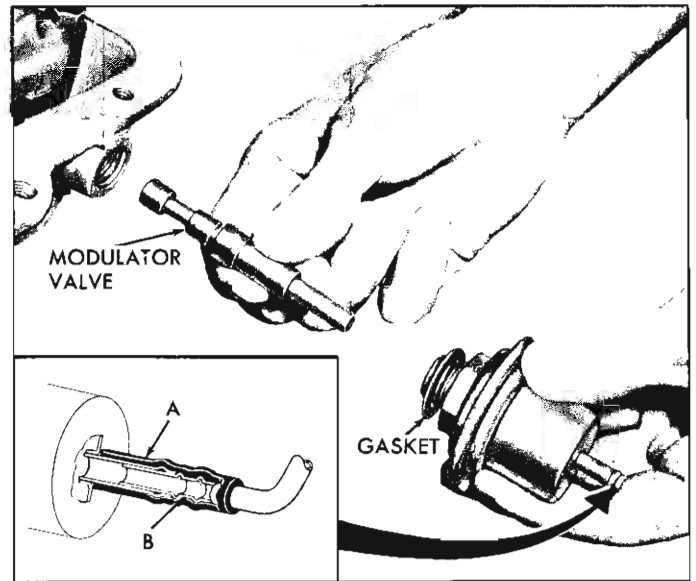


Fig. 15—Vacuum Modulator, Gasket and Valve

Remove the oil pan attaching bolts, oil pan and gasket.

23. Remove the vacuum modulator and gasket, and the vacuum modulator valve (fig. 15).
24. Remove the two bolts attaching the detent guide plate to the valve body and the transmission case. Remove the guide plate and the range selector detent roller spring.
25. Remove the remaining valve body-to-transmission case attaching bolts (indicated by arrows in Figure 16) and carefully lift out the valve body

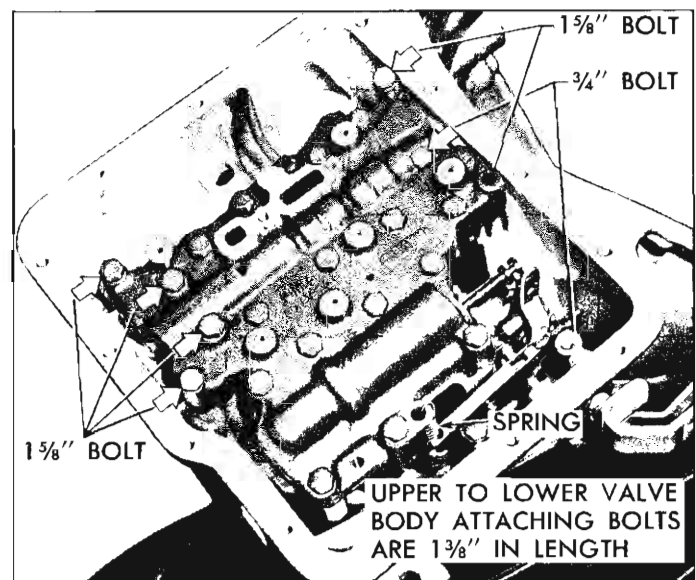


Fig. 16—Valve Body Removal

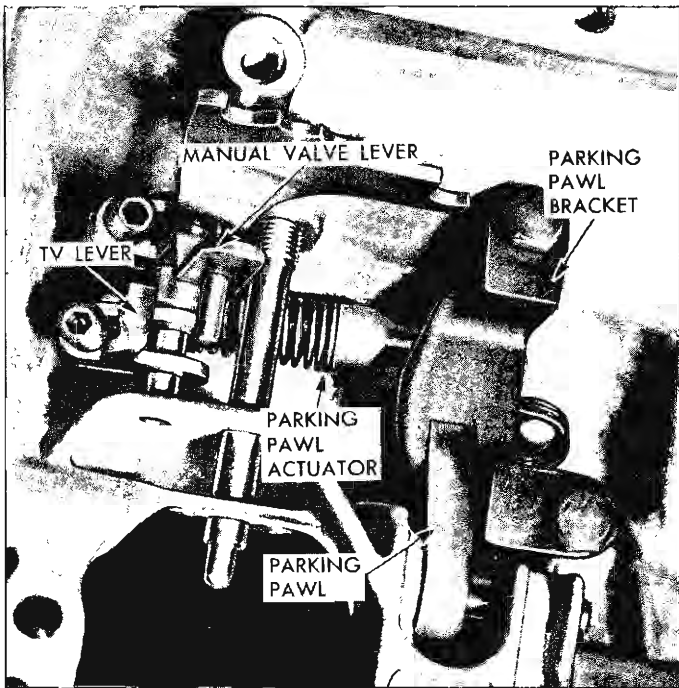


Fig. 17—Inner Control Levers, Parking Pawl and Bracket

and gasket, disengaging the servo apply tube from the transmission case as the valve body is removed.

26. If necessary, the TV, shift and parking actuator assembly levers, and the parking pawl and bracket (fig. 17) may be removed.

This completes the entire transmission disassembly procedure. Component parts disassembly and repair procedures will be found in succeeding pages of this manual.

## OVERHAULING UNIT ASSEMBLIES

### CONVERTER AND STATOR

The converter is a welded assembly and no internal repairs are possible. Check the seams for stress or breaks and replace converter if necessary.

### FRONT PUMP

#### Seal Replacement

If the front pump seal requires replacement, remove the pump from the transmission, pry out and replace the seal. (Drive new seal into place, fully seated in counterbore, using J-6839). Then, if no further work is required on the front pump, reinstall it in the case.

**NOTE:** Outer diameter of the seal should be coated with non-hardening sealer prior to installation.

### Disassembly

1. Remove bolts attaching pump cover to body and remove the cover.
2. Remove pump gears from body.

**CAUTION:** Do not drop or nick gears. These gears are not heat treated.

3. Remove the rubber seal ring from the pump body.

**NOTE:** See Figure 19 for a layout of pump parts.

### Inspection

1. Wash all parts in cleaning solvent and blow out all oil passages. **DO NOT USE RAGS TO DRY PARTS.**

**CAUTION:** Some solvents may be harmful to rubber seals.

2. Inspect pump gears for nicks or damage.
3. Inspect body and cover faces for nicks or scoring.
4. Check operation of the priming valve and replace if necessary.
5. Inspect body bushing for galling or scoring. Check clearance between body bushing and converter pump hub (fig. 21). Maximum clearance is .005". If the bushing is damaged, the front pump body should be replaced.
6. Inspect converter housing hub O.D. for nicks or burrs which might damage front pump seal or bushing. Repair or replace as necessary.
7. If oil seal is damaged or is leaking (and the pump body is otherwise suitable for reuse), pry out and install a new seal, fully seated in counterbore, using seal driver J-6839.

**NOTE:** Outer diameter of seal should be coated with a non-hardening sealer prior to installation.

8. Check condition of oil cooler bypass and lube relief valves, and replace if either valve leaks excessively.
9. With parts clean and dry, install pump gears and check:
  - a. Clearance between O.D. of driven gear and body should be .0035"-.0065" (fig. 22).
  - b. Clearance between I.D. of driven gear and crescent should be .003"-.009" (fig. 23).
  - c. Gear end clearance (fig. 24) should be .0005"-.0015".

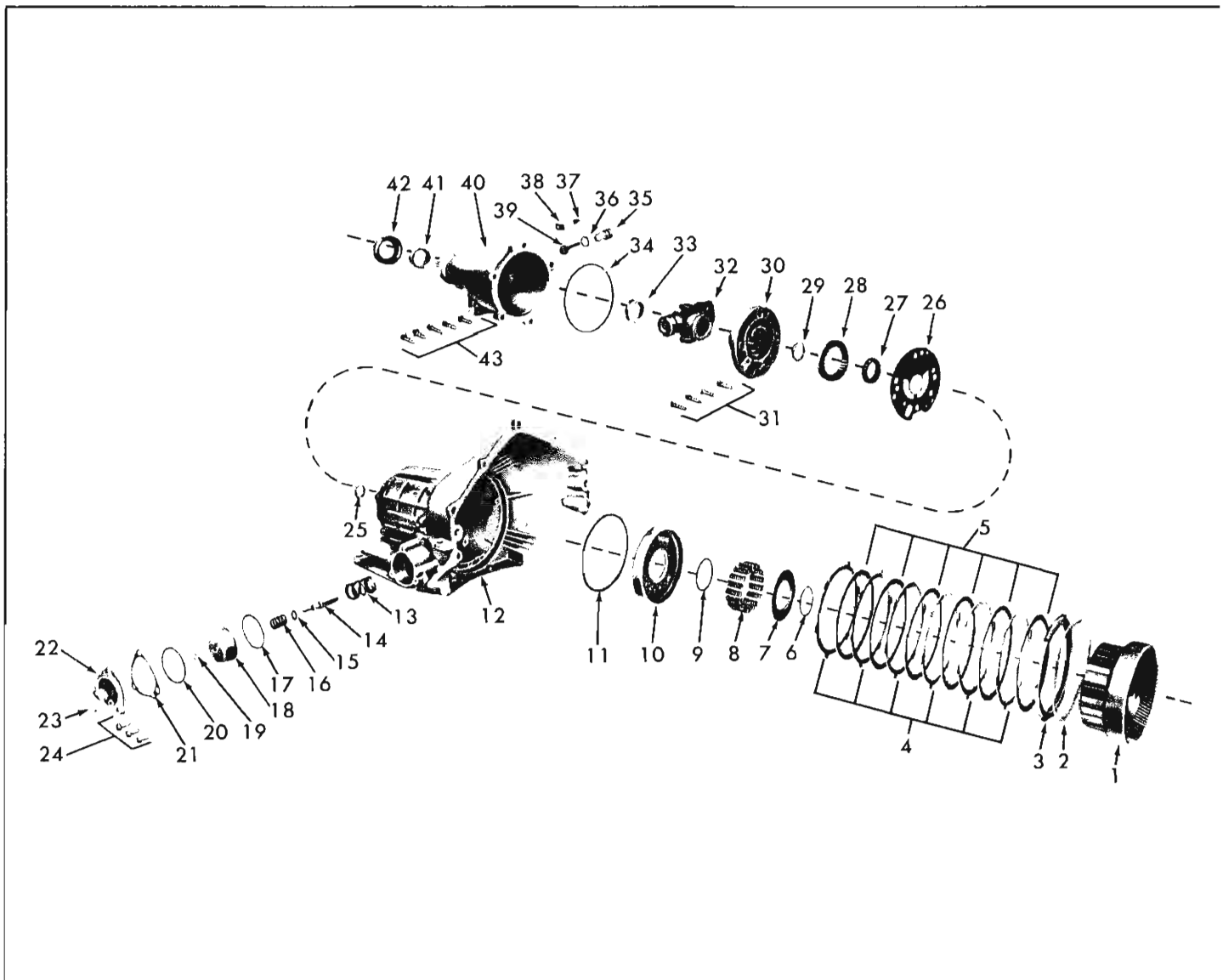


Fig. 18—Transmission Case—Exploded View

- |  |                                      |  |
|--|--------------------------------------|--|
| 1. Reverse Ring Gear                                       | 14. Servo Piston Rod                 | 30. Rear Pump Body                             |
| 2. Reverse Clutch Pack Snap Ring                           | 15. Servo Piston Apply Spring Seat   | 31. Rear Pump Assembly to Case Attaching Bolts |
| 3. Reverse Clutch Pressure Plate                           | 16. Servo Piston Apply Spring        | 32. Governor Assembly                          |
| 4. Reverse Clutch Reaction Plates                          | 17. Servo Piston Seal Ring           | 33. Speedometer Drive Gear                     |
| 5. Reverse Clutch Drive Plates                             | 18. Servo Piston                     | 34. Rear Pump Seal                             |
| 6. Reverse Clutch Piston Return Springs Retainer Snap Ring | 19. Servo Piston Rod Spring Retainer | 35. Speedometer Shaft Fitting                  |
| 7. Reverse Clutch Piston Return Springs Retainer           | 20. Servo Cover Seal                 | 36. Speedometer Shaft Fitting Oil Seal         |
| 8. Reverse Clutch Piston Return Springs                    | 21. Servo Cover Gasket               | 37. Lock Plate Attaching Screw                 |
| 9. Reverse Clutch Piston Inner Seal                        | 22. Servo Cover                      | 38. Lock Plate                                 |
| 10. Reverse Clutch Piston                                  | 23. Servo Cover Plug                 | 39. Speedometer Driven Gear                    |
| 11. Reverse Clutch Piston Outer Seal                       | 24. Servo Cover Bolts                | 40. Transmission Extension                     |
| 12. Transmission Case                                      | 25. Transmission Case Bushing        | 41. Extension Bushing                          |
| 13. Servo Piston Return Spring                             | 26. Rear Pump Wear Plate             | 42. Extension Oil Seal                         |
|  | 27. Rear Pump Drive Gear             | 43. Extension to Case Attaching Bolts          |
|  | 28. Rear Pump Driven Gear            |  |
|  | 29. Rear Pump Body Bushing           |  |

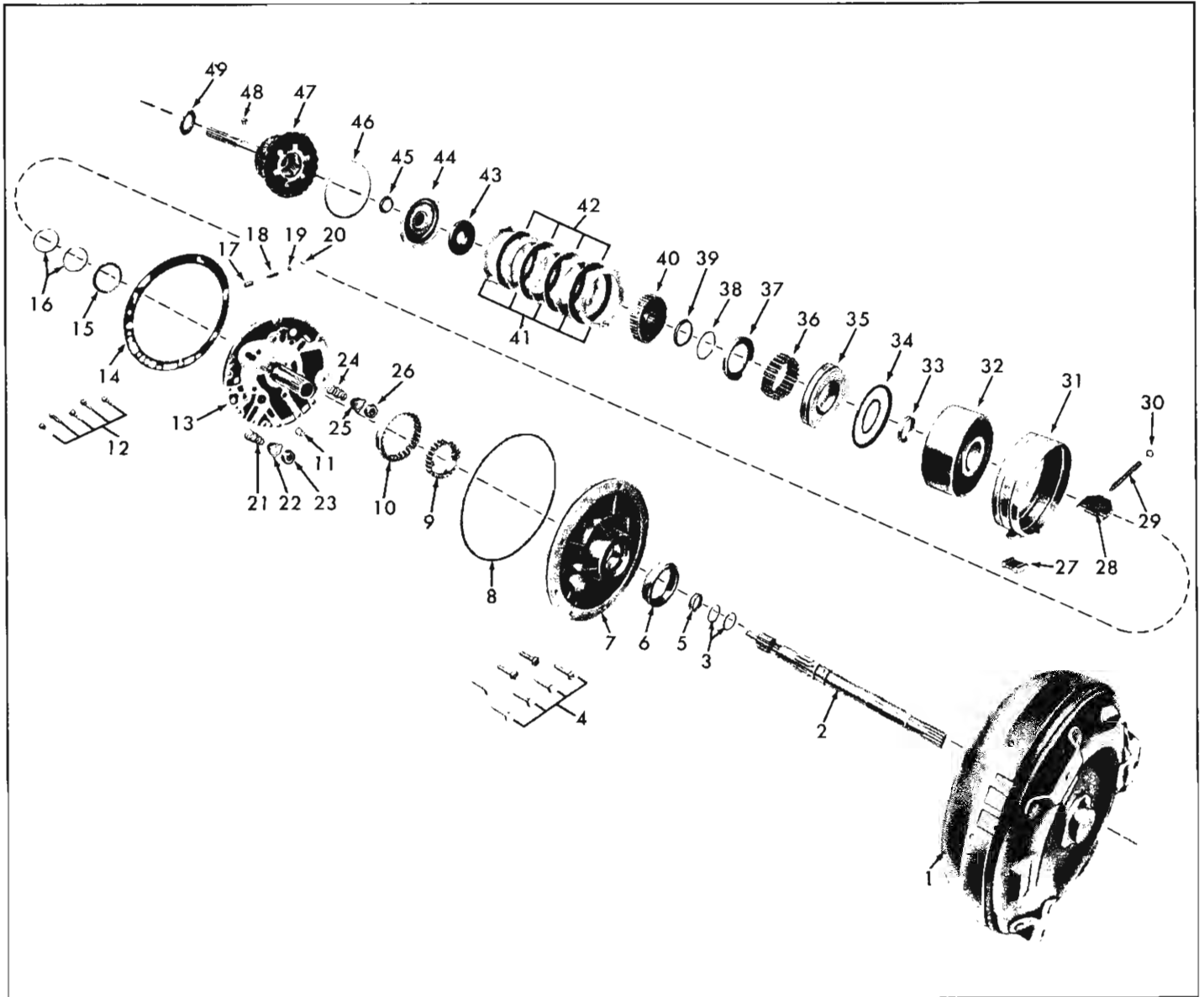


Fig. 19—Internal Mechanism - Exploded View

- |  |   |  |
|--|---|--|
| 1. Converter Assembly                                    | 17. Front Pump Priming Valve                      | 34. Clutch Piston Outer and Inner Seals      |
| 2. Input Shaft   | 18. Front Pump Priming Valve Spring               | 35. Clutch Piston                            |
| 3. Input Shaft Oil Seals                                 | 19. Front Pump Priming Valve Spring Washer        | 36. Clutch Return Springs                    |
| 4. Front Pump to Case Attaching Bolts and "O" Ring Seals | 20. Front Pump Priming Valve Spring Retaining Pin | 37. Clutch Spring Seat                       |
| 5. Low Sun Gear Bushing                                  | 21. Oil Cooler By-Pass Valve Spring               | 38. Clutch Spring Snap Ring                  |
| 6. Front Pump Oil Seal                                   | 22. Oil Cooler By-Pass Valve                      | 39. Clutch Hub Front Thrust Washer           |
| 7. Front Pump Body                                       | 23. Oil Cooler By-Pass Valve Seat                 | 40. Clutch Hub                               |
| 8. Front Pump to Case Oil Seal                           | 24. Lube Pressure Relief Valve Spring             | 41. Clutch Driven Plates (Flat)              |
| 9. Front Pump Drive Gear                                 | 25. Lube Pressure Relief Valve Seat               | 42. Clutch Driven Plates (Waved)             |
| 10. Front Pump Driven Gear                               | 26. Lube Pressure Relief Valve                    | 43. Clutch Hub Rear Thrust Washer            |
| 11. Low Speed Downshift Timing Valve                     | 27. Band Apply Strut                              | 44. Low Sun Gear and Clutch Flange Assembly  |
| 12. Front Pump Cover to Pump Body Attaching Screws       | 28. Band Anchor Strut                             | 45. Low Sun Gear Thrust Washer               |
| 13. Front Pump Cover and Converter Stator Shaft          | 29. Band Anchor Adjusting Screw                   | 46. Clutch Flange Retainer Ring              |
| 14. Front Pump Gasket                                    | 30. Band Anchor Adjusting Screw Nut               | 47. Planet Carrier and Output Shaft Assembly |
| 15. Clutch Drum Thrust Washer                            | 31. Low Brake Band                                | 48. Rear Pump Drive Pin                      |
| 16. High Clutch Seal Rings                               | 32. Clutch Drum                                   | 49. Output Shaft Thrust Bearing              |
|  | 33. Clutch Drum Bushing                           |  |

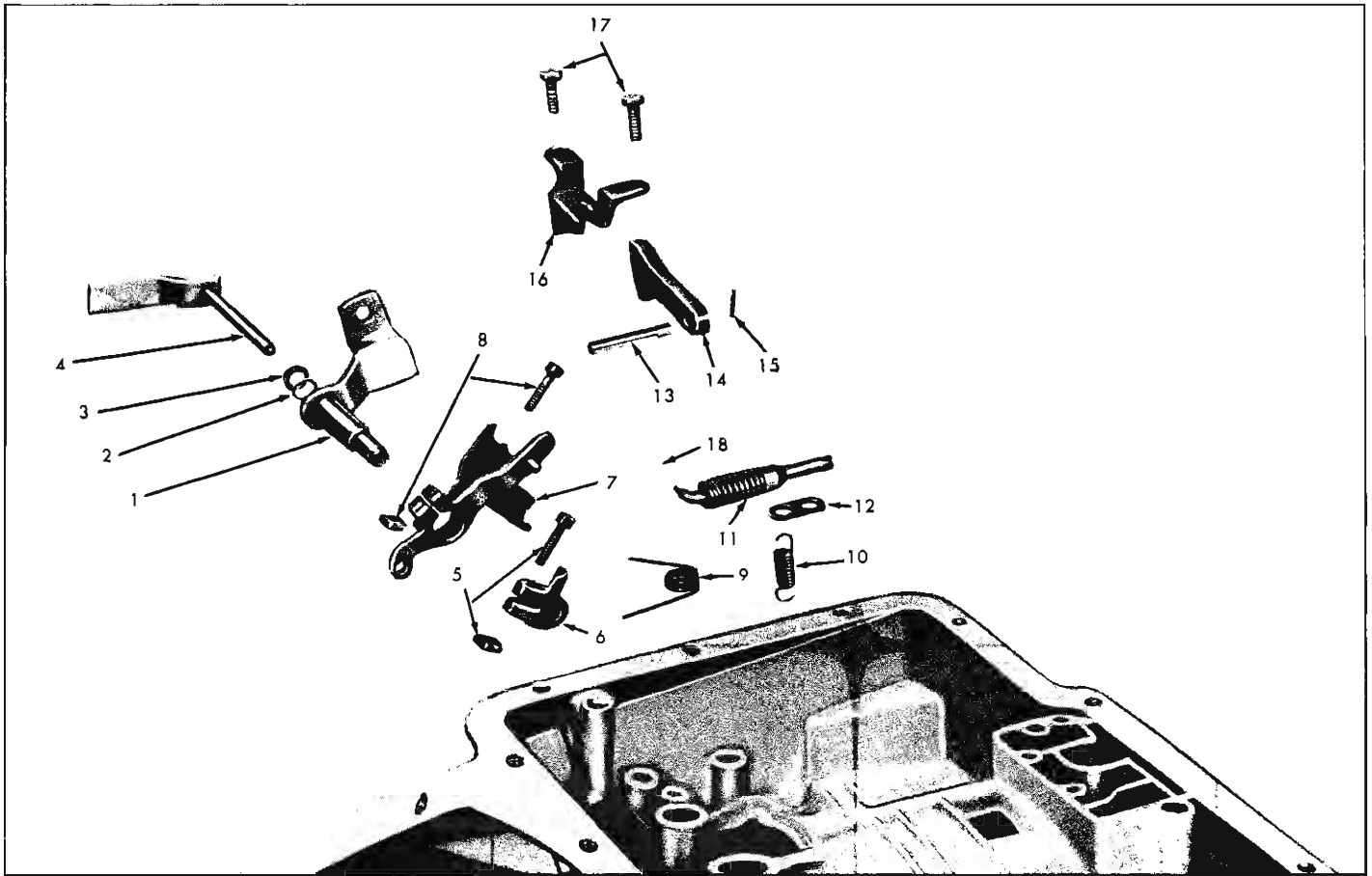


Fig. 20—Manual Levers - Exploded View

- |  |   |
|--|---|
| 1. Park Lock and Range Selector Outer Lever and Shaft                          | 10. Range Selector Detent Roller Spring   |
| 2. Throttle Valve Control Shaft Oil Seal                                       | 11. Park Lock Actuator Assembly   |
| 3. Throttle Valve Control Shaft Washer   | 12. Range Selector Detent Roller Spring Retainer                                  |
| 4. Throttle Valve Control Lever and Shaft                                      | 13. Park Lock Pawl Shaft  |
| 5. Throttle Valve Control Inner Lever to Control Shaft Attaching Screw and Nut | 14. Park Lock Pawl  |
| 6. Throttle Valve Control Inner Lever  | 15. Park Lock Pawl Shaft Retaining Pin or Ring                                    |
| 7. Park Lock and Range Selector Inner Lever                                    | 16. Park Lock Pawl Reaction Bracket   |
| 8. Park Lock and Range Selector Inner Lever Attaching Screw and Nut            | 17. Park Lock Pawl Reaction Bracket Attaching Bolts                               |
| 9. Park Lock Pawl Disengaging Spring   | 18. Park Lock Actuator to Park Lock and Range Selector Inner Lever Retaining Clip |



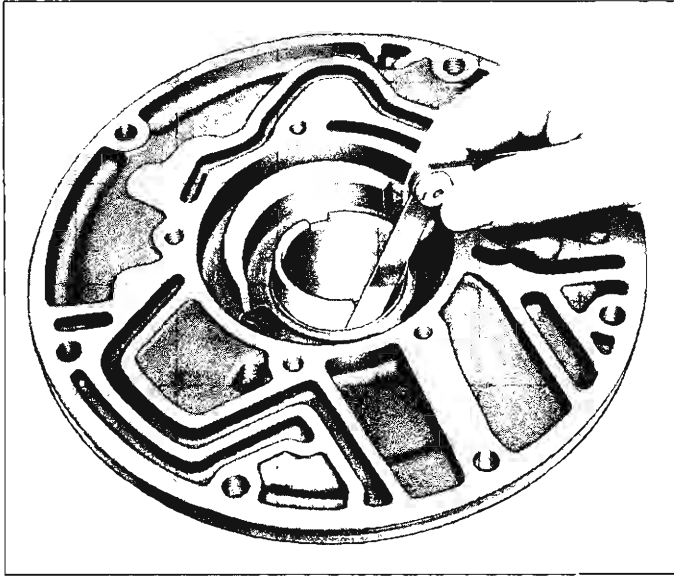


Fig. 21—Checking Pump Body Bushing to Converter Pump Hub Clearance

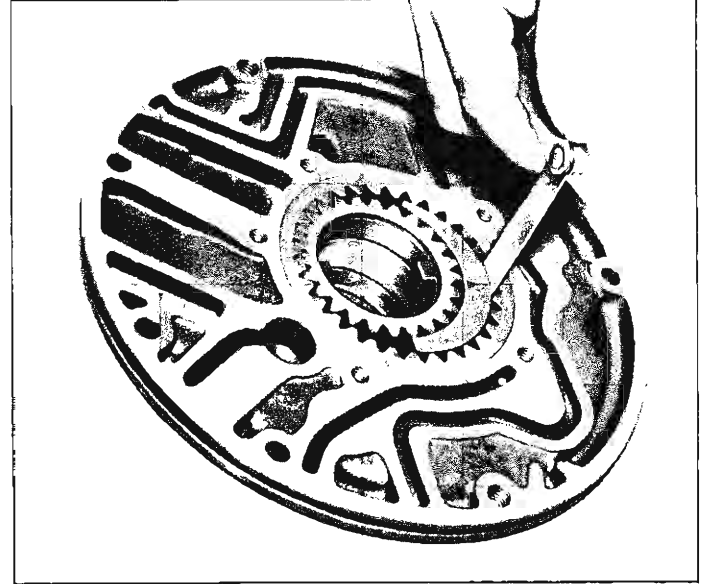


Fig. 23—Driven Gear to Crescent Clearance

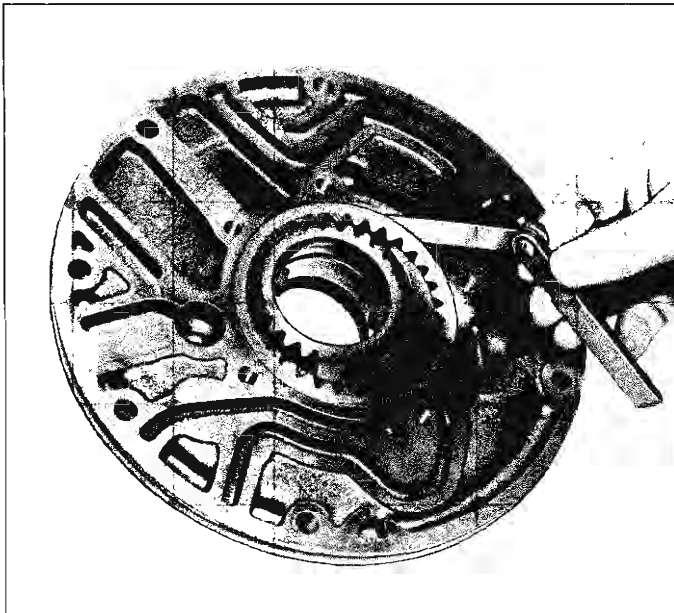


Fig. 22—Checking Driven Gear to Pump Body Clearance

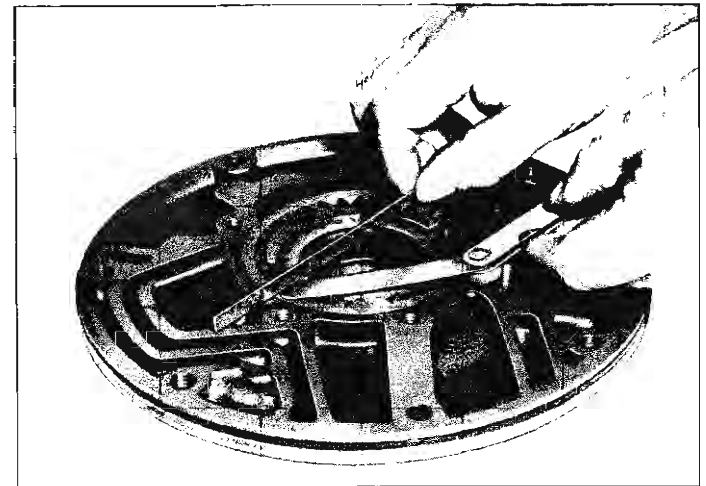


Fig. 24—Checking Gear End Clearance

### Assembly

With the transmission facing up, proceed as follows:

1. Remove the input shaft, clutch drum, low band and struts as outlined under "Transmission-Disassembly".
2. Install the downshift timing valve, conical end out, into place in the pump cover.
3. Oil drive and driven gears generously and install in the pump body.

4. Carefully set the pump cover in place over the body and loosely install 2 attaching bolts.
5. Place the pump assembly, less the rubber seal ring, upside down into the pump bore of the case (use guide pins if desired). Install remaining attaching bolts and torque to 15 to 20 ft. lbs.
6. Remove pump assembly from case bore. Replace the clutch drum and input shaft, low band and struts as outlined under "Transmission - Assembly".

NOTE: If necessary, remove two bolts and use J-6585 pullers and J-6585 adapters to remove pump assembly. Replace and re-torque bolts.

7. Replace rubber seal ring in its groove in the

pump body and install the pump assembly properly in place in the case bore, using a new gasket, being sure that the selective fit thrust washer is in place.

8. Install the attaching bolts, using new bolt "O" rings if necessary.

## REAR PUMP

The rear pump is removed and disassembled as described in the "Transmission - Disassembly" procedures earlier in this section. General cleaning and clearance check information will remain the same as for the front pump. Assembly of the rear pump is described in the "Transmission - Assembly" procedure later in this section.

**NOTE:** When reinstalling the rear pump priming valve, retain the washer, spring and valve in the bore with the retaining seat, installed small hole first.

### Rear Pump Bushing Replacement

If the rear pump bushing must be replaced, it may be removed using Tool J-9557 (and handle J-7079) and reinstalled using Tool J-6582, pressing or driving the bushing in from the front of the pump.

## CLUTCH DRUM

### Disassembly

**CAUTION:** When working with the clutch drum, use extreme care that the machined face on the front of the drum (fig. 19) not be scratched, scored, nicked or otherwise damaged during any of the following service operations. This machined face must be pro-

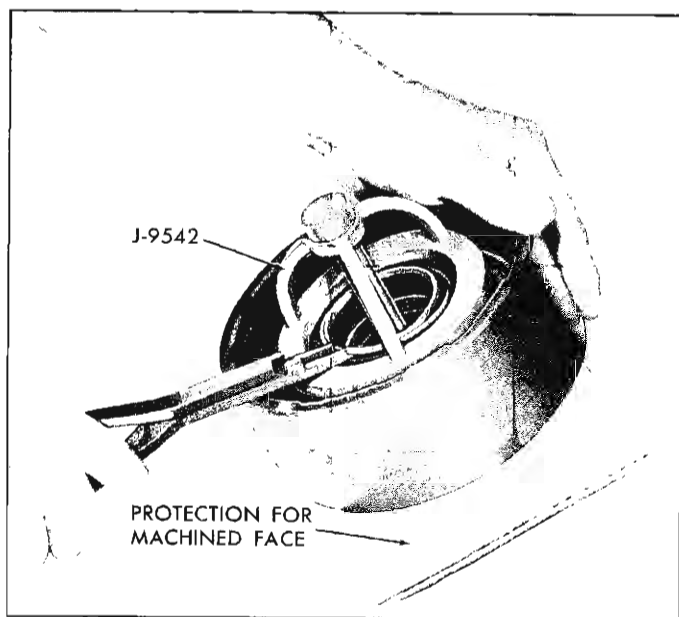


Fig. 25—Removing Clutch Spring Retainer Snap Ring

tected whenever it must be brought to bear on a press or tool of any sort.

1. Remove retainer ring and low sun gear and clutch flange assembly from the clutch drum.
  2. Remove the hub rear thrust washer.
  3. Lift out the clutch hub, then remove the clutch pack and the hub front thrust washer.
  4. Remove the spring retainer using J-9542 as shown in Figure 25, or if using an arbor press, use J-5133 and J-7782 adapter ring. Compress the springs far enough to allow removal of the retainer snap ring; then, releasing pressure on the springs, remove the retainer and the 24 springs.
- NOTE:** When using J-9542, place a piece of cloth or cardboard between the tool and the front side of the clutch drum as protection for the machined face.
5. Lift up on the piston with a twisting motion to remove from the drum, then remove the inner and outer seals.

### Inspection

1. Wash all parts in cleaning solvent (air dry).  
**CAUTION:** Do not use rags to dry parts.
2. Check drum bushing for scoring or excessive wear.
3. Check the steel ball in the clutch drum that acts as a relief valve. Be sure that it is free to move in the hole and that the orifice leading to the front of the drum is open. If the clutch relief valve check ball in the clutch drum is loose enough to come out or not loose enough to rattle, replace the clutch drum as an assembly. Replacement or restaking of the ball should not be attempted.
4. Check fit of clutch flange in drum slots. There should be no appreciable radial play between these two parts. Also check low sun gear for nicks or burrs and bushing for wear.
5. Check clutch plates for burning and wear.

### Bushing Replacement (fig. 26)

1. Remove the old bushing with Tool J-9546 using care not to damage the bushing bore or the machined face on the front of the clutch drum.
2. Use the same tool to install the new bushing. Press (do not hammer) the bushing into the clutch drum from the machined face side of the clutch drum. Press only far enough so that the tool meets the clutch drum. Do not force the tool against the clutch drum machined face.

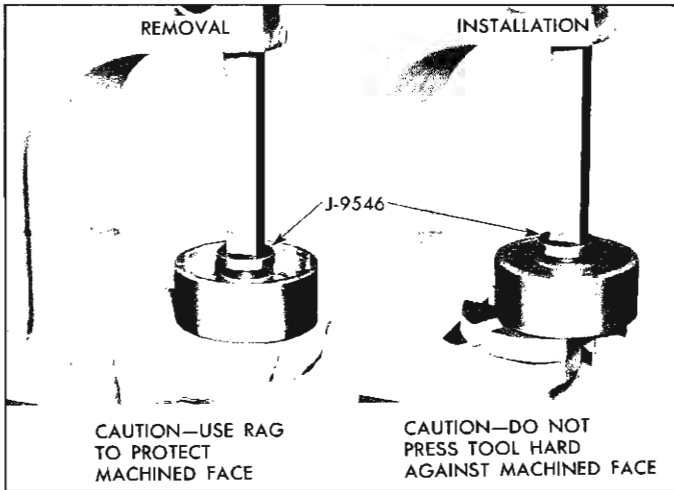


Fig. 26—Removing and Installing Clutch Drum Bushing

**Assembly**

1. Install new piston inner seal in hub of clutch drum with seal lip downward (toward front of transmission).
2. Install a new piston seal in clutch piston. Seal lips must be pointed toward the clutch drum (front of transmission). Lubricate seals generously and install piston in clutch drum with a twisting motion.
3. Place the 24 springs in position on the piston, then place the retainer in place on the springs.
4. Using Tools J-5133 and J-7782 and a press, or J-9542 as a hand operation, depress the retainer plate and springs far enough to allow installation of the spring retainer snap ring in its groove on the clutch drum hub.

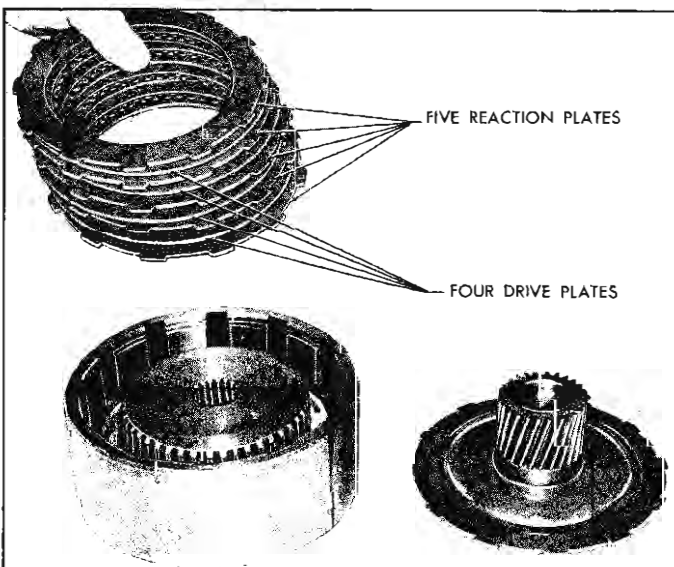


Fig. 27—Installing Clutch Drum Plates

5. Install the hub front washer with its lip toward the clutch drum, then install the clutch hub.
6. Install the five steel reaction plates and four faced plates alternately, beginning with a steel reaction plate (fig. 27).
7. Install the rear hub thrust washer with its flange toward the low sun gear, then install the low sun gear and flange assembly and secure with retainer ring. When installed, the openings in the retainer ring should be adjacent to one of the lands of the clutch drum.
8. Check the assembly by turning the clutch hub to be sure it is free to rotate.

**LOW BAND**

The brake band used in the Aluminum Powerglide transmission has bonded linings which, due to the transmission characteristics and band usage, should require very little attention. However, whenever a transmission is disassembled the band should be cleaned of metal particles and inspected.

1. Check lining for evidence of scoring or burning.
2. Check band and lining for cracks.
3. Check all band linkage for excessive wear.

**PLANET ASSEMBLY AND INPUT SHAFT**

**Inspection**

1. Wash planet carrier and input shaft in cleaning solvent, blow out all oil passages and air dry.  
**CAUTION:** Do not use rags to dry parts.
2. Inspect planet pinions for nicks or other tooth damage.
3. Check end clearance of planet gears. This clearance should be .006"-.030" (fig. 28).

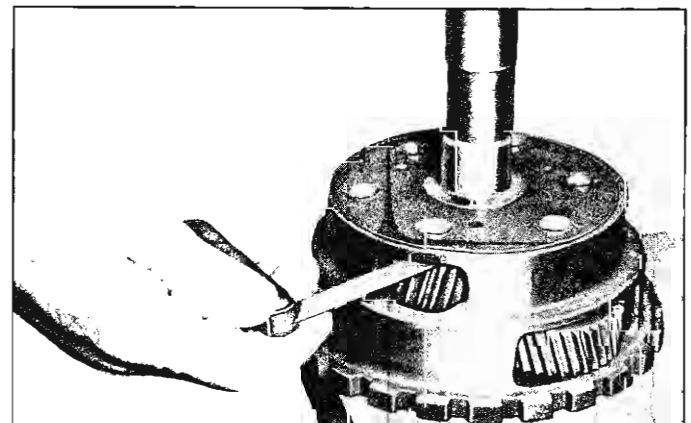


Fig. 28—Checking Planet Gear End Clearance

**AUTOMATIC TRANSMISSIONS—ALUMINUM POWERGLIDE 13-18**

4. Check input sun gear for tooth damage, also check input sun gear rear thrust washer for damage.
5. Inspect output shaft bearing surface for nicks or scoring and inspect input pilot bushing.
6. Inspect input shaft splines for nicks or damage and check fit in clutch hub and input sun gear. Also check fit of splines in turbine hub.
7. Check oil seal rings for damage; rings must be free in input shaft ring grooves. Remove rings and insert in stator support bore and check to see that hooked ring ends have clearance. Replace rings on shaft.

**Repairs**

**Planet Carrier Assembly—Overhaul**

If during inspection, the planet pinions, pinion needle bearing, pinion thrust washers, input sun gear, and/or input sun gear thrust washer should show evidence of excessive wear or damage, they should be replaced using the following procedure:

Refer to Figure 29.

1. Place the planet carrier assembly in a fixture or vise so that the front (parking lock gear end) of the assembly faces up.

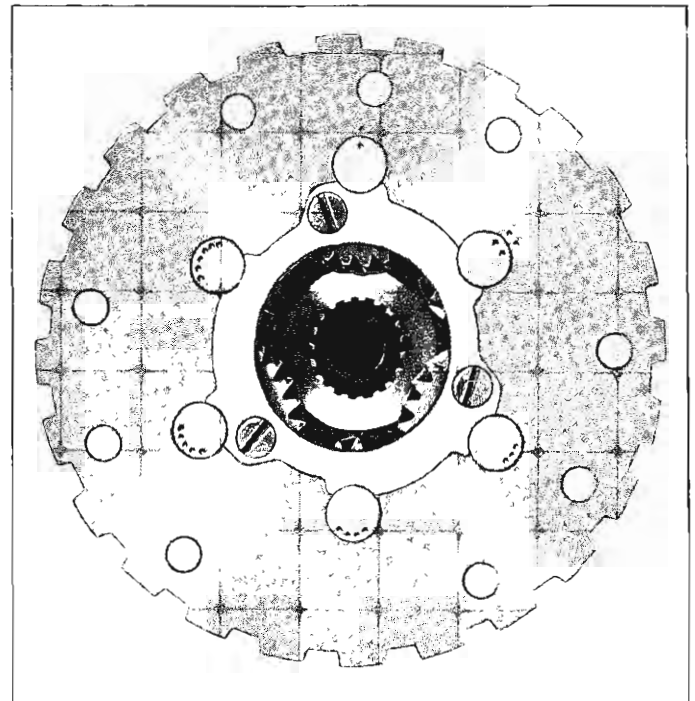


Fig. 30—Suggested Pinion Shaft Markings

2. Using prick punches or other similar means, mark each pinion shaft and also the planet carrier assembly (fig. 30), so that reassembling, each pinion shaft will be reinstalled in the same location from which it was removed.

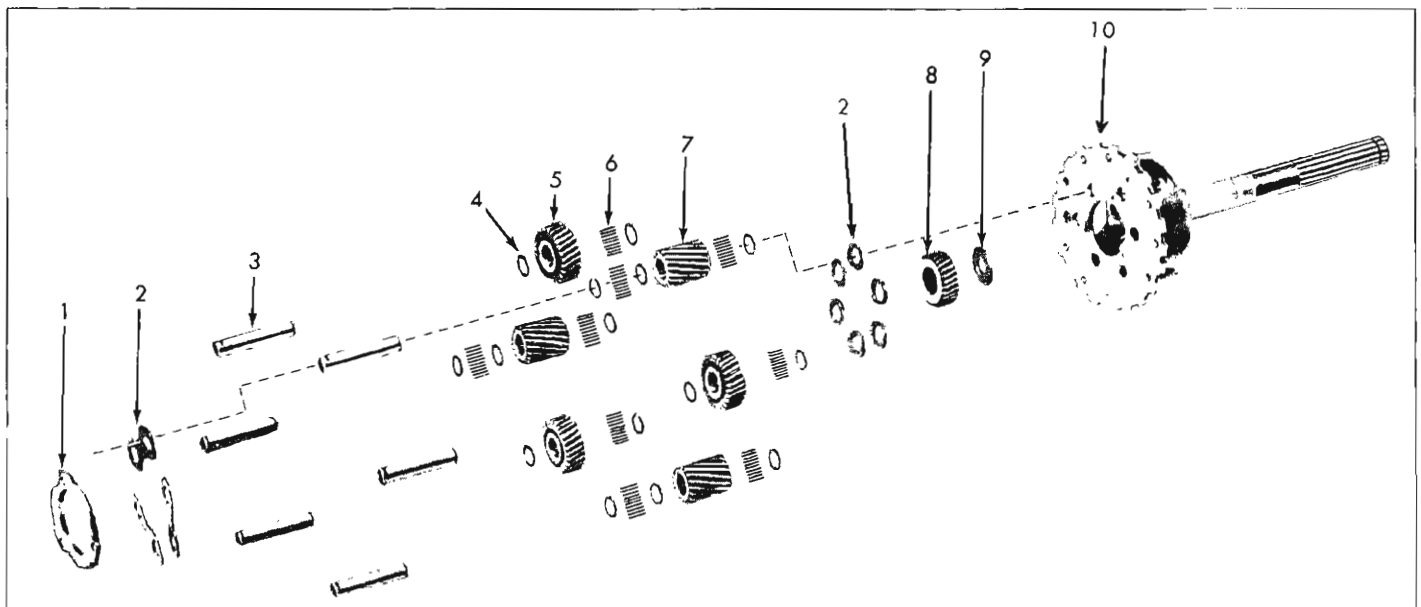


Fig. 29—Planet Carrier Assembly - Exploded View

- |                            |                             |                                 |
|----------------------------|-----------------------------|---------------------------------|
| 1. Pinion Shaft Lock Plate | 5. Short Planet Pinion Gear | 8. Input Sun Gear               |
| 2. Pinion Thrust Washer    | 6. Needle Bearings          | 9. Input Sun Gear Thrust Washer |
| 3. Pinion Shaft            | 7. Long Planet Pinion Gear  | 10. Carrier and Output Shaft    |
| 4. Needle Bearing Washer   |                             |                                 |

**NOTE:** The pinion shafts are not selectively fit but it is good practice to reinstall them in their original locations.

3. Remove the pinion shaft lock plate screws and rotate the lock plate counterclockwise sufficiently to remove it.
4. Starting with a short planet pinion, and using a soft steel drift, drive on the lower end of the pinion shaft until the pinion shaft is raised above the press fit area of the output shaft flange. Feed J-9538 into the short planet pinion from the lower end, pushing the planet pinion shaft ahead of it until the tool is centered in the pinion and the pinion shaft is removed from the assembly.
 

**NOTE:** Planet pinion remover and replacer tool, J-9538, comes in two pieces, one long for use with the long pinion gears, and one short for use with the short pinion gears.
5. Remove the short planet pinion from the assembly.
6. Remove J-9538, needle bearings and needle bearing spacers (2) from short planet pinion.
 

**CAUTION:** Use care so as not to lose any of the planet pinion needle bearings. Twenty needle bearings are used with a bearing spacer at each end.
7. By following the procedure as outlined in Steps 4, 5, and 6, and using the long tool in the J-9538 set, remove the adjacent long planet pinion that was paired by the thrust washer to the short planet pinion now removed.
 

**NOTE:** Twenty needle bearings are used in each end of the long pinion, separated by a bearing spacer in the center.
8. Remove the upper and lower thrust washers.
9. Remove and disassemble the remaining planet pinions, in pairs, by first removing a short planet pinion and then the adjacent long planet pinion.
10. Remove input sun gear and input sun gear thrust washer.
11. Wash all parts in cleaning solvent and air dry.
12. Recheck the planet pinion gears and input sun gear for nicks or other tooth damage; also check the planet pinion thrust washers and input sun gear thrust washer. Replace worn or damaged parts.
13. Inspect the planet pinion needle bearings closely and if excessive wear shows, all the needle bearings must be replaced. Also inspect pinion shafts closely and if worn replace the worn shafts.
14. Inspect the input shaft bushing installed in the

base of the output shaft. If damaged, it may be removed by threading Tool J-9534 into the bushing and pulling the bushing out using slide hammer J-6585. New bearing can be installed by pressing in flush or below thrust surface with the pilot end of input shaft as press tool.

15. Using J-9538, assemble needle bearing spacer and needle bearings (20 in each path) in one of the long planet pinions (fig. 29). Use petroleum jelly to aid in assembling and holding the needle bearings in position.
16. Position the long planet pinion with J-9538, centered in the pinion assembly and with thrust washers at each end, in the planet carrier. Oil grooves on thrust washers must be toward gears.
 

**NOTE:** The long planet pinions are located opposite the closed portions of the carrier, while the short planet pinions are located in the openings.
17. Select the proper pinion shaft, as marked in Step 2, lubricate the shaft and install it from the top, pushing the assembling tools ahead of it. As the tool is pushed down, check that it picks up the lower thrust washer.
18. Turn the pinion shaft so that the slot or groove at the upper end faces the center of the assembly.
19. With a brass or soft steel drift, drive the pinion shaft in until the lower end is flush with the lower face of the planet carrier.
20. Following the same general procedure as outlined in Steps 15 through 20, assemble and install a short planet pinion in the planet carrier adjacent to the long planet pinion now installed.
 

**NOTE:** The front thrust washer already installed with the long planet pinion also suffices for this short planet pinion as the two pinions are paired together on one set of thrust washers.
21. Install the input sun gear thrust washer and install the input sun gear.
22. Assemble and install the remaining planet pinions, in pairs, by first installing the long planet pinion and then the adjacent short planet pinion.
23. Check end clearance of planet gears. This clearance should be .006"-.030" (fig. 28).
24. Place the pinion shaft lock plate in position, then with the extended portions of the lock plate aligned with slots in the planet pinion shafts, rotate the lock plate clockwise until the three attaching screw holes are accessible.
25. Install the pinion shaft lock plate attaching screws and tighten to 2 1/2-3 ft. lbs.

**GOVERNOR**

The governor assembly is a factory balanced unit. If body replacement is necessary, the two sections must be replaced as a unit. Remove the governor as outlined under "Transmission - Disassembly".

**Disassembly**

NOTE: The governor valve and shaft were already disassembled from the assembly during the removal procedures.

1. Remove the outer weight assembly by sliding toward center of body.

2. Remove the smaller inner weight retaining snap ring and remove the inner weight and spring.
3. If it is considered necessary, remove the four body assembly bolts and separate the body, hub and gasket. Remove the two seal rings.

**Inspection**

Clean all parts thoroughly in a solvent and air dry. Check condition of all component parts of the assembly. Replace any bent, damaged or scored parts. Body and hub must be replaced as a unit.

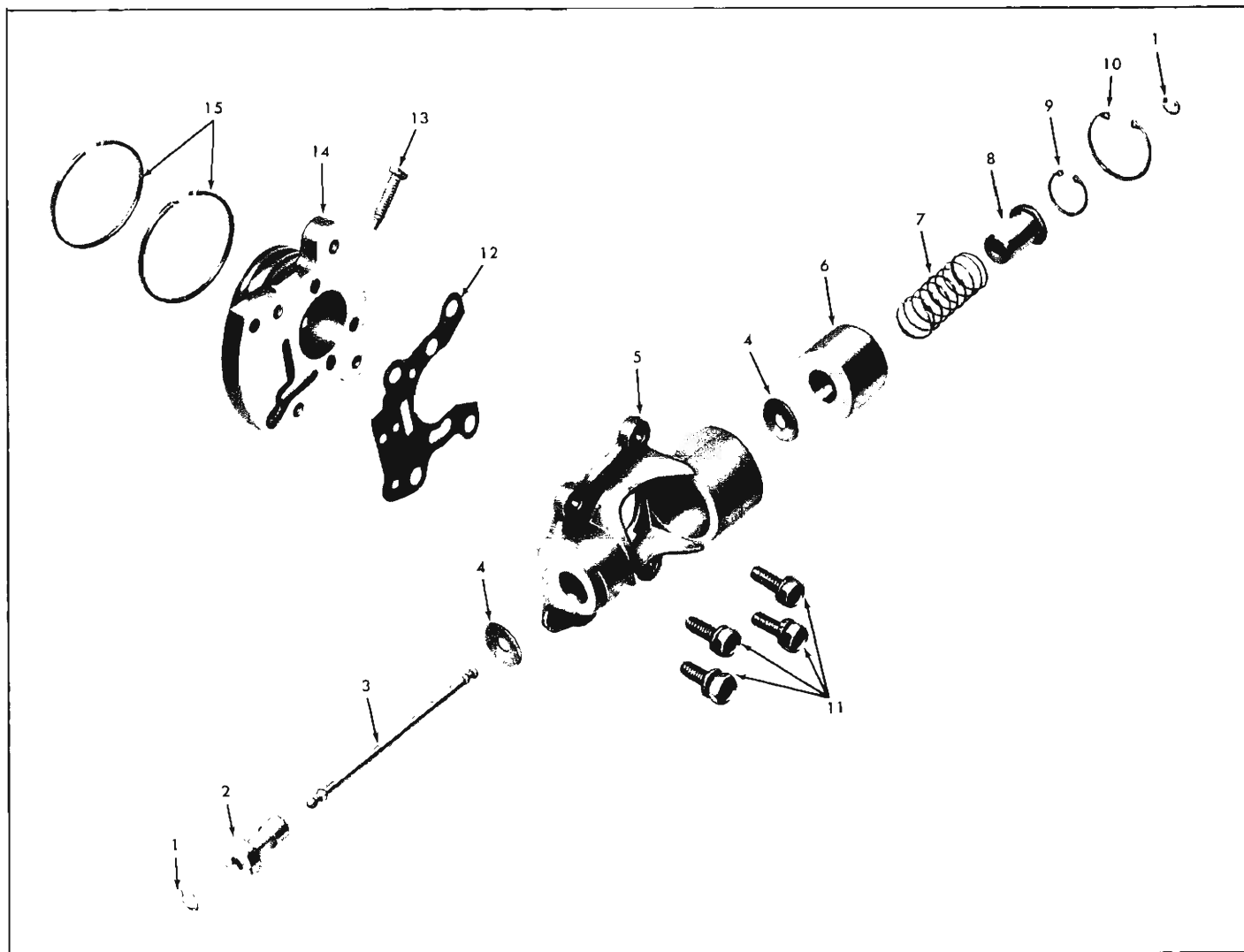


Fig. 31—Governor - Exploded View

- |   |                                      |   |
|---|--------------------------------------|---|
| 1. Valve to Shaft and Inner Weight to Shaft Retaining Snap Ring | 6. Outer Weight                      | 11. Body to Hub Screws and Lock Washers |
| 2. Valve  | 7. Spring                            | 12. Gasket                              |
| 3. Shaft  | 8. Inner Weight                      | 13. Hub Drive Screw                     |
| 4. Damping Springs  | 9. Inner Weight Retaining Snap Ring  | 14. Hub                                 |
| 5. Body   | 10. Outer Weight Retaining Snap Ring | 15. Hub Oil Seal Rings                  |

## Assembly

1. Reassemble governor weights and reinstall in body bore. Replace seal rings on hub.
2. Slide hub into place on output shaft and lock into place with the drive screw. Install gasket and governor body over output shaft, install governor shaft, line up properly with output shaft and install body attaching bolts. Torque to 6 to 8 ft. lbs.  
**NOTE:** Place transmission selector lever in PARK to keep shaft from turning while tightening these bolts.
3. Check the governor weight for free fit in body after the four attaching bolts are torqued. If the weight sticks or binds, loosen the bolts and retorque.

## VALVE BODY

### Removal

Remove valve body as described under "Transmission - Disassembly." If performing the operation on the vehicle, the vacuum modulator and valve, oil pan and gasket, guide detent plate and range selector detent roller spring need to be removed in order to remove the valve body from the transmission.

### Disassembly

1. Remove the manual valve, suction screen and gasket.
2. Remove valve body bolts and carefully remove lower valve body and transfer plate from upper valve body. Discard gaskets.
3. Remove the front and rear pump check valves and springs.
4. From the upper valve body, remove the TV and detent valves and the downshift timing valve as follows:
  - a. TV and Detent Valve - Remove the retaining pin by wedging a thin screwdriver between its head and the valve body, then remove the detent valve assembly and throttle valve spring. Tilt the valve body to allow the throttle valve to fall out. If necessary, remove the "C" clip and disassemble the detent valve assembly.

**CAUTION:** Do not disturb the setting of the adjustment hex nut on the detent valve assembly. This is a factory adjustment and should not normally be changed. However,

some adjustment is possible if desired. See "Throttle Valve Adjustment".

- b. Downshift Timing Valve - Drive out the roll pin, remove the valve spring and the downshift timing valve.
5. From the lower valve body, remove the low-drive shift valve and the pressure regulator valve as follows:
  - a. Low-Drive Shift Valve - Remove the snap ring and tilt the valve body to remove the low-drive regulator valve sleeve and valve assembly, valve springs and the shifter valve.
  - b. Pressure Regulator Valve - Remove the snap ring, then tilt valve body to remove the hydraulic modulator valve sleeve and valve, pressure regulator valve spring seat, spring, damper valve, spring seat and valve.

### Inspection

Since most valve body failures are caused initially by dirt or other foreign material preventing a valve from functioning properly, a thorough cleaning of all parts in clean solvent is mandatory. Check all valves and their bores for burrs or other deformities which could result in valve hang-up.

### Assembly

1. Replace valve components in the proper bores, reversing the disassembly procedures given above and checking Figure 32, if necessary.
2. Place front and rear pump check valves and springs into place in the upper valve body and install the gasket and transfer plate.  
**NOTE:** See Figure 32 for upper and lower valve body gasket identification.
3. Carefully install the lower valve body and gasket and install 15 1-3/8" attaching bolts. Torque to 8 to 11 ft. lbs.

### Installation

Install the valve body onto the transmission as outlined under "Transmission - Assembly".

## VACUUM MODULATOR

The vacuum modulator is mounted on the left rear of the transmission and can be serviced from beneath the vehicle.

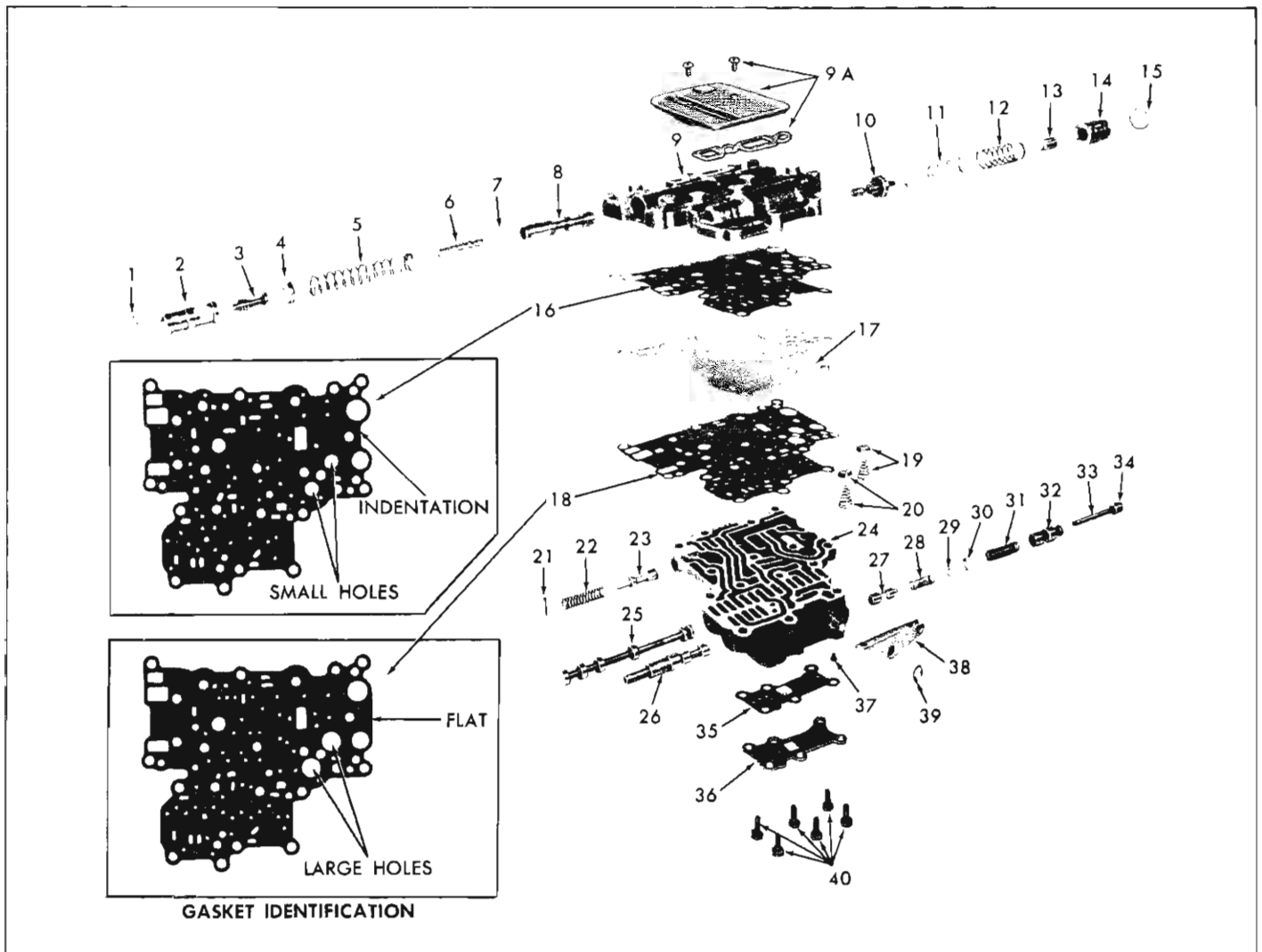


Fig. 32—Valve Body - Exploded View

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>1. Snap Ring</li> <li>2. Hydraulic Modulator Valve Sleeve</li> <li>3. Hydraulic Modulator Valve</li> <li>4. Pressure Regulator Spring Retainer</li> <li>5. Pressure Regulator Spring</li> <li>6. Pressure Regulator Damper Assembly</li> <li>7. Pressure Regulator Damper Valve Spring Seat</li> <li>8. Pressure Regulator Valve</li> <li>9. Lower Valve Body</li> <li>9A. Suction Screen, Gasket and Attaching Screws</li> <li>10. Low and Drive Valve</li> <li>11. Low and Drive Valve Inner Spring</li> <li>12. Low and Drive Valve Outer Spring</li> <li>13. Low and Drive Regulator Valve</li> <li>14. Low and Drive Regulator Valve Sleeve and Cap</li> </ul> | <ul style="list-style-type: none"> <li>15. Snap Ring</li> <li>16. Transfer Plate to Lower Valve Body Gasket</li> <li>17. Transfer Plate</li> <li>18. Transfer Plate to Upper Valve Body Gasket</li> <li>19. Front Pump Check Valve and Spring</li> <li>20. Rear Pump Check Valve and Spring</li> <li>21. High Speed Down Shift Timing Valve Stop Pin</li> <li>22. High Speed Down Shift Timing Valve Spring</li> <li>23. High Speed Down Shift Timing Valve</li> <li>24. Upper Valve Body</li> <li>25. Manual Control Valve</li> <li>26. Vacuum Modulator Valve</li> <li>27. Throttle Valve</li> </ul> | <ul style="list-style-type: none"> <li>28. Throttle Valve Spring</li> <li>29. Throttle Valve Spring Seat</li> <li>30. Throttle Valve Spring Regulator Guide Washer</li> <li>31. Detent Valve Spring</li> <li>32. Detent Valve</li> <li>33. Throttle Valve Spring Regulator Nut</li> <li>34. Throttle Valve Spring Regulator Nut</li> <li>35. Upper Valve Body Plate Gasket</li> <li>36. Upper Valve Body Plate</li> <li>37. Detent Valve and Spring Retaining Stud</li> <li>38. Range Selector Detent Lever</li> <li>39. Snap Ring</li> <li>40. Upper Valve Body Plate to Upper Valve Body Attaching Bolts and Washers</li> </ul> |
|--|--|---|

**Removal**

1. Remove the vacuum line at the vacuum modulator.
2. Unscrew the vacuum modulator from the transmission using J-9543, if available, or any thin 1" tappet type wrench.

3. Remove the vacuum modulator valve (fig. 15) from the transmission case.

**Inspection and Repairs**

Check the vacuum modulator valve for nicks and



burrs. If such cannot be repaired with a slip stone, replace the valve.

The vacuum modulator can be checked with a vacuum source for leakage. However, leakage normally results in transmission oil pull-over and results in oil smoky exhaust and continually low transmission oil. No vacuum modulator repairs are possible; replace as an assembly.

### Inspection

1. Install vacuum modulator valve in bore in transmission.
2. Place a new gasket on vacuum modulator and hold gasket centered with petroleum jelly. It is important that gasket be held centered during installation to prevent a transmission external oil leak.
3. Install vacuum modulator, tighten firmly, and install vacuum line as follows (fig. 15): Rubber tubing "A" should bottom against modulator can. Pipe assembly "B" should bottom against the modulator extension.

## TRANSMISSION CASE

### Inspection

1. Wash case thoroughly with cleaning solvent, air dry and blow out all oil passages.

**CAUTION:** Do not use rags to dry parts.

2. Inspect case for cracks which may contribute to leakage.
3. Inspect case rear bushing for damage or excessive wear.

**NOTE:** This is a precision bushing and if damaged or worn excessively must be replaced.

4. Check shifter shaft seal. If it shows signs of damage or leaking, pry it out and install a new seal. The new seal must be firmly seated in case counterbore.

## Repairs

### Rear Bushing—Replacement

Transmission case rear bushing is a precision bushing which requires no reaming or finishing after assembly.

1. Remove bushing by driving or pressing from within case using J-9557 and handle J-7079.
2. To install new bushing, drive or press bushing into place from rear of case using Tool J-9557 and handle J-7079 (fig. 33).

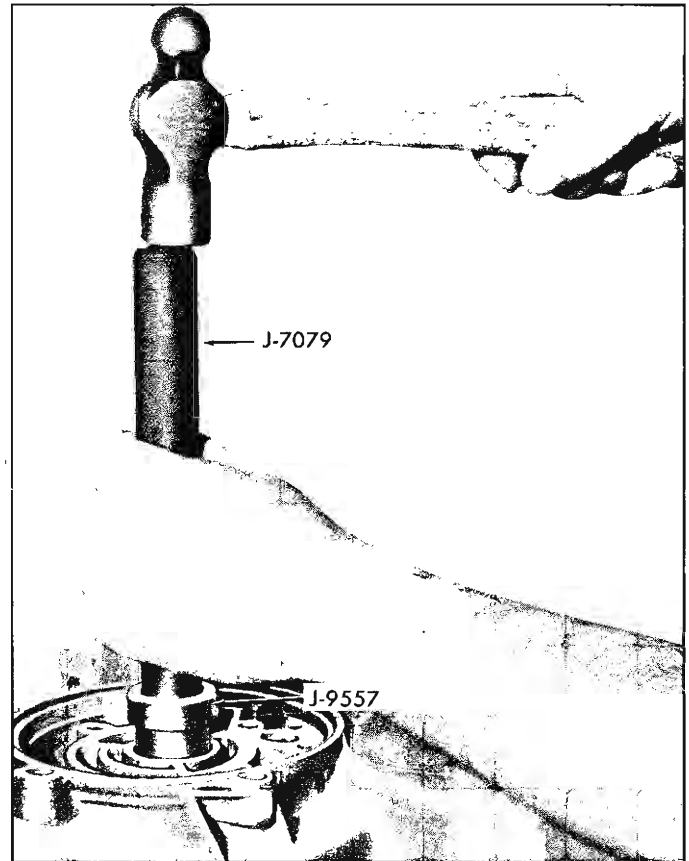


Fig. 33—Installing Case Rear Bushing

**CAUTION:** Install bushing only until shoulder of J-9557 contacts the rear face of the case. Excessive force, either hammering or pressing, may crack or otherwise damage the aluminum case.

## TRANSMISSION EXTENSION

### Inspection

1. Wash extension thoroughly with cleaning solvent and air dry.
- CAUTION:** Do not use rags to dry parts.
2. Inspect extension for cracks that may contribute to leakage.
  3. Inspect extension rear bushing for damage or excessive wear.
  4. Inspect rear oil seal and replace if damaged or worn.

## Repairs

### Rear Bushing—Replacement

For service, the transmission extension rear bushing is of a precision type which requires no reaming

or finishing after installation.

1. Place transmission extension in an arbor press rear end up.
2. Using J-5778, press old bushing from extension.
3. Place new bushing on pilot end of J-5778 and press it into place.
4. Replace extension rear oil seal.

## TRANSMISSION

### Assembly

**NOTE:** Use only transmission oil or petroleum jelly as lubricants or to retain bearings or races during assembly. Lubricate all bearings, seal rings and clutch plates prior to assembly.

If removed, assemble manual linkage to case as described in Steps 1-7.

1. Install the parking lock pawl and shaft and insert a new retaining roll pin into the shaft (early production transmissions) or "E" ring (later production transmissions).
2. Install the parking lock pawl pull-back spring over its boss to the rear of the pawl. The short leg of the spring should locate in the hole in the parking pawl.
3. Install the parking lock pawl reaction bracket with its two bolts.
4. Fit the actuator assembly between the parking lock pawl and the bracket.
5. Insert the outer shift lever into the case (being careful of the shaft seal, and pick up the inner shift lever and parking lock assembly and tighten allen head screw.
6. Insert outer TV lever and shaft, special washer and "O" ring into case and pick up inner TV lever. Tighten allen head nut.
7. Thread the low band adjusting screw into case.

**NOTE:** The above internal components are shown in their proper relationship in Figure 20.

### TRANSMISSION INTERNAL COMPONENTS

8. Install the inner and outer rear piston seals on the reverse piston and, lubricating the piston and case with transmission oil, install the piston into the case (fig. 34). If necessary, carefully slide a feeler gauge around the outer diameter of the piston to start the seal ring into the bore.
9. With the support fixture turned so that the transmission case is facing up, install the 17 reverse piston return springs and their retainer ring.

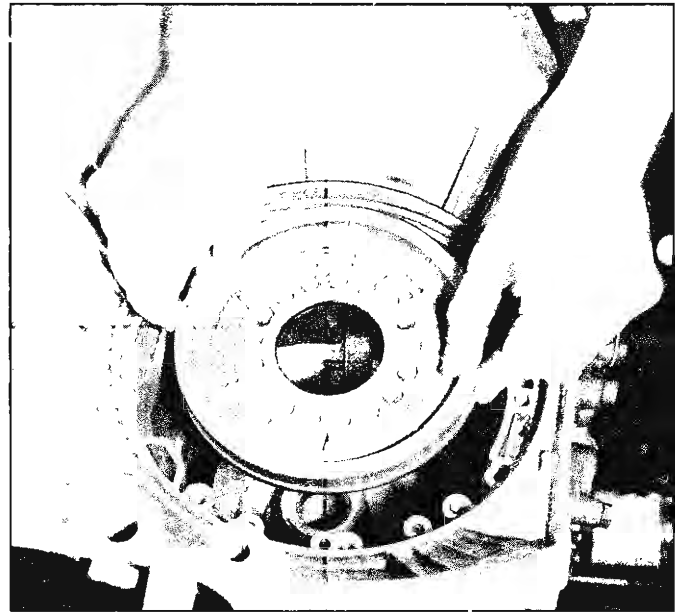


Fig. 34—Installing Reverse Piston

10. Carefully install Tool J-9542 over the retainer ring and through the rear bore of the case. With the flat plate on the rear face of the case, turn down on the wing nut to compress the return springs and allow the retaining ring snap ring to be installed. Remove Tool J-9542.

**CAUTION:** Use care when performing this operation that the spring retainer is correctly guided over the case internal hub and is not damaged by catching on the edge of the hub or in the snap ring groove.

11. Lubricate and install the reverse clutch pack (fig. 35) beginning with a reaction (spacer) plate and alternating with the drive plates (faced) until the six reaction plates and six drive plates are

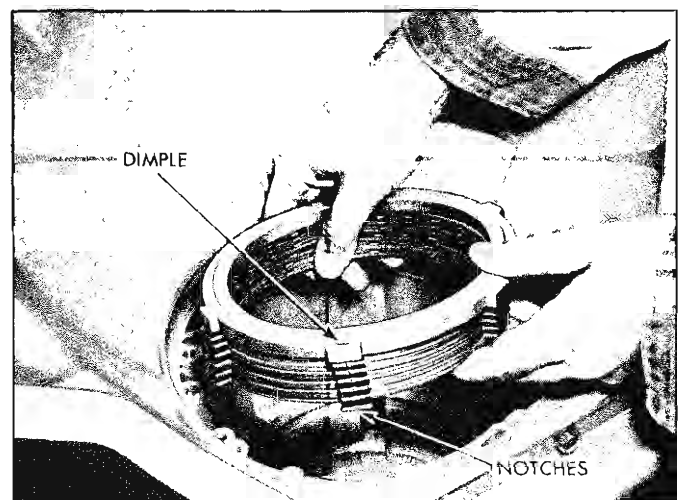


Fig. 35—Installing Clutch Plates

in place. The notched lug on each reaction plate is installed in the groove at the 7 o'clock position in the case. Then install the thick pressure plate which has a "dimple" in one lug to align with the same slot in the case as the notched lugs on the other reaction plates.

**NOTE:** The rearmost reaction plate is of selective fit.

12. Install the clutch plate retainer ring.
13. Check for correct selective reverse reaction spacer plate running clearance as follows:
  - a. Position the transmission fixture so that the case is horizontal.
  - b. Using feeler gauges, measure the clearance between any reaction plate and adjacent faced plate. Because the faced plate is waved, it will be necessary to slide the feeler gauges in an arc of several inches to get an average reading.
  - c. If the proper selective reverse reaction spacer is installed, gauge measurement will be .025" to .060".
  - d. If the clearance is not within limits, it will be necessary to remove the reverse clutch pack and install a thicker or thinner selective reverse plate, as required, next to the piston. Then recheck running clearance. Three sizes of reverse spacers are available as shown in the following table:

Part Number	Plate Thickness
3799210	.070" ± .002"
3799212	.102" ± .002"
3799214	.134" ± .002"

14. With the rear of the transmission case downward, align the internal lands and grooves of the reverse clutch pack faced plates, then engage the reverse ring gear with these plates. This engagement must be made by "feel" while jiggling and turning the ring gear.
15. Place the output shaft thrust bearing over the output shaft and install the planetary carrier and output shaft into the transmission case (fig. 37).
16. Install the low sun gear thrust washer on the sun gear in the planetary gear set with the flange of the thrust washer toward the front of the transmission. A small amount of petroleum jelly will keep the thrust washer in place.
17. Move the transmission into a horizontal position. The two input shaft seal rings should be in place on the shaft. Install the clutch drum (machined face first) onto the input shaft and install the

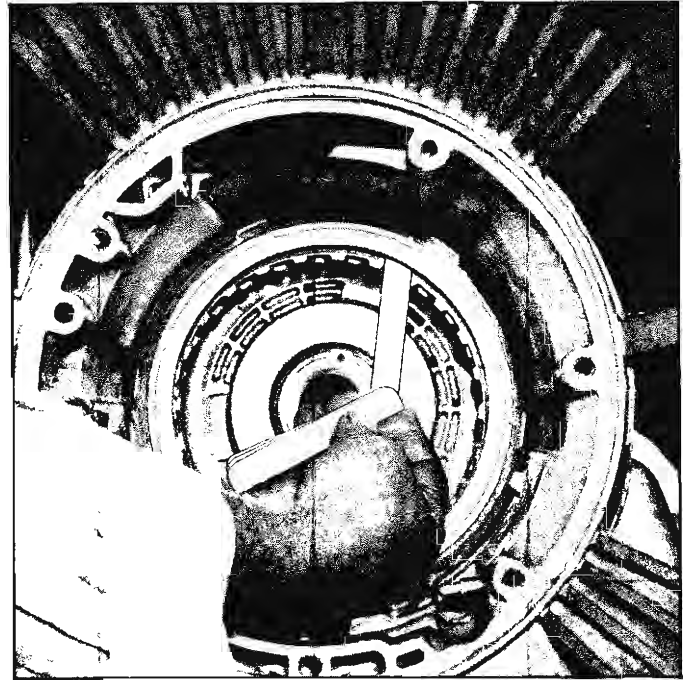


Fig. 36—Measuring Reverse Clutch Running Clearance

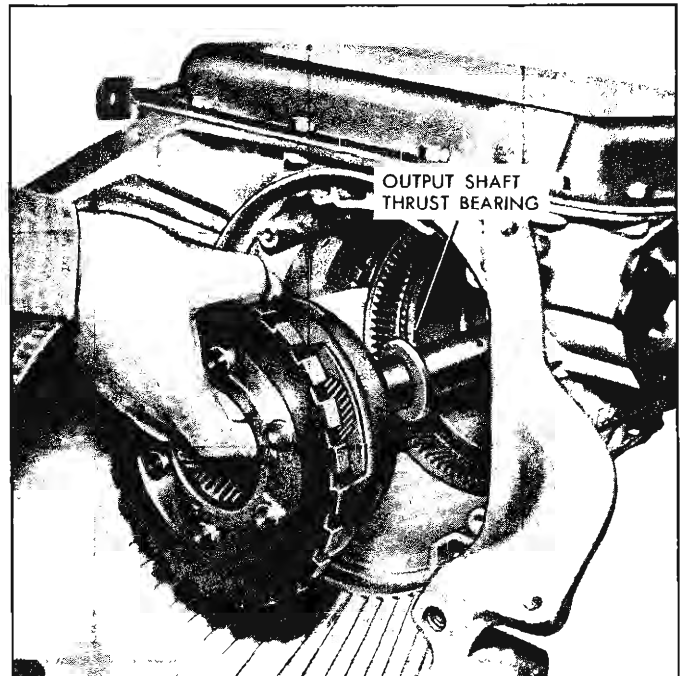


Fig. 37—Installing Gearset

low sun gear bushing (splined) against shoulder on shaft.

18. Install clutch drum and input shaft assembly into case, aligning thrust washer on input shaft and indexing low sun gear with the short pinions on the planet carrier.
19. Remove the rubber seal ring from the front pump

body and, using guide studs from J-3387 set, install front pump and gasket and selective fit thrust washer into case. Install two pump-to-case bolts.

20. To check for correct thickness of the selective fit thrust washer, move transmission so that output shaft points down and proceed as follows:

- a. Mount a dial indicator so that plunger of indicator is resting on end of the input shaft. J-5492 may be used to support the dial indicator as shown in Figure 38. Zero the indicator.
- b. Push up on the transmission output shaft and observe the total indicator movement.
- c. The indicator should read .030" to .054". If the reading is within limits, the proper selective fit washer is being used. If the reading is not within limits, it will be necessary to remove the front pump, change to a thicker or thinner selective fit thrust washer, as required to obtain the specified clearance, and repeat the above checking procedure.

**NOTE:** Selective fit washers are available in thicknesses of .061", .078", .092" and .106".

21. Install the servo piston, piston ring, and spring into the servo bore. Then, using a new gasket and "O" ring, install the servo cover. See that gasket is properly aligned with the three bolt holes and the drain back passage in the case.
22. Remove the front pump and the selective fit washer from the case, and install the low brake band, anchor and apply struts into the case. Tighten the low band adjusting screw enough to prevent struts from falling out of case.
23. Place the seal ring in the groove around front pump body and the two seal rings on the pump

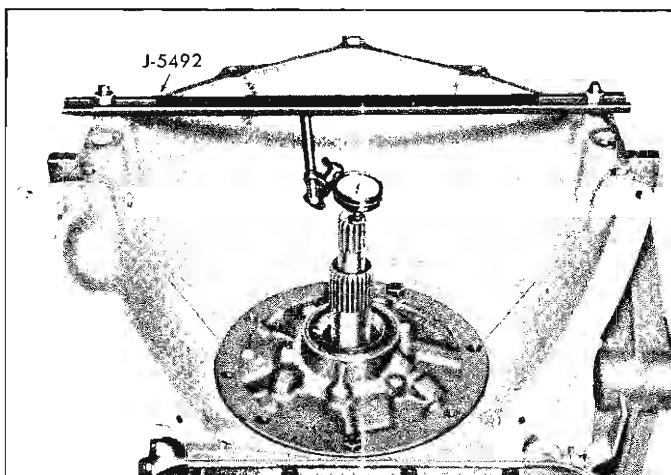


Fig. 38—Checking End Play for Proper Thrust Washer Selection

cover extension. Install the pump, gasket and thrust washer into case. Remove guide pins and install all pump bolts, replacing any damaged bolt "O" rings necessary and torque bolts to 13-17 ft. lbs.

**EXTENSION, GOVERNOR AND REAR OIL PUMP**

24. Turn transmission so that output shaft points upward. Install rear pump wear plate, drive pin, and drive gear, indexing gear to drive pin.
25. Install rear pump body and driven gear drain back baffle, and pump to case attaching bolts. Bolt holes are positioned so that the pump may be assembled only in the proper position.
26. Install governor over output shaft. (See "Governor-Assembly" for body to hub installation.) Install governor shaft and valve, two Belleville washers (concave side of washers against output shaft), and retaining "C" clips. Center shaft in output shaft bore and tighten governor hub drive screw.
27. Using Tool J-5814, install speedometer gear into output shaft.
28. Place extension seal ring over rear pump body and install transmission extension and five retaining bolts.
29. If removed, replace speedometer driven gear.

**OIL PAN AND VALVE BODY**

30. With transmission upside down, and manual linkage installed as previously described, and the selector lever detent roller installed, install the valve body (servo apply tube installed) and a new gasket. Carefully guide the servo apply line into

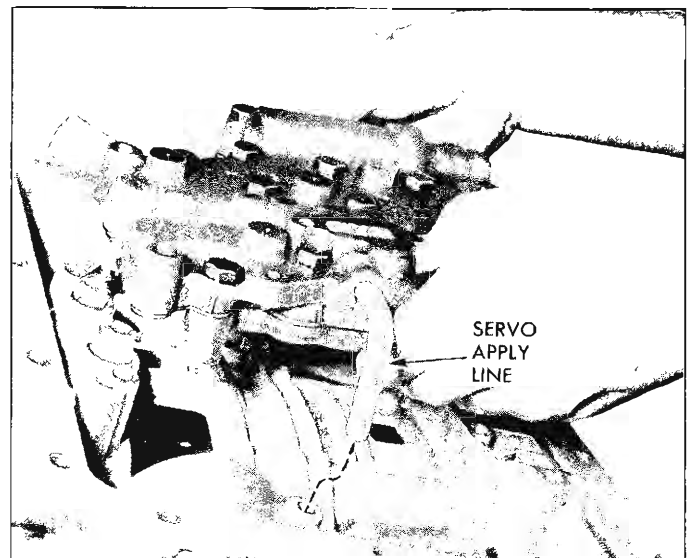


Fig. 39—Installing Valve Body

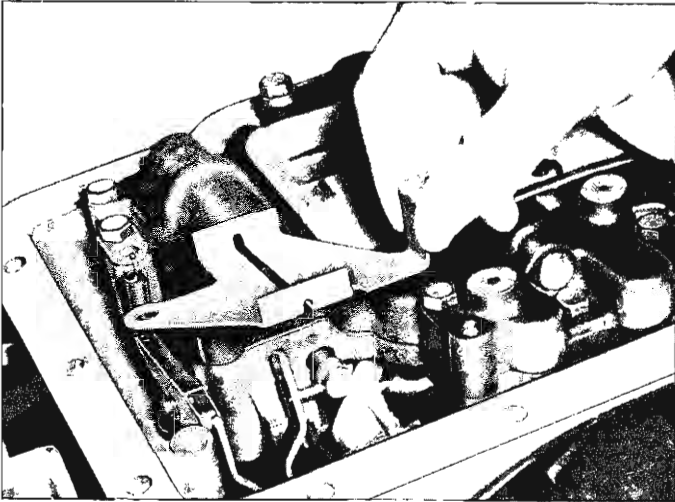


Fig. 40—Installing Detent Guide Plate

its boss in the case as the valve body is set into place (fig. 39). Install six mounting bolts and range selector detent roller spring shown in Figure 16.

**NOTE:** Position the manual valve actuating lever fully forward when installing valve body to more easily pick up the manual valve.

31. Install the guide plate (fig. 40) making sure that the inner lever properly picks up the manual valve. Install attaching bolts.
32. Install the vacuum modulator valve and the vacuum modulator and gasket.
33. Install the oil pan, using a new gasket, and the oil pan attaching bolts.
34. Install converter and safety holding strap J-5949 or a suitable substitute.

### Low Band Adjustment

Tighten the low servo adjusting screw to 40 inch lbs. using torque wrench J-5853 (fig. 41). The input and output shaft must be rotated simultaneously to properly center the low band on the clutch drum. Then back off four (4) complete turns, and tighten the lock nut.

**CAUTION:** The amount of back-off is not an approximate figure, it must be exact.

### Throttle Valve Adjustment

No provision is made for checking TV pressures. However, if operation of the transmission is such that some adjustment of the TV is indicated, pressures may be raised or lowered by adjusting the position of the jam nut on the throttle valve assembly

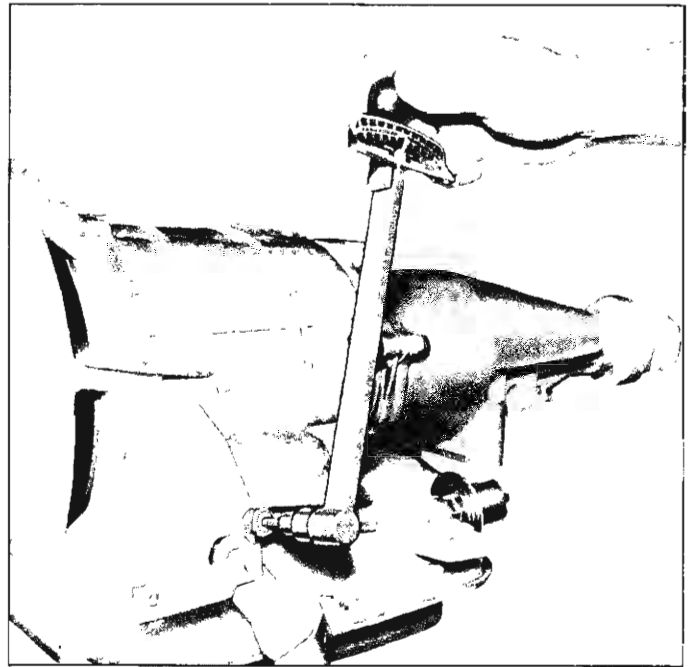


Fig. 41—Low Band Adjustment

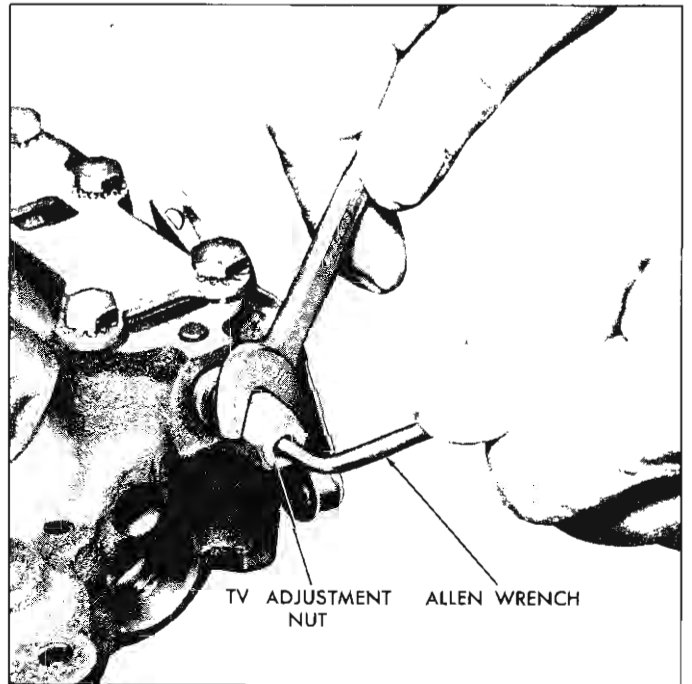


Fig. 42—TV Adjustment Nut

(fig. 42). To raise TV pressure 3 psi, back-off the jam nut one (1) full turn. This increases the dimension from the jam nut to the throttle valve assembly stop. Conversely, tightening the jam nut one (1) full turn lowers TV pressure 3 psi. A difference of 3 psi in TV pressure will cause a change of approximately 2 to 3 mph in the wide open throttle upshift point. Smaller pressure adjustments can be made by partial

turns of the jam nut. The end of TV adjusting screw has an allen head so the screw may be held stationary while the jam nut is moved.

**NOTE:** Use care when making this adjustment since no pressure tap is provided to check TV pressure.

### **Installation**

**NOTE:** The "light" side of the converter is denoted by a "blue" stripe painted across the ends of the converter cover and housing. This marking should be aligned as closely as possible with the "white" stripe painted on the engine side of the flywheel outer rim, denoting the "heavy" side of the engine.

1. Mount transmission on transmission lifting equipment installed on jack or other lifting device.
  2. Remove converter holding tool.
- CAUTION:** Do not permit converter to move forward after removal of holding tool.
3. Raise transmission into place at rear of engine and install transmission case to engine upper mounting bolts, then install remainder of the mounting bolts. Torque bolts to 25-30 ft. lbs.
  4. Remove support from beneath engine, then raise rear of transmission to final position.
  5. Through flywheel cover opening align as closely as possible the "white" flywheel balance mark

stripe and the "blue" painted stripe on end of converter cover and housing. If scribed during removal, align scribe marks on flywheel and converter cover. Install converter to flywheel attaching bolts. Torque bolts to 15-20 ft. lbs.

6. Install flywheel cover.
  7. Reinstall transmission support cross member to transmission and frame, using the lower set of attaching holes to secure the cross member to the frame bracket.
- NOTE:** Reinstall same number of shims between transmission extension and cross member as removed to maintain correct driveline angle relationship.
8. Remove transmission lift equipment.
  9. Connect propeller shaft to transmission.
  10. Connect manual and TV control lever rods to transmission.
  11. Install crankcase ventilation tube clamp bracket bolt, washers and nut to secure tube to transmission.
  12. Connect oil cooler lines, vacuum modulator line, and speedometer drive cable to transmission.
  13. Refill transmission through filler tube, using funnel J-4264 and following the recommended procedure provided earlier in this section.
  14. Check transmission for proper operation and for leakage. Check and, if necessary, adjust linkage.

## **DIAGNOSIS**

Proper operation of the Powerglide transmission may be affected by a number of factors, all of which must be considered when trouble in the unit is diagnosed.

Proper trouble diagnosis can only be accomplished when performed in a thorough step by step procedure. The following procedure has been devised and tested and is recommended for all trouble diagnosis complaints and if the service man will follow this checking procedure, accurate and dependable diagnosis may be accomplished. This will result in a savings of time, not only to the service man, but to the customer as well.

### **WARMING UP TRANSMISSION**

Before attempting to check and/or correct any complaints on the Powerglide transmission, it is absolutely essential that the oil level be checked and corrected if necessary. An oil level which is either too high or too low can be the cause of a number of

abnormal conditions from excessive noise to slip-page in all ranges.

It must be remembered that cold oil will slow up the action of the hydraulic controls in the transmission. For this reason a trouble or oil leak diagnosis should not be attempted until the transmission has been warmed up by either of the following procedures:

### **Shop Warm Up**

1. Connect tachometer to engine.
2. Set parking brake tight and start engine.
3. Place selector lever in "D" (drive) range.
4. Adjust carburetor idle speed adjusting screw to run engine at approximately 750 rpm and operate in this manner for two minutes. At the end of two minutes of operation, the transmission will be sufficiently warmed up for diagnosis purposes.

**NOTE:** At this point, readjust the engine idle speed to 450-475 rpm in "D" range.

**Road Warm Up**

Drive the car approximately 5 miles with frequent starts and stops.

**NOTE:** At this point, make sure the engine idle speed is set to 450-475 rpm in "D" range.

**CHECKING FLUID LEVEL**

After the transmission has been warmed up, check the fluid level with the engine idling, parking brake set and control lever in "N" (neutral). If the fluid level is low, add fluid to bring level up to the full mark on gauge rod.

**CAUTION:** If fluid level is too high, fluid may be aerated by the planet carrier. Aerated fluid will cause turbulence in the converter which will result in lost power, lower stall speed and lower pressures in control circuits. Lower fluid level to full mark, then shut off engine to allow air bubbles to work out of fluid.

**BASIC PRESSURE CHECKS**

Five basic pressure checks are used for diagnosis and operational checks of the Aluminum Powerglide transmission. All checks should be made only after thoroughly warming up the transmission.

- Wide Open Throttle Upshift Pressure.
- Idle Pressure in "Drive" Range.
- Manual "Low" Range Pressure.
- "Drive" Range Overrun (Coast) Pressure.

It is not recommended that stall tests be conducted which would result in engine vacuum falling below 10" Hg.

Pressure gauge hose connections should be made at the low servo apply (main line) and reverse test points (fig. 43). Run the gauge lines into the driving compartment by pushing aside the mast jacket seal. Tie lines out of the way of the drivers feet and connect to gauge set J-4872-4.

● **Wide Open Throttle Upshift Pressure Check**

Wide open throttle upshift should occur at 85-95 psi (327 V-8 engine) as indicated on the low servo apply (main line) gauge.

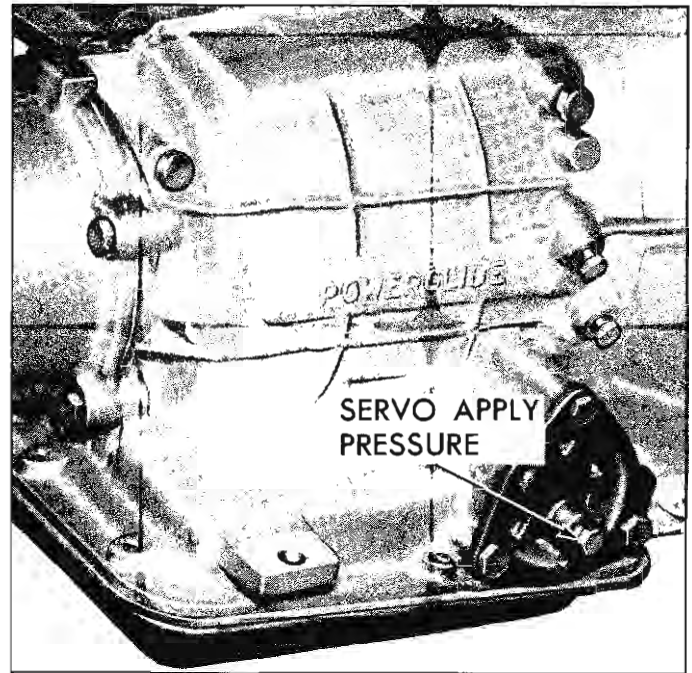


Fig. 43—Pressure Test Plugs

● **Idle Pressure in "Drive" Range**

In addition to the oil pressure gauges, a vacuum gauge is need for this check.

With the parking brake applied and the shift selector lever in "Drive", low servo apply (main line) pressure should be as follows:

Vacuum	Low Servo Apply (Mainline) Pressure
16" Hg.	62 - 73
10" Hg.	85 - 95

If pressures are not within these ranges, the following items should be checked for oil circuit leakage:

1. Pressure regulator valve stuck.
2. Vacuum modulator valve stuck.
3. Hydraulic modulator valve stuck.
4. Leak at low servo piston ring (between ring and bore).
5. Leak at low servo piston rod (between rod and bore).
6. Leak at valve body to case gasket.
7. Leak at valve body gaskets.
8. Front pump clearances.

## AUTOMATIC TRANSMISSIONS—ALUMINUM POWERGLIDE 13-30

9. Check passages in transmission case for porosity.

### ● Manual "Low" Range Pressure Check

Connect a tachometer, apply the parking brake, place the selector lever in "Low" range, and adjust the engine speed to 1000 rpm. with the car stationary.

Low servo apply (main line) pressure should be 126-131 psi.

Pressures not within this range can indicate the following possibilities:

1. Partially plugged oil suction screen.
2. Broken or damaged ring in low servo.
3. Pressure regulator valve stuck.
4. Leak at valve body to case gasket.
5. Leak between valve body gaskets.
6. Leak at servo center.
7. Front pump clearances.

### ● Drive Range Overrun (Coast) Pressure

With the vehicle coasting in "Drive" range at 20-25 mph with engine vacuum at approximately 20" Hg., low servo apply (main line) pressure should be 48-54 psi.

## POWERGLIDE SHIFT POINTS

Engine	Passenger Car				Corvette	
	327*		327 High Perf.**		327*	
Throttle Position	Up	Down	Up	Down	Up	Down
Closed	14-16	11.5-15	12-15	10.5-14	12-15	11-14
Detent Touch	48-58	17-25	49-60	16-25	50-62	16-26
Through Detent	59-65	55-63	59-66	56-63	61-68	58-65

\* 3.08:1 Axle

\*\* 3.36:1 Axle

**NOTE:** Shift points as indicated on the speedometer are not affected by tire size.

## DIAGNOSIS GUIDE

### No drive in any selector position; cannot load engine.

- Low oil level.
- Clogged oil suction screen.
- Defective pressure regulator valve.
- Front pump defective.
- Input shaft broken.
- Front pump priming valve stuck.

### Engine speed flares on standstill starts but acceleration lags.

- Low band partially applied:

- a. Low oil level.
- b. Clogged oil suction screen.
- c. Improper band adjustment.
- d. Servo apply passage blocked.
- e. Servo piston ring broken or leaking.
- f. Band facing worn.
- g. Low band apply linkage disengaged or broken.
- h. Converter stator not holding (rare).

### Engine speed flares on upshifts.

- Low oil level.



- Improper band adjustment.
- Clogged oil suction screen.
- High clutch partially applied - blocked feed orifice.
- High clutch plates worn.
- High clutch seals leak.
- High clutch piston hung up.
- High clutch drum relief ball not sealing.
- Vacuum modulator line plugged.

**Transmission will not upshift.**

- Low band not releasing, probably due to:
  - a. Stuck low-drive valve.
  - b. Defective governor.
  - c. No rear pump output caused by stuck priming valve, sheared drive pin or defective pump.
  - d. Throttle valve stuck or maladjusted.
  - e. Maladjusted manual valve lever.

**Upshifts harsh.**

- Incorrect carburetor-to-transmission TV rod adjustment.
- Improper low band adjustment.
- Vacuum modulator line broken or disconnected.
- Vacuum modulator diaphragm leaks.
- Vacuum modulator valve stuck.
- Hydraulic modulator valve stuck.

**Closed throttle (coast) downshifts harsh.**

- Improper low band adjustment.
- High engine idle speed.
- Downshift timing valve malfunction.
- High mainline pressure. Check:
  - a. Vacuum modulator line broken or disconnected.
  - b. Modulator diaphragm ruptured.
  - c. Sticking Hydraulic Modulator valve, pressure regulator valve or vacuum modulator valve.

**Will not downshift.**

- Sticking low-drive shift valve.

- Low-drive shift plug stuck.
- High governor pressure.
- Low TV pressure.

**Clutch failure—burned plates.**

- Low band adjusting screw backed off more than specified.
- Improper order of clutch plate assembly.
- Extended operation with low oil level.
- Clutch drum relief ball stuck.
- Abnormally high speed upshift:
  - a. Improper governor action.
  - b. Transmission operated at high speed in manual "low".

**Car creeps excessively in Drive.**

- Idle speed too high.

**Car Creeps in Neutral**

- Incorrect manual valve lever adjustment.
- High clutch or low band not released.

**No drive in Reverse.**

- Incorrect manual valve lever adjustment.
- Reverse clutch piston stuck.
- Reverse clutch plates worn out.
- Reverse clutch leaking excessively.
- Blocked reverse clutch apply orifice.

**Improper shift points (see Chart).**

- Incorrectly adjusted carburetor-to-transmission linkage.
- Incorrectly adjusted throttle valve.
- Governor defective.
- Rear pump priming valve stuck.

**Unable to push start.**

- Rear pump drive gear not engaged with drive pin on output shaft.
- Drive pin sheared off.
- Rear pump priming valve not sealing.

**Oil leaks.**

- Transmission case and extension
  - a. Extension oil seal.
  - b. Shifter shaft oil seal.
  - c. Speedometer driven gear fitting.
  - d. Pressure taps.
  - e. Oil cooler pipe connections.
  - f. Vacuum modulator assembly and case.

A very smoky exhaust indicates a ruptured vacuum modulator diaphragm.

- Transmission oil pan gasket.

- Converter cover pan.
  - a. Front pump attaching bolts.
  - b. Front pump seal ring.
  - c. Front pump oil seal.
  - d. Oil drain in front pump plugged.
  - e. Porosity in transmission case.

**Oil forced out of filler tube.**

- Oil level too high, aeration and foaming caused by planet carrier running in oil.
- Water in oil.
- Leak in pump suction circuits.

## TORQUE SPECIFICATIONS

Transmission Case to Engine . . . . .	25 to 30 ft. lbs.
Transmission Oil Pan to Case . . . . .	6 to 9 ft. lbs.
Transmission Extension to Case . . . . .	20 to 30 ft. lbs.
Speedometer Gear Housing Retainer . . . . .	3-1/2 to 5 ft. lbs.
Servo Cover to Transmission Case Bolts . . . . .	15 to 20 ft. lbs.
Front Pump to Transmission Case Bolts . . . . .	13 to 17 ft. lbs.
Front Pump Cover to Body Attaching Bolts . . . . .	15 to 20 ft. lbs.
Pinion Shaft Lock Plate Attaching Screws . . . . .	2-1/2 to 3 ft. lbs.
Governor Body to Hub Attaching Bolts . . . . .	6 to 8 ft. lbs.
Governor Hub Drive Screw . . . . .	6 to 8 ft. lbs.
Rear Pump to Transmission Case Bolts . . . . .	8 to 11 ft. lbs.
Valve Body to Transmission Case Bolts . . . . .	8 to 11 ft. lbs.
Valve Body Suction Screen Attaching Screws . . . . .	2-1/2 to 3-1/2 ft. lbs.
Upper Valve Body Plate Bolts . . . . .	3-1/2 to 5 ft. lbs.
Lower to Upper Valve Body Attaching Bolts . . . . .	8 to 11 ft. lbs.
Inner Control Lever Allen Head Nuts . . . . .	6 to 8 ft. lbs.
Parking Lock Pawl Reaction Bracket Attaching Bolts . . . . .	8 to 11 ft. lbs.
Oil Cooler Connections at Transmission Case . . . . .	5 to 7 ft. lbs.
Pressure Test Point Plugs . . . . .	5 to 7 ft. lbs.
Low Band Adjustment Lock Nut . . . . .	13 to 17 ft. lbs.
Converter to Engine Bolts . . . . .	15 to 20 ft. lbs.

# SPECIAL TOOLS

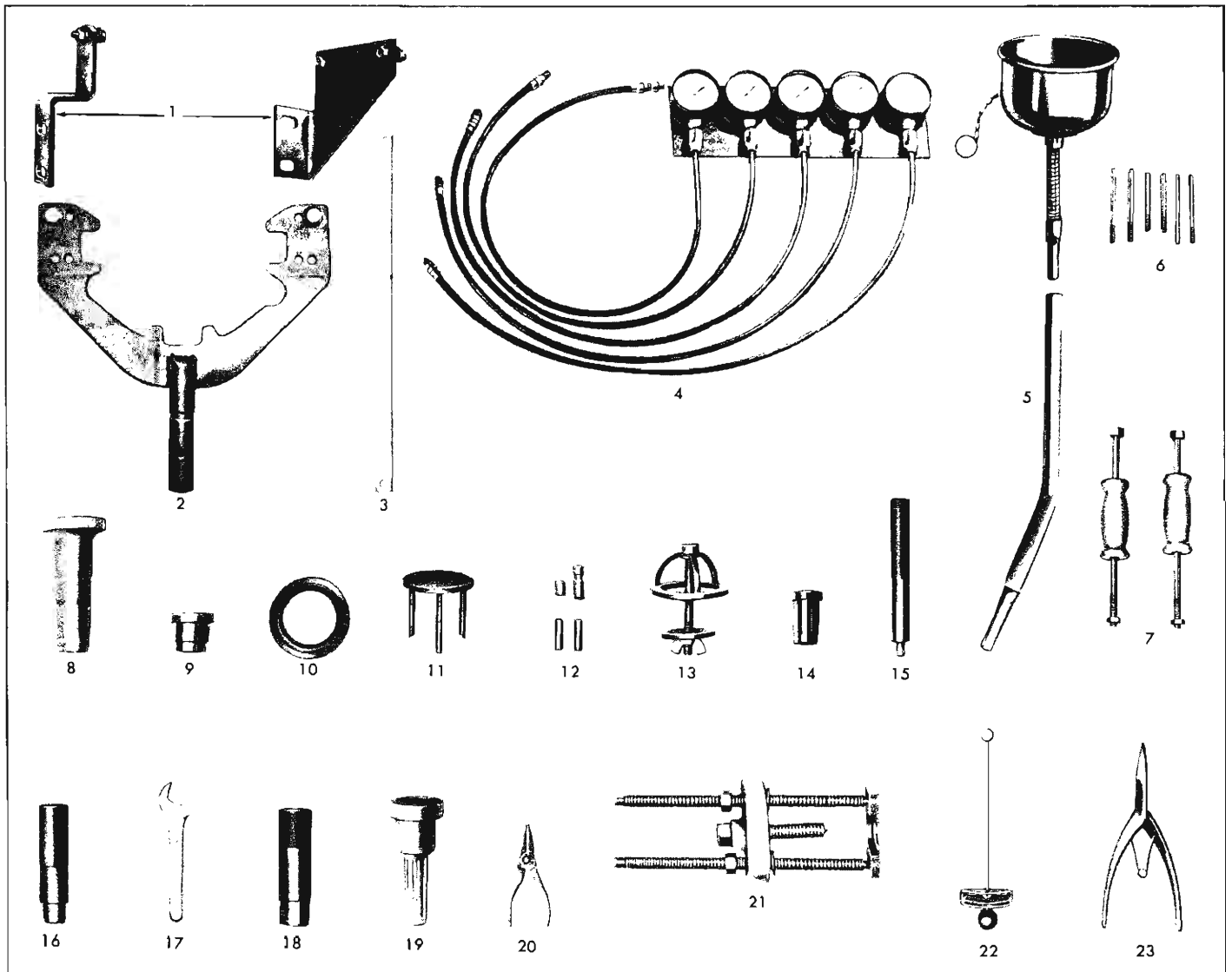


Fig. 44—Aluminum Powerglide Special Tools

- |              |  |              |  |
|--------------|--|--------------|--|
| 1. J-9506    | Holding Fixture Adapters   | 15. J-7079   | Handle   |
| 2. J-3289-01 | Holding Fixture (Use with J-3289-20 Base)  | 16. J-6582   | Rear Pump Bushing Installer                    |
| 3. J-9549    | Converter Safety Strap   | 17. J-9543   | Vacuum Modulator Wrench                        |
| 4. J-4872-A  | Transmission Pressure Gauges   | 18. J-5778   | Extension Bushing Remover and Installer        |
| 5. J-4264-A  | Oil Filler Tube and Funnel   | 19. J-5154-A | Extension Oil Seal Installer                   |
| 6. J-3387    | Pilot Stud Set   | 20. J-5403   | Snap Ring Pliers                               |
| 7. J-9539    | Front Pump Puller Bolts (Use with weights from Slide Hammers J-6585)               | 21. J-5814-A | Speedometer Drive Gear Remover and Installer   |
| 8. J-6839    | Front Pump Seal Driver   | 22. J-5853   | Torque Wrench                                  |
| 9. J-9546    | Clutch Drum Bushing Remover and Installer  | 23. J-8039   | Snap Ring Pliers                               |
| 10. J-7782   | Clutch Spring Compressor Adapter Plate   | J-8001       | Dial Indicator (Not Illustrated)               |
| 11. J-5133   | Clutch Spring Compressor   | J-5492       | Dial Indicator Support Strap (Not Illustrated) |
| 12. J-9538   | Planet Pinion Assembly Tool Set  | J-6585       | Slide Hammers (Not Illustrated)                |
| 13. J-9542   | Reverse Piston Spring Compressor   | J-6585-3     | Slide Hammer Adapters (Not Illustrated)        |
| 14. J-9557   | Transmission Case Rear Bushing Remover and Installer and Rear Pump Bushing Remover | J-9534       | Bushing Remover (Not Illustrated)              |

# SECTION 14

## BODY AND SHEET METAL

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## GENERAL DESCRIPTION

New sedan roof panels have a smooth contour, the canopy over the rear window being eliminated. A new roof for the Impala 2-door hardtop model is impressive with two lateral creases which add interesting highlights at the rear. Complementing the new roof, the Impala Sport Coupe utilizes a compound curved windshield. This same windshield is again used for the Convertible.

Body outer panels below the belt, with the exception of door panels, are new for all models. Doors differ from previous models only in hole locations for body trim moldings. Body valance panels, front and rear, are eliminated with the new deep section bumper design. Basic body construction, including double-wall cowl, box-section roof rails, headers, pillars and rocker panels, is retained.

Slightly lower in the rear quarter panel than last year, the new fuel tank filler door is enlarged permitting easier filling of fuel tank. The door vertical and horizontal dimensions are increased approximately 0.5 inch.

Reinforcing provisions at underbody attaching points for all front seat safety belts will be released as regular production for all models. Eliminating the need for special tools, the new provision permits easy and rapid installation. A new attaching method for front belts, made possible by the new production reinforcement, complies with Federal Specifications as do the rear safety belts. Rear

belts, buckles, and attachments are not changed. See Figures 1 and 2 for General Body Views.

Throughout this section, the various body styles will be referred to by number. The following chart lists these numbers and relates them to body descriptions. If service information refers only to one

SERIES NUMBER						DESCRIPTION
Biscayne		Bel Air		Impala		
1100 6 Cyl	1200 8 Cyl	1500 6 Cyl	1600 8 Cyl	1700 6 Cyl	1800 8 Cyl	
1111	1211	1511	1611			2 Dr. Sedan - 6 Pass.
1169	1269	1569	1669	1769	1869	4 Dr. Sedan - 6 Pass.
				1739	1839	4 Dr. Sport Sedan - 6 Pass.
		1537	1637	1747	1847	Sport Coupe - 5 Pass.
				1767	1867	Convertible - 5 Pass.
1135	1235	1535	1635	1735	1835	4 Dr. Sta. Wagon - 6 Pass.
		1545	1645	1745	1845	4 Dr. Sta. Wagon - 9 Pass.

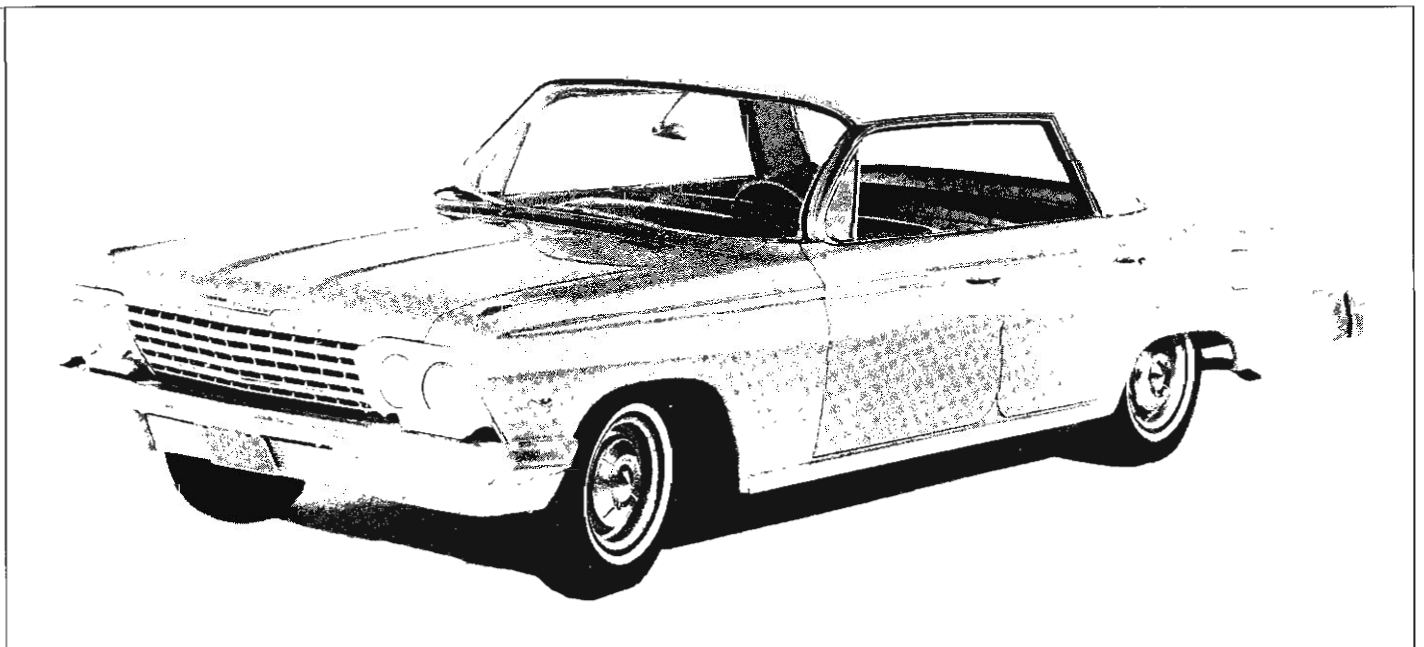


Fig. 1—1962 Impala Sport Sedan

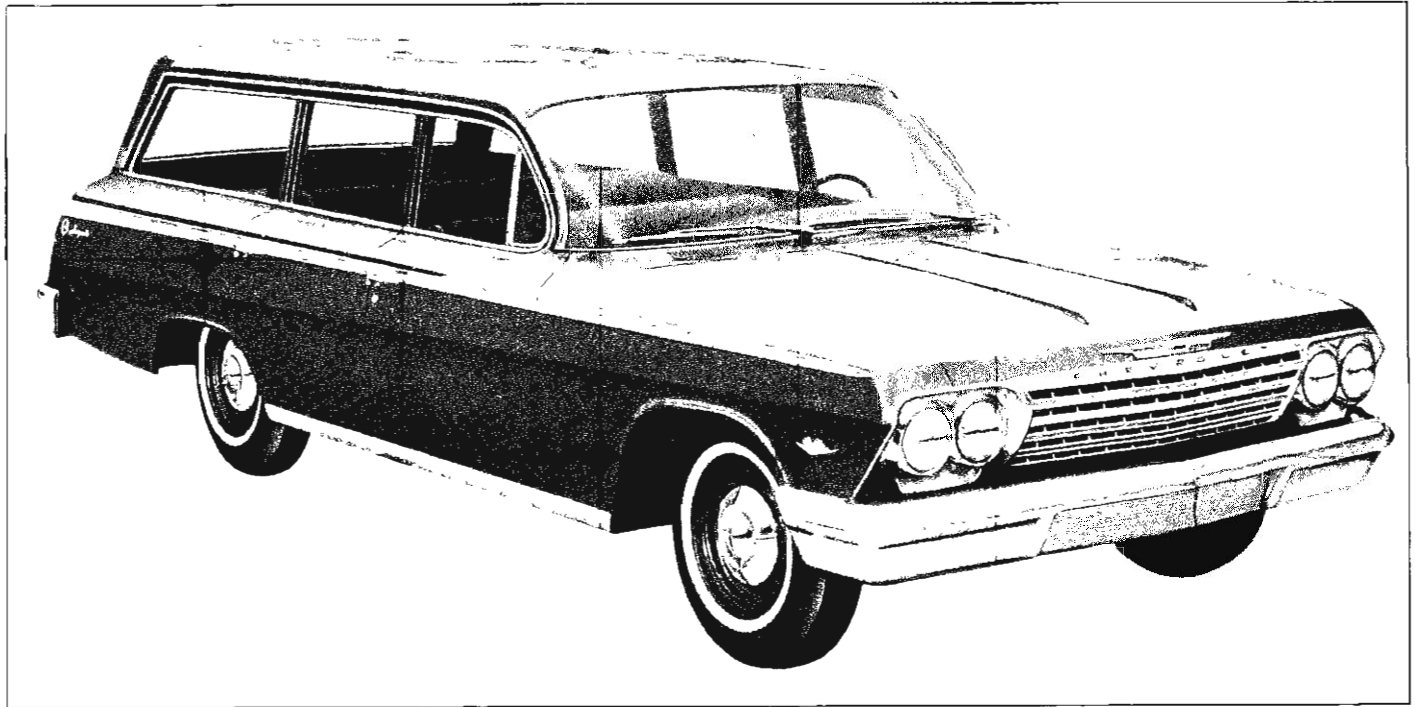


Fig. 2—1962 Impala Station Wagon

particular body style, or group of body styles, it will be so stated in the headings (large size type) preceding each service outline. Service procedures not

covered herein may be performed as outlined in the 1961 Shop Manual.

## SERVICE OPERATIONS

### CLEANING SOFT TRIM

There are four general types of trim materials used in automotive bodies:

1. Fabrics that may be either plain fabrics (broadcloth, gabardine, etc.) or pattern fabrics which are manufactured with natural or synthetic (nylon orlon, rayon, viscose, etc.) fabrics.
2. Genuine leather.
3. Coated fabrics (vinyl or mylar).
4. Polyurethane foam.

Dust and dirt particles that accumulate on the upholstery of a car should be removed every few weeks, or oftener if the car is given constant hard use. This is done with a whisk broom or vacuum cleaner.

**CAUTION:** Do not use a whisk broom on fabrics having raised tapestry patterns since damage to the fine threads may result. On polyurethane foam material use only a soft bristle brush - do not use a whisk broom or vacuum cleaner.

Before attempting to remove spots or stains from upholstery fabrics, determine as accurately as possible:

1. Nature and age of the spot or stain.
2. The effect of stain removing agents on the color structure and general appearance of the fabric.

For best results, stains should be removed from upholstery as soon as possible after they have been made. If they are allowed to stand for some time, they often become set, and removal becomes more difficult - frequently, impossible.

There are three basic types of acceptable cleaners available:

1. Volatile cleaners (colorless liquids).
2. Synthetic detergents.
3. Neutral soap (nonalkaline).

The volatile cleaners are recommended since they have great solvent powers for grease, oils and general road grime. Synthetic detergents generally loosen up stains satisfactorily, however, the use of improper type detergents involves risk of damage to the color or finish of fabrics.

## PROCEDURE FOR CLEANING FABRICS WITH VOLATILE CLEANERS

Care should be taken not to use too much solvent and to apply it only with clean cloths. It is the solvent that does the work - so only a minimum of pressure should be applied.

1. Brush away all loose particles of dirt and soil.
2. Dampen a clean cloth (cheese cloth may be used) with the volatile cleaner. Open the cloth and allow a portion of the cleaner to evaporate so that the cloth is just slightly damp.
3. Using very light pressure and circular lifting motion, rub the stained area, starting at the outer edge and working toward the center until the entire area has been covered. Change to a clean portion of the cloth every few strokes.
4. Before proceeding, wait several minutes to allow most of the volatile cleaner to evaporate. This will avoid the danger of the cleaner penetrating to the padding under the upholstery. Certain cleaners will deteriorate sponge rubber which is often used as padding.
5. It may be necessary to repeat Steps No. 2, 3, and 4 several times before the stain has been satisfactorily removed. Each time a clean cloth should be used.
6. If a ring should form on the fabric when removing a stain, the entire area of the trim assembly should be cleaned as described in the preceding steps.
7. The cleaned upholstery should be allowed to dry completely before using.

Some volatile cleaners are toxic and harmful; therefore, the following safety precautions should be used:

1. Always use in a well ventilated area. Car windows and garage doors must be open when such cleaners are used.
2. Avoid prolonged or repeated breathing of vapors from cleaner.
3. Avoid prolonged or repeated contact with the skin.
4. Keep away from eyes and mouth.
5. Some cleaners are flammable, and every precaution and care must be exercised in handling these cleaners.

## PROCEDURE FOR CLEANING FABRICS WITH SYNTHETIC DETERGENTS

1. Make a solution of the synthetic detergent in lukewarm water, working up a thick, frothy suds.

2. With a clean cloth or sponge, dampened with lukewarm water, apply suds only to the surface of the upholstery using light to medium pressure, repeating several times, applying more suds with a clean portion of the cloth or sponge.
3. With a second clean cloth, dampened with lukewarm water, rub over the area with medium pressure to remove excess detergent and loose material.
4. With a clean dry cloth, wipe off all excess moisture. A vacuum cleaner may also be used.
5. Allow the upholstery to dry partially; then repeat the above treatment if necessary to remove stain.
6. When the upholstery is satisfactorily cleaned, allow to dry completely before using.

## PRECAUTIONS FOR CLEANING FABRICS

1. Solutions containing water are not recommended for general cleaning of broadcloths. Water has great destructive powers on the high face or high gloss finish of broadcloths, causing the nap to curl and roughen to such an extent that the finish is destroyed or made very unsightly. However, in some cases where it is necessary to use a solution containing water to remove a stain, the resultant disturbance to the finish of material may be preferable to the stain.
2. Do not use as a cleaning solvent any gasoline which is colored or which contains tetraethyl lead.
3. Do not use solvents such as acetone, lacquer thinners, enamel reducers and nail polish remover, as a cleaning solvent.
4. Do not use laundry soaps, bleaches or reducing agents, such as the following: chloride of lime, javelle water, hydrogen peroxide, sodium hydro-sulphite, potassium permanganate, chlorine or chlorine water, sulphurous acid (sulphur dioxide), sodium thiosulphate (Photographers' hypo). The use of these agents tends to weaken fabric and to change its color.
5. Do not use too much cleaning fluid; some interior trim assemblies are padded with rubber, and volatile cleaners are generally solvents for rubber. The application of too much cleaner may destroy these rubber pads.

## PROCEDURE FOR CLEANING GENUINE LEATHER AND COATED FABRICS

Care of genuine leather and coated fabrics (includes vinyl coated formed headlining) is a relatively simple but important matter. The surface should be wiped occasionally with a dry cloth, and whenever



## BODY 14-6

dirt accumulates, the following cleaning instructions should be used:

1. Lukewarm water and a neutral soap should be used. Apply a thick suds, worked up on a piece of gauze or cheesecloth, to the surface.
2. The operation should be repeated, using only a damp cloth and no soap.
3. The surface should then be wiped dry with a soft cloth.

Polishes and cleaners used for auto body finishes, volatile cleaners, furniture polishes, oils, varnishes or household cleansing and bleaching agents should never be used.

### PROCEDURE FOR CLEANING POLYURETHANE FOAM MATERIAL

Normal soilage such as dirt and finger prints can be removed with a cleaning solution of approximately two (2) ounces of white detergent powder mixed in a gallon of water. Immerse a clean cellulose sponge in cleaning solution. Wring the sponge out thoroughly leaving suds only; then clean soiled area carefully. Rinse off the cleaned area with sponge and clean water - DO NOT soak the cleaned area.

Soilage such as cements, sealers, and grease can be removed by first cleaning the soiled area with a detergent solution as described above - DO NOT RINSE. Leaving suds on the soiled area, clean area, with a clean cloth that has been dipped in a good volatile upholstery cleaner and thoroughly wrung out. Then clean soiled area with detergent suds and rinse as described above.

### PROCEDURE FOR CLEANING VICODEC FOLDING TOP MATERIAL

The top should be washed frequently with neutral soap suds, lukewarm water and a brush with soft bristles. Rinse top with sufficient quantities of clear water to remove all traces of soap.

If the top requires additional cleaning after using soap and water, a mild foaming cleanser can be used. Rinse the whole top with water; then apply a mild foaming type cleanser on an area of approximately two square feet. Scrub area with a small soft bristle hand brush, adding water as necessary until the cleanser foams to a soapy consistency. Remove the first accumulated soilage with a cloth or sponge before it can be ground into the top material. Apply additional cleanser to the area and scrub until the top is clean. Care must be exercised to keep the cleanser from running onto body finish as it may cause streaks if allowed to run down and dry. After the entire top has been cleaned, rinse the top generously with clear water to remove all traces

of cleanser. If desired, the top can be supported from the underside during the scrubbing operations.

After cleaning always be sure the top is thoroughly dry before it is lowered. Lowering the top while it is still wet or damp may cause mildew and unsightly wrinkles.

Do not use volatile cleaners or household bleaching agents on the top material.

### PROCEDURE FOR CLEANING FLOOR CARPETS

Thoroughly brush or vacuum the floor carpet. In many instances the floor carpet may require no further cleaning. If carpet is extremely soiled remove carpet from car and thoroughly vacuum to remove loose dirt; then with a foaming type upholstery cleaner, clean approximately one (1) square foot of carpet at a time. After each area is cleaned, remove as much of the cleaner as possible with a vacuum cleaner. After cleaning the carpet use an air hose to "fluff" the carpet pile, then dry the carpet. After the carpet is completely dried, use an air hose to again fluff the carpet pile.

**NOTE:** If the carpet is not extremely soiled, the carpet may be cleaned in the car by applying a sparing amount of foaming type upholstery cleaner with a brush.

If oil or grease spots are still present on the carpet they may be removed by using a volatile cleaner.

### INSTRUCTIONS FOR THE REMOVAL OF SPECIFIC STAINS FROM AUTOMOTIVE UPHOLSTERY MATERIALS

Some types of stains and soilage, including blood, ink, chewing gum, etc., require special consideration for most satisfactory results. For these, and other stains, specific instructions are outlined in succeeding paragraphs. It must be expected, particularly where water treatment is specified, that discoloration and finish disturbance may occur. In some cases fabric disturbance may be considered preferable to the stain itself. By following the procedures outlined with normal care and caution, reasonably satisfactory results can be expected.

#### Battery Acids

Apply ordinary household ammonia water with a brush or cloth to the affected area, saturating it thoroughly. Permit the ammonia water to remain on the spot about a minute, so that it will have ample time to neutralize the acid. Then rinse the spot by rubbing with a clean cloth saturated with cold water.

This treatment will suffice for both old and new stains. However, no type of treatment will repair damage to fibers resulting from the action of the acids on the fibers - particularly after the spot has dried.

### **Blood**

Do not use hot water or soap and water on blood stains since they will set the stain, thereby making its removal practically impossible.

Rub the stain with a clean cloth saturated with cold water until no more of the stain will come out. Care must be taken so that clean portions of cloth are used for rubbing the stain.

This treatment should remove all of the stain. If it does not, apply a small amount of household ammonia water to the stain with a cloth or brush. After a lapse of about one minute, continue to rub the stain with a clean cloth dipped in clear water.

If the stain remains after the use of water and ammonia, a thick paste of corn starch and cold water may be applied to the stained area. Allow the paste to remain until it has dried and absorbed the stain. Then pick off the dry starch. Brush the surface to remove starch particles that remain. For bad stains, several applications of starch paste may be necessary.

### **Candy**

Candy stains, other than candy containing chocolate, can be removed by rubbing the affected area with a cloth soaked with very hot water. If the stain is not completely removed, rub area lightly (after drying) with a cloth wet with a volatile cleaner. This will usually remove the stain.

Candy stains resulting from cream and fruit-filled chocolates can be removed more easily by rubbing with a cloth soaked in lukewarm soap-suds (mild neutral soap) and scraping, while wet, with a dull knife. This treatment is followed with a rinsing by rubbing the spot with a cloth dipped in cold water.

Stains resulting from chocolate or milk chocolate can be removed by rubbing the stain with a cloth wet with lukewarm water. After the spot is dry, rub it lightly with a cloth dipped in a volatile cleaner.

### **Chewing Gum**

Harden the gum with an ice cube, and scrape off particles with a dull knife. If gum cannot be removed completely by this method, moisten it with a volatile cleaner and work it from the fabric with a dull knife, while gum is still moist.

### **Fruit, Fruit Stains, Liquor and Wine**

Practically all fruit stains can be removed by treatment with very hot water. Wet the stain well by applying hot water to the spot with a clean cloth. Scrape all excess pulp, if present, off the fabric with a dull knife; then rub vigorously with a cloth wet with very hot water. If the stain is very old or deep, it may be necessary to pour very hot water directly on the spot, following this treatment with the scraping and rubbing. Direct application of hot water to fabrics is not recommended for general use since discoloration usually results.

If the above treatments do not remove stain, allow fabric to dry thoroughly; then rub lightly with a clean cloth dipped in a volatile cleaner. This is the only further treatment recommended.

Soap and water are not recommended since they will probably set the stain and cause a permanent discoloration. Drying the fabric by means of heat (such as the use of an iron) is not recommended.

### **Grease and Oil**

If grease has been spilled on the material, as much as possible should be removed by scraping with a dull knife or spatula before further treatment is attempted.

Grease and oil stains may be removed by rubbing lightly with a clean cloth saturated with a volatile cleaner. Be sure all motions are toward the center of the stained area to decrease the possibility of spreading the stain.

### **Ice Cream**

The same procedure is recommended for the removal of ice cream stains as that used in removing fruit stains.

If the stain is persistent, rubbing the spot with a cloth wet with warm soap suds (mild neutral soap) may be used to some advantage the initial treatment with hot water. This soap treatment should be followed with a rinsing, by rubbing with a clean cloth wet with cold water. After this dries, rubbing lightly with a cloth wet with volatile cleaner will clear up the last of the stain, by removing fatty or oily matter.

### **Nausea**

Sponge with a clean cloth, dipped in clear cold water. After most of the stain has been removed in this way, wash lightly with soap (mild neutral), using a clean cloth and lukewarm water. Then rub with another clean cloth dipped in cold water. If any of the stain remains after this treatment, gently rub clean with a cloth moistened with a volatile cleaner.

### Shoe Polish and Dressings

On types of shoe dressings which contain starch or dextrine or some water soluble vehicle, allow the polish to dry; then brush the spot vigorously with a brush. This will probably be all the treatment that is necessary. If further treatment is required moisten the spot with cold water and after it has dried, repeat the brushing operation.

Paste or wax type shoe polishes may require using a volatile cleaner. Rub the stain gently with a cloth wet with a volatile cleaner until the polish is removed. Use a clean portion of the cloth for each rubbing operation and rub the stained area from outside to center.

### Tar

Moisten the spot slightly with a volatile cleaner, and then remove as much of the tar as possible with a dull knife. Follow this operation by rubbing the

spot lightly with a cloth wet with the cleaner until the stain is removed.

### Urine

Sponge the stain with a clean cloth saturated with lukewarm soap suds (mild neutral soap) and then rinse well by rubbing the stain with a clean cloth dipped in cold water. Then saturate a clean cloth with a solution of one part household ammonia water and five parts water. Apply the cloth to the stain and allow solution to remain on affected area for one minute; then rinse by rubbing with a clean wet cloth.

### Lipstick

The compositions of different brands of lipsticks vary, making the stains very difficult to remove. In some instances a volatile cleaner may remove the stain. If some stain remains after repeated applications of the volatile cleaner, it is best to leave it rather than try other measures.

## FRONT END

### WINDSHIELD ASSEMBLY INSTRUMENT PANEL ASSEMBLY BODY VENTILATING SYSTEM

1961 service information is applicable to 1962 vehicles. Note, however, that the windshield side

reveal moldings (1961 Passenger Shop Manual, Figure 2) now have a screw retaining the lower end to the body. The windshield checking blocks J-8372 have been replaced by the new J-8942 blocks which are designed to fit over the new, deeper pinchweld flange. The new blocks may also be used in place of the older style on earlier vehicles.

## DOORS AND CENTER PILLAR

### FRONT AND REAR DOORS

#### Front and Rear Door Bottom Drain Hole Sealing Strips

Door bottom drain hole sealing strips are attached to door inner panels over door bottom drain holes and are designed to prevent entry of dust at these areas. The sealing strips are of a new design and are retained by two (2) retaining plugs (carrots) which are an integral part of the sealing strip. These new sealing strips are of a vinyl construction and should not require lubrication.

#### Removal and Installation

1. With a putty knife, or other suitable flat-bladed tool, carefully pry out retaining carrots.
2. To install, insert tip of a blunt tool (such as a

blunt ice pick) into carrot and push carrot into retaining holes (see Figure 3).

#### Front and Rear Door Inside Handles

##### Removal and Installation

- A. On styles equipped with door inside remote control "paddle" handles, proceed as follows:
  1. Remove door arm rest as described under "Front and Rear Door Arm Rests".
  2. Remove handle-to-remote attaching bolt and remove handle from door (see Figure 4).
  3. To install, reverse removal procedure.
- B. On styles not equipped with paddle handles and for removal of manually operated door window and ventilator inside handles, proceed as follows:

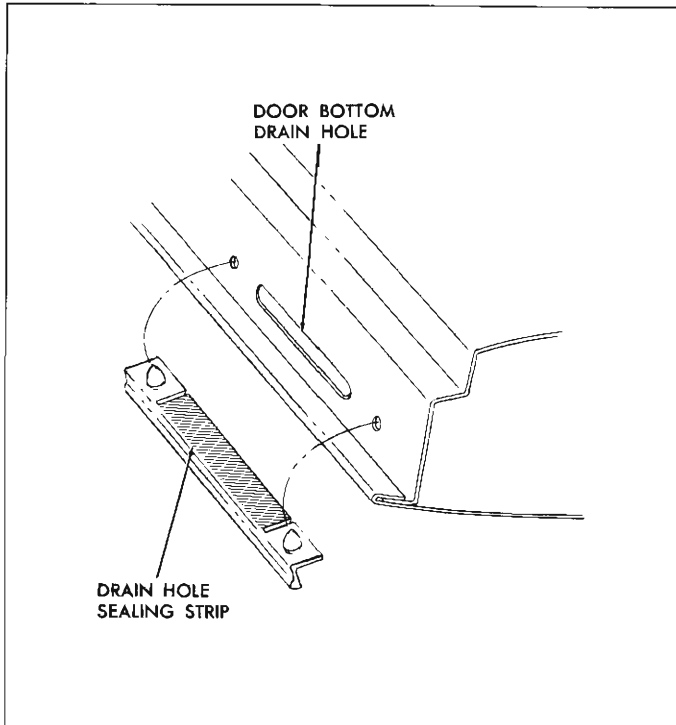


Fig. 3—Door Bottom Drain Hole Seal

1. Depress door trim assembly at handle sufficiently to install Tool J-7797 between handle and bearing plate.

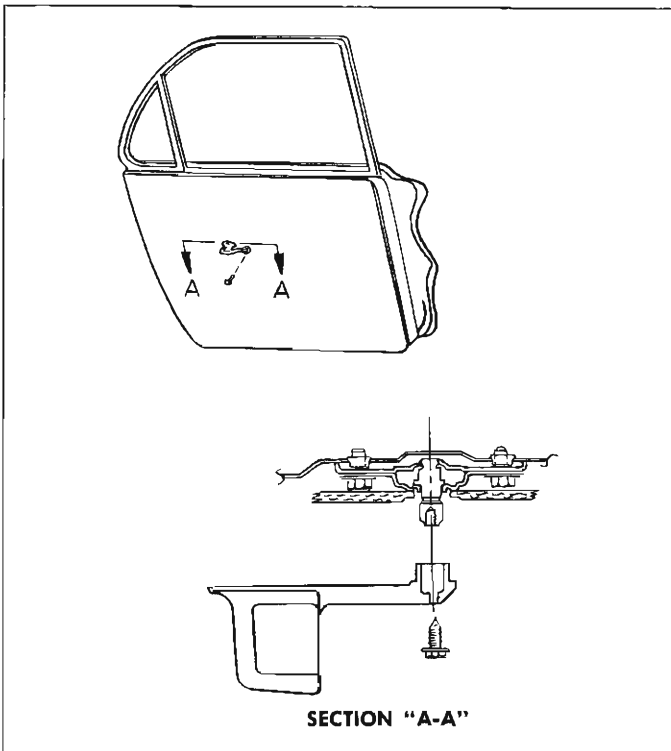


Fig. 4—"Paddle" Type Inside Door Handles

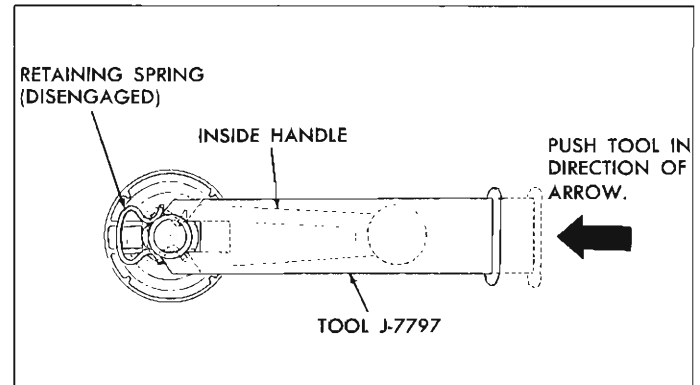


Fig. 5—Disengaging Handle Retaining Spring

2. Push handle retaining spring out of engagement and remove handle and bearing plate from door.

**Installation**

1. Install retaining spring on handle and bearing plate over regulator spindle.
2. Position handle on spindle at same angle as handle on opposite door and push handle until spring is engaged (see Figure 5).

**NOTE:** Handles are installed in a horizontal position with open end forward when glass is in full up position.

**Front and Rear Door Arm Rest Assemblies**

All arm rests are the applied type and are secured to the door inner panel by two (2) attaching screws. When a door arm rest is removed, it may be necessary to reseal the attaching screw holes with body caulking compound prior to installation.

**Removal and Installation**

1. Remove screws securing arm rest assembly to door inner panel and remove assembly (see Figure 6).
2. To install, reverse removal procedure.

**Front and Rear Door Window Glass Run Channel Inner and Outer Strip Assemblies**

Glass run channel strip assemblies are used on all doors on all styles incorporating a dropping window and are designed to prevent cold air and water from entering the body between the door window lower sash channel and door inner and outer panels. The inner strip assembly is similar to that used on past models and is secured to the door inner panel by a series of attaching clips. The outer strip assembly is constructed of a molded rubber and is

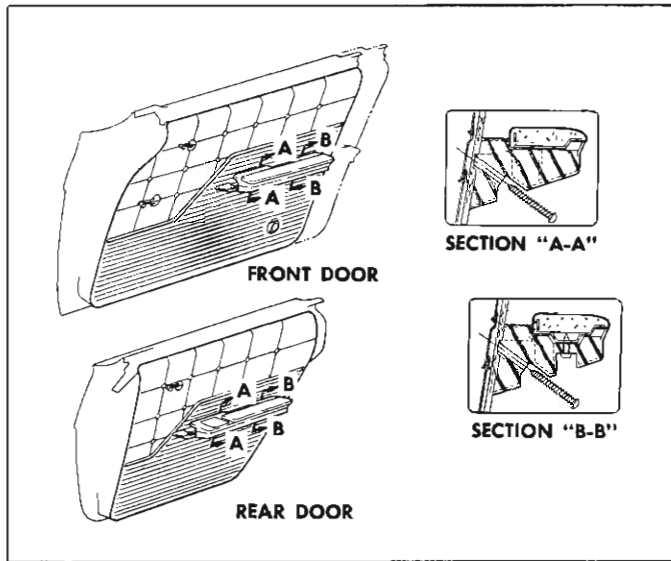


Fig. 6—Front and Rear Door Trim Assemblies

secured to a metal retainer by a series of staples. On styles equipped with a door window belt reveal molding, the metal retainer is an integral part of this molding. In either case, the molding or retainer is secured to the door outer panel by a series of attaching clips. Moldings are further retained by two (2) attaching screws, one at each end. When the door window is raised, the top section of the outer strip assembly is lifted and held in position by the door window lower sash channel and/or filler (see Figure 7).

**Removal and Installation**

1. Lower door window and apply masking tape over door panel adjacent to strip assembly to protect paint finish.
2. On styles equipped with a belt reveal molding, remove attaching screws.

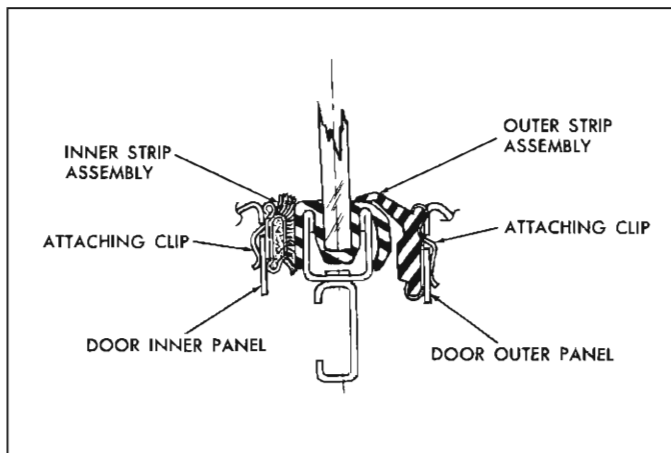


Fig. 7—Glass Channel Strip Assemblies

3. With a hooked tool, carefully pry up inner edge of strip assembly at clip locations and remove assembly from door (see Figure 8).
4. To install, align clips with holes in door inner panel and press strip assembly into place.
5. On styles equipped with belt reveal molding, reinstall attaching screws and, if applicable, front door ventilator assembly.
6. Remove tape from door panel.

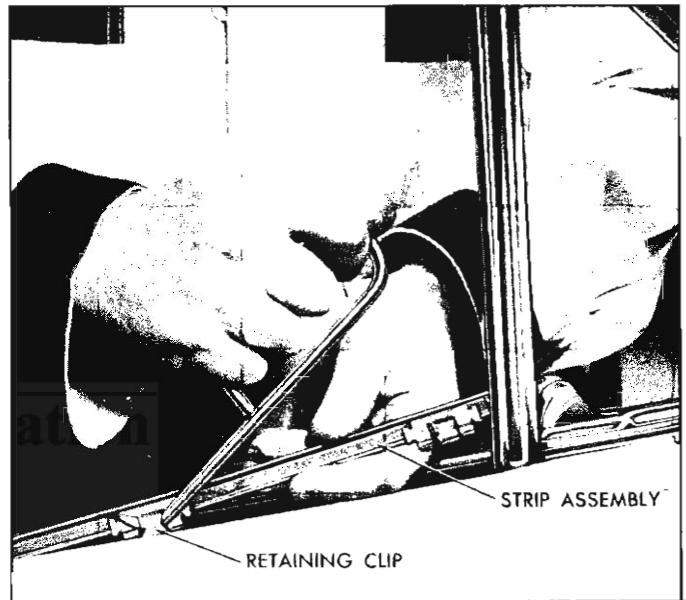


Fig. 8—Glass Channel Strip Removal

**FRONT DOORS**

**Front Door Assemblies and Hinges**

The following note should be added to the 1961 Door Assembly Installation Instructions:

**NOTE:** One (1) or more of the attaching bolts are not accessible due to inadequate wrench clearance. When fore and aft adjustments are performed, therefore, the recommended procedure is to remove the obstructing attaching bolt and perform adjustments with the remaining three (3) bolts. After satisfactory adjustments have been made, replace the previously removed bolt. The removal of the obstructing bolt and subsequent adjustments can best be accomplished with a ratcheting boxocket wrench.

It should also be noted that the upper door hinge is made of cast aluminum and that attempts to adjust door by bending this hinge will result in cracking or totally breaking hinge straps.

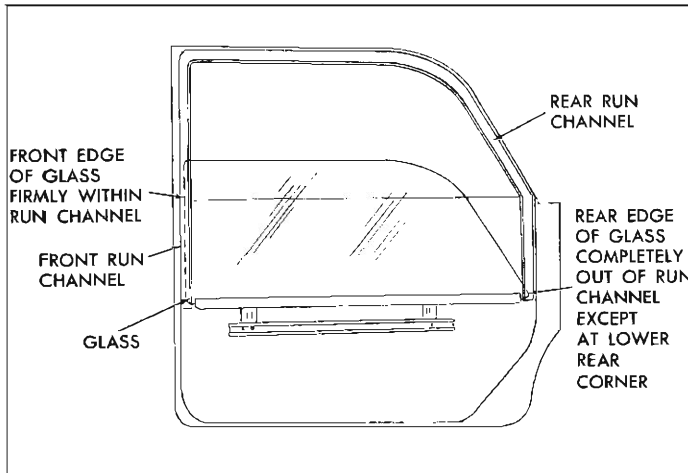


Fig. 9—Typical "69" Style Rear Door  
(Fully Lowered Glass)

### Front Door Window Glass Run Channel Assembly

1. Remove door trim assembly and detach inner panel water deflector.
2. Remove ventilator division channel lower adjusting stud and nut (see Figure 39). 1961 Passenger Car Shop Manual, Section 14.
3. On styles equipped with manual window regulators, lower window. Remove window lower sash channel cam attaching screws and disengage sash channel cam from window lower sash channel; then raise window and prop in full up position. Disengage sash channel cam from window regulator arm rollers.
4. On "37-47-39-67" styles, equipped with electric window regulators, remove door ventilator assembly and door window, remove screws securing window lower sash channel cam to window sash channel and disengage cam from window sash channel and remove cam. On remaining styles prop window in up position.
5. On styles equipped with electric window regulators, disconnect wire harness feed wires from regulator motor at connector.

**CAUTION:** DO NOT OPERATE REGULATOR MOTOR after window assembly is disengaged from regulator. Operation of motor with load removed may damage unit.

6. Remove window regulator attaching screws. Disengage regulator balance arm from inner panel cam and carefully remove regulator assembly from door.

**NOTE:** On some models only one end of inner panel cam is open sufficiently to permit removal of regulator arm roller.

7. To install, reverse removal procedure. Check window for proper operation prior to installing inner panel water deflector.

### REAR DOORS

Figure 9 is typical of "69" style rear doors; while Figure 10 shows "35" and "45" style rear doors. Both views show fully lowered door window in proper position for maximum glass stability. These and other style doors are serviced as outlined in the 1961 Shop Manual except as follows:

### Rear Door Hinges

The rear door hinges are attached to the center pillar with two (2) butt-type hinges. The hinges are secured to the center pillar and door hinge pillar by screws and anchor plates. The lower hinge incorporates an integral door check and hold-open.

### Removal

The door and hinges can be removed as an assembly from the center pillar or the door can be removed from the hinge straps.

1. On "39" styles, lower door window.
2. Clean off excess sealer around each hinge strap and mark location on door hinge pillar or center pillar, depending on method of removal being used.
3. On bodies equipped with electrically powered window regulators, proceed as follows:
  - a. Remove door trim assembly and detach inner panel water deflector sufficiently to gain access to wire connector at motor.

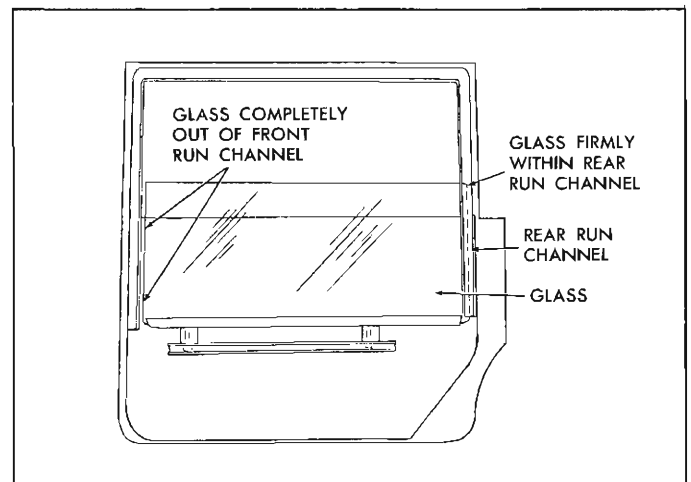


Fig. 10—Typical "35" and "45" Style Rear Door  
(Fully Lowered Glass)

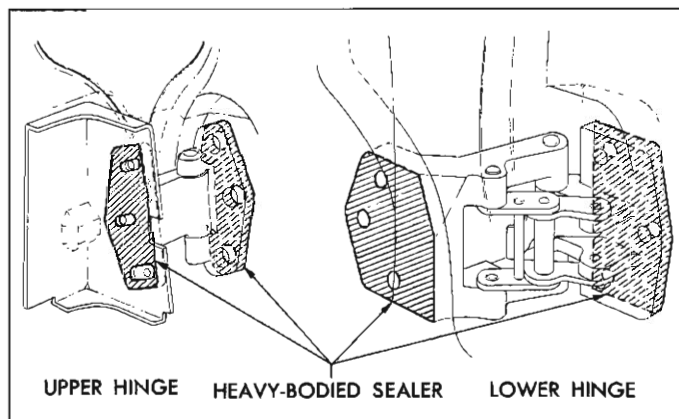


Fig. 11—Rear Door Hinge Sealing

- b. Detach wire harness from door inner panel and disconnect regulator motor from harness at connector.
- c. Remove electrical conduit from door and remove wire harness from between door panels through opening in door hinge pillar.
4. With door properly supported, remove three (3) upper and three (3) lower hinge attaching screws at door hinge pillar or center pillar depending on method of removal (see Figures 43 and 44 in Section 14, 1961 Passenger Car Shop Manual).
5. With aid of helper, remove door from body.

### Installation

1. With scraper and mineral spirits, clean off old sealing compound at hinge attaching areas. This operation should be performed carefully to avoid possibility of soiling adjacent trim material.
2. Apply a coat of heavy-bodied sealer to attaching surfaces of hinge straps or corresponding surfaces of door or body (see Figure 11).
3. With helper, lift door into position. Install screws loosely, align strap within scribe marks on pillar and tighten bolts. Check door for proper alignment.
4. On doors equipped with power operated windows, proceed as follows:
  - a. Install wiring harness inside of door. Connect regulator motor and install wiring harness to inner panel.
  - b. Install conduit to door hinge pillar. Check operation of electric window assembly.
5. Where required, seal door inner panel water deflector as specified in "DOOR INNER PANEL WATER DEFLECTOR" and reinstall all previously removed parts.



Fig. 12—Rear Door Hinge Attachment

6. For lubrication information see "LUBRICATION" section.

### Adjustments

In and out or up and down adjustments are provided at door hinge pillar. Fore and aft and a slight up and down adjustment are provided at center pillar. When checking the door for alignment, remove door lock striker from body pillar to allow door to hang free on its hinges.

**NOTE:** After performing any adjustments, the rear door window on "39" models should be checked for proper alignment with side roof rail weatherstrip. In addition, door lock extension-to-striker engagement should be checked and adjusted if necessary.

1. For in and out or up and down adjustment, loosen hinge to door pillar attaching screws. (see Figure 12). Adjust door as required and tighten screws.

**NOTE:** When performing in and out or fore and aft adjustments, adjust one hinge at a time so that "up and down" adjustment is maintained.

- To adjust door fore or aft, loosen hinge to center pillar attaching screws (see Figure 13). Adjust door fore or aft as required and tighten screws and bolts.

**CAUTION:** The rear door upper hinge on "35", "45" and "69" styles is constructed of die cast aluminum which will break under strain of bending in an attempt to short-cut adjustments. Use only the recommended procedures for adjusting rear doors.

### Rear Door Window Glass Run Channel Assemblies "69" Style

#### Removal and Installation

- Remove door trim assembly and detach inner panel water deflector. Disengage lower sash channel cam from window sash channel.
- Remove door window assembly.
- Remove front and rear attaching screws from hinge and lock pillar facing of door inner panel (see Figure 14).
- Carefully disengage glass run channel attaching clips, beginning along front of door window frame. Pull glass run channel inboard and upward and remove channel from between inner and outer panels.
- To install, reverse removal procedure. Check operation of rear door window and where required, adjust glass run channel for proper operation of window assembly.

### Rear Door Window Glass Run Channel Assemblies "35-45" Styles

#### A. Rear Door Window Rear Glass Run Channel

##### Removal and Installation

- Raise door window. Remove door trim assembly and detach inner panel water deflector.
- From inside door, remove screw securing lower end of glass run channel at door lock pillar facing.
- Remove screws securing door belt trim support rear finishing plate and remove plate.
- Remove screws securing rear door window glass run channel rear retainer from rear of window frame assembly and remove retainer.

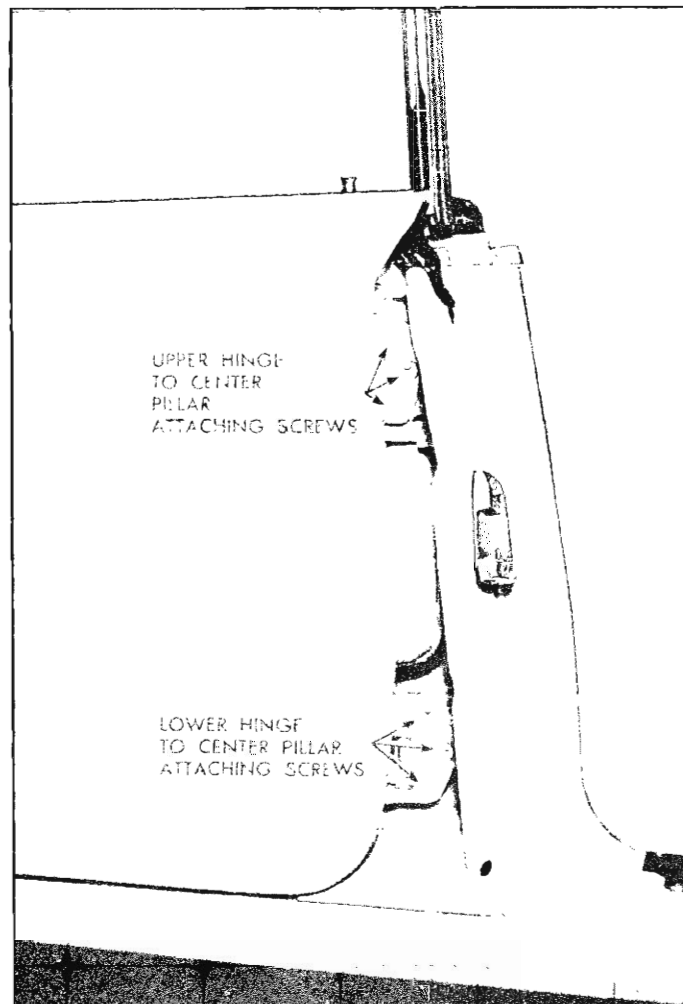


Fig. 13—Rear Door-to-Center Pillar Attachment

- Lower door window. Disengage run channel attaching clips along lock pillar portion of window frame. Then carefully raise rear run channel and remove from door.
- To install, reverse removal procedure. Check operation of rear door window and adjust rear glass run channel as required before installing water deflector.

#### B. Rear Door Window Front Glass Run Channel

##### Removal and Installation

- Remove rear door window rear glass run channel and remove rear door window assembly.
- Remove glass run channel lower attaching screws from hinge pillar facing of door.
- Carefully disengage glass run channel attaching clips along top and hinge pillar portion of window frame. Then pull glass run channel inboard and upward and remove from door.



4. To install, reverse removal procedure. Check operation of rear door window and adjust channel as required.

**Adjustments**

**“69-35-45” Styles**

To adjust either glass run channel in or out or up or down, loosen channel attaching screws(s), adjust channel as required and tighten screws. After any adjustments, check window for proper operation.

**NOTE:** Adjustment of both channels must be co-ordinated to provide proper operation of the rear door window assembly.

Lower door window sufficiently to gain access to lower sash channel cam attaching screws through access holes in door inner panel and remove screws (see Figure 14).

**Rear Door Window Assembly**

**“69-35-45” Styles**

**Removal and Installation**

1. Lower door window. Remove door trim assembly and detach inner panel water deflector.
2. Remove lower sash channel cam attaching screws and disengage cam from sash channel (see Figure 14).

**NOTE:** On styles equipped with electric window regulators, disconnect wiring harness electrical feed plug from regulator motor at connector.

**CAUTION:** DO NOT OPERATE REGULATOR MOTOR after window assembly is disengaged from regulator. Operation of motor with load removed may damage unit.

3. Rotate rear edge of window assembly downward to remove assembly from door on “69” styles.
4. To install, reverse removal procedure. Prior to installation of window lower sash channel cam, lubricate entire length of cam with 630 AAW Lubriplate or equivalent. Check operation of window assembly and where required, adjust window as described under “REAR DOOR WINDOW GLASS RUN CHANNEL ASSEMBLIES AND REAR DOOR INNER PANEL CAM”.

**Rear Door Window Guide Front Cam Assembly**

**“39” Style**

The window guide front cam assembly incorporates an attaching support bracket at the upper edge of the

guide cam which is attached to the door hinge pillar facing by two (2) screws. The front cam can be removed without removing this attaching bracket.

**Removal and Installation**

1. Raise door window. Remove door trim assembly and detach inner panel water deflector.
2. Through inner panel access hole remove front guide cam upper attaching screw(s) and front guide cam lower adjusting stud and nut (see Figure 15).
3. Carefully disengage guide cam from window lower sash channel roller and remove guide cam through access hole.
4. To install, reverse removal procedure. Prior to installation, lubricate entire length of guide cam with 630AAW Lubriplate or equivalent. Reseal front guide cam lower adjusting stud and nut with body caulking compound.
5. Check operation of window assembly and, where required, adjust window as described under Rear Door Window Adjustments.

**Rear Door Window Guide Front Cam Support**

**“39” Style**

**Removal and Installation**

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

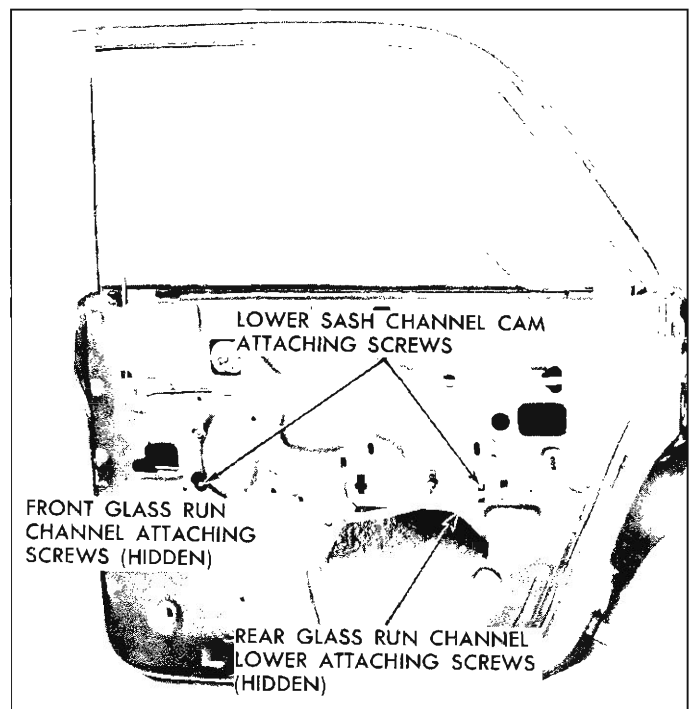


Fig. 14—Rear Door Assembly—“69” Style

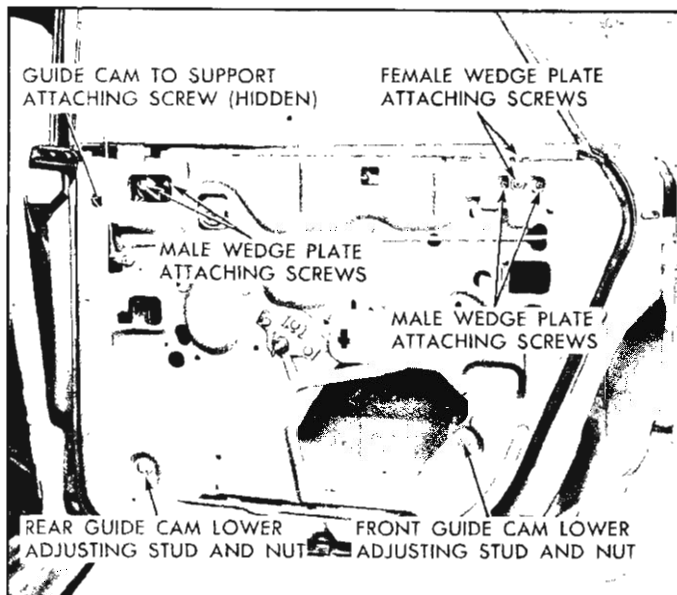


Fig. 15—Rear Door Assembly—"39" Style

2. Raise door window. Through inner panel access hole remove front guide cam upper attaching screw (see Figure 15).
3. At door hinge pillar facing, remove two (2) screws

securing guide cam support and remove support through access hole (see Figure 15).

4. To install, reverse removal procedure. Check operation of window assembly and, where required, adjust window as described under Rear Door Window Adjustments.

### Side Roof Rail Weatherstrip "37" Style

The side roof rail weatherstrip assembly is a one-piece type which is secured to the front body hinge pillar with a snap fastener. The remainder of the weatherstrip is secured to the side roof rail by weatherstrip adhesive and a weatherstrip retainer and reveal molding assembly.

#### Removal

1. Remove snap fastener securing weatherstrip at front body hinge pillar.
2. Carefully disengage inner lip of side roof rail weatherstrip from retainer. Using a flat-bladed tool, carefully break cement bond between weatherstrip and weatherstrip retainer and reveal molding assembly.
3. Remove side roof rail weatherstrip from body.

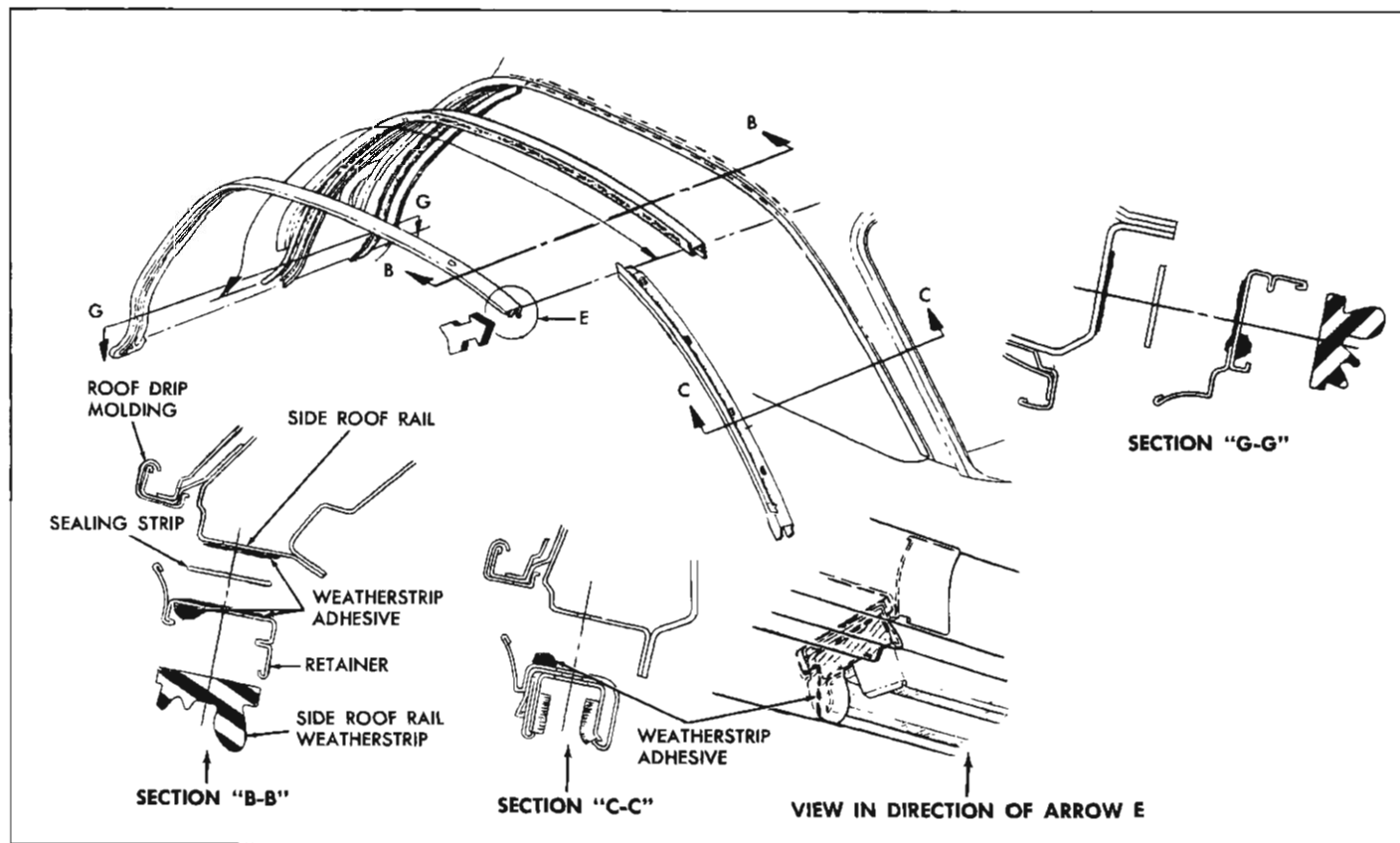


Fig. 16—"37" Style Roof Rail Weatherstrip Assembly

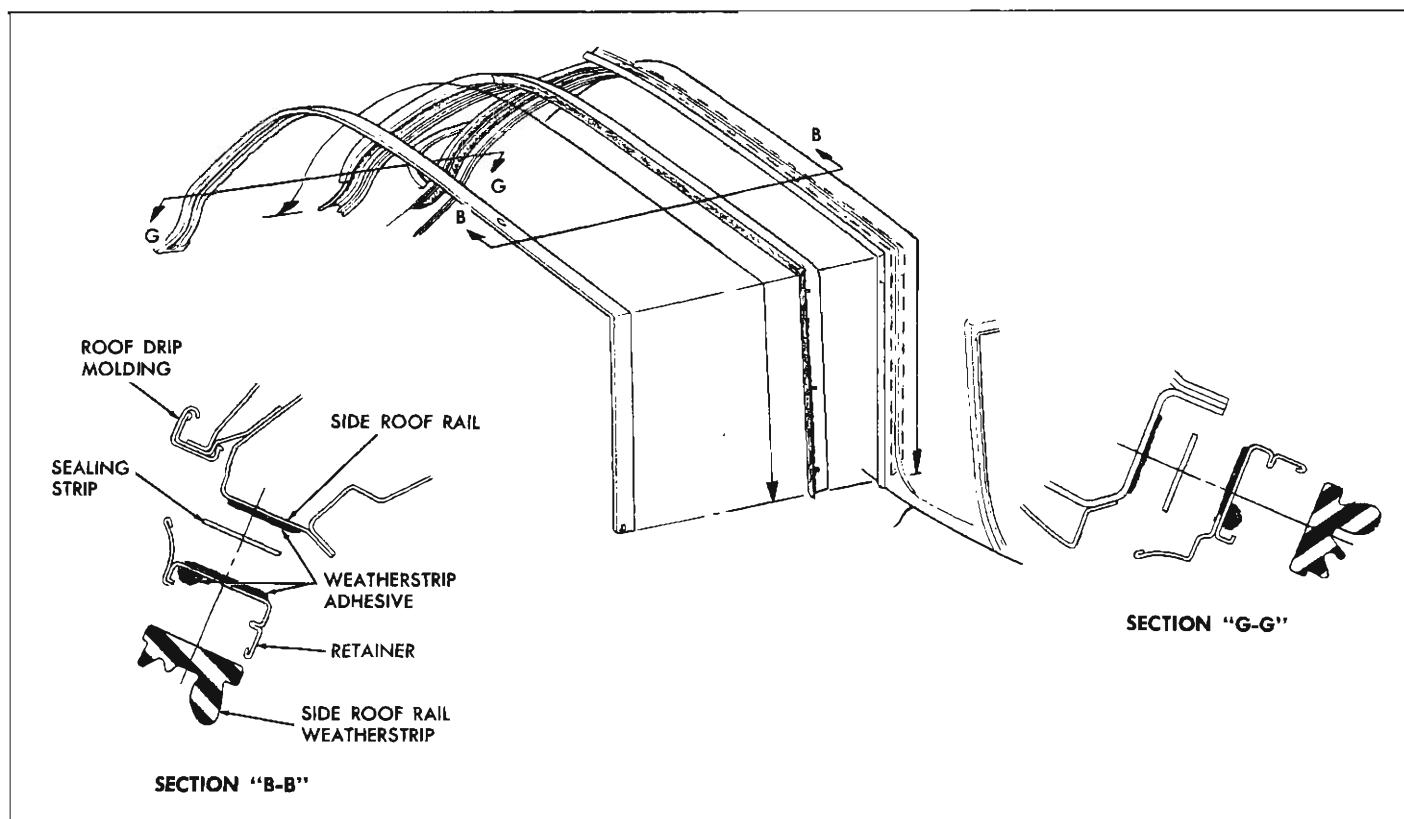


Fig. 17—"47" and "39" Style Roof Rail Weatherstrip Assembly

### Installation

1. Clean off old cement from side roof rail weatherstrip and weatherstrip retainer to insure a clean cementing surface.
2. Apply a continuous bead (approximately 3/16" diameter) of weatherstrip adhesive along entire outboard surface of side roof rail weatherstrip retainer (see Section "B-B" in Figure 16).
3. Apply weatherstrip cement to rear end of side roof rail weatherstrip and cement weatherstrip to front end of rear quarter window sealing strip (see view "E" in Figure 16).
4. With a flat-bladed tool, engage inboard edge of weatherstrip and then outboard edge of weatherstrip into weatherstrip retainer.
5. Install snap fastener at front body hinge pillar and clean off all excessive weatherstrip cement.

### Side Roof Rail Weatherstrip "47-39" Styles

The side roof rail weatherstrip assembly is a one-piece type which is secured to the front body hinge pillar with a snap fastener. The remainder of the weatherstrip is secured to the side roof rail by weatherstrip adhesive and a weatherstrip retainer and reveal molding assembly.

### Removal

1. Remove snap fastener securing weatherstrip at front body hinge pillar.
2. Carefully disengage inner lip of side roof rail weatherstrip from retainer. Using a flat-bladed tool, carefully break cement bond between weatherstrip and weatherstrip retainer and reveal molding assembly.
3. Remove side roof rail weatherstrip from body.

### Installation

1. Clean off old cement from side roof rail weatherstrip and weatherstrip retainer to insure a clean cementing surface.
2. Apply a continuous bead (approximately 3/16" diameter) of weatherstrip adhesive along entire outboard surface of side roof rail weatherstrip retainer (see Section "B-B" in Figure 17).
3. On "39" styles, slide rear end of weatherstrip upward until weatherstrip retaining clip is engaged behind weatherstrip retainer.
4. With a flat-bladed tool, engage inboard edge of weatherstrip and then outboard edge of weatherstrip into weatherstrip retainer.
5. Install snap fastener at front body hinge pillar and clean off all excessive weatherstrip cement.

### Side Roof Rail Weatherstrip Adjustments

With doors and windows closed, front and/or rear door window upper frames should make an even continuous contact with the side roof rail weatherstrip. If necessary, adjust weatherstrip and/or ventilator or front or rear door windows to obtain proper weatherstrip contact.

The attaching holes in the side roof rail weatherstrip retainer are elongated allowing "in and out" adjustment of the side roof rail weatherstrip; however, the amount of adjustment is small and is not intended to correct improper ventilator or door window alignment. It is necessary to remove the weatherstrip to adjust the retainer.

**NOTE:** Before attempting to adjust the side

roof rail weatherstrip, first check that the ventilator and front and rear door windows are properly aligned and, where necessary, adjust for proper alignment as directed under ADJUSTMENT OF THE VENTILATOR AND/OR FRONT OR REAR DOOR WINDOW.

1. To adjust side roof rail weatherstrip "in or out" first determine and mark retainer at area or areas to be adjusted.
2. Remove side roof rail weatherstrip.
3. Loosen retainer attaching screws slightly in area to be adjusted and adjust retainer in or out as required.
4. Tighten retainer attaching screws and install side roof rail weatherstrip.

## REAR QUARTER

### TRIM AND HARDWARE

The rear quarter section is divided according to body styles in the following sequence:

- Two Door Sedans ("11" Styles)
- Two Door Coupes ("37" and "47" Styles)
- Convertibles ("67" Styles)

- Four Door Sedans ("39" and "69" Styles)
- Station Wagons ("35" and "45" Styles)

The service procedures for each style are arranged in the sequence that they normally would be performed, such as: removal, installation, adjustment and sealing. Operations not covered herein may be performed as outlined in the 1961 Shop Manual, Section 14.

Figure 18, 19 and 20 identify and show the relationship of major components of the rear quarter hardware of "11", "37-47" and "67" style bodies, which are the only styles incorporating a dropping rear quarter window. All rear quarter windows are made of solid tempered safety plate glass.

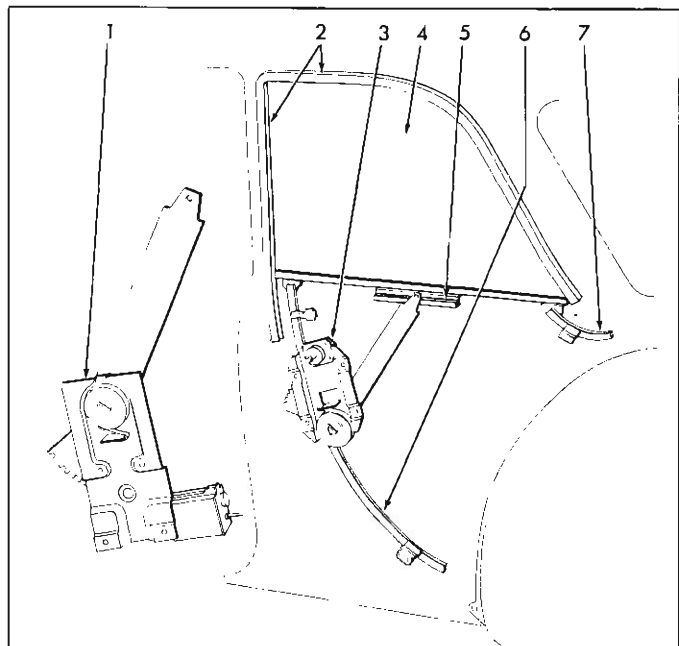


Fig. 18—"11" Style Rear Quarter

- |  |   |
|--|---|
| 1. Rear Quarter Window Electric Motor and Regulator Assembly | 5. Rear Quarter Window Lower Sash Channel Cam |
| 2. Rear Quarter Window Glass Run Channel                     | 6. Rear Quarter Window Front Guide Assembly   |
| 3. Rear Quarter Window Regulator Assembly—Manual             | 7. Rear Quarter Window Rear Guide Assembly    |
| 4. Rear Quarter Window Assembly                              |   |

### TWO DOOR SPORT COUPE— "47" & "37" STYLES

#### Window Assembly—Manual or Electric "37" Style

##### Removal and Installation

1. Remove rear seat cushion and back assemblies and rear quarter arm rest and trim assemblies.
2. Remove rear quarter window sealing strip assembly from side roof rail and remove rear quarter inner panel large access hole cover.

**NOTE:** On styles equipped with electric window regulators, disconnect feed wire connector from electric motor.

**CAUTION:** DO NOT OPERATE REGULATOR MOTOR after the window assembly is disengaged from the regulator. Operation of the motor with the load removed may damage the unit.

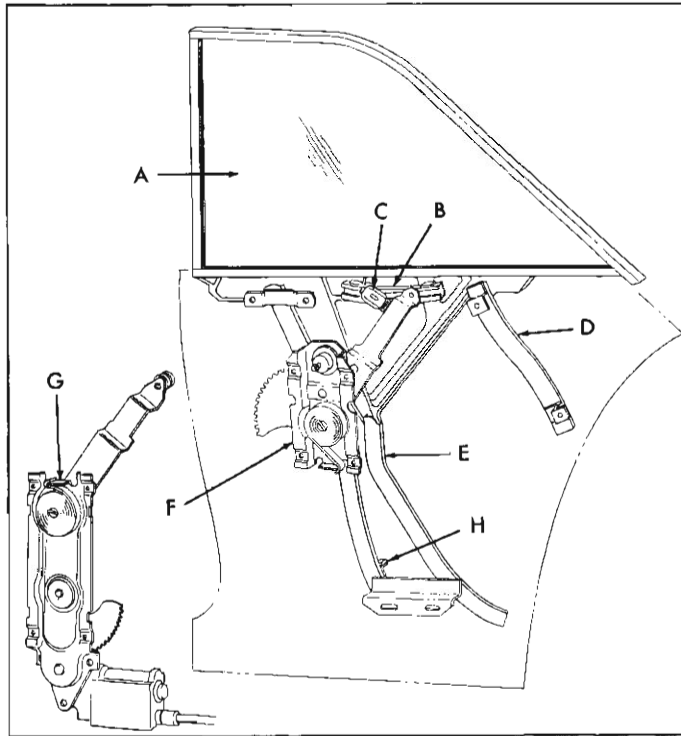


Fig. 19—"47" Style Rear Quarter

- |   |   |
|---|---|
| A. Rear Quarter Window Assembly               | E. Rear Quarter Window Front Guide        |
| B. Rear Quarter Window Lower Sash Channel Cam | F. Rear Quarter Window Regulator—Manual   |
| C. Rear Quarter Window Upper Stop             | G. Rear Quarter Window Regulator—Electric |
| D. Rear Quarter Window Rear Guide             | H. Rear Quarter Window Lower Stop         |

3. Remove rear quarter window rear guide attaching screws (fig. 21). Disengage guide from roller on window lower sash channel and remove guide.
4. With the rear quarter window in the down position, remove the lower sash channel cam attaching screws. Detach cam from roller on regulator arm and remove cam.
5. Loosen rear quarter window front guide attaching screws.
6. Lift rear quarter window upward and disengage rollers on window lower sash channel frame from channels of rear quarter window front guide assembly; then remove window from between inner and outer panels.
7. To install rear quarter window assembly, reverse removal procedure. Prior to installation of the window lower sash channel cam, lubricate channels of cam and guide with Lubriplate or its equivalent along entire length of channels.

Adjust rear quarter window for proper alignment and operation as described under "Rear Quarter Window Adjustments" for "47" styles.

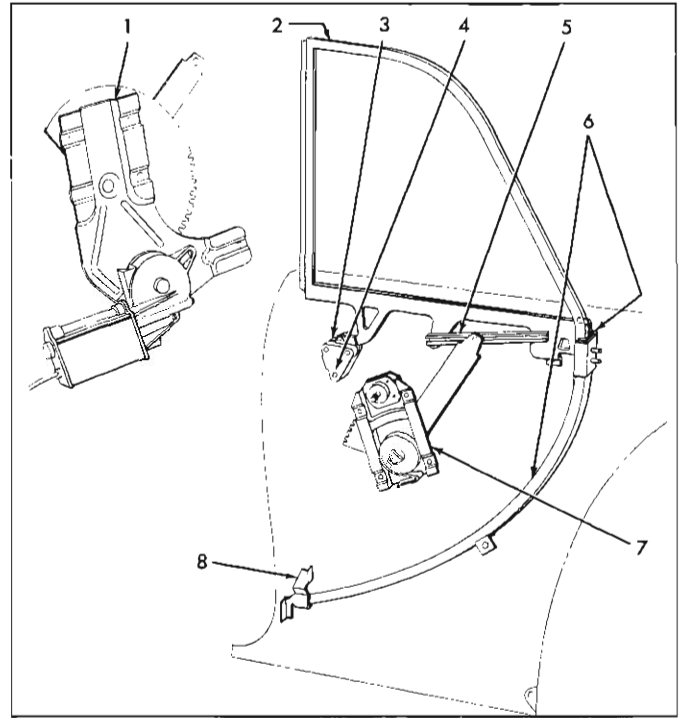


Fig. 20—"67" Style Rear Quarter

- |  |  |
|--|--|
| 1. Rear Quarter Window Electric Motor and Regulator Assembly | 6. Rear Quarter Window Guide Assembly—Includes Window Upper Stop |
| 2. Rear Quarter Window Assembly                              | 7. Rear Quarter Window Regulator—Manual                          |
| 3. Rear Quarter Window Hinge Bolt                            | 8. Rear Quarter Window Lower Stop                                |
| 4. Rear Quarter Window Hinge Adjusting Plate                 |  |
| 5. Rear Quarter Window Lower Sash Channel Cam                |  |

Seal all rear quarter hardware attachments which have been disturbed and inner panel access hole cover as specified under "Rear Quarter Inner Panel Sealing" for "47" styles.

### Window Assembly—Manual or Electric "47" Style

#### Removal and Installation

1. Remove rear seat cushion and seat back assemblies and rear quarter arm rest and trim assemblies. Remove inner panel access hole cover.

**NOTE:** On models equipped with electric window regulators, disconnect feed wire connector from electric motor.

**CAUTION:** Do not operate regulator motor after the window assembly is disengaged from the regulator, operation of the motor with the load removed may damage the unit.

2. Remove rear quarter window rear guide attaching screws (fig. 21). Disengage rear guide from

roller on window lower sash channel and remove guide.

3. With the rear quarter window in the half-down position, remove the lower sash channel cam attaching screws (fig. 21). Detach from roller on regulator arm and remove cam.
4. Remove rear quarter window front guide adjusting stud nuts (fig. 21).
5. With the rear quarter window in the half-down position, disengage the front guide adjusting studs from the adjusting stud holes in the rear quarter inner panel, then disengage front guide from rollers on rear quarter window. Remove rear quarter window from between the panels by lifting upward and inward.
6. To install rear quarter window, insert the window between the panels and prop in the "up" position. Engage front guide channels to rollers on window lower sash channel frame. Allow window to drop to the half-down position and insert front guide adjusting studs into the adjusting stud holes in the rear quarter inner panel. Install previously removed parts.

Prior to installation of window lower sash channel cam and the front and rear guides, lubricate the channels of the cam and guides with Lubriplate or its equivalent along the entire length of the channel.

Adjust rear quarter window for proper alignment and operation as described under "Rear Quarter Window Adjustments" for "47" styles. Seal all hardware attachments that have been disturbed and the inner panel access hole cover, as specified under "Rear Quarter Inner Panel Sealing" for "47" styles.

### Window Adjustments "37" and "47" Styles

1. Remove rear seat cushion and seat back assemblies. Remove rear quarter arm rest and trim assemblies.
2. To adjust the window fore or aft, loosen the front and rear guide attaching stud nuts (fig. 21). Position the window and guides fore or aft as required; then tighten the attaching stud nuts.
3. To adjust the rear quarter window in or out, loosen the front guide upper attaching stud nuts (fig. 21). Adjust the studs in or out as required; then tighten the stud nuts.
4. To adjust the top of the rear quarter window in or out, loosen the front guide lower attaching stud nut. Adjust the stud in or out as required; then tighten the stud nut.
5. To relieve a binding condition between the channels of the front and rear guide, loosen the front and rear guide adjusting stud nuts. Operate window to full up position and tighten upper stud

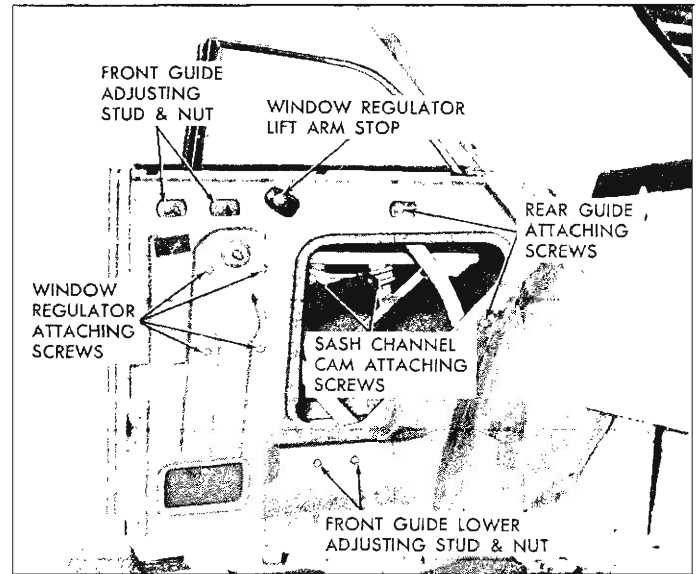


Fig. 21—"47" Style Rear Quarter Hardware

nuts on the front guide and forward attaching screw on rear guide. Operate window to full down and tighten remaining nuts.

6. To limit the forward and upward travel of the rear quarter window, adjust the regulator lift arm stop as required (fig. 21).
7. To limit the down travel of the rear quarter window, remove the inner panel large access hole cover, loosen the lower stop assembly attaching bolt (located at the lower end of the window front guide cam) and adjust stop up or down as required.

**NOTE:** After performing window adjustments, seal hardware attaching screws which have been disturbed, as specified under "Rear Quarter Inner Panel Sealing" for "47" styles.

### Window Regulator Assembly—Manual or Electric "37" and "47" Styles

#### Removal and Installation

1. Remove rear quarter window as described under "Window Assembly - Manual or Electric - Removal".

**NOTE:** On styles equipped with electric window regulators, disconnect feed wire plug from electric motor.

**CAUTION:** Do not operate regulator motor after the window assembly is disengaged from the regulator or after the regulator assembly is removed from the body. Operation of the motor with the load removed may damage the unit.

2. Remove rear quarter window regulator attaching screws (fig. 21); then remove regulator assembly through large access hole.

**NOTE:** The procedure for removing the electric motor from the rear quarter window regulator is described and illustrated under "Rear Door and/or Rear Quarter Window Regulator Electric Motor Assembly" in the Door Section.

3. To install, reverse removal procedure. Seal all hardware attaching locations that have been disturbed as specified under Rear Quarter Inner Panel Sealing for "47" styles.

### Window Regulator Electric Motor Assembly

#### Removal and Installation

See "Rear Door and/or Rear Quarter Window Regulator Electric Motor Assembly" in the Door Section.

### Window Front Guide Assembly

#### Removal and Installation

1. Remove rear seat cushion and seat back. Remove rear quarter arm rest and trim assemblies. Remove rear quarter inner panel large access hole cover.
2. With window in "up" position, remove the window front guide upper and lower attaching stud nuts (fig. 21).
3. Maneuver guide assembly between rear quarter panels so that upper end of guide can be started out of large access hole; then remove guide assembly.
4. To install rear quarter window front guide assembly, reverse removal procedure. Prior to installation of the front guide assembly, lubricate channels of guide with Lubriplate or its equivalent along full length of channels.

Adjust front guide assembly for proper window alignment and operation as described under "Rear Quarter Window Adjustments" for "47" styles.

Seal front guide attaching screws as specified under "Rear Quarter Inner Panel Sealing" for "47" styles.

### Window Rear Guide Assembly

#### Removal and Installation

1. Remove rear seat cushion and back assemblies. Remove rear quarter arm rest and trim assemblies. Remove rear quarter inner panel large access hole cover.
2. With the window in the up position remove the window rear guide attaching screws (fig. 21).

Disengage guide from roller on window lower sash channel and remove guide through access hole.

3. To install, reverse removal procedure. Prior to installation of the rear guide lubricate the entire length of the channel with Lubriplate or its equivalent.

Adjust rear guide for proper window alignment and operation as described under "Rear Quarter Window Adjustments" for "37" and "47" styles.

Seal rear guide attaching screws as specified under "Rear Quarter Inner Panel Sealing" for "37" and "47" styles.

### Window Glass Run Outer Sealing Strip "37" Styles

#### Removal and Installation

1. Remove rear seat cushion and back assemblies. Remove rear quarter arm rest and trim assemblies.
2. Remove rear quarter inner panel large access hole cover. Loosen window lower stop attaching screw located on lower end of window front guide assembly; then operate window to the extreme low position.
3. Remove sealing strip attaching screws and remove sealing strip from body.
4. To install rear quarter window glass run outer sealing strip, reverse removal procedure.

### Window Sealing Strip at Roof Rail "37" Style

#### Removal and Installation

1. Lower rear quarter window and remove back window side garnish molding.
2. Remove screws securing sealing strip assembly to roof rail; then carefully remove sealing strip from roof rail.
3. To install, first apply a continuous bead of medium bodied sealer (approximately 1/8" in diameter) to the side roof rail along a line just outside the sealing strip attaching screw holes. Apply a second continuous bead of medium-bodied sealer along a line just inside sealing strip attaching screw holes.
4. To install, reverse removal procedure.

## FOUR DOOR SPORT SEDANS "39" AND "69" STYLES

### Rear Quarter Lower Trim Assembly

#### Removal and Installation

1. Remove rear seat cushion and back assemblies. Remove back window side garnish molding.

2. Remove screw securing metal trim support in upper center of trim assembly ("69" styles only).
3. Using a trim panel removing Tool (No. J-6335) carefully pry trim assembly retaining nails from tacking strip; then lift trim assembly upward to disengage from retainers at top of rear quarter inner panel and remove trim from quarter panel.
4. To install rear quarter trim assembly, reverse removal procedure.

### Rear Quarter Upper Trim Assembly "39" Style

#### Removal and Installation

1. Remove back window side garnish molding and side roof rail rear finishing molding.
2. Carefully break cement bond securing trim foundation to roof extension inner panel; then remove trim assembly.
3. To install, first apply trim cement to contacting surfaces of trim foundation and roof extension inner panel. Position trim and press or roll to assure a good cement bond. Install back window side garnish molding and side roof rail rear finishing molding.

### Quarter Inner Panel Sealing

Whenever the rear quarter inner panel seals have been disturbed, the area must be resealed before the rear quarter trim is reinstalled. Following are the rear quarter inner panel openings and hardware attaching locations which must be sealed to prevent water leakage and possible trim damage.

**NOTE:** When body caulking compound is used, work compound firmly to metal surfaces and feather edges out to obtain good adhesion.

For "11" Styles - See Figure 22

For "37" and "47" Styles - See Figure 23

For "67" Styles - See Figure 24

1. **Large and Small Access Hole Covers**— Prior to installation of access hole cover, apply a continuous bead of body caulking compound (approximately 1/8" diameter) across top and down side of quarter inner panel along flange contacted by cover.

After installation of cover, apply body caulking compound at lower corners of cover, at locations

"X", to seal openings where cover flange transition to inside of quarter panel occurs.

2. **Window Guide Attaching Screws**— Apply body caulking compound over window guide attaching screws and holes. Firmly press caulking compound to assure a good bond and watertight seal.

On convertible styles apply weatherstrip adhesive (black) around the window guide attaching hole plug to effect seal between inner panel and plug.

3. **Manual Window Regulator Attaching Screws**— Apply weatherstrip adhesive (black) over attaching screws.

4. **Electric Window Regulator Attaching Screws**— Apply weatherstrip adhesive (black) over attaching screws.

5. **Window Regulator Spindle Hole Sealing Washer**— Apply weatherstrip adhesive over exposed surface of washer to seal pores of sponge rubber and joint between inner panel and washer.

On convertible Coupe Styles with electrically operated windows apply weatherstrip adhesive (black) around the manual regulator spindle hole; then apply waterproof body tape over spindle hole.

6. **Wire Harness and Grommet Hole**— (Styles with Electrically Operated Windows) - Apply weatherstrip adhesive (black) around the grommet and wire to effect a seal between wire and grommet and between grommet and inner panel.

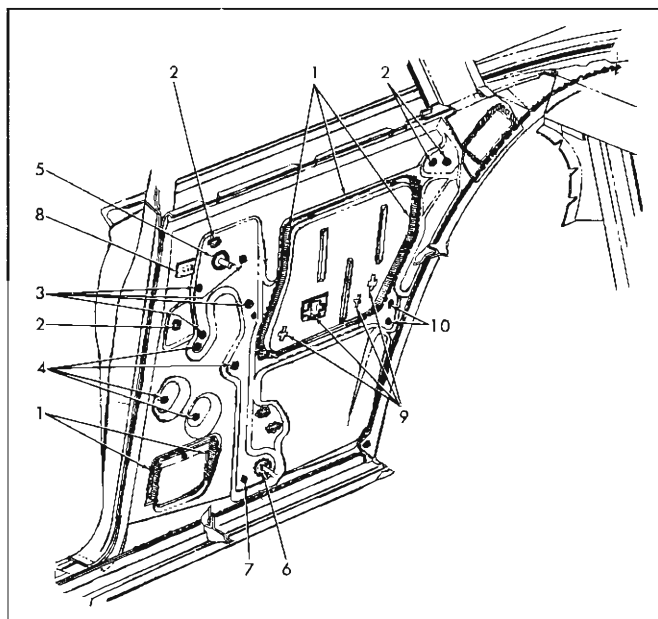


Fig. 22—Quarter Inner Panel Sealing



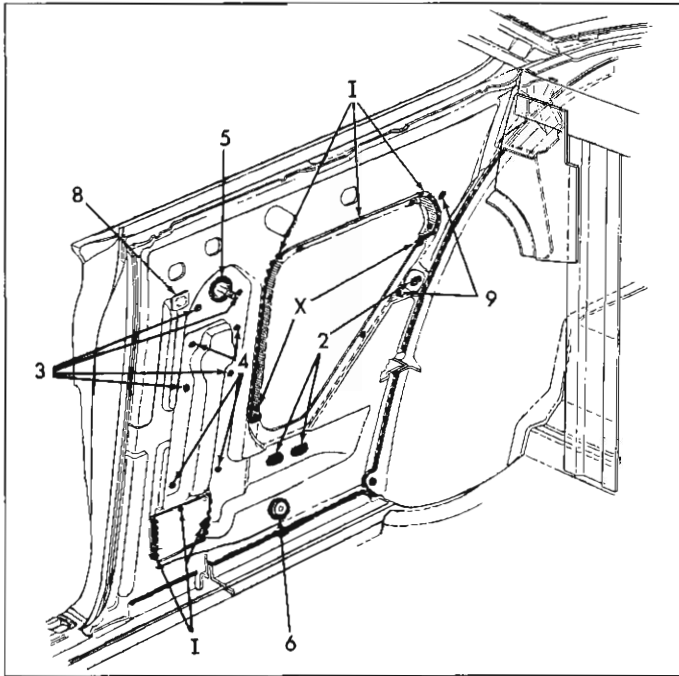


Fig. 23—Quarter Inner Panel Sealing "37" and "47" Styles

7. **Wire Harness Clip Hole** (Styles with Electrically Operated Windows) - Apply weatherstrip adhesive over hole.

8. **Gage Slot**— Apply waterproof body tape over slot.

**Items 9 and 10 for "11" Styles only (see fig. 22)**

9. **Arm Rest Anchor Nut** ("11" styles only) - Apply body caulking compound over anchor nut and hole to effect a seal around anchor nut, hole and attaching screw when arm rest is installed.

**Arm Rest Anchor Nut Hole** ("11" styles only) - Where anchor nuts are not used, apply waterproof body tape over hole. Press tape firmly to effect a good bond.

10. **Window Stop Attaching Screws** ("11" styles with electrically operated windows) - Apply weatherstrip adhesive (black) over stop attaching screws.

**Item 9 for "37" and "47" Styles only (see fig. 23)**

9. **Seat Back to Quarter Panel Filler Panel Attaching Screw Holes** ("37" and "47" styles only) - Apply weatherstrip adhesive (black) over filler panel attaching holes.

**Item 9 for "67" Styles only (see fig. 24)**

9. **Window Hinge Attaching Screws** ("67" styles only) - Apply body caulking compound over hinge attaching screws. Press compound firmly to assure a good bond and watertight seal.

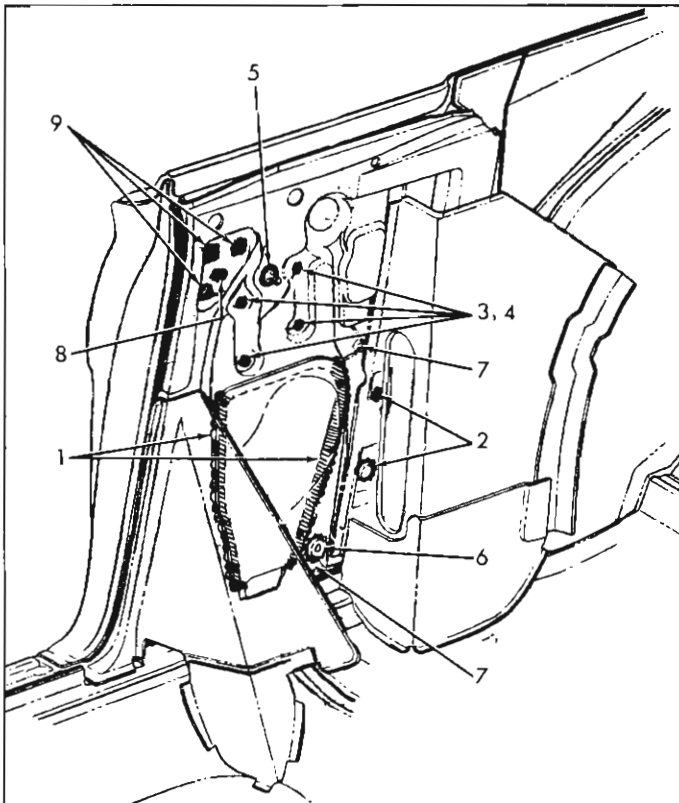


Fig. 24—Quarter Inner Panel Sealing "67" Styles

## STATION WAGONS "35" AND "45" STYLES

### Spare Tire Cover Panel

The spare tire cover panel is secured to a retainer at the belt line by a folding catch type handle.

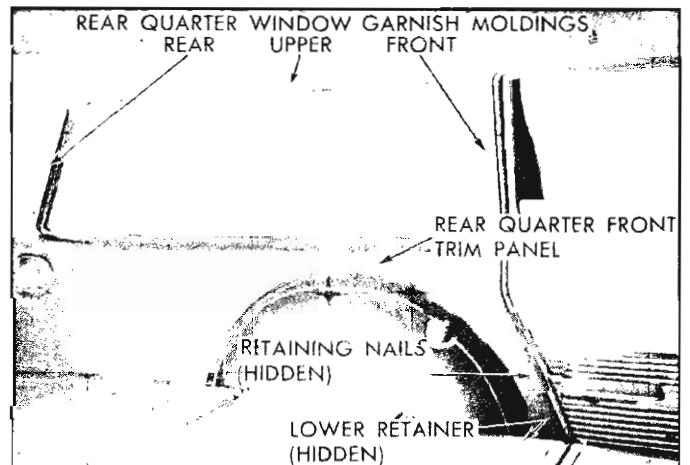


Fig. 25—Quarter Trim Assembly—Left Side

To remove the panel disengage the catch and lift the panel upward. To install, reverse removal procedure.

The handle can be adjusted "in" or "out" to increase or decrease closing effort. To adjust, loosen the handle attaching screws; position the handle as desired and tighten the screws.

### Rear Quarter Stationary Window Garnish Moldings and Finishing Panel

The rear quarter window front and upper garnish moldings and rear finishing panel are secured by screws. The upper garnish molding overlaps the front garnish molding and rear finishing panel (see Figure 25).

## REAR END

### BACK WINDOW REVEAL MOLDINGS

All back windows are made of solid tempered safety plate glass and are secured in the body openings by conventional rubber channels. All styles have window reveal moldings that must be removed to remove the back window and rubber channel assembly.

Back window reveal moldings are secured to the body by a combination of two or more of the following type attachments.

- A. Reveal Moldings Retaining Clips
- B. Reveal Molding Bolt and Clip
- C. Reveal Molding Stud and Nut
- D. Reveal Molding Retaining Clip and Molding Clip

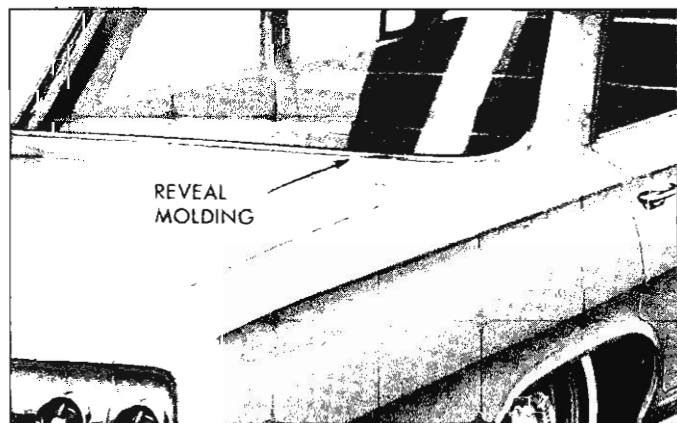


Fig. 26—Back Window Reveal Molding

The location where the above type attachments are used are indicated on the illustrations for the various body styles. Also shown in the illustrations are sectional views of the attachments used.

### Reveal Molding Retaining Clip

**NOTE:** The reveal molding retaining clip attachment is used at various locations marked "A" on all body styles to secure the back window reveal moldings. Whenever this clip is called out in the procedure for removing back window reveal moldings, refer to the following procedure covering engagement and disengagement of reveal moldings from reveal molding retaining clips.

### Disengagement and Engagement of Reveal Molding From Retaining Clip

Reveal molding retaining clips are snapped over the back window pinchweld or retaining flange and secure the reveal molding by means of a barbed prong. To disengage the reveal molding by means of a barbed prong. To disengage the reveal molding from the clip requires the use of reveal molding

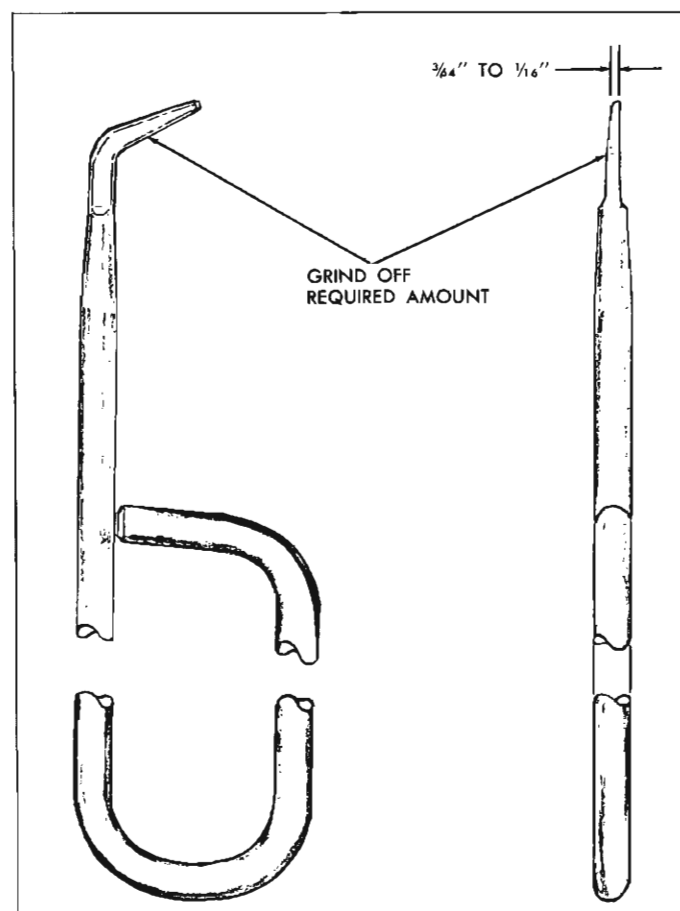


Fig. 27—Reveal Molding Tool

removal Tool J-7898-01 (fig. 27). Insert end of tool between back window rubber channel and reveal molding. Engage point of tool between retaining clip and molding, then swing tool slightly (fig. 28) to disengage prongs of clip from molding and lift molding free of clip.

**IMPORTANT:** Do not lift excessively on molding - if clip is disengaged, molding will lift free of clip easily. If clip is not disengaged, any excessive "pull" on molding will cause prongs of clip to bite harder on molding, thereby, making it more difficult to disengage clip from molding. If difficulty is being experienced in disengaging clip, push molding at clip location to relieve pressure of clip prongs on molding while using tool to disengage clip.

An occasional application of silicone lubricant on end of tool will facilitate inserting tool between reveal molding and rubber channel and sliding tool to engage with clip.

To install molding(s) position molding so that flange of molding is between body metal and retaining clip, then carefully push molding at retaining clip locations until molding is properly secured by retaining clips.

**Back Window Reveal Moldings (Clip-Retained-Type)**  
**All "11" and "69" Styles**

**Upper Reveal Molding (Fig. 29)**

Remove both right and left back window side

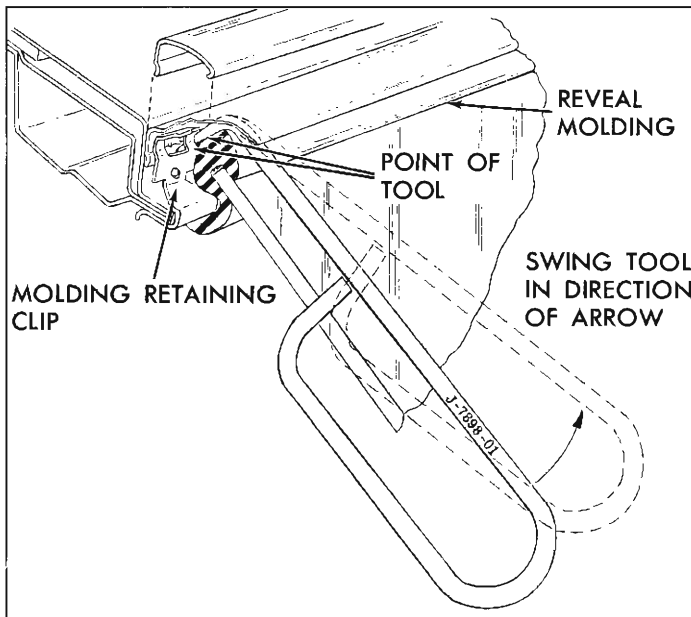


Fig. 28—Removing Molding with J-7898-01

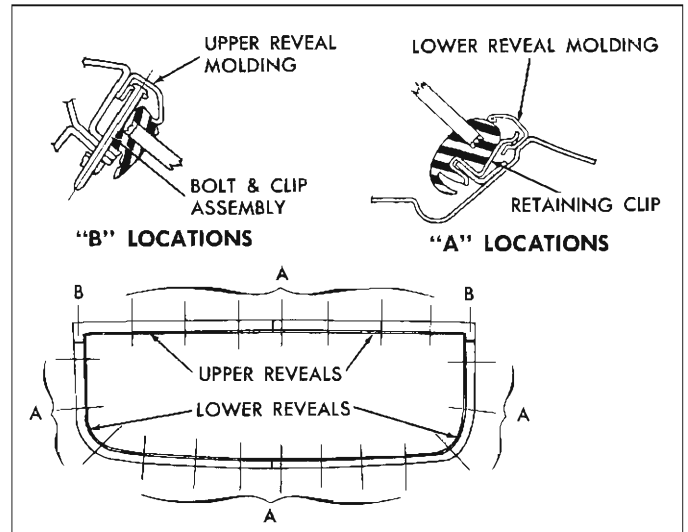


Fig. 29—Back Window Reveal Moldings—all "11" and "69" Styles

garnish moldings. Under inner lip of back window rubber channel, remove nut from both right and left bolt and clip assemblies at locations "B". From outside of body disengage both right and left upper reveal moldings from retaining clips "A" and remove moldings from body.

To install, reverse removal procedure.

**Lower Reveal Molding (Fig. 29)**  
**1211, 1269, 1611, and 1669 Styles**

Remove back window side garnish moldings. Under inner lip of back window rubber channel remove nuts from bolt and clip assemblies at locations "B". Disengage upper reveal molding sufficiently from retaining clips "A" to allow removal of lower reveal moldings.

Starting at upper end of lower reveal molding, disengage molding from first four or five retaining clips "A", then slide molding off remaining clips by pulling molding towards side of body.

To install reverse removal procedure.

**Lower Reveal Molding**  
**1869 Style**

Inside of rear compartment under rear compartment front and shelf panel, remove self threading sealing nuts from three studs on lower reveal molding and remove molding from body.

To install, reverse removal procedure. Prior to installation, apply body caulking compound to studs and sealing nuts to effect a watertight seal.

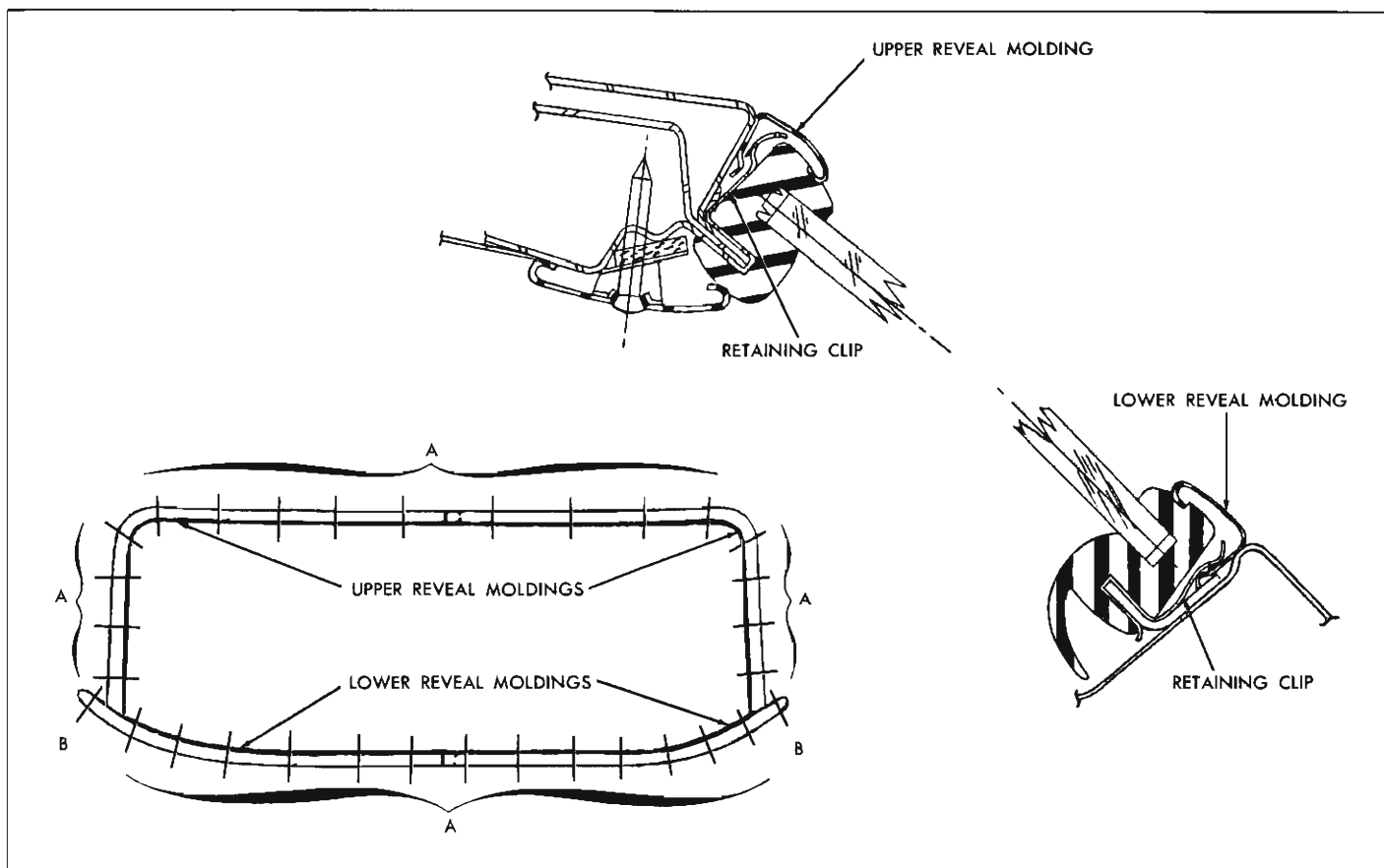


Fig. 30—Back Window Reveal Moldings—1937 Styles

**Side Reveal Molding (Fig. 29)  
1937 Style**

Remove back window garnish moldings. Under inner lip of back window rubber channel remove nuts from upper reveal molding bolt and clip assemblies at locations "B". Disengage upper reveal molding sufficiently from retaining clips "A" to allow removal of side reveal moldings.

Starting at upper end of side reveal molding, disengage molding from four retaining clip locations "A" (no view). Slide molding from under overlapping lower reveal molding and remove molding. If difficulty is encountered disengaging side molding from lower molding, loosen lower reveal molding stud nuts.

To install, reverse removal procedure.

**Upper Reveal Moldings (Fig. 30)  
1937 Style**

Starting at upper end of molding disengage molding from first four or five retaining clips "A", then slide molding off remaining clips by pulling molding upwards. When removing left molding only, disengage right molding sufficiently to allow removal of left molding which it overlaps.

To install, reverse removal procedure.

**Lower Reveal Molding (Fig. 30)  
1937 Style**

Starting at inner end of molding (center of body) disengage lower reveal molding from retaining clips "A". Using a flat-bladed tool, pry outer end of molding away from quarter outer panel to disengage molding snap-in type clip from panel at locations "B".

**NOTE:** Use care not to damage painted surfaces or molding during removal.

When removing left molding only, disengage right molding sufficiently to allow removal of left molding which it overlaps.

To install reverse removal procedure. Prior to installation apply body caulking compound to snap-in type clip to aid in installation and sealing.

**Lower Reveal Molding (Fig. 31)  
1947 Style**

From inside rear compartment under rear compartment front and shelf panel, remove nuts from

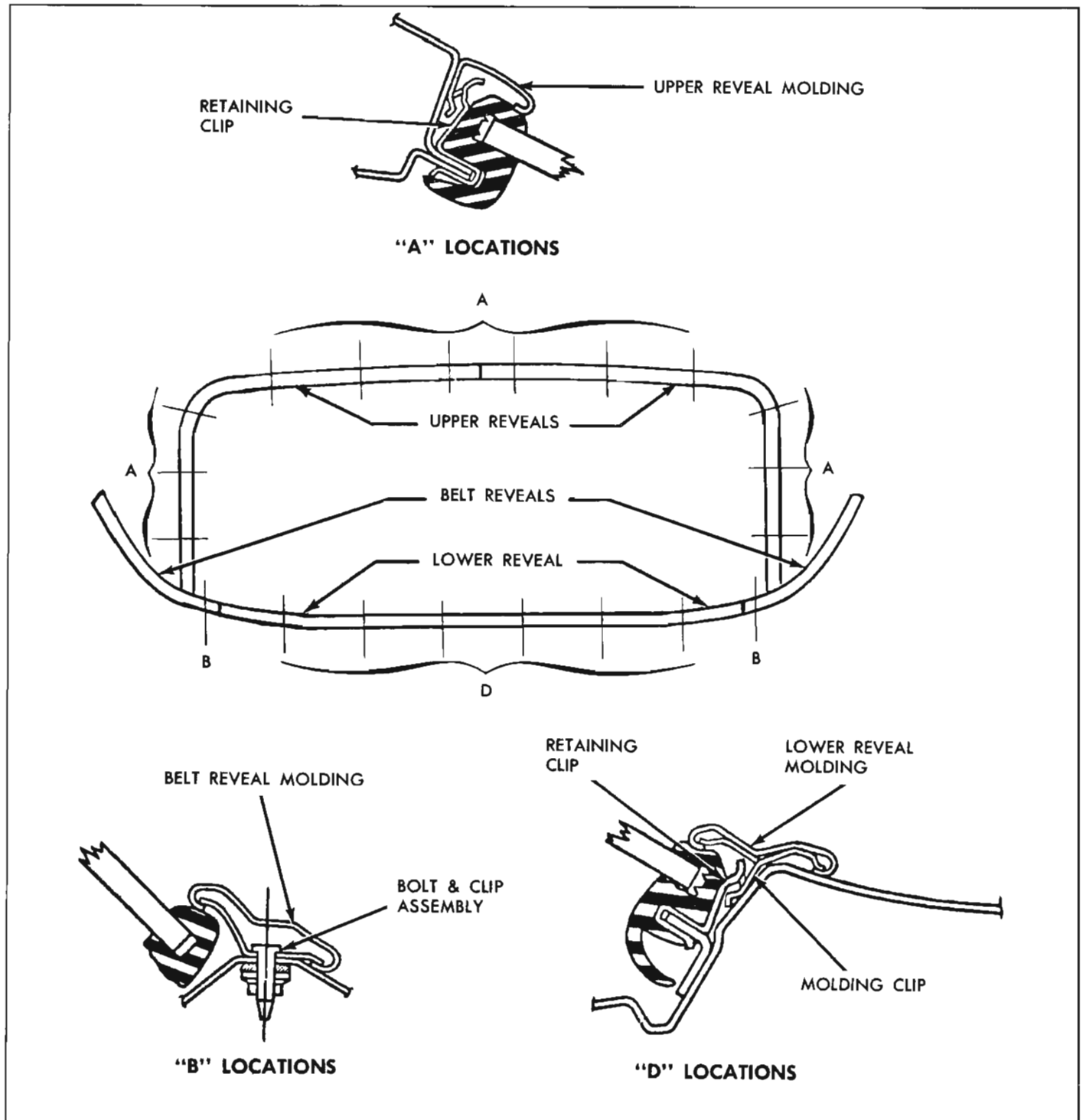


Fig. 31—Back Window Reveal Moldings—"47" Styles

both bolt and clip assemblies at "B". Remove belt reveal moldings as described in "Exterior Moldings". Using reveal molding Tool J-7898-01 insert point of tool between molding and rubber channel and push or pull molding clip sideways to slide it out of engagement from molding retaining clip ("D", fig. 32).

Perform this operation at each molding clip location "D" and remove molding from body.

To install, first slide molding clips in molding so they will be in position to engage retaining clips on body. Then position molding to body and engage clips.

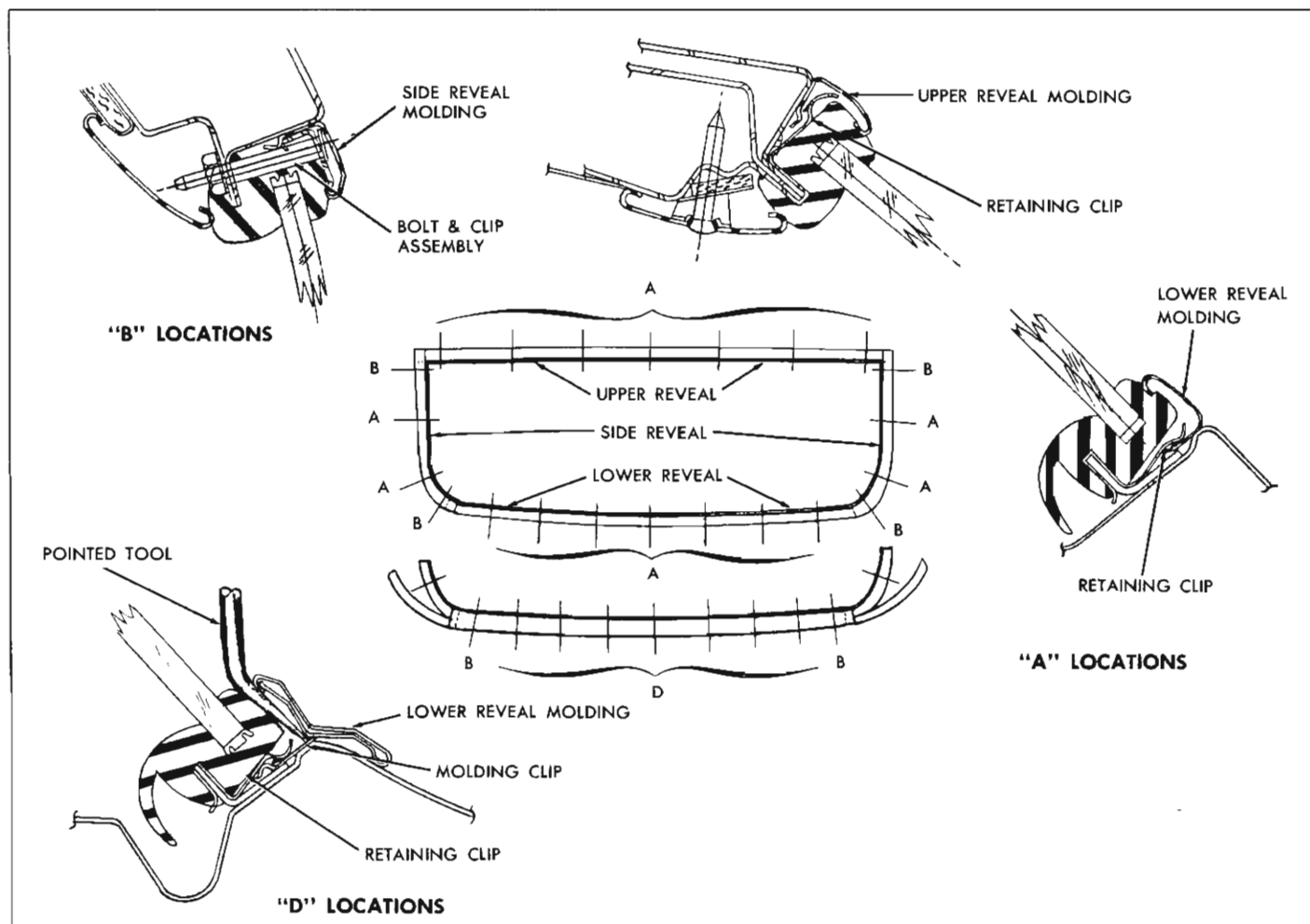


Fig. 32—Back Window Reveal Moldings—"39" Styles

### Upper Reveal Molding (Fig. 31) 1847 Style

Starting at upper end of molding disengage molding from first three or four retaining clips "A". Remove nut from belt reveal molding bolt and clip assembly at locations "B". Slide molding off remaining clips "A" by pulling molding upwards.

When removing left upper molding only, disengage upper end of right molding sufficiently to allow removal of left molding, which it overlaps.

To install, reverse removal procedure.

### Upper Reveal Molding (Fig. 32) "39" Style

Remove both right and left back window side garnish moldings. From inside of body under inner lip of back window rubber channel, remove nut from both the right and left side reveal molding upper bolt and clip assemblies "B". From outside body disengage both right and left side reveal moldings from upper retaining clips "A". Pull side reveal mold-

ings away from rubber channel sufficiently to disengage upper reveal molding retaining clips at locations "A", then remove upper reveal molding from body.

To install, reverse removal procedure.

### Lower Reveal Molding (Fig. 32) 1839 Style

From inside body under inner lip of back window rubber channel, remove nuts from lower reveal molding bolt and clip assemblies at locations "B". Using a reveal molding removal Tool J-7898-01 or other similar pointed tool, insert point of tool between molding and rubber channel and engage point of tool with molding clip as indicated in View "D", Figure 32. Push or pull molding clip with tool until clip has moved sideways out of engagement with retaining clip on body. Perform this operation at each of the molding clip locations "D" and remove molding from body.

To install, first slide molding clips in molding so they will be in position to engage with retaining clips

on body. Then, position molding to body and engage clips.

**Side Reveal Molding (Fig. 32)  
1839 Style**

From inside body under inner lip of back window rubber channel, remove nuts from bolt and clip assemblies at locations "B". Using a reveal molding removal Tool J-7898-01 or other similar pointed tool, disengage the first two molding clips "D" as follows: Insert point of tool between molding and rubber channel and engage point to tool with molding clip as indicated in View "D", Figure 62D-26; then, push or pull molding clip with tool until clip has moved sideways out of engagement with retaining clip on body. Disengage side reveal molding from retaining clips "A" and remove molding from body.

To install, reverse removal procedure.

**BACK WINDOW ASSEMBLY**

**Back Window Assembly  
All Except 1211 and 1269 Styles**

**Removal**

1. Place protective coverings over rear seat cushion and back, over parcel shelf trim and over painted surfaces around back window.
2. Remove back window garnish moldings.
3. Remove back window reveal moldings.
4. From inside body carefully break seal between lip of rubber channel and pinchweld flange completely around back window.
5. Carefully push back window and rubber channel assembly outward until lip of rubber channel is disengaged from body pinchweld flange.
6. With the aid of a helper, lift complete assembly from body opening and place on a protected surface. Remove rubber channel from glass.

**Installation**

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

1. Clean original sealer from back window body opening and rubber channel and install rubber channel to glass.

**IMPORTANT:** Before installing back window glass, check the back window body opening and pinchweld flange for any irregularities and correct, where necessary.

2. Check installation of reveal molding clips at pinchweld and retaining flanges and replace clips, where necessary. If replacing clips, apply medium-bodied sealer to opening rabbet, prior to installing clips. (See "1" in View "A", Figure 33).
  3. Apply a continuous ribbon of medium-bodied sealer (approximately 1/2 inch wide by 1/4 inch thick) on wall of rabbet, completely around opening. (See "2" in Section "B-B", Figure 33).
  4. Insert a strong cord into pinchweld cavity of rubber channel; tie ends together at bottom center and tape to inside surface of glass.
  5. Apply a continuous ribbon of medium-bodied sealer (approximately 1/2 inch wide by 1/4 inch thick) to base of rubber channel across top and down sides at opening. (See "3" in Section "B-B", Figure 33).
  6. With aid of a helper, position back window assembly into body opening. While helper is applying hand pressure to outside surface of glass, use a hooked tool or other suitable tool to pull inner lip of rubber channel (located along lower portion of channel) over retaining flanges along bottom opening.
  7. With aid of helper applying hand pressure to outside surface of glass, pull cords in rubber channel and, where necessary, use a hooked tool to seat lip of rubber channel over body flanges across bottom, up sides and across top of window opening.
- IMPORTANT:** If, during the string-pulling operation, the rubber lip is not seating properly over the body flange, check for locations where rubber channel is tight against the body flange preventing forward movement of the glass and channel assembly into the opening. Using a hooked tool, seat the rubber lip over the body flange at any tight locations before proceeding with cord-pulling sequence.
8. Using a pressure-type applicator, apply sufficient medium-bodied sealer to completely fill any openings between rubber channel and body completely around rubber channel. (See "4" in Section "C-C", Figure 33).
  9. Using a pressure-type applicator (Pistol-type oiler) apply weatherstrip adhesive (black) between rubber channel and glass on inside and outside of glass around entire perimeter of glass (See "5" in Section "C-C", Figure 33). Application of adhesive should be continuous with no skips.
  10. Install back window moldings as described under "Back Window Reveal Moldings".

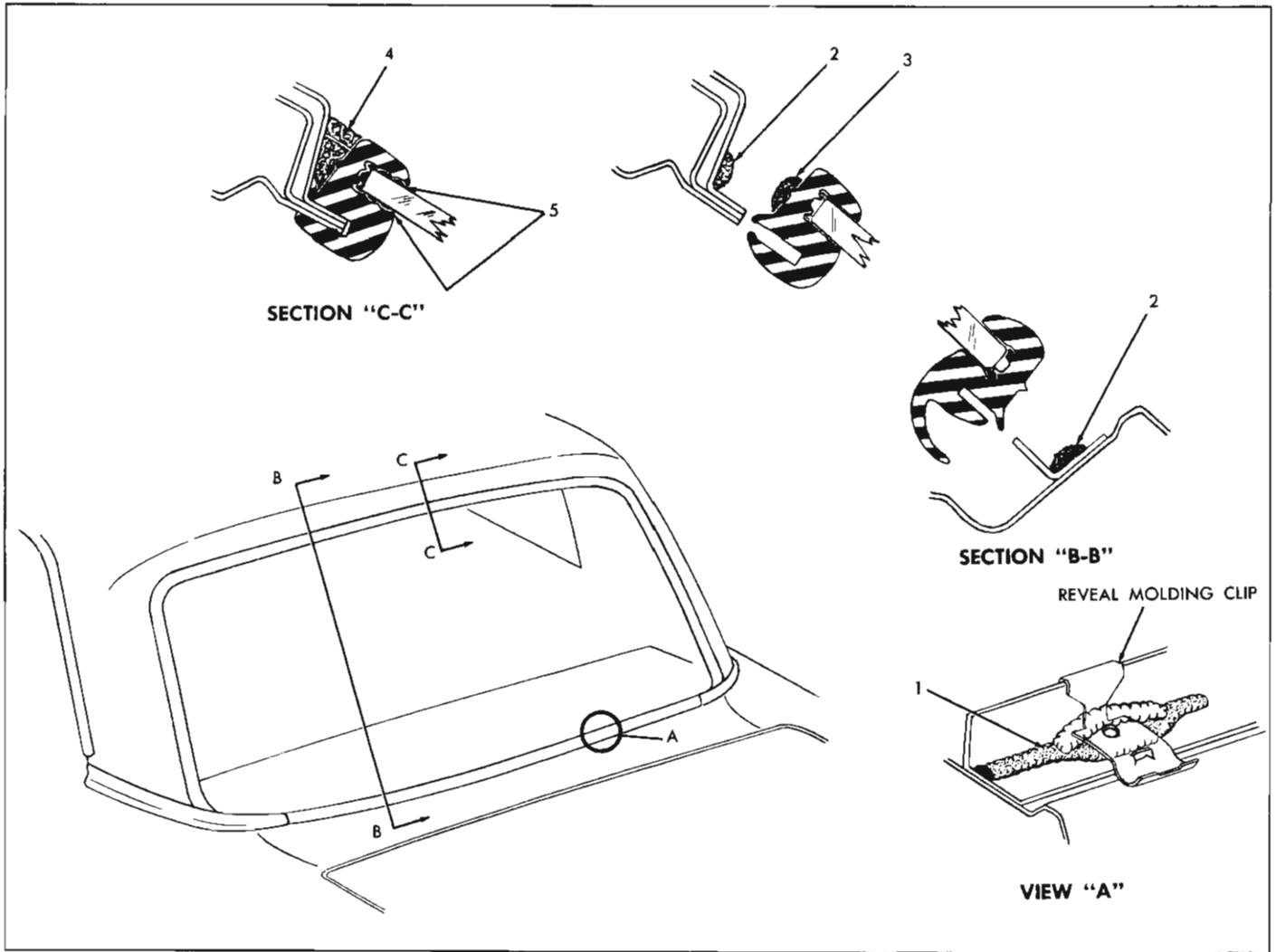


Fig. 33—Back Window Sealing

11. Clean off excess sealer and cement; install previously removed parts and remove protective coverings.

### Back Window Assembly 1211 and 1269 Styles

#### Removal

1. Place protective covering over rear seat cushion and back, over parcel shelf trim, and over painted surfaces around back window.
2. Remove back window garnish moldings.
3. From inside body carefully break seal between lip of rubber channel and pinchweld flange completely around back window.
4. Carefully push back window and rubber channel assembly outward until lip of rubber channel is disengaged from body pinchweld flange.

5. With the aid of a helper, lift complete assembly from body opening and place on a protected surface.
6. Remove insert-type moldings from rubber channel and rubber channel from glass. (See "Back Window Reveal Moldings").

#### Installation

**IMPORTANT:** Care should be taken to make certain that glass does not strike body metal during installation as edge chips can cause solid tempered safety plate glass to shatter. Do not attempt to grind glass.

1. Clean original sealer from back window body opening and rubber channel and install rubber channel to glass. Insert moldings in rubber channel.

**IMPORTANT:** Before installing back window glass, check back window body opening



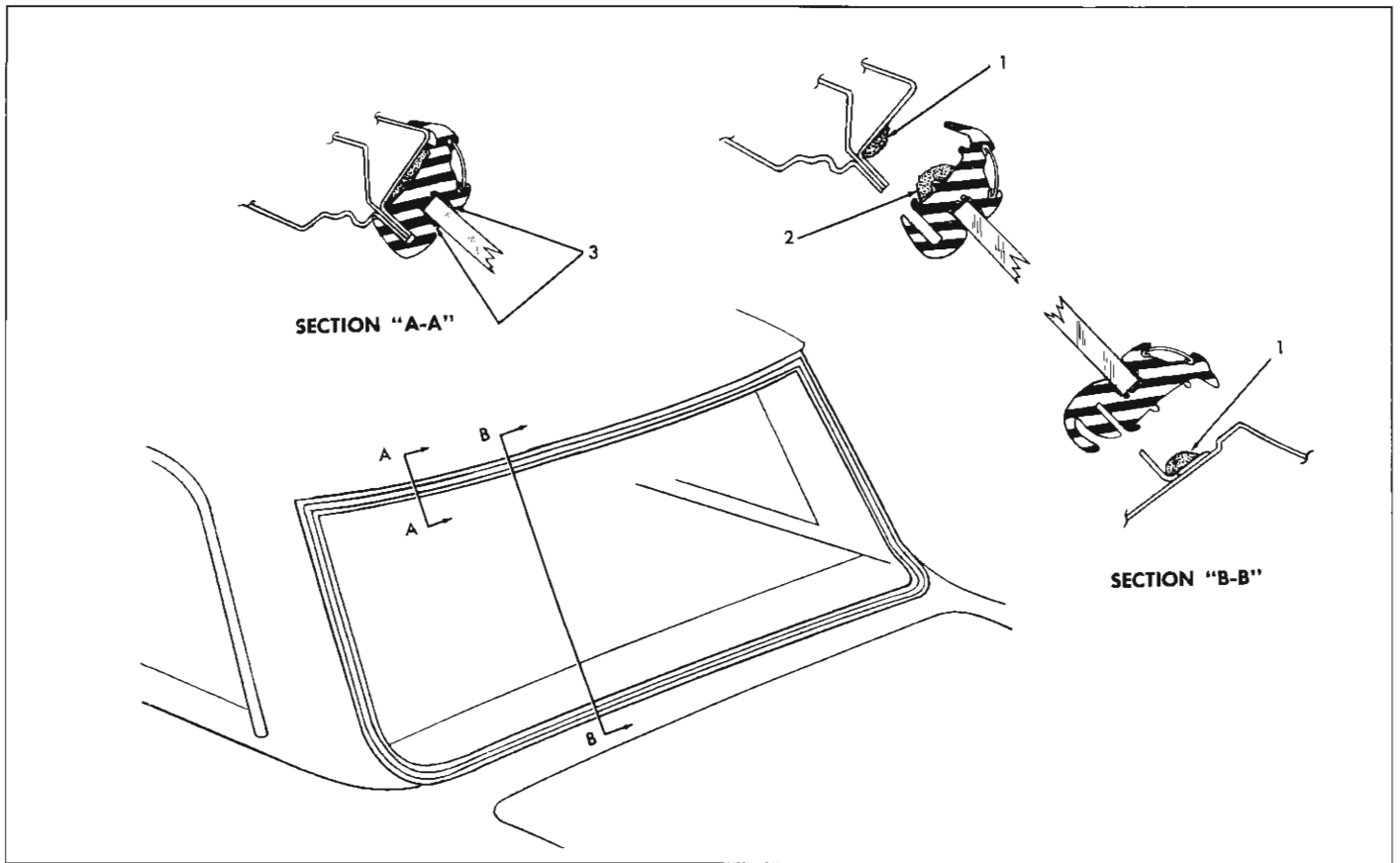


Fig. 34—Back Window Sealing—1211, 1269, 2311 and 2369

and pinchweld flange for any irregularities and correct where necessary.

2. Apply a continuous ribbon of medium-bodied sealer (approximately 1/2 inch wide by 1/4 inch thick) on wall of rabbet completely around opening. (See "1" in Section "B-B", Figure 34).
3. Insert a strong cord into pinchweld cavity of rubber channel; tie ends together at bottom center and tape to inside surface of glass.
4. Apply a continuous ribbon of medium-bodied sealer (approximately 1/2 inch wide by 1/4 inch thick) to base of rubber channel across the top and down both sides. (See "2" in Section "B-B", Figure 34).
5. With the aid of a helper, position back window assembly in body opening. While helper is applying hand pressure to outside surface of glass, use a hooked tool or other suitable tool to pull inner lip of rubber channel (located along lower portion of channel) over retaining flange along bottom of opening.
6. With helper applying hand pressure to outside surface of glass pull cords in rubber channel to seat lip of rubber channel over body flange across bottom, up sides, and across top of window opening.

**IMPORTANT:** If, during cord pulling operation, the rubber lip is not seating properly over the body flange, check for locations where the rubber channel is tight against the body flange preventing movement of the glass into the opening. Using a hooked tool, seat the rubber lip over the body flange at any tight locations before proceeding with the cord pulling sequence.

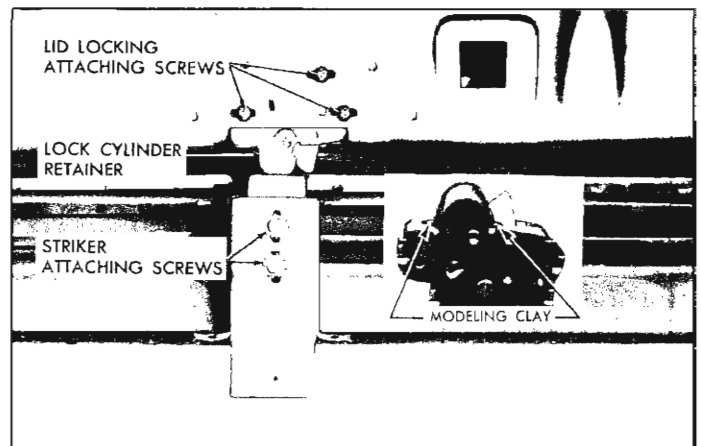


Fig. 35—Rear Compartment Lid Lock and Striker

7. Using a pressure type applicator (Pistol type oiler) apply weatherstrip adhesive (black) between rubber channel and glass on inside and outside of glass around entire perimeter of glass. (See "3" in Section "A-A", Figure 34). Application should be continuous with no skips.
8. Clean off excess sealer and cement and remove protective coverings. Install previously removed parts.

## REAR COMPARTMENT

### Rear Compartment Lid Lock

#### Removal and Installation

1. Open rear compartment, remove lock cylinder retainer and lock cylinder assembly.
2. Remove lid lock attaching screws (fig. 35) and remove lock assembly.
3. To install, reverse removal procedure. Check for proper operation of lock and lock cylinder.

### Rear Compartment Lid Lock Striker

#### Removal and Installation

1. Open rear compartment. Mark vertical position of striker by scribing line at top of striker support on striker. Mark horizontal position of striker on striker support.
2. Remove striker attaching screws (fig. 35) and remove striker.
3. To install, position striker within scribed marks and install attaching screws. Check for proper alignment.

### Rear Compartment Lid Lock Striker Engagement

**NOTE:** Since the rear compartment lock frame acts as a guide when entering the striker, make sure rear compartment lid is properly positioned in body opening before performing striker engagement check. To check for proper engagement of rear compartment lid lock bolt with striker, use the following procedure:

- a. Insert a small quantity of modeling clay on frame of lock at both sides of the lock bolt (fig. 35). Close lid with moderate force.
- b. Open lid and check amount of engagement of striker with lock frame as indicated by the compression of the clay. The striker bar impressions in the clay should be even on both sides of the lock frame.

Where required, loosen striker attaching screws; adjust striker sideways or up or down to obtain proper engagement; then, tighten screws.

## TAIL GATE "35" AND "45" STYLES

All tail gates incorporate either a manually operated or electrically operated tail gate window which can be lowered into the tail gate or raised into the upper portion of the back body opening. The manually operated tail gate window is operated by means of a window regulator control handle (folding type) located in the tail gate outer panel. The electrically operated tail gate window can be operated from any one of two control switches: (1) control switch located on instrument panel; (2) lock cylinder control switch (key operated) located in tail gate outer panel. In addition, on nine passenger station wagon styles, the window can be operated by a control switch located in the upper portion of the left rear quarter trim assembly. A switch located at the right tail

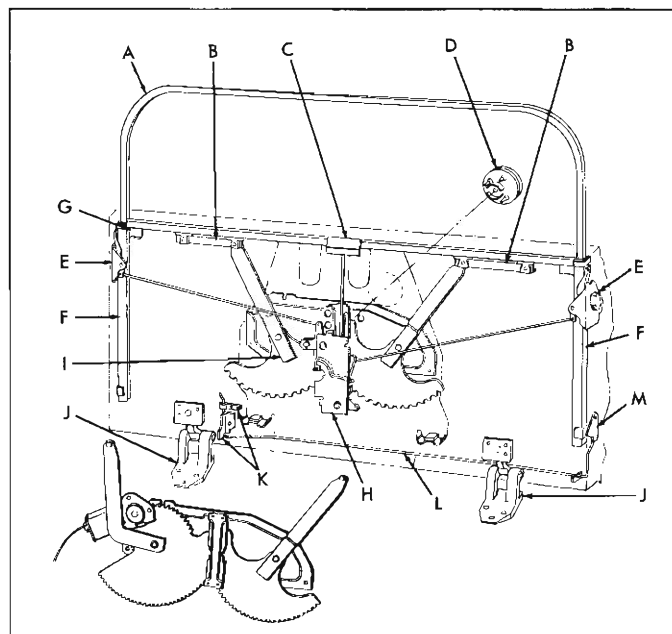


Fig. 36—Tail Gate Hardware

- |   |  |
|---|--|
| A. Tail Gate Assembly Window  | H. Tail Gate Lock Remote Control                 |
| B. Tail Gate Window Lower Sash Channel Cams   | I. Tail Gate Window Regulator—Manual             |
| C. Tail Gate Lock Remote Control Inside Handle                                      | J. Tail Gate Hinges                              |
| D. Tail Gate Window Regulator Outside Handle or Lock Cylinder Switch and Escutcheon | K. Tail Gate Torque Rod Retainers—Gate Side      |
| E. Tail Gate Lock Assembly  | L. Tail Gate Torque Rod                          |
| F. Tail Gate Window Glass Side Run Channels   | M. Tail Gate Torque Rod Mounting Plate—Body Side |
| G. Tail Gate Window Upper Stop  | N. Tail Gate Window Regulator—Electric           |

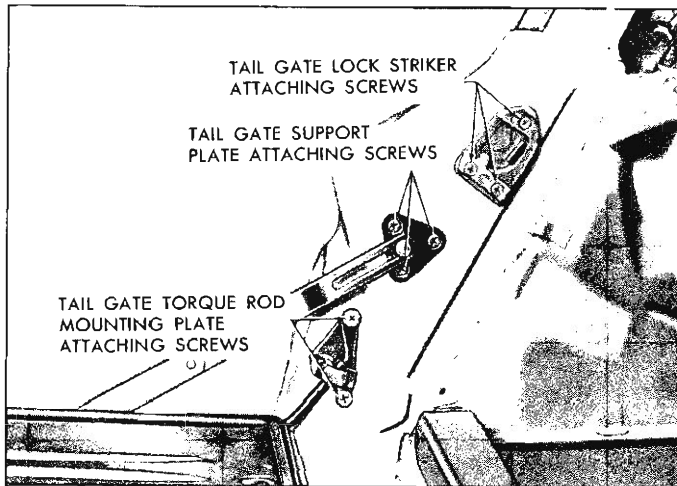


Fig. 37—Tail Gate Support and Torque Rod Attachment

gate lock prevents the up cycle operation of the electrically operated tail gate window when the tail gate is not completely closed.

After lowering the tail gate window the tail gate can be opened by means of a tail gate lock remote control inside handle located at the tail gate belt finishing molding. On styles with the electrically operated tail gate window the tail gate lock remote control incorporates a safety feature which prevents operation of the inside handle unless the tail gate window is in the full down position.

The tail gate hinges are secured to the body rear cross bar and the tail gate inner panel by screws, which are accessible upon removal of the cross bar hinge cover plate and tail gate inner cover panel.

The tail gate is counterbalanced by a single torque rod that is secured at the left rear body opening pillar by a mounting plate and between the tail gate panels by an upper and lower retainer bolted to the tail gate inner panel.

When the tail gate is opened the portion of the torque rod inside of the tail gate rotates with the gate while the end of the rod secured to the body pillar remains stationary. This creates an assisting torque to hold the tail gate as the gate approaches and reaches the open position. This torque also assists in closing the tail gate. Figure 36 is a phantom view which identifies and shows the relationship of major component parts of the tail gate assembly.

## Tail Gate Assembly

### Removal and Installation

1. Open tail gate and remove tail gate inner cover panel lower retainer and inner cover panel.
2. Carefully remove inner panel water deflector. Through small hole in access hole covers disengage remote control to lock connecting rods from clips on access hole covers by lifting rods

upwards. Remove both large access hole covers.

3. On styles equipped with electrically operated tail gate window remove tail gate window. Remove lock cylinder switch and escutcheon assembly as described under "Lock Cylinder Switch and Escutcheon Assembly - Removal and Installation". Detach harness connector from regulator motor.
4. On all styles, detach harness connectors from tail lights in tail gate and detach harness from clips inside the tail gate; then remove harness from tail gate.
5. Mark position of tail gate hinge (tail gate side) to facilitate installation in same position.
6. Raise tail gate to approximately a vertical position to relieve torque from torque rod. Remove torque rod mounting plate attaching screws (fig. 37) from left body pillar and remove mounting plate.
7. Suitably support tail gate to facilitate detachment of tail gate supports, then remove support attaching screws (fig. 38) from both sides of tail gate and fold supports against body.
8. With the aid of a helper remove tail gate to hinge attaching screws (fig. 39) from both hinges and remove tail gate assembly from body.
9. To install tail gate assembly reverse removal procedure. Prior to installation apply a coat of heavy bodied sealer to surface of hinge straps that contact tail gate inner panel (fig. 40).

Where necessary, adjust tail gate for proper alignment in body opening as specified under "Tail Gate Adjustments."

## Tail Gate Adjustments

To adjust the tail gate assembly "up or down" or "sideways" in the body opening loosen the tail gate hinge to inner panel, and upper and lower torque rod retainer attaching screws (fig. 39), shift tail gate to desired position and retighten screws.

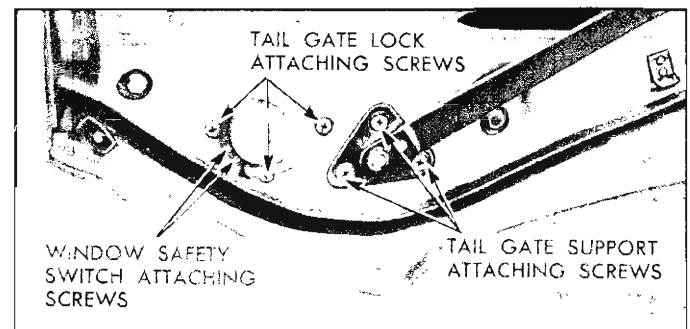


Fig. 38—Tail Gate Lock and Support

To adjust the tail gate assembly forward or rearward in the body opening loosen the tail gate hinge to rear body cross bar attaching screws, shift tail gate assembly to the desired position and retighten the screws.

If "up or down" or "in or out" adjustment of tail gate has affected lock striker engagement, adjust strikers as described under "Tail Gate Lock Striker Adjustment".

**Tail Gate Torque Rod**

**Removal and Installation**

1. Open tail gate and remove tail gate inner cover panel lower retainer, inner cover panel, inner panel water deflector, and both large access hole covers.
2. Raise tail gate to almost a vertical position to relieve torque from torque rod. Remove torque rod mounting plate attaching screws from left body pillar and remove mounting plate (fig. 37).
3. Lower tail gate to open position. Remove screws securing torque rod bearing plate to tail gate left side lower facing and remove bearing plate and bearing plate sealing washer through access hole.
4. Loosen upper and lower torque rod retainer attaching screws sufficiently to disengage torque rod from retainers (fig. 39).
5. Remove remote control assembly attaching screws (fig. 41) and lay remote control assembly on tail gate window.
6. Work torque rod out of tail gate through torque rod entrance hole at left lower corner of tail gate side facing.
7. To install tail gate torque rod, reverse removal procedure.

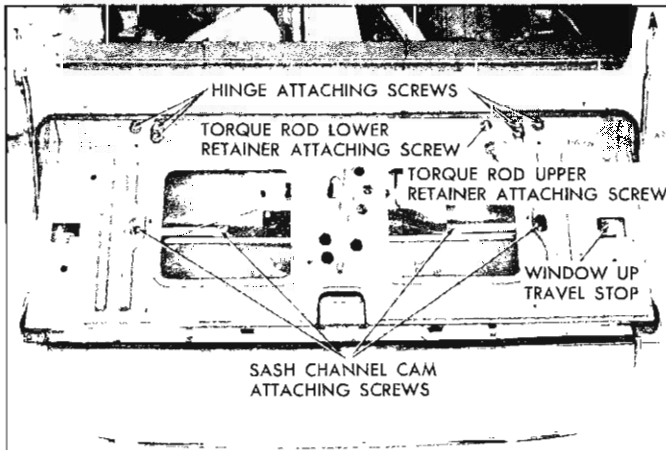


Fig. 39—Tail Gate Hardware

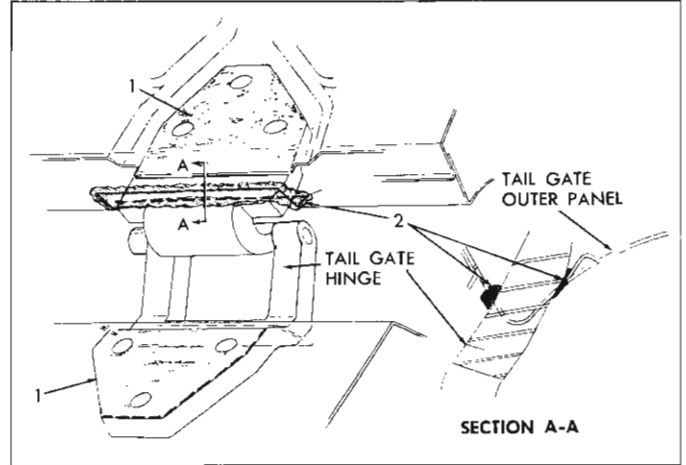


Fig. 40—Tail Gate Hinge Assembly

Lubricate nylon insert in torque rod mounting plate with Lubriplate or its equivalent. Wipe off excess lubricant.

**Tail Gate Hinge**

**Removal and Installation**

1. Remove tail gate assembly.
2. On side of body from which hinge is being removed, loosen rear bumper sufficiently to allow hinge to be removed from body.
3. Scribe (mark) position of hinge to facilitate installation in same position.
4. Remove hinge attaching bolts and remove hinge from body.
5. To install tail gate hinge, reverse removal procedure. Prior to installation apply a coat of heavy bodied sealer to surfaces of hinge strap which contact tail gate inner panel and body rear cross bar (fig. 40). Where necessary adjust tail gate for proper alignment in body opening as described under "Tail Gate Adjustments."

**Tail Gate Window Assembly—Manual and Electric**

**Removal and Installation**

(Refer to fig. 39)

1. Remove inner cover panel lower retainer and inner cover panel.
2. Detach tail gate inner panel water deflector sufficiently to gain access to window lower sash channel cam attaching bolts. Remove tail gate inner panel access hole covers.
3. Carefully operate window upward until the window lower sash right and left cam attaching bolts are accessible through access holes.

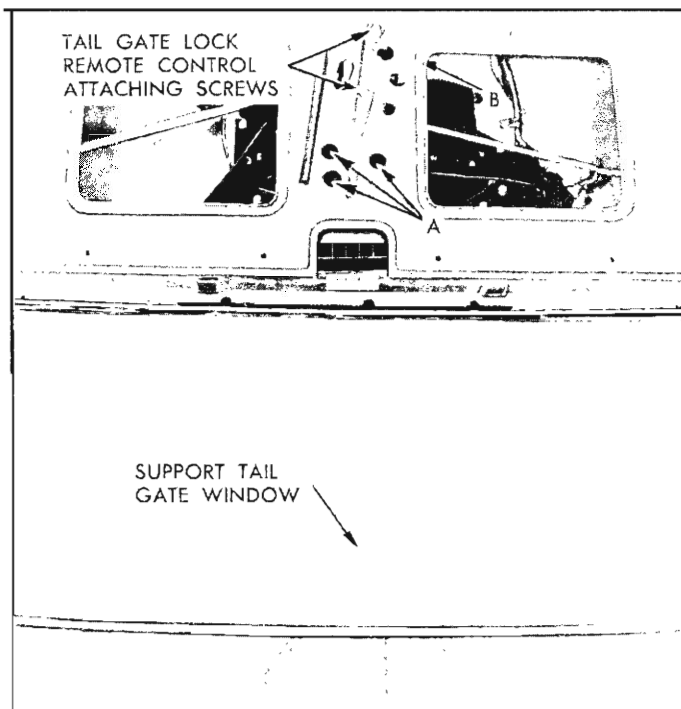


Fig. 41—Outside Handle and Lock Remote Control

4. Remove window lower sash channel right and left cam attaching bolts and disengage cams from window lower sash channel.

5. Remove tail gate window assembly by cocking glass so that left side of window assembly comes out of tail gate prior to right side. This is necessary to allow integral up travel stop on right side of lower sash channel to bypass up travel stop engagement arm on glass run channel.

NOTE: To open the tail gate on styles with electric windows when window assembly is removed, depress tail gate lock remote control locking lever through access hole at location "A" (fig. 39), and at the same time operate tail gate remote control inside handle.

6. To install tail gate window assembly reverse removal procedure. Prior to installing window lower sash channel cams, lubricate channel portion of cams with "Lubriplate" or its equivalent. Prior to resealing tail gate inner panel water deflector, check operation of window and tail gate locking mechanisms. Where necessary, adjust tail gate window, tail gate lock strikers or tail gate lock remote control for proper operation. Reseal tail gate inner panel water deflector as specified under "Tail Gate Inner Panel Sealing."

In the event the tail gate cannot be opened due to the window becoming inoperative while in an up position, proceed as follows:

1. Using an offset screwdriver, remove tail gate inner cover panel attaching screws. Lift panel upward to disengage it from lower retainer.

NOTE: Due to inaccessibility, it may be necessary to cut lower left cover panel attaching screws by chisel. To make chisel, taper one end of an 18" x 1" x 1/8" piece of steel. Cut lower screws by inserting chisel between tail gate inner panel and tail gate cover panel.

2. Remove inner panel access hole cover upper attaching screws. Loosen access hole cover lower attaching screws and remove cover by lifting it upward.

3. Remove lower sash channel cam attaching screws and lower window assembly into tail gate. Open tail gate.

In the event the window is inoperative in the full "up" position, the window regulator attaching screws can be removed and the window and regulator lowered sufficiently to allow removal of the window lower sash channel cam attaching screws.

### Tail Gate Inner Panel Water Deflector

On all station wagon styles a waterproof paper tail gate inner panel water deflector is sealed to the tail gate inner panel and deflects water into the bottom of the tail gate where it can drain out the bottom drain holes. The bottom of the water deflector is sealed to the inner panel in a manner that will deflect water towards designated access holes where the water can readily enter into the bottom of the tail gate.

IT IS IMPORTANT THAT WHENEVER ANY WORK IS PERFORMED ON THE TAIL GATE WHERE THE WATER DEFLECTOR HAS BEEN DISTURBED, THE DEFLECTOR MUST BE PROPERLY SEALED TO THE TAIL GATE INNER PANEL.

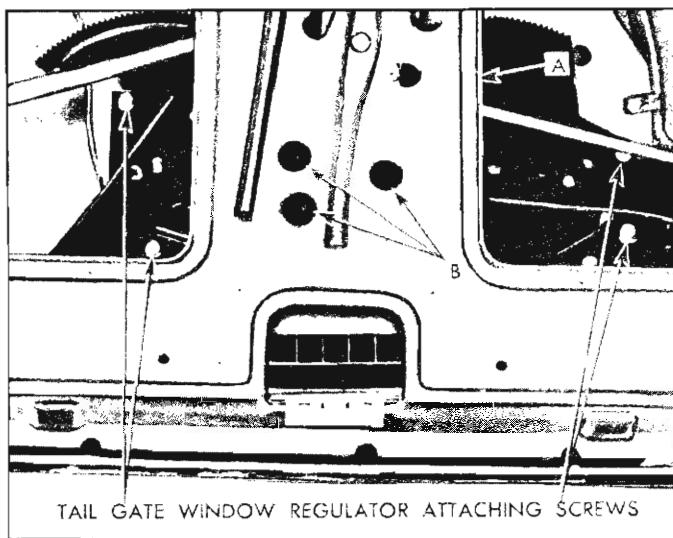


Fig. 42—Tailgate Window Regulator

### Removal and Installation

1. Remove tail gate inner cover panel lower retainer and inner cover panel.
2. Using a sharp scraper or other suitable tool carefully lift up edge of deflector and detach sealer and water deflector as required.

**NOTE:** DO NOT TEAR WATER DEFLECTOR.

### Installing or Resealing Procedure

1. If installing old deflector or resealing partially detached deflector first inspect water deflector for any tears or holes and, where necessary, repair any tears or holes with waterproof body tape applied to both sides of deflector.
2. If installing new deflector use old deflector or tail gate inner panel to trim new deflector to proper size.
3. Apply a bead of body caulking compound (approximately 3/16" diameter) to tail gate inner panel (fig. 43).

**NOTE:** The body caulking compound should be applied along the lower portion of the tail gate exactly as shown in illustration to assure proper drainage of water through inner panel access holes into bottom of tail gate.

4. Position water deflector to tail gate inner panel with polyethylene coated side of deflector against inner panel. Firmly press or roll sealed areas to obtain a good bond between deflector and tail gate inner panel.
5. Clean off all excess caulking compound; then, install previously removed tail gate inner cover panel.

## FRONT SEATS

### FRONT SEAT ASSEMBLY (SIX-WAY SEAT)

The electrically-operated six-way front seat assembly can be moved forward, rearward, upward, downward or tilted by means of a manually-operated seat control switch. The large center control knob controls movement of the entire seat assembly horizontally. The smaller forward control knob controls the vertical movements of the front of the seat assembly causing the seat assembly to "tilt". In the same manner, the rear control knob controls vertical movement of the rear of the seat assembly. To obtain maximum vertical travel, it will be necessary

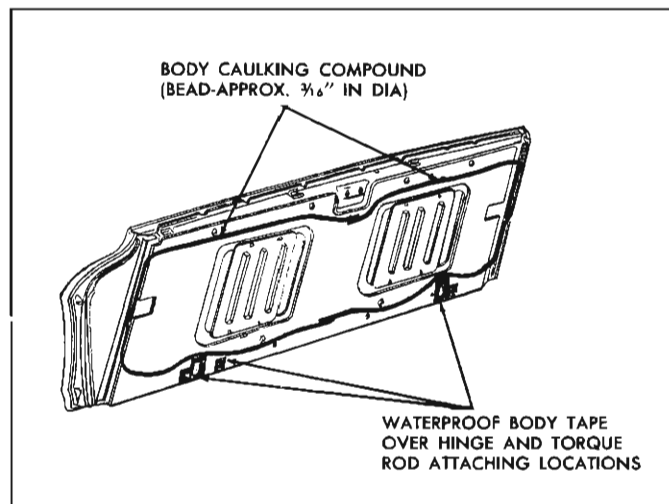


Fig. 43—Tailgate Inner Panel Sealing

to engage the center vertical control until the limit of travel is reached, then engage the smaller forward or rear control knob to complete the maximum travel. This is necessary due to the removal of the slip clutches in the seat transmission. This seat adjuster operating mechanism incorporates a transmission assembly which includes three solenoids and six drive cables leading to the seat adjusters.

Solenoid #1 (fig. 44) controls the vertical movement of the rear edge of the seat. Solenoid #2 controls the horizontal movement of the seat. Solenoid #3 controls the vertical movement of the front edge of the seat. In addition to the six seat adjuster drive cables at the transmission assembly, a motor drive cable is installed from the motor to the transmission assembly (fig. 44). When one of the control switch buttons is actuated, the motor and one of the solenoids are energized simultaneously. The solenoid plunger engages the large gears with a driving gear. The driving gear rotates the large gears which rotates the drive cables and operates both adjusters. When the switch contacts are opened, a spring returns the solenoid plunger to its original position, disengaging the large gears from the driving gear.

### Front Seat Assembly

#### Removal and Installation

1. Under front of seat, disconnect seat wire harness from feed wire harness and detach control switch harness from clip on floor pan.
2. Turn back floor carpeting, remove both seat adjuster track covers and remove four seat adjuster-to-floor pan attaching bolts from each adjuster. Remove carpet retainers at front of seat adjusters.

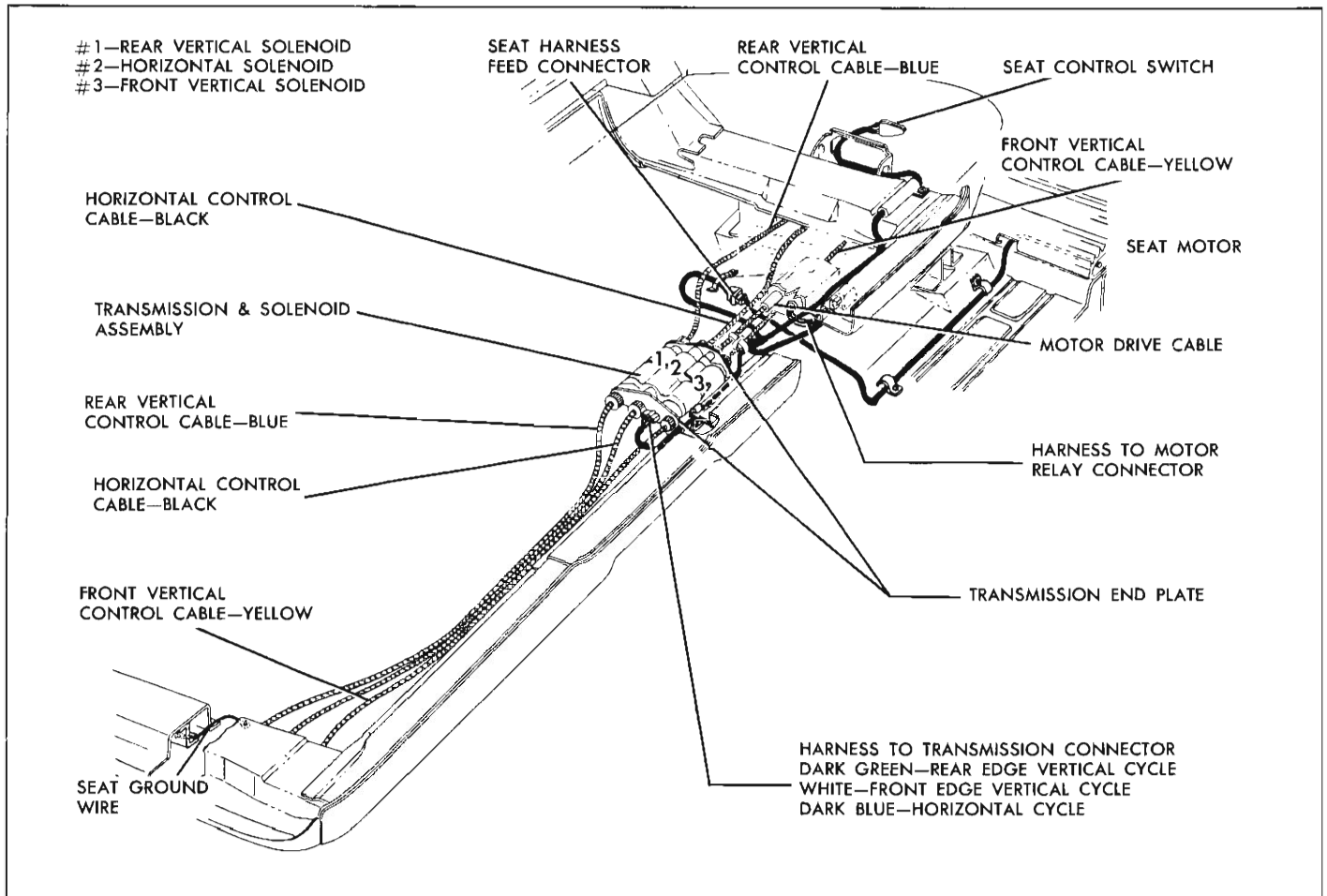


Fig. 44—Six Way Seat Installation

3. With aid of a helper, remove seat assembly with attached adjusters, motor and transmission assembly from body.
4. To install seat assembly, reverse removal procedure. Make sure ground wire is securely attached at right seat adjuster and under seat adjuster-to-floor pan attaching bolt.

4. To install seat adjuster assembly, reverse removal procedure. Black cable attaches to horizontal actuator; yellow cable to front vertical gear nut and blue cable to rear vertical gear nut.

**IMPORTANT:** When installing seat assembly in body, seat adjusters should be parallel and "in phase" with each other. In the event the adjusters are "out of phase" (that is, one adjuster reaches its maximum horizontal or vertical travel in a given direction before the other adjuster), proceed as follows:

- a. 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.
- b. Front and Rear Vertical Travel - operate seat control switch until one adjuster reaches fully raised position. Disconnect

## Front Seat Adjuster Assembly

### Removal and Installation

1. Remove front seat assembly from body with attached adjusters, motor and transmission, and place upside down on a clean protected surface.
2. Detach the three power drive cables from adjuster to be removed.
3. Remove adjuster-to-seat bottom frame front and rear attaching bolts and remove adjuster from seat assembly.

vertical drive cable from adjuster which has reached the full up position. Operate seat upward until other adjuster has reached the full up position; then, connect the vertical drive cable and check vertical travel of seat.

### Front Seat Adjuster Vertical Jackscrew Gear Nuts and Springs

#### Removal and Installation

1. Remove seat assembly from body.
2. Remove seat adjuster from side on which jackscrew is to be removed.
3. Using clutch-type screwdriver or other suitable tool, remove shoulder screws securing linkages to vertical gear nuts (fig. 45).
4. Insert a #1 crosshead screwdriver or other suitable tool into drive cable slot in rear vertical gear nut and actuate gear nut rearward. Actuate front vertical gear nut rearward to release tension from front assist spring.
5. Remove jackscrew front attaching nut.
6. Lift front end of jackscrew to disengage it from support and remove front assist spring and silencer.
7. Actuate front and rear gear nuts forward to release tension from rear assist spring.
8. Remove rear attaching nut from jackscrew.
9. Disengage rear end of jackscrew from support and remove jackscrew with gear nuts and spring from adjuster. Rear assist spring and silencer may now be removed from jackscrew (fig. 46).
10. To remove vertical gear nuts, turn or actuate gear nuts off jackscrew.
11. To install, reverse removal procedure making

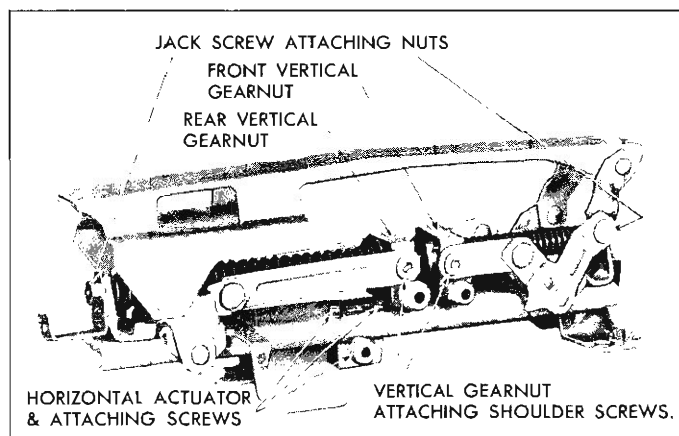


Fig. 45—Six Way Seat Adjuster

sure jackscrew is installed with unthreaded shoulder at rear of adjuster and with gear nuts installed. Rear vertical gear nut with larger diameter cable attachment is installed to rear; front vertical gear nut with smaller diameter cable attachment is installed at front. Both vertical gear nuts should have cable attachment at bottom of inner side of adjuster.

### Front Seat Adjuster Horizontal Actuator or Upper and Lower Channels

#### Removal and Installation

1. Remove front seat adjuster.
2. Remove screws securing horizontal actuator and remove actuator from seat adjuster.
3. Slide seat adjuster lower channel from upper channel and, if required, remove plastic shoes from lower channel track.
4. To install, reverse removal procedure. If lower channel has been removed from upper channel, make sure all four plastic shoes are installed on lower track. Apply "Lubriplate" or equivalent to track portion of upper channel and to teeth on lower channel. When installing horizontal actuator, adjust actuator so that drive gear is fully engaged with teeth on lower channel. When horizontal actuator screws are tightened, there should be no free motion between upper and lower channels.

### Front Seat Adjuster Electric Motor or Drive Cable

#### Removal and Installation

1. Remove front seat assembly as previously described.
2. Remove motor support-to-seat frame attaching bolts.
3. Move motor assembly towards left side of seat sufficiently to disengage motor drive cable; then, remove motor from support assembly. Motor drive cable may be removed, if required, by removing cable end plate from transmission.
4. To install, reverse removal procedure making sure motor drive cable is properly engaged at both motor and transmission.

### Front Seat Adjuster Horizontal and Vertical Drive Cables

#### Removal and Installation

1. Remove front seat assembly from body with attached adjusters, motor and transmission and place upside down on a clean protected surface.



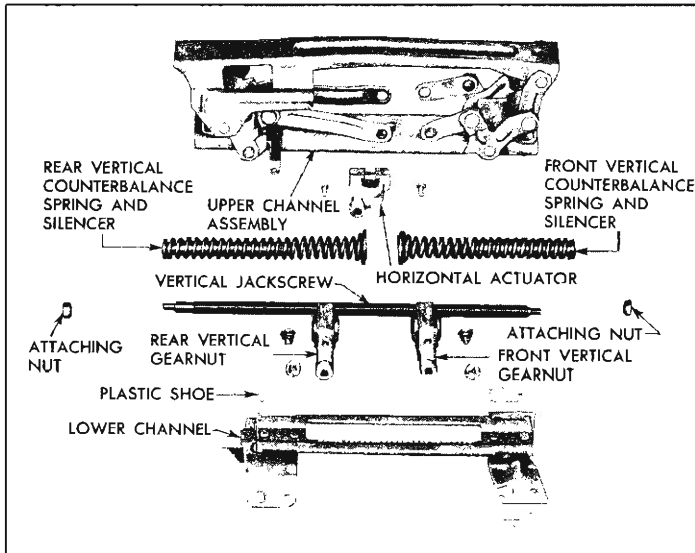


Fig. 46—Exploded View of Adjuster

2. Detach both horizontal and vertical cables from seat adjuster.
3. Remove screws securing horizontal and vertical cable end plate on side of transmission from which cables are being removed and remove

cables from seat assembly; then disengage cables from end plate.

4. To install horizontal and vertical cables, reverse removal procedure. Make sure cables are installed to correct gear nuts (fig. 44).

### Front Seat Adjuster Transmission

#### Removal and Installation

1. Remove front seat assembly from body with attached adjusters, motor and transmission and place upside down on a clean protected surface.
2. Disconnect wire harness connector from transmission (see Figure 44).
3. Remove screws securing horizontal and vertical cable end plate on both sides of transmission and detach cables from transmission.
4. Remove transmission to support attaching bolts; then disengage transmission from motor drive cable and remove transmission from seat assembly.
5. To install, reverse removal procedure.

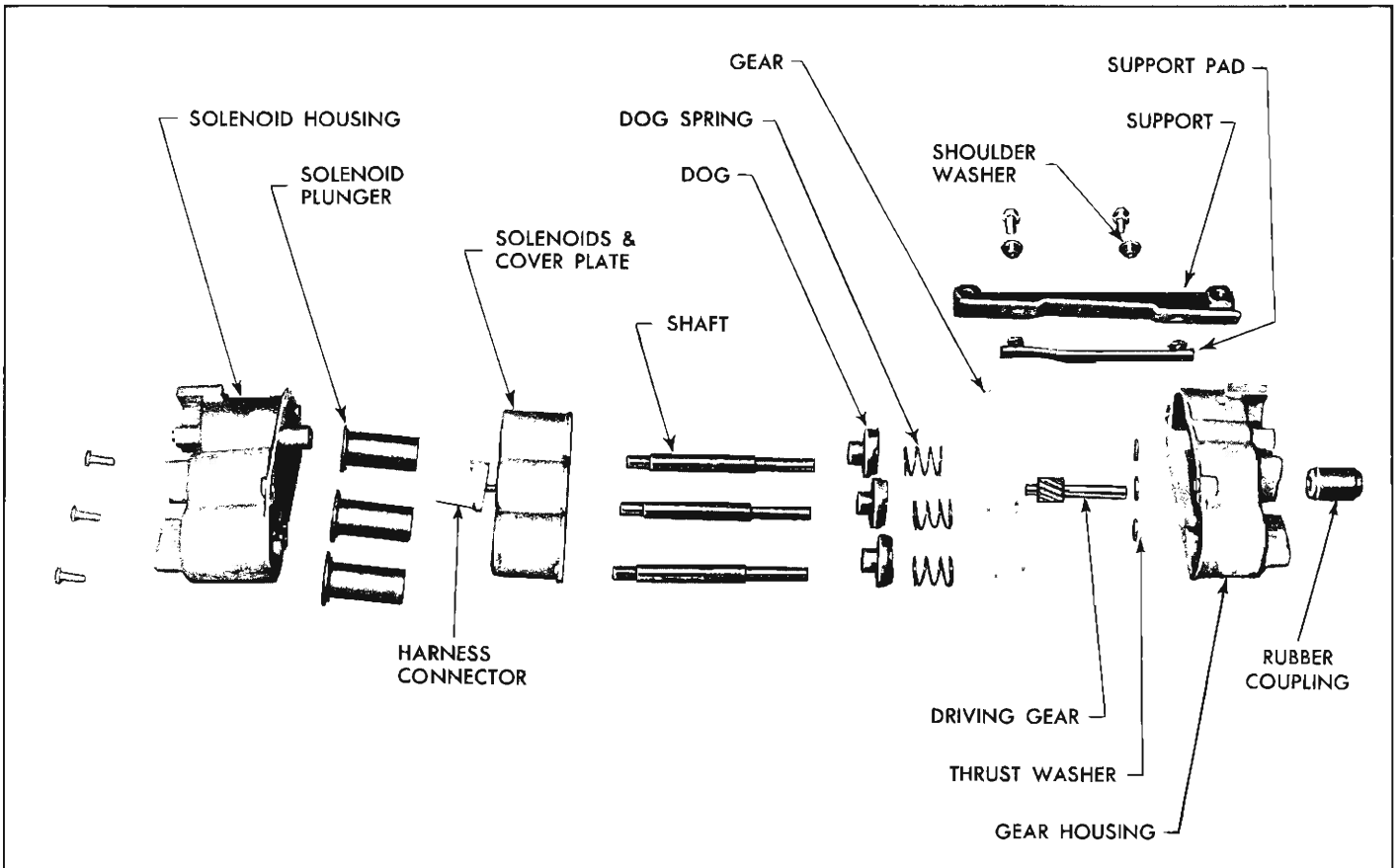


Fig. 47—Exploded View of Transmission

**Disassembly and Assembly**

1. Remove front seat adjuster transmission from seat assembly.
2. Remove screw securing ground strap to solenoid housing and screws securing transmission support to gear and solenoid housings.
3. Remove screws securing gear housing to the solenoid housing; then, carefully separate housings and remove component parts of transmission assembly (fig. 47).
4. To assemble transmission, reverse removal procedure.

**NOTE:** Prior to or during installation, lubricate frictional surfaces of driving gear, thrust washer, large gears, dog washers, gear shaft and solenoid plungers with "Lubriplate" or equivalent.

**BUCKET TYPE FRONT SEATS**

**Bucket Type Front Seat Assembly (Driver or Passenger)**

**Removal and Installation**

1. Turn back floor carpeting sufficiently to expose seat adjuster-to-floor pan attaching nuts or bolts.
2. Operate seat assembly to full forward position.
3. At rear of seat, remove adjuster to floor pan attaching nuts or bolts.
4. With aid of helper, remove seat assembly with attached adjusters from body.
5. To install, reverse removal procedure.

**Front Seat Adjusters (Driver or Passenger)**

**Removal and Installation**

1. Remove front seat assembly as previously described and place upside down on a clean, protected surface.
2. If adjuster to be replaced is equipped with an assist spring, remove spring from adjuster.
3. Operate adjuster so that both front and rear attaching bolts are accessible.
4. If power operated outboard adjuster is being replaced, disconnect power drive cable from adjuster gear nut.

5. Remove adjuster-to-seat bottom frame front and rear attaching bolts and remove adjuster from seat assembly.
6. To install, reverse removal procedure.

**Front Seat Back Assembly**

**Removal and Installation**

1. Remove bolts securing back assembly to seat cushion frame assembly.
2. On all styles, using a flat bladed tool, carefully remove retainer from outer hinge pin (fig. 48).
3. Carefully disengage front seat back outer hinge arm from pin.
4. Move entire seat back assembly inboard until inner hinge pin is disengaged from retainer on seat assembly; then remove seat back from body.
5. To install, reverse removal procedure. Prior to installation of back assembly, be sure inner and outer washers are installed over the hinge pins (fig. 48).

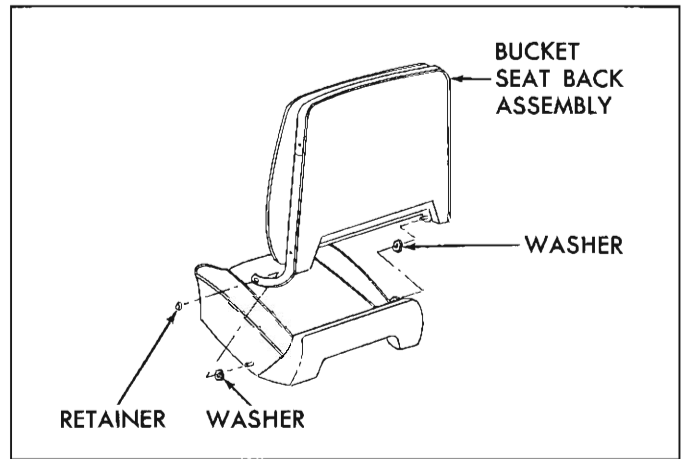


Fig. 48—Bucket Seat Back Removal

**Repositioning Front Seat Assembly 1847 and 1867 Styles**

To reposition front seat assembly one (1) inch rearward, proceed as follows:

1. Remove front seat assembly from body and placed it upside down on a clean protected surface.
2. Enlarge pilot holes in seat adjusters located one (1) inch forward of existing attaching holes to 3/8" diameter.
3. Install front seat assembly. Check seat for proper operation.

## FOLDING TOP

### FOLDING TOP ADJUSTMENTS

The folding top linkage consists of three sections of right and left side roof rails and a front roof rail connected by bolts, hinges, and a series of connecting links and bows. The top linkage is attached to the body at the rear quarter area by a male hinge. On "B" and "C" styles, the male hinge is bolted to an adjustable support. On "X" and "Y" styles, the hinge is attached directly to the quarter panel brace. The front roof rail is locked at the windshield header by two hook type locks which are an integral part of the two locking handles.

The following information outlines and illustrates procedures which may be used to correct misaligned folding top linkage. To correct some top variations, only a single adjustment is required; other top variations require a combination of adjustments. In conjunction with adjustment of the folding top, it may be necessary to adjust the door, door glass, rear quarter glass, trim sticks or side roof rail weatherstrips.

#### Adjustment of Top at Front Roof Rail Corner Brace

If the top, when in a raised position, is too far forward or does not move forward enough to allow the guide studs on the front roof rail to enter holes in the striker assemblies, proceed as follows:

1. Unlatch top and raise it above windshield header. Remove side roof rail weatherstrip front attaching screws.
2. Loosen corner brace attaching bolts and adjust front roof rail fore or aft as required. Repeat on opposite side if necessary (see Figure 49).

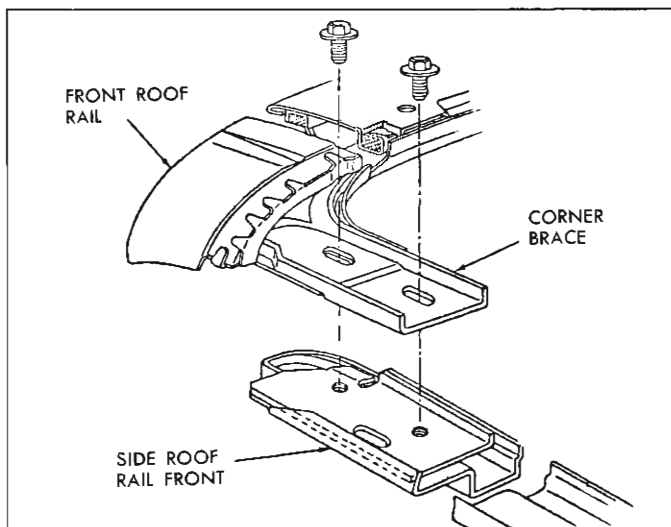


Fig. 49—Roof Rail Corner Brace Attachment

**NOTE:** This adjustment is limited. If additional adjustment is required, it can be made at the folding top male hinge.

3. When front roof rail corner brace is properly adjusted, tighten attaching bolts and reinstall side roof rail front weatherstrip attaching screws. Check forward section of weatherstrip and reseal if necessary.

#### Adjustment of Top at Sunshade and Striker Support Assembly

If a difficult locking action, caused by misalignment of the sunshade and striker support assembly is encountered at the front roof rail or if a closer fit of the front roof rail to windshield header is desired, proceed as follows:

1. Unlatch top and raise it above windshield header.
2. Loosen striker support attaching screws and adjust striker as required; then tighten attaching screws (see Figure 50).

If, after adjusting the striker support, the locking action of top is still unsatisfactory, the hook lever on the front roof rail lock assembly may be adjusted as follows:

1. To tighten locking action of top, turn hook lever clockwise.
2. To reduce locking action of top, turn hook lever counterclockwise.

**NOTE:** Hook lever may be adjusted with finger pressure, no tools are required.

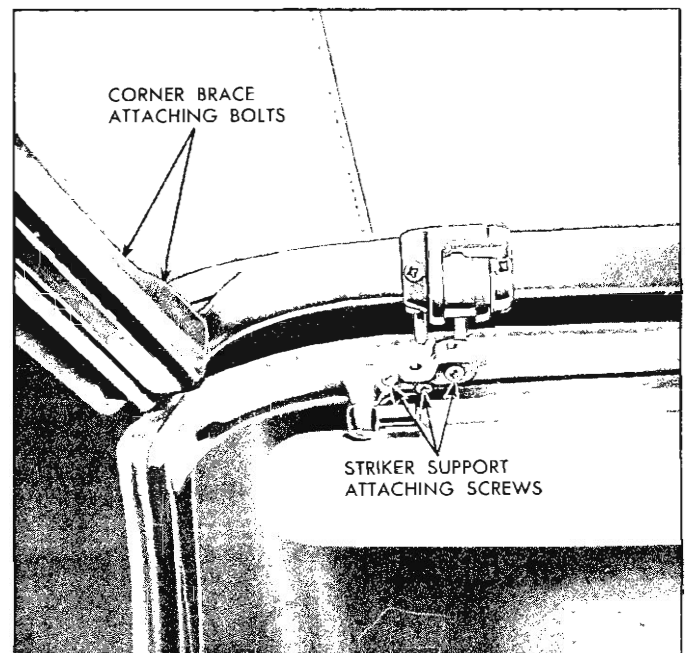


Fig. 50—Front Roof Rail Adjustment

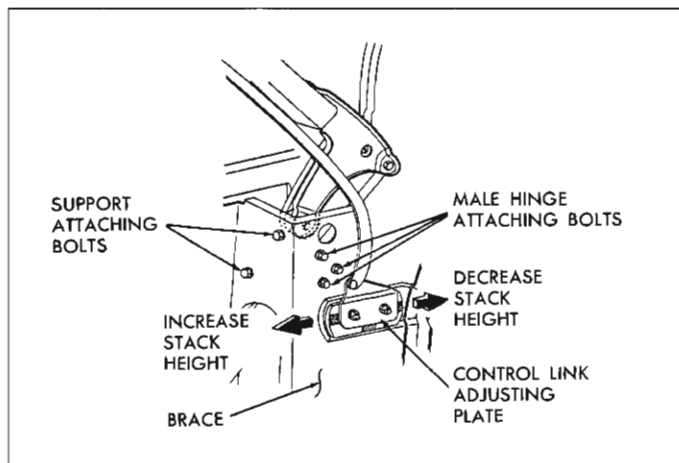


Fig. 51—Folding Top Mechanism

### Adjustment of Top Control Link Adjusting Plate

1. With top in up position, if joint between front and center side roof rail is too high or too low, proceed as follows:
  - a. Remove folding top compartment side trim panel.
  - b. Scribe location of control link adjusting plate on folding top compartment brace.
  - c. Loosen two bolts securing control link adjusting plate sufficiently to permit adjustment of plate (fig. 51).
  - d. Without changing fore and aft location of adjusting plate, adjust side roof rail up or down allowing adjusting plate to move up or down over serrations on support as required; then tighten bolts.
2. If top assembly does not stack properly when top is in down position, proceed as follows:
  - a. Scribe location of control link adjusting plate on folding top compartment brace.
  - b. Loosen bolts securing control link adjusting plate sufficiently to permit adjustment of plate.
  - c. Without changing the up or down location of adjusting plate, move adjusting plate forward or rearward (horizontally) over serrations as required to obtain desired height; then tighten bolts.

### Adjustment of Top at Male Hinge Support

Prior to making any adjustment of top linkage at male hinge, loosen two bolts securing top rear quarter trim stick to rear quarter panel. This will prevent any possible damage to top when it is raised after adjustment. After making an adjustment at

male hinge, check folding top at rear quarter area for proper fit and, if necessary, adjust trim stick assembly.

1. If there is an excessive opening between side roof rail rear weatherstrip and rear of rear quarter window, or if front roof rail is too far forward or rearward, proceed as follows:
  - a. Scribe location of male hinge attaching bolt washers on folding top compartment brace.
  - b. Loosen three male hinge assembly attaching bolts (see Figure 51).
  - c. Move hinge fore or aft as required to obtain proper alignment between side roof rail rear weatherstrip and rear quarter window; then tighten bolts.
  - d. Lock front roof rail to windshield, (where required, adjust front roof rail corner brace as described), and check fit of top material at rear quarter trim stick area. If necessary, adjust trim stick; then tighten trim stick attaching bolts.
2. If side roof rail is too high or too low at rear quarter window area, proceed as follows:
  - a. Loosen male hinge assembly attaching bolts and, loosen male hinge support front attaching bolts (see Figure 51).
  - b. Without changing fore and aft location of male hinge, adjust hinge support up or down as required to obtain proper alignment between side roof rails and rear quarter windows.

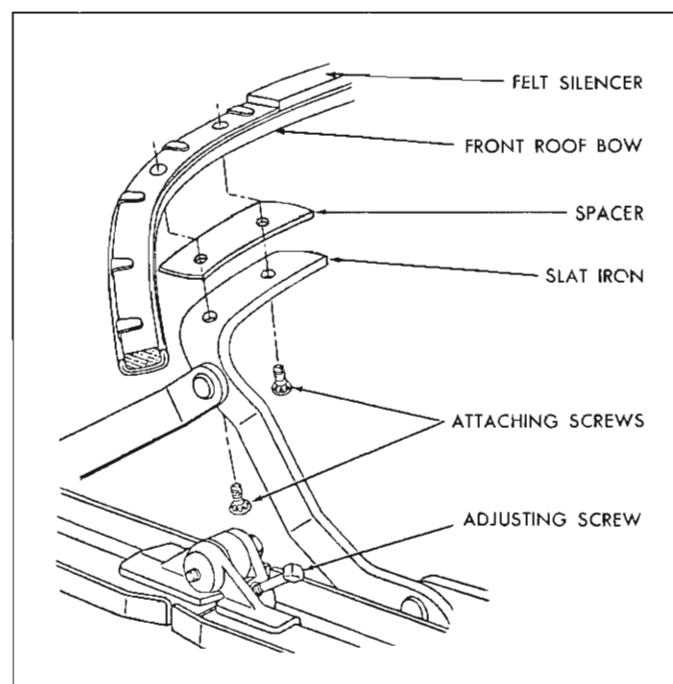


Fig. 52—Center Side Roof Rail and Hinge

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- c. Tighten attaching bolts, while maintaining proper alignment of scribe marks.
- d. Check fit of top material at rear quarter trim stick area and, if necessary, adjust trim stick. If adjustment is not necessary, tighten

trim stick attaching bolts.

**Description:** The following procedure describes and illustrates various types of folding top misalignment conditions, their apparent causes and the recommended procedure for their correction.

Condition	Apparent Cause	Correction
A. Difficult locking action at front roof rail.	<ol style="list-style-type: none"> <li>1. Sunshade support misaligned.</li> <li>2. Lock hook lever improperly adjusted.</li> <li>3. Misaligned front roof rail front weatherstrip.</li> <li>4. Front roof rail misaligned.</li> </ol>	<p>Adjust sunshade support laterally.</p> <p>Adjust lock hook lever counter-clockwise.</p> <p>Loosen, realign and retack front roof rail front weatherstrip.</p> <p>Adjust front roof rail.</p>
B. Top does not lock tight enough to windshield header.	<ol style="list-style-type: none"> <li>1. Sunshade support misaligned.</li> <li>2. Lock hook lever improperly adjusted.</li> <li>3. Misaligned front roof rail front weatherstrip.</li> <li>4. Front roof rail misaligned.</li> </ol>	<p>Adjust sunshade support laterally.</p> <p>Adjust lock hook lever clockwise.</p> <p>Loosen, realign and retack front roof rail front weatherstrip.</p> <p>Adjust front roof rail.</p>
C. Top travels too far forward.	<ol style="list-style-type: none"> <li>1. Front roof rail misaligned.</li> <li>2. Male hinge assembly misaligned.</li> </ol>	<p>Adjust front roof rail rearward (fig. 49).</p> <p>Adjust male hinge assembly rearward (fig. 51).</p>
D. Top does not travel forward far enough.	<ol style="list-style-type: none"> <li>1. Front roof rail misaligned.</li> <li>2. Male hinge assembly misaligned.</li> <li>3. Improper spacing between rear trim stick and body metal.</li> </ol>	<p>Adjust front roof rail forward (fig. 49)</p> <p>Adjust male hinge assembly forward ("B" and "C" Figure 51).</p> <p>Install an additional spacer between rear trim stick and body metal at each attaching bolt location.</p>
E. Side roof rail rear weatherstrip too tight against rear of rear quarter window.	<ol style="list-style-type: none"> <li>1. Male hinge assembly misaligned.</li> </ol>	<p>Adjust male hinge assembly rearward (fig. 51).</p>
F. Gap between side roof rail rear weatherstrip and rear of rear quarter window.	<ol style="list-style-type: none"> <li>1. Male hinge assembly misaligned.</li> </ol>	<p>Adjust male hinge assembly forward (fig. 51) and/or shim side roof rail rear weatherstrip forward as required.</p>
G. Side roof rail rear weatherstrip too tight against top of rear quarter window.	<ol style="list-style-type: none"> <li>1. Male hinge misaligned.</li> </ol>	<p>Adjust male hinge support upward (fig. 51).</p>
H. Gap between side roof rail rear weatherstrip and top of rear quarter window.	<ol style="list-style-type: none"> <li>1. Male hinge misaligned.</li> </ol>	<p>Adjust male hinge support downward and/or shim side roof rail rear weatherstrip downward as required.</p>

Condition	Apparent Cause	Correction
<p>I. Sag at front to center side roof rail joint.</p>	<ol style="list-style-type: none"> <li>1. Control link adjusting plate misaligned.</li> <li>2. Center side roof rail hinge adjusting screw improperly adjusted.</li> </ol>	<p>Adjust control link adjusting plate downward (fig. 51).</p> <p>Adjust screw counterclockwise (fig. 52).</p>
<p>J. Front and center side roof rails bow upward at hinge joint.</p>	<ol style="list-style-type: none"> <li>1. Control link adjusting plate misaligned.</li> <li>2. Center side roof rail hinge adjusting screw improperly adjusted.</li> </ol>	<p>Adjust control link adjusting plate upward (fig. 51).</p> <p>Adjust screw clockwise (fig. 52).</p>
<p>K. Folding top dust boot is difficult to install.</p>	<ol style="list-style-type: none"> <li>1. Improper stack height due to misaligned control link adjusting plate.</li> <li>2. Misaligned folding top dust boot female fastener.</li> <li>3. Rear seat back assembly is too far forward.</li> <li>4. Excessive build-up of padding in side roof rail stay pads.</li> <li>5. On manual tops, due to improperly adjusted catch clips.</li> </ol>	<p>Adjust control link plate rearward or forward as required.</p> <p>Where possible, align female with male fastener.</p> <p>Relocate rear seat back panel rearward until dimension "Z" between upper rear edge of rear seat back to forward edge of pinchweld finishing molding is 19 1/2 inches ± 1/16 inch. The dimension is measured at approximately center line of body.</p> <p>Repair side stay pads as required.</p> <p>Adjust catch clips downward as required.</p>
<p>L. Folding top dust boot fits too loosely.</p>	<ol style="list-style-type: none"> <li>1. Improper stack height due to misaligned control link adjusting plate.</li> <li>2. Rear seat back assembly is too far rearward.</li> <li>3. On manual tops, due to improperly adjusted catch clips.</li> </ol>	<p>Adjust control link plate forward (fig. 51).</p> <p>Relocate rear seat back panel forward until dimension "Z" between upper rear edge of rear seat back to forward edge of pinchweld finishing molding is 19 1/2 inches ± 1/16 inch. The dimension is measured at approximate center line of body.</p> <p>Adjust catch clips upward as required.</p>
<p>M. Top material is too low over windows or side roof rails.</p>	<ol style="list-style-type: none"> <li>1. Front roof bow improperly shimmed.</li> <li>2. Excessive width in top material.</li> </ol>	<p>*Install one or two 1/8" shims between front roof bow and slat iron.</p> <p>If top is too large, detach binding along affected area, trim off excessive material along side binding as required; then hand sew binding to top material.</p>

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Condition	Apparent Cause	Correction
N. Top material is too high over windows or side roof rails.	1. Front roof bow improperly shimmed.  2. Front roof bow felt silencer too high.	*Remove one or two 1/8" shims from between front roof bow and slat iron.  Trim silencer to within 1/8" of top of front roof bow.
O. Top material has wrinkles or draws.	1. Rear quarter trim stick improperly adjusted.  2. Top material improperly installed to center or rear quarter trim stick.	Adjust rear quarter trim stick on side affected.  Retack top material as required.
P. Wind whistle or waterleak along front roof rail.	1. Top does not lock tight enough to windshield header.  2. Misaligned front roof rail front weatherstrip.  3. Front roof rail contour does not conform to windshield header.	Adjust sunshade support laterally and/or adjust lock hook lever clockwise.  Retack front weatherstrip to front roof rail.  Contour of front roof rail may be changed slightly by reforming rail.

\* When no shims are required, use attaching screw part #4824789 (1/4-28x5/8" #12 oval head with external tooth lock washer, type "T" thread cutting, chrome finish).

When one shim is required, use attaching screw part #4837811 (1/4-28x3/4" #12 oval head with external tooth lock washer, type "T" thread cutting, chrome finish).

When two shims are required, use attaching screw part #4824257 (1/4-28x7/8" #12 oval head with external tooth lock washer, type "T" thread cutting, chrome finish).

**TOP**

**FOLDING TOP TRIM ASSEMBLY (COMPLETE)**

Design changes have been made on the 1962 folding top and back curtain assembly. The most important of these changes include relocation of the back curtain zipper, extension of the back curtain vinyl to the rear trim stick and elimination of the vertical weather flaps on the folding top assembly and back curtain assembly. The back curtain assembly has also been extended around the rear quarter section and is tacked to the rear and rear quarter trim sticks. In addition, all vertical portions of the back curtain assembly, which were formerly stitched, will be dielectrically sealed. The materials which are required for performing convertible top sealing operations are a neoprene-type weatherstrip adhesive for cementing vinyl surfaces and convertible top sealer (nitrile type) for sealing and cloth inner lining of the top material and back curtain assembly.

The latter material may be obtained through the Car Division Parts System.

**Removal of Folding Top and Back Curtain Trim Assembly**

1. Place protective covers on all exposed panels which may be contacted during procedure.
2. Remove following trim and hardware items:
  - a. Rear seat cushion and back.
 

**CAUTION:** Disconnect rear seat speaker wire if present.
  - b. Folding top compartment side trim panel assemblies.
  - c. Side roof rail rear weatherstrips; then loosen folding top quarter flaps from rails.
3. At the front of body, raise front roof rail, remove retainers and front weatherstrips, detach top material from front roof rail (fig. 53).

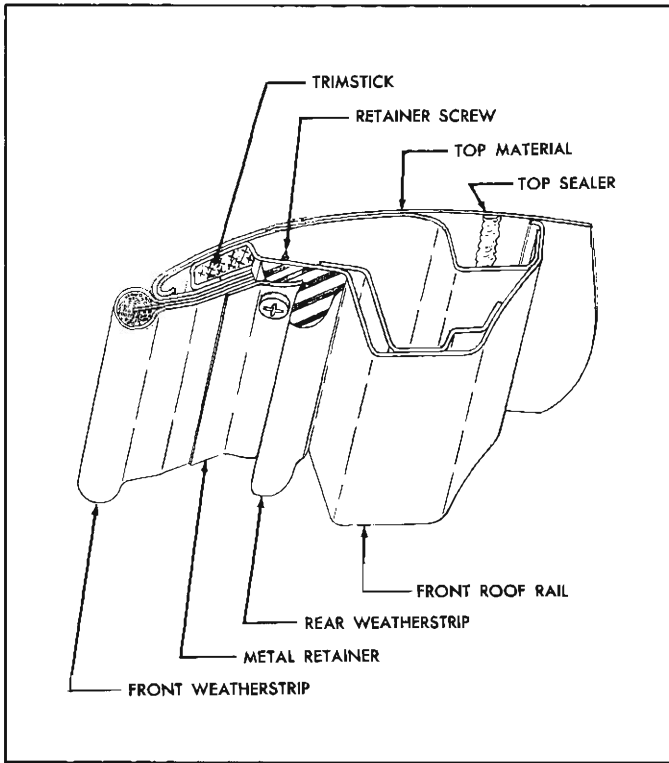


Fig. 53—Front Roof Rail Assembly

4. Loosen front end of each side roof rail front weatherstrip sufficiently to detach top material flaps which are nailed and cemented to rails (fig. 54).
5. Detach folding top compartment bag from rear seat back panel, thus exposing rear quarter and rear trim stick attaching bolts. Forward end of top compartment bag may be tied or wired to

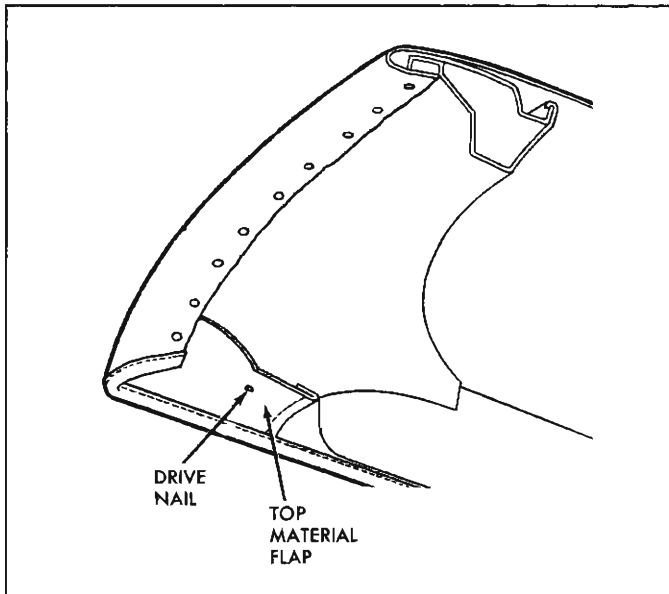


Fig. 54—Top Material at Front Roof Rail

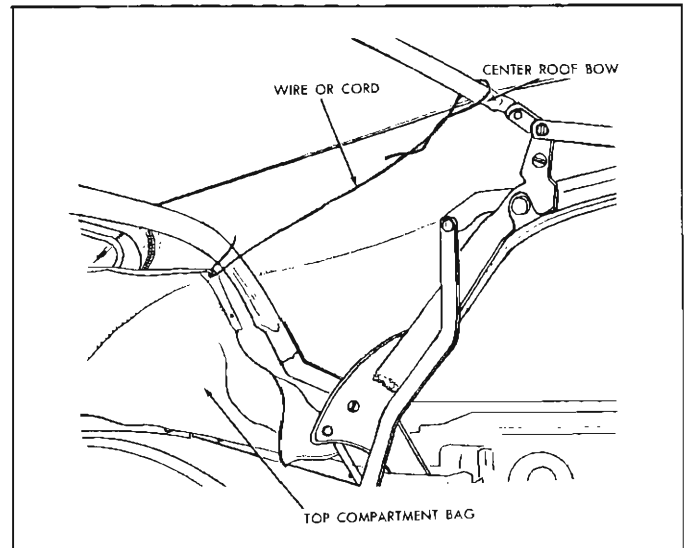


Fig. 55—Tying Top Compartment Bag

center roof bow to provide ready access to attaching bolts (fig. 55).

6. At each rear quarter area remove attaching bolts and washer securing rear quarter trim stick assembly to rear quarter inner panel (fig. 56).
7. Remove rear trim stick attaching bolts; then lift trim assembly with attached quarter and rear trim sticks on top of rear compartment front panel.
8. To establish the relationship of right and left inner vertical edge of old top material to back curtain assembly at rear trim stick location, mark back curtain vinyl at both locations with a grease pencil (fig. 57). Reference marks should be transferred to new back curtain when Step 8 of installation procedure is performed.

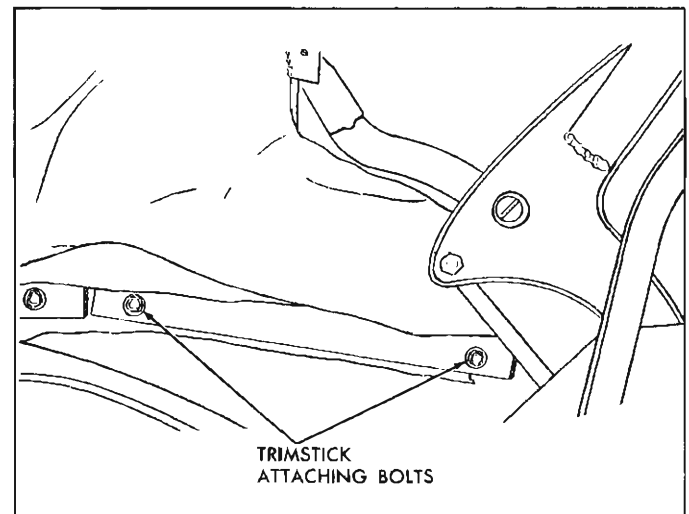


Fig. 56—Rear Quarter Trimstick



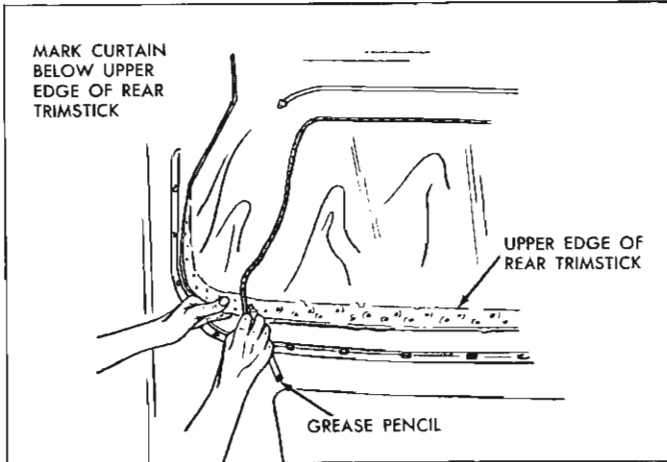


Fig. 57—Locating Edge of Top Material

**NOTE:** Reference marks must be made below upper edge of rear trim stick.

9. To establish the relationship of old top material to its position on rear trim sticks, cut selvage end of top material off flush with lower edge of trim sticks.
- CAUTION:** When cutting top material, be careful not to cut lower selvage edge of back curtain assembly.
10. Using a pencil, mark both ends of rear and rear quarter trim sticks on vinyl surface of top material (fig. 58). Reference marks for trim sticks should be transferred to new top material when Step 31 of installation procedure is performed.
11. Remove screw securing escutcheon clip at each end of wire-on binding on rear bow. Remove wire-on binding from rear bow. Detach top material from rear roof bow and from trim sticks, then remove top cover assembly.
12. Lock top to windshield header. Install radius end of each adjustable spacer stick to fit against center roof bow. Install opposite end of spacer stick so that metal plate fits under rear roof

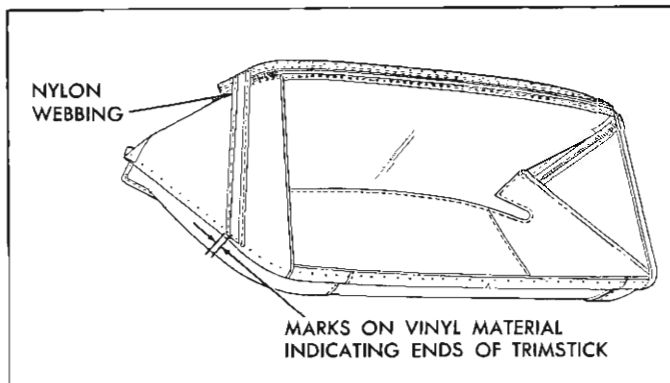


Fig. 58—Marking Back Curtain Material

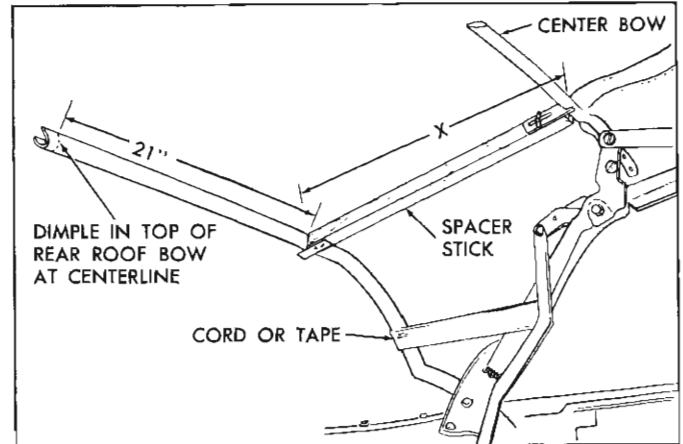


Fig. 59—Installation of Spacer Sticks

bow (fig. 59). Spacer sticks should be installed along inboard edge of side stay pad or approximately 21" outboard from centerline dimple of rear roof bow. While exerting rearward pressure on rear bow to draw side stay pads taut, extend spacer sticks until they fit snug between center bow and rear roof bow, then tighten wing nuts.

**NOTE:** Spacer stick may be made as shown in Figure 60.

13. Temporarily tie or tape rear bow to rear side roof rails. See Figure 59. Detach nylon webbing, side stay pads and back curtain assembly from rear bow.
14. Remove rear trim stick with attached back curtain assembly and top compartment bag from body and place on a clean, protected surface.
15. Using chalk, or other suitable material, mark ends of rear and rear quarter trim sticks on vinyl surface of back curtain material (fig. 58). Reference marks for trim sticks should be transferred to new back curtain material when Step 8 of installation procedure is performed.

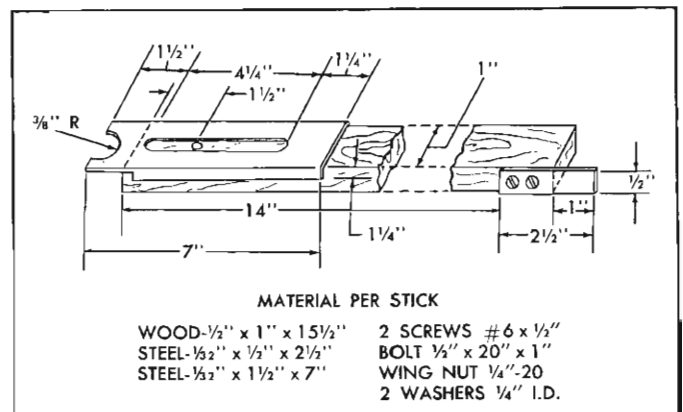


Fig. 60—Spacer Stick Dimensions

16. Remove right and left nylon webbing from rear trim stick (fig. 58).
17. Remove back curtain assembly from rear and rear quarter trim sticks.
18. Remove side stay pads. Stay pads are attached to front roof rail and front and rear bows with tacks; to center bow, and side roof front rail with screws.

**Installation of Folding Top and Back Curtain Trim Assembly**

1. If new top is being installed but it was impossible to perform Step 12 of removal procedure, preset spacer sticks to shortest length and install between center and rear roof bow (fig. 61). Adjust sticks so that dimension "X" in Figure 61 (measured along spacer stick from front upper rolled edge of rear roof bow to center of bow) is  $16\frac{3}{8}'' \pm 1/4''$ . Tie or tape rear bow to rear side roof rails.
2. In all cases, dimension "X", previously described, must be between  $16\frac{1}{8}''$  and  $16\frac{5}{8}''$  and equal on both sides. This dimension may be changed slightly within tolerances to correspond with new top after tryout.
3. Tack side stay pads in conventional manner to rear roof bow and front roof rail. Make sure inboard edge of pad is properly aligned within depressions in bow and rail. Tack stay pad to front bow. Inboard edge of pad should be located within  $1/4$  inch of outboard edge of front bow felt silencer. Install pad to center bow with

screws. Make sure inboard edge of pad is properly aligned within depression in bow. Install stay pad wadding in conventional manner using an approved trim cement.

4. Trim selvage end of side stay pads just forward of rear rolled edge of rear roof bow (fig. 61).
5. Distance from center of center bow to rolled forward upper edge of rear roof bow is  $16\frac{3}{8}'' (\pm 1/4'')$ . Readjust spacer sticks and side roof rail pads as required if rear bow does not come within this position range.
6. Place back curtain window assembly on clean covered work bench with exterior (vinyl) surface of back window valance facing down. (Large pliable back window must be handled carefully to avoid possible damage due to scratches, abrasions, etc.) Apply bead of convertible top sealer (nitrile) along lower edge of back curtain material in area which will be tacked to rear and rear quarter trim stick. (See view "A-A" in Figure 62).
7. Apply bead of convertible top sealer (nitrile) along lower selvage edge of back curtain material (see Figure 62).
8. After sealer has dried, carefully lay removed back curtain assembly over new back curtain assembly. Using a grease pencil, mark vinyl surface of new back curtain using marked edge of old curtain as guide. (See Steps 8 and 15 of removal procedure.) In addition, mark trim stick bolt hole locations on new back curtain assembly.

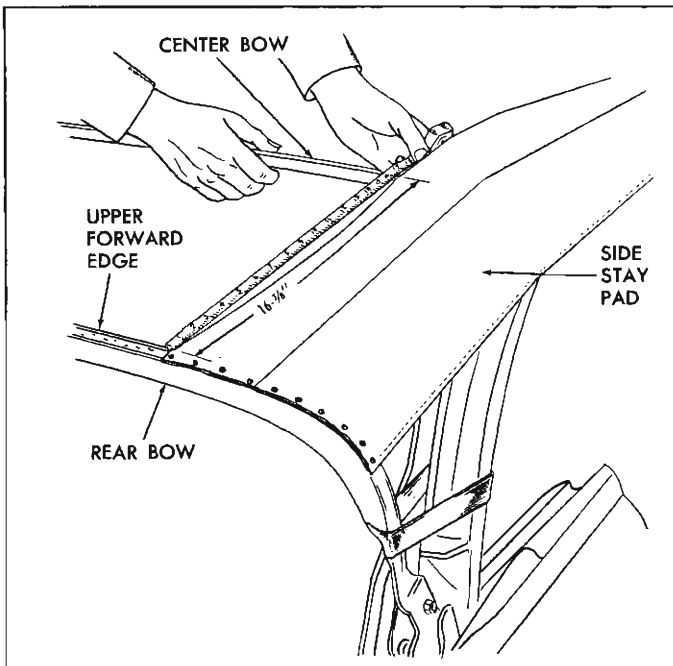


Fig. 61—Position of Rear Bow

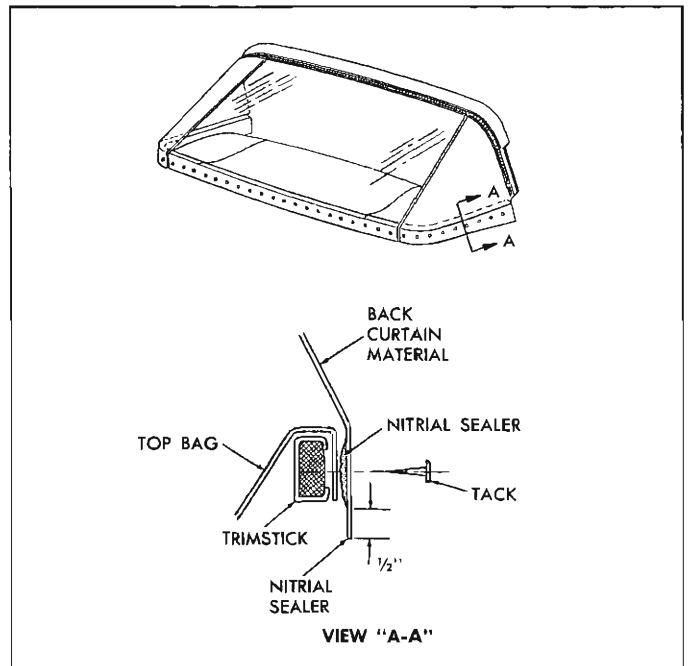


Fig. 62—Back Curtain Sealing

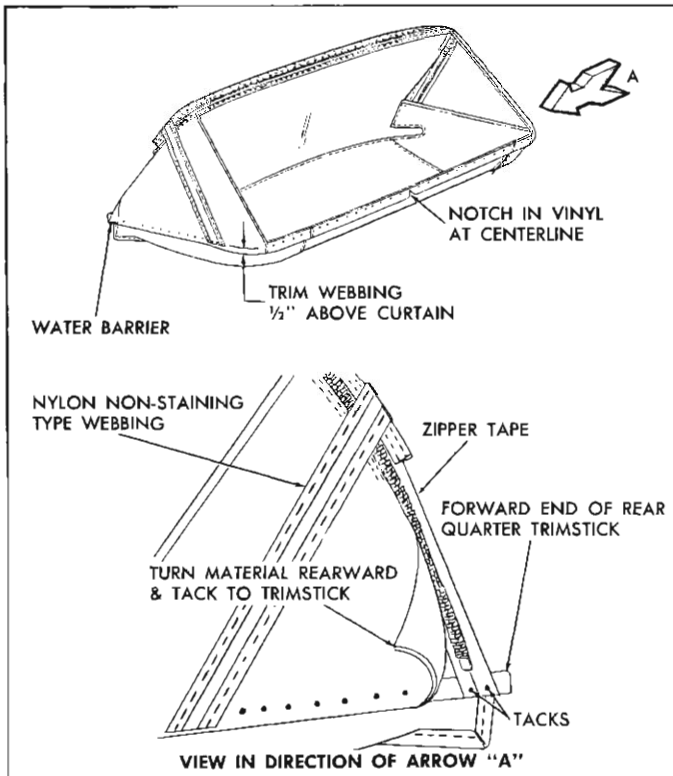


Fig. 63—Back Curtain Installation

**IMPORTANT:** Where a grease pencil or similar material is used for marking back curtain vinyl, marks must be below trim stick so that they will not show after curtain is installed in body.

9. Center and position back curtain assembly to rear trim stick over attached compartment bag.

**NOTE:** Notch in back curtain vinyl at lower edge indicates centerline of back curtain assembly. (see Figure 63). In addition back curtain lower edge should extend 1/2" below lower edge of trim sticks as shown in view "A-A", Figure 62.

10. Tack curtain to rear and rear quarter trim sticks. On right side, tack zipper tape to forward edge of rear quarter trim stick. (See "A" in direction of arrow in Figure 63.)

**NOTE:** Zipper stop should be above upper edge of rear quarter trim stick. Zipper tape should not be pulled taut after back curtain has been installed to rear roof bow as zipper assembly may show through top material after top has been proper installed.

11. Tack remainder of back curtain material to rear quarter trim stick, turning forward edge of material rearward to form a water barrier (see fig. 63).

12. Tacks securing back curtain assembly to trim

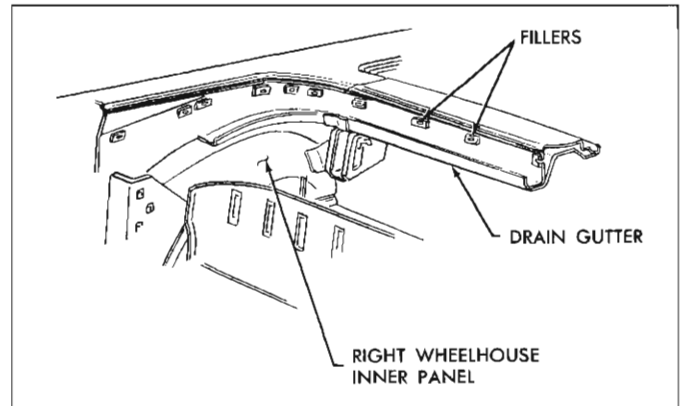


Fig. 64—Checking Trimstick Fillers

sticks should be placed close to each side of every bolt hole in trim sticks. Then pierce or punch back curtain assembly for each trim stick bolt.

13. Tack nylon webbing to rear trim stick. Forward edge of webbing should be even with edge of rear trim stick. New webbing may be cut from a piece of non-staining type webbing 2" x 19". Excess webbing should be trimmed off at rear trim stick, 1/2" above back curtain lower edge (see Figure 63).

**NOTE:** Webbing used in build-up of side roof rail stay pads is recommended for the above operation.

14. Inspect rubber trim stick fillers cemented to body below pinchweld. Re-cement if necessary (fig. 64).
15. Install rear trim stick with attached back curtain assembly into body.

**NOTE:** Make sure that all trim stick bolts are driven completely in to represent finished condition.

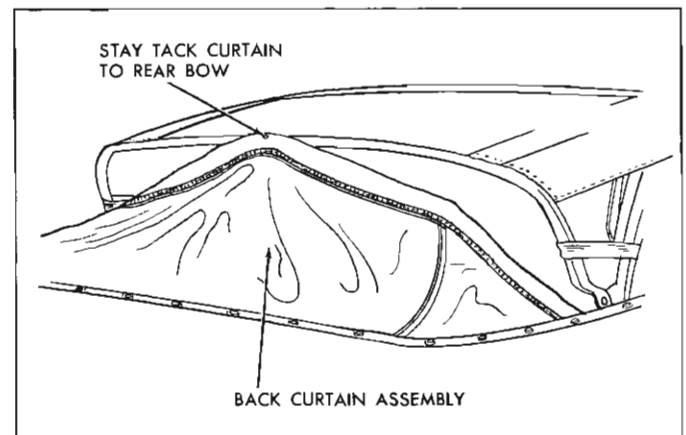


Fig. 65—Stay Tacking Back Curtain at Rear Bow

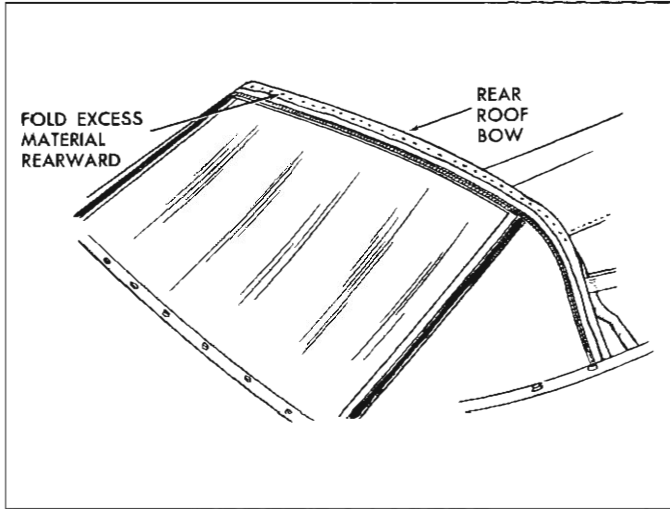


Fig. 66—Trimming Material at Rear Bow

16. Secure back curtain assembly with one tack to rear bow to prevent damage to plastic sheet (fig. 65).
  17. Working from body center progressively outboard to right and left sides, tack back curtain upper valance to rear bow. Make sure all fullness has been drawn from back curtain assembly. Fold excess back curtain upper valance material rearward and tack to rear bow (fig. 66).
- CAUTION:** Do not cut off excess upper valance material, as material may unravel.
18. Check contour of back curtain assembly at rear roof bow and at pinchweld molding.
  19. Where required, place reference chalk mark on outer surface of back curtain along pinchweld finishing molding. Re-adjust back curtain assembly as required (fig. 67).
  20. Where required, adjust side stay pads; then tack side stay pads to front roof rail and front bow. Attach side stay pads to center bow and side roof

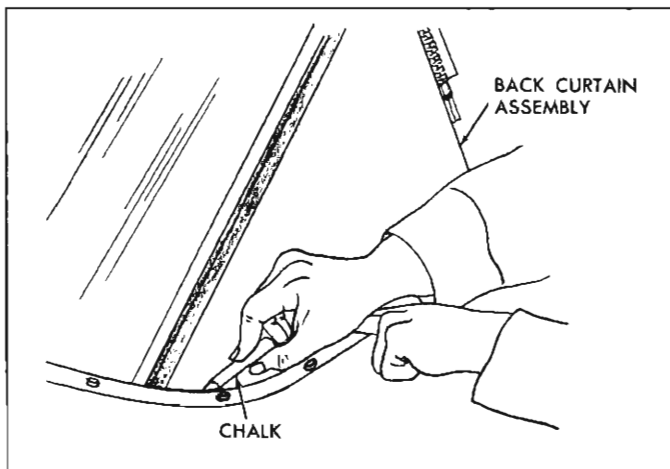


Fig. 67—Marking Back Curtain

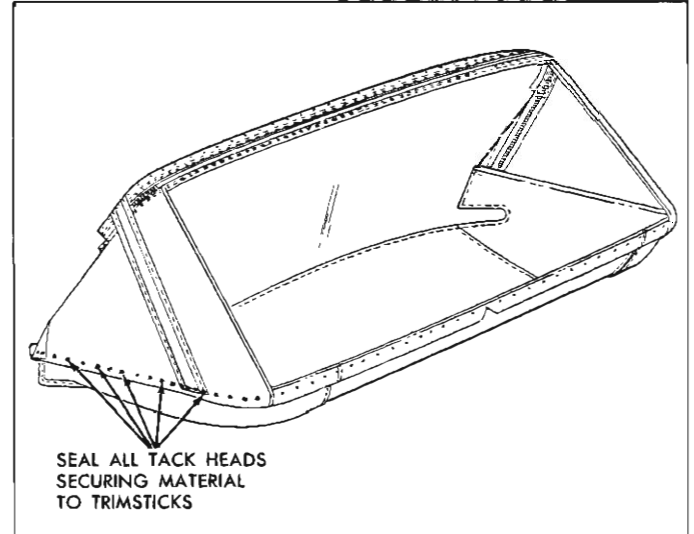


Fig. 68—Back Curtain Sealing

21. Tack nylon webbing to rear roof bow. Outboard edge of webbing should be installed even with outboard edge of side roof rail pad. Remove excess by trimming webbing just rearward of front rolled edge of rear roof bow.
- CAUTION:** Do not cut back curtain or side stay pad material.
22. Detach rear trim stick with attached back curtain assembly from body.
  23. Apply convertible top sealer (nitrile) around each tack head used to secure back curtain material and webbing to rear and/or quarter trim sticks (fig. 68).
- IMPORTANT:** It is not necessary to seal tacks which secure back curtain vinyl to rear trim stick.

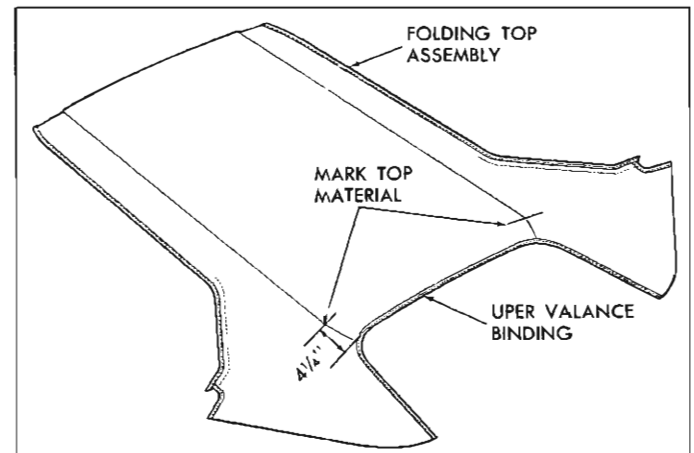


Fig. 69—Marking Top Material

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24. Lay out new top material on clean protected surface with outer layer of material exposed.
25. Using a pencil, mark top material (mark should be approximately 1/2" in length) at deck seam 4 1/4" from edge of top material upper valance binding (fig. 69).
26. Fold new top material in half so that inner lining of top material is exposed (fig. 70). Install a 6" piece of taper on inner surface at centerline fold of new top material (fig. 70). Using a pencil, mark the approximate centerline of new top material along entire length of tape.

**NOTE:** Be sure mark will be visible inside of body after new top is installed on convertible top framework.

27. Along forward surface of rear roof bow install a 1" piece of tape at centerline dimple of rear roof bow. Using a pencil, mark centerline of rear bow on tape (fig. 71).
  28. Remove rear bow spacer sticks and positioning tape or cord.
  29. Check position of rear roof bow in relation to new folding top trim assembly by placing new top trim over folding top framework. With quarter flaps properly folded over rear side roof rails (edge of rails should match stitch lines of quarter flap seams), marks on deck seam should be in center of rear roof bow.
- NOTE:** The deck seam mark will vary slightly ( $\pm 1/4"$ ) depending upon position of rear roof bow. Also check centerline mark on inner lining of top material. Mark should correspond to centerline mark on rear roof bow.
30. Remove top trim material.
  31. Carefully lay removed top, which was marked at lower edge of trim stick prior to removal, over

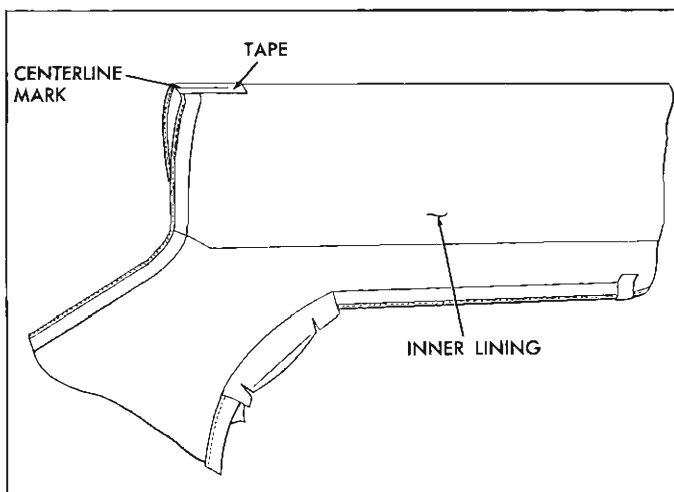


Fig. 70—Marking Folding Top Material

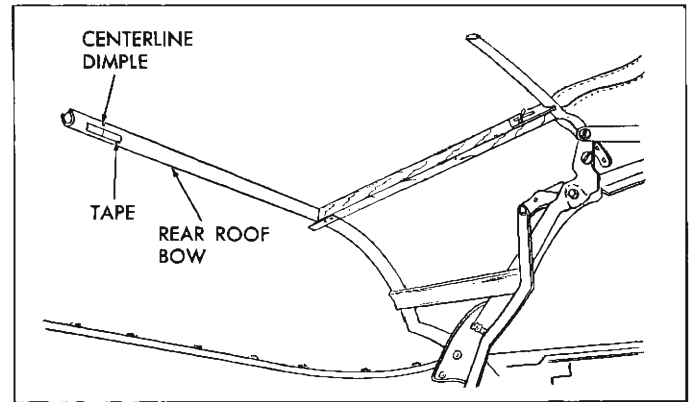


Fig. 71—Marking Rear Roof Bow

- new top. Align old top with new top. Using a pencil, mark vinyl surface of new top using marked edge of old top as guide. Also mark edges of trim sticks on vinyl surface of new top material. (See Steps 9 and 10 of removal procedure.)
32. Apply bead of convertible top sealer (nitrile) to inner lining of top material along front roof rail. Sealer bead should be roughly parallel with forward edge of top material and located so that sealer will be completely concealed by front roof rail when top is installed.
  33. After sealer has dried, position top trim on framework and center assembly both fore and aft and side to side.
  34. Check position of top trim at rear roof bow and at side roof rear rails. With quarter flaps properly folded over rear side roof rails (edge of rails should match stitch lines of quarter flap seams), marks on deck seam should be in center of rear roof bow.
- NOTE:** The deck seam mark will vary slightly ( $\pm 1/4"$ ) depending upon position of rear roof bow. Also check centerline mark on inner lining of top material. Mark should correspond to centerline mark on rear roof bow (see Figure 71).
35. Using neoprene-type weatherstrip adhesive, fasten rear quarter flaps to side roof rear rails. Make sure that quarter flap seam breaks at forward edge of side roof rear rail.
- NOTE:** Material may have to be stretched from side to side to insure proper fit of top material flaps to side roof rear rails and to remove wrinkles from top material along rear roof bow.
36. Cut or pierce flaps for side roof rail rear weatherstrip attaching bolts. Install side roof rail rear weatherstrip to help maintain position of quarter flaps while adhesive is drying.

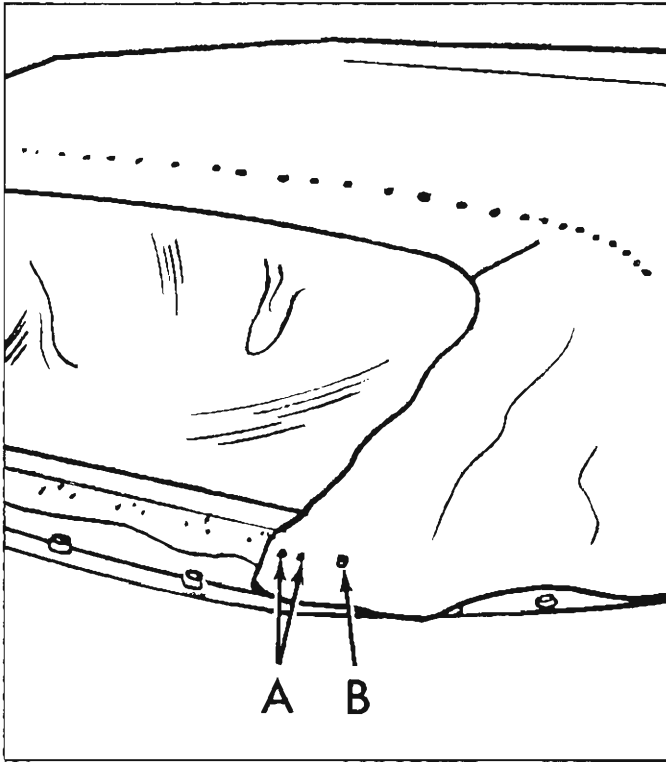


Fig. 72—Tacking Top Material

37. Using previously marked lines (ends of trim stick) as locating reference, tack top material to rear and rear quarter trim sticks. "A" in Figure 72 shows top material installed to rear trim stick at inboard edge.
38. Cut or punch hole in top material for each trim stick attaching bolt.
39. Install top material into body. Make sure rear and rear quarter trim stick attaching bolts are completely driven in to represent finished condition.
40. Check fit of top material. Rear quarter trim sticks may be adjusted downward to remove minor wrinkles in top material in rear quarter area.
41. Where required, remark top material; then make necessary adjustments to top material by re-positioning rear quarter trim sticks and/or by retacking top material to rear and/or rear quarter trim sticks.

**NOTE:** In extreme cases, adjustment of top material at rear or rear quarter trim sticks may have to be performed several times before desired fit of top material is obtained.

42. Remove trim sticks with attached top material from top compartment well. Back curtain should extend 1/2" below trim sticks. (See Step 9 of installation procedure.) In addition, top material

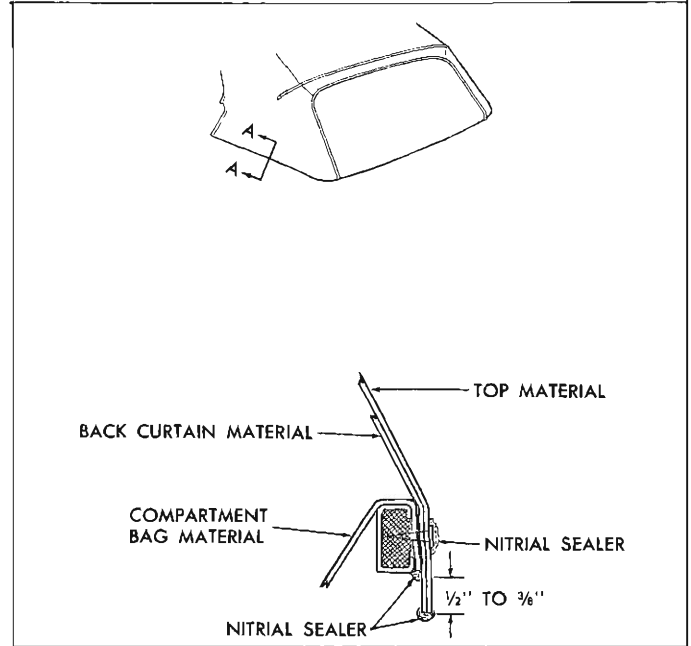


Fig. 73—Sealing at Trimsticks

must extend 1/2" to 5/8" below trim sticks to minimize water wicking on inner lining of back curtain material. (See view "A-A" in Figure 73.) Trim top material as required.

43. Apply convertible top sealer (nitrile) onto all trimmed edges, around each tack head and around each trim stick attaching bolt hole. (See view "A-A" in Figure 73.)

**CAUTION:** All painted surfaces adjacent to belt finishing molding should be adequately covered to prevent possible sealer damage.

44. Install trim sticks with attached top material into top compartment well and tighten side and rear trim stick attaching bolts.
45. Re-check side roof rail flaps. Make sure mark at deck seams is in center of rear bow. Also re-check centerline mark on inner surface of top material at rear bow.
46. Where required, remove side roof rail rear weatherstrips. Readjust top material at side roof rails and reinstall weatherstrips.
47. While pulling top material slightly rearward, stay tack top material along rear roof bow.

**IMPORTANT:** Tacks must be installed along a straight line in center of rear bow (see Figure 74). Tacks outboard of deck seams should be restricted to distance not to exceed six inches, which is length wire-on binding extends past seam (fig. 74).

48. Unlock top from windshield header, apply neoprene-type weatherstrip adhesive to front

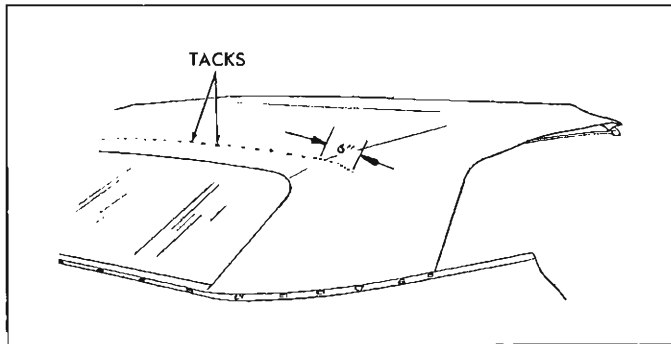


Fig. 74—Tacks Outboard of Seams

flaps and to corresponding areas on side roof front rails. Fasten flaps to side roof front rails. Lock top to windshield header.

49. At front roof rail, pull top trim material forward to desired tension. While maintaining tension on top trim, place a pencil mark on outer surface of trim material along forward edge of front roof rail (fig. 75).
50. Unlock top from windshield header and apply neoprene-type weatherstrip adhesive to tacking area of front roof rail. Pull top trim material slightly forward so that pencil marks are forward on front edge of front roof rail. Fasten top trim to cemented area and stay tack trim to rail (fig. 76).
51. Lock top to windshield header. Check appearance of top trim as well as operation and locking action of top. (If additional tension is desired in top trim, unlock top from header and reposition top trim so that pencil marks are further forward. Stay tack and re-check top appearance.)
52. Complete tacking of top trim to front roof rail and trim off excess material.
53. Permanently tack top material to rear roof bow. Apply bead of neoprene-type weatherstrip adhesive around each tack head, and into two holes pierced into top material for wire-on binding clip escutcheons.
54. When completed, folding top should be free from wrinkles and draws. Install all previously removed trim and hardware and clean any soil from top material, back curtain or pads.

### FOLDING TOP TRIM (LESS BACK CURTAIN)

#### Removal

1. Remove folding top trim as described in Steps 1 through 11 of "Removal of Folding Top Trim Assembly (Complete)."

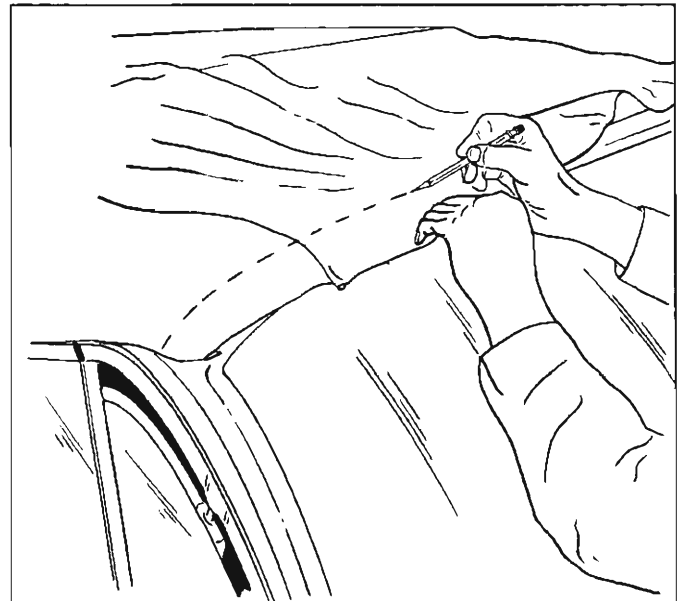


Fig. 75—Marking Top Material at Front Roof Rail

#### Installation

1. Prior to installation of new top trim material, check contour of back curtain and side stay pad assemblies. Where required, adjust back curtain and/or side stay pads as required.
2. Install new folding top trim as described in Steps 24 through 27 and 29 through 54 of "Installation of Folding Top Trim Assembly (Complete)."

### BACK CURTAIN TRIM ASSEMBLY (COMPLETE)

#### Removal

1. Perform Steps 1, 2, 5, 6, 7, 8, 10 as described in "Removal of Folding Top Trim Assembly (Complete)."
2. Remove wire-on binding and escutcheons from rear roof bow.

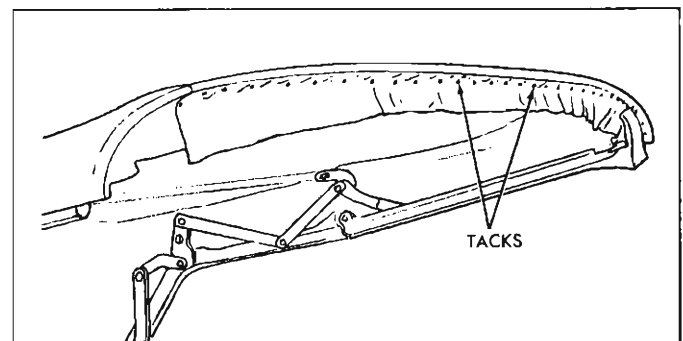


Fig. 76—Installation of Top Material to Front Roof Rail

3. Detach folding top trim from rear roof bow and from rear and rear quarter trim sticks.
4. Carefully slide top trim forward exposing tacked edge of back curtain at rear roof bow.
5. Detach nylon webbing and back curtain from rear roof bow; then remove back curtain assembly with attached trim sticks and top compartment bag from body and place on a clean, protected surface.
6. Perform Steps 15, 16 and 17 as described in "Removal of Folding Top Trim Assembly (Complete)."

**Installation**

1. Install spacer sticks as described in Steps 1 and 2 of "Installation of Folding Top Trim Assembly (Complete)."
2. Seal and install back curtain assembly as described in Steps 7 through 23 of "Installation of Folding Top Trim Assembly (Complete)."

**NOTE:** Extra care in positioning new curtain at same location on trim stick as old curtain and aligning of trim stick attaching bolt holes in top material with holes in trim stick will allow reinstallation of top material to its original position with a minimum of refitting.

**BACK CURTAIN VINYL (INCLUDES EXTENSIONS)**

**Back Curtain Vinyl Replacement**

**Removal**

1. Place protective covers on all exposed panels which may be contacted during procedure.
2. Remove rear seat cushion and back.
 

**CAUTION:** Disconnect rear seat speaker wire if present.
3. Remove folding top compartment side trim panel assemblies and side roof rail rear weatherstrips; then detach folding top quarter flaps from side roof rear rails.
4. Detach top compartment bag from seat back panel and remove all trim stick attaching bolts.
5. To establish the relationship of right and left inner vertical edge of old top material to back curtain assembly at rear trim stick location, mark back curtain vinyl at both locations with a grease pencil (fig. 77). Reference marks should be transferred to new back curtain when Step 5 of installation procedure is performed.

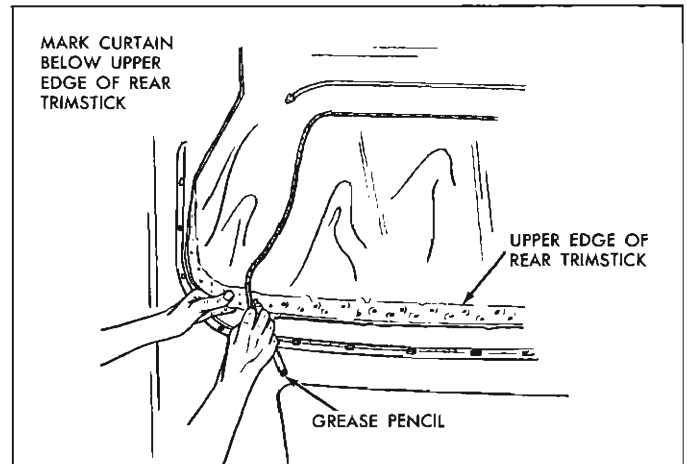


Fig. 77—Locating Edge of Top Material

6. Using a pencil, mark both ends of rear and rear quarter trim sticks on vinyl surface of top material. Reference marks should be used as a guide when installing top material to trim sticks after new back curtain has been installed.
7. Remove folding top material from rear and rear quarter trim sticks; then carefully slide top trim forward sufficiently to expose back curtain zipper.
8. Detach zipper tape from rear quarter trim stick.
9. Using a pair of wire cutting shears or other suitable tool, cut zipper stop along dotted line and remove both halves of stop from zipper (fig. 78).
10. Operate slide fastener off of zipper assembly.
11. Detach nylon webbing from rear trim stick.

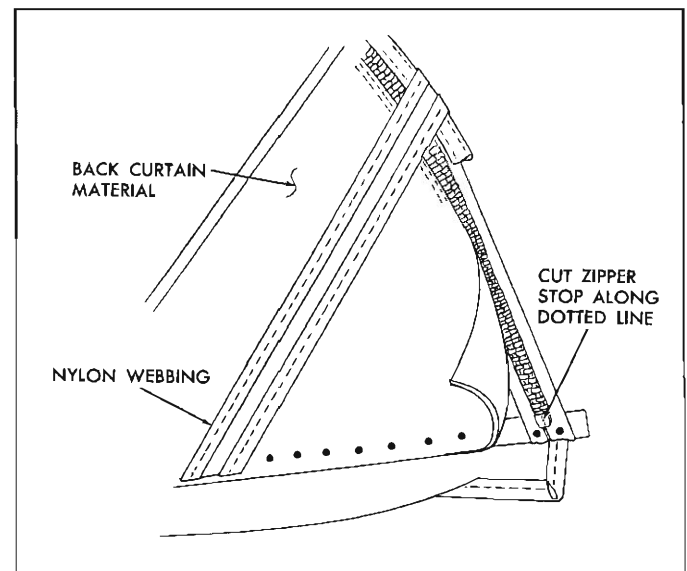


Fig. 78—Back Curtain Vinyl Replacement



## BODY 14-54

12. Remove rear and rear quarter trim sticks with attached back curtain and compartment bag material from body and place on a clean, protected surface.
13. Using chalk, or other suitable material, mark ends of rear and rear quarter trim sticks on vinyl surface of back curtain material (fig. 58). Reference marks for trim sticks should be transferred to new back curtain material when Step 5 of installation procedure is performed.
14. Using chalk or similar material, mark zipper tape at upper edge of vinyl (fig. 79).
15. Remove back curtain assembly from rear and rear quarter trim sticks.
16. As a bench operation, cut stitches securing half of zipper assembly to back curtain vinyl.

**NOTE:** Back curtain vinyl and extensions (less zipper) are available as a service part.

### Installation

1. Using chalk mark as guide, locate rear half of zipper to new back curtain vinyl. Zipper tape may be stapled to new back curtain to aid in holding zipper in proper position during sewing operation.
2. Sew zipper to new back curtain assembly.
3. Place back curtain window assembly on clean covered work bench with exterior (vinyl) surface of back window valance facing down. (Large pliable back window must be handled carefully to avoid possible damage due to scratches, abrasions, etc.). Apply bead of convertible top sealer (nitrile) along lower edge of back curtain material in area which will be tacked to rear and rear quarter trim stick (see view "A-A" in Figure 80).

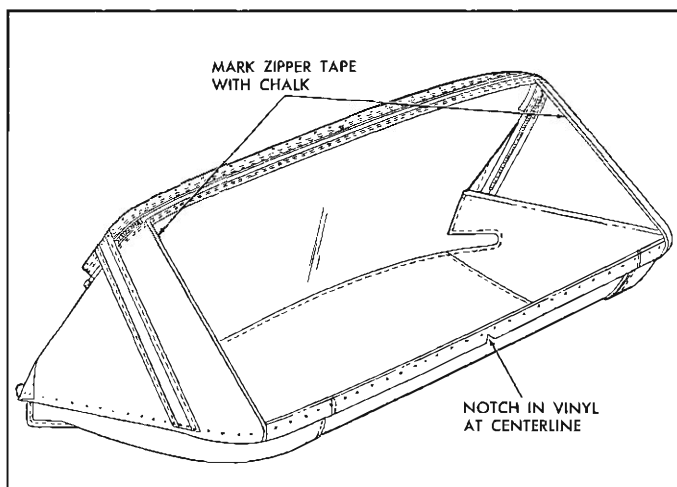


Fig. 79—Marking Zipper Tape

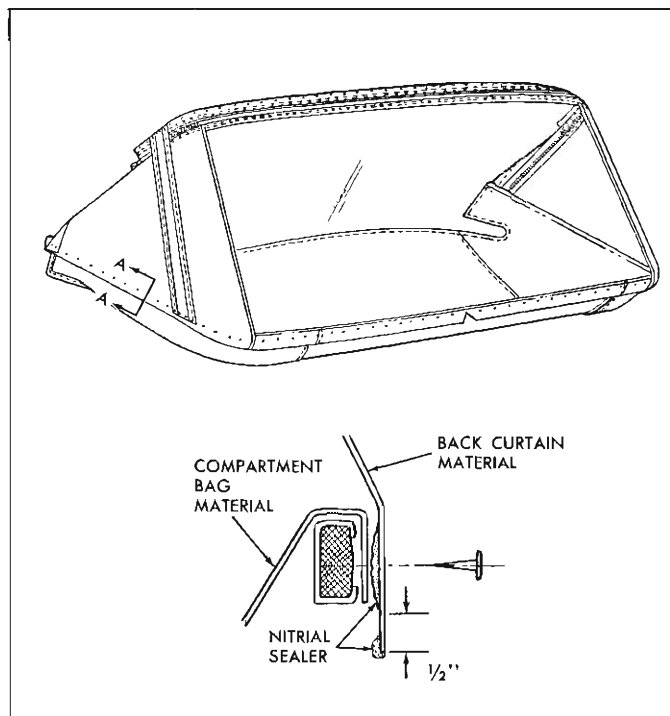


Fig. 80—Back Curtain Sealing

4. Apply bead of convertible top sealer (nitrile) along lower selvage edge of back curtain material (fig. 80).
5. After sealer has dried, transfer marks on old back curtain to new back curtain assembly. See Steps 5 and 13 of removal procedure.
6. Center and position back curtain assembly to rear trim stick over attached compartment bag.  
**NOTE:** Notch in back curtain vinyl at lower edge indicates centerline of back curtain assembly (fig. 80). In addition, back curtain lower edge should extend 1/2" below lower edge of trim sticks.
7. Tack curtain to rear and rear quarter trim sticks. Turn forward edge of material rearward to form a water barrier (fig. 80).
8. Tacks securing back curtain assembly to trim sticks should be placed close to each side of every bolt hole in trim sticks. Then pierce or punch curtain assembly for each trim stick bolt.
9. Tack nylon webbing to rear trim stick as previously described.
10. Inspect rubber trim stick fillers cemented to body below pinchweld. Re-cement if necessary.
11. Install slide fastener onto zipper assembly.
12. Staple both sections of zipper tape together. Staples will aid in preventing zipper scoops from disengaging and also serve as a stop for the slide fastener (fig. 81).

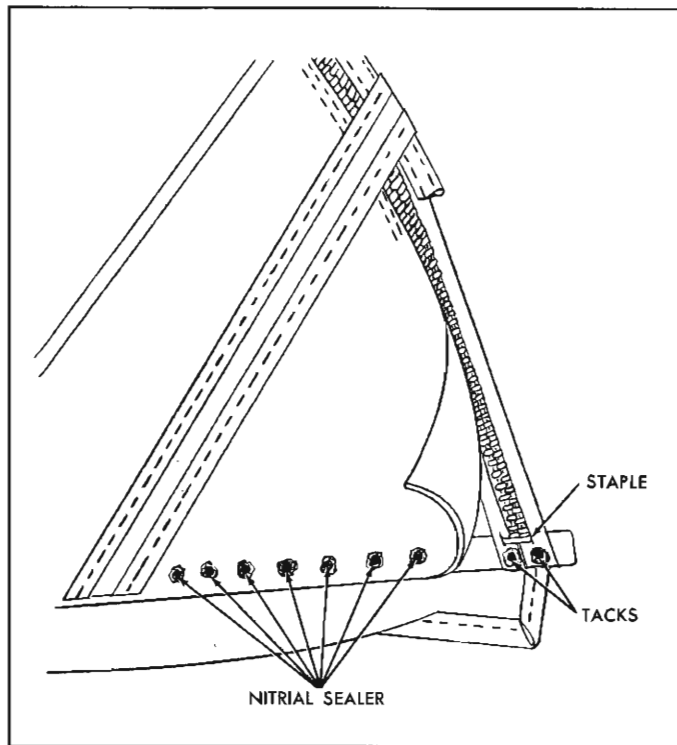


Fig. 81—Sealing at Rear Quarter Trimstick

13. Operate slide fastener to closed position.
14. Tack zipper tape to rear quarter trim stick (fig. 81). Zipper tape should not be pulled taut as zipper teeth may show through top material after top has been properly installed.
15. Install trim sticks with attached back curtain assembly into body.
 

**NOTE:** Make sure that all trim stick bolts are driven completely in to represent finished condition.
16. Check contour of back curtain assembly at pinch-weld molding. Where required, place reference chalk mark on outer surface of back curtain along pinchweld finishing molding. Readjust back curtain assembly by retacking curtain to rear or rear quarter trim sticks as required.
17. Detach rear trim stick with attached back curtain assembly from body.
18. Apply convertible top sealer (nitrile) around each tack head used to secure back curtain material and webbing to rear and rear quarter trim sticks (fig. 81).
 

**NOTE:** It is not necessary to seal tacks which secure back curtain vinyl to rear trim stick.
19. After sealer has dried, carefully replace top in position in rear quarter area.

20. Using neoprene-type weatherstrip adhesive, fasten rear quarter flaps to side roof rear rails. Make sure that quarter flap seam is even with forward edge of side roof rear rail. Install side roof rail rear weatherstrip to help maintain position of quarter flaps while adhesive is drying.
21. Using previously marked lines (end of trim sticks) and bolt hole locations in top material as a locating reference, tack top material to rear and rear quarter trim sticks.
22. Install top material into body. Make sure rear and rear quarter trim stick attaching bolts are completely driven in to represent finished condition.
23. Check fit of top material. Rear quarter trim sticks may be adjusted downward to remove minor wrinkles in top material in rear quarter area.
24. Where required, remark top material; then make necessary adjustments to top material by repositioning rear quarter trim sticks or by retacking top material to rear or rear quarter trim sticks.
25. After desired fit of top material has been obtained, remove trim sticks with attached top material from top compartment well. Back curtain should extend 1/2" below trim sticks on "B", styles (fig. 80).
26. Apply convertible top sealer (nitrile) onto all trimmed edges, around each tack head and around each trim stick attaching bolt hole (see view "A-A" in Figure 73).
 

**CAUTION:** All painted surfaces adjacent to belt finishing molding should be adequately covered to prevent possible sealer damage.
27. Install trim sticks with attached top material into top compartment well and tighten side and rear trim stick attaching bolts.
28. Where required, remove side roof rail rear weatherstrips. Readjust top material at side roof rails and reinstall weatherstrips.
29. When completed, folding top and back curtain assembly should be free from all wrinkles and draws. Install all previously removed trim and hardware and clean any soil from top material or back curtain assembly.

## HYDRO-LECTRIC SYSTEM

The 1962 system is serviced in much the same manner as the 1961 system. The 1962 pump, however, now delivers somewhat more hydraulic pressure than its 1961 counter part. When performing hydraulic checks as outlined on Page 14-89 of the

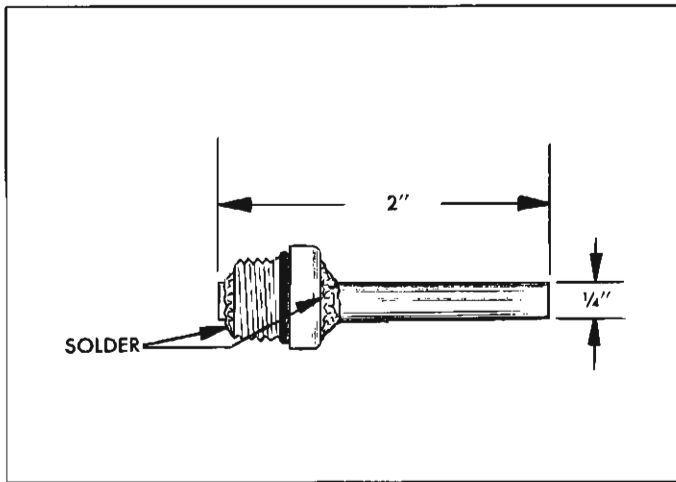


Fig. 82—Reservoir Filler Plug Adapter

1961 Passenger Car Shop Manual. Note that the pressures listed in operation 3-C should be between 340 and 380 psi for 1962 units.

Please note the inclusion of a new pump filling method which may be used on both new and previous model pumps.

### Filling of Hydro-Lectric Reservoir

This procedure virtually eliminates discharge or spillage of hydraulic fluid and possible trim damage while filling and bleeding system.

#### 1. Filler Plug Adapter.

- a. Drill 1/4 inch diameter hole through center of spare reservoir filler plug.
- b. Install two inch length of metal tubing (1/4" O.D. x 3/16" I.D.) into center of filler plug and solder tubing on both sides of filler plug to form air tight connection. See Figure 82.

#### 2. Filling Bleeding of Reservoir.

- a. With top in raised position, remove folding top compartment bag material from rear seat back panel. Remove pump and motor shield.
- b. Place absorbent rags below reservoir at filler plug. Using a straight-bladed screwdriver, slowly remove filler plug from reservoir.

**IMPORTANT:** When installing new or overhauled motor and pump assembly, as bench operation, fill reservoir to specified level with hydraulic fluid. This operation is necessary as pump must be primed prior to operation to avoid drawing excessive amount of air into hydraulic system.

- c. Install filler plug adapter to reservoir and attach four or five foot length of 3/16 inch I.D. rubber tubing or hose to filler plug tubing.

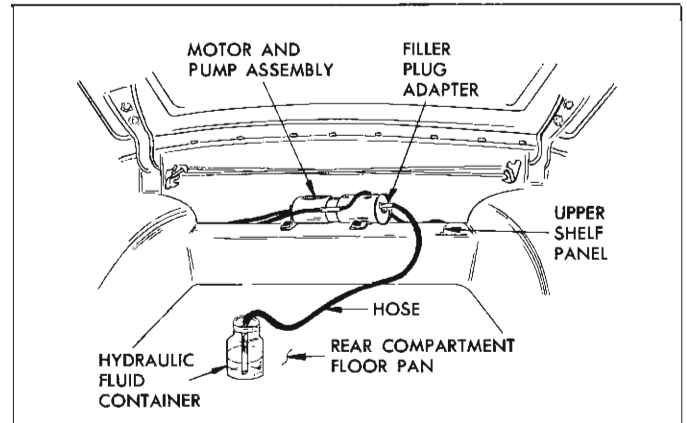


Fig. 83—Filling Hydraulic System

- d. Install opposite end of hose into a container of GM Hydraulic Brake Fluid Super #11 or equivalent. See Figure 83.

**NOTE:** Container should be placed in rear compartment body, below level of fluid in the reservoir. In addition, sufficient fluid must be available in container to avoid drawing air into hydraulic system.

- e. Operate top to down or stacked position. After top is fully lowered continue to operate motor and pump assembly (approximately 15 to 20 seconds), or until noise level of pump is noticeably reduced. Reduction in pump noise level indicates that hydraulic system is filling with fluid.
- f. Operate top several times or until operation of top is consistently smooth in both up and down cycles.
- g. Remove hose from filler plug tubing and remove filler plug adapter from reservoir.
- h. Check level of fluid in reservoir and re-install original filler hole plug.

**NOTE:** Fluid level should be within 1/4 inch of lower edge of filler plug hole.

## EXTERIOR MOLDINGS

### GENERAL INFORMATION

The exterior moldings are secured to the body by any one or a combination of the following: attaching screws, attaching nuts, snap retention on body parts, friction type snap-in clips, bolt and clip assemblies, joint plates and molding integral attaching studs. Figure 84 depicts cross section drawings which illustrate some of the typical methods used in attaching moldings to the body.

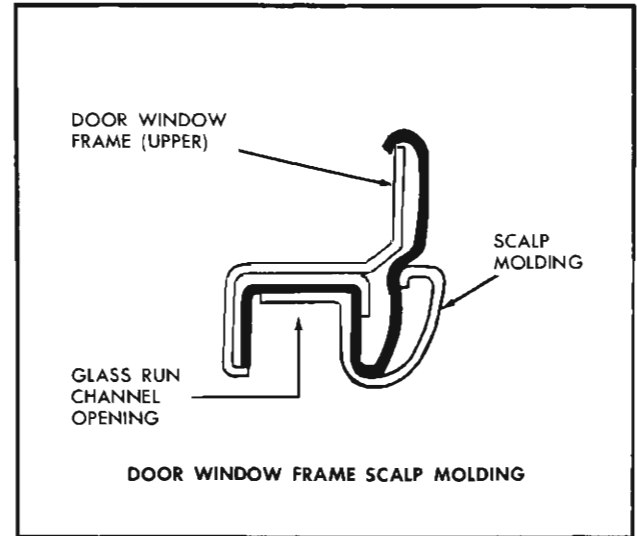
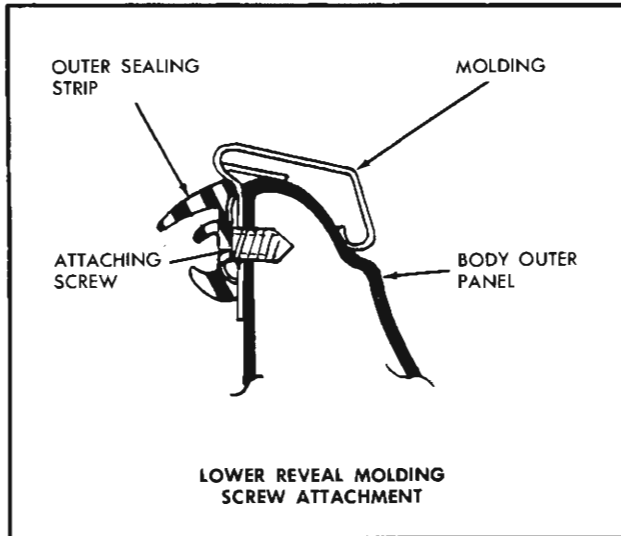
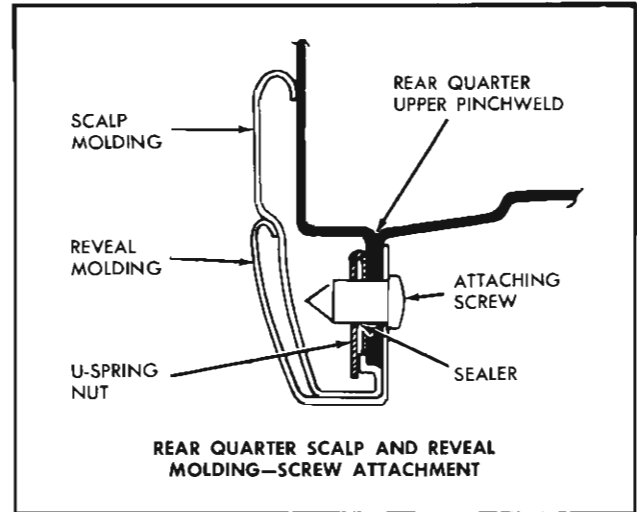
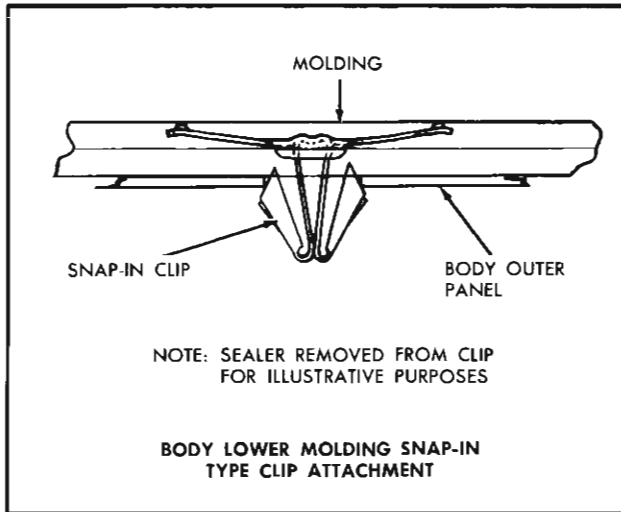
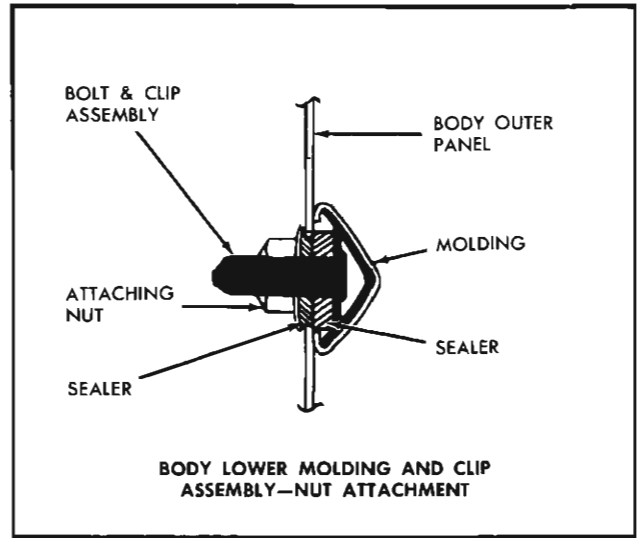
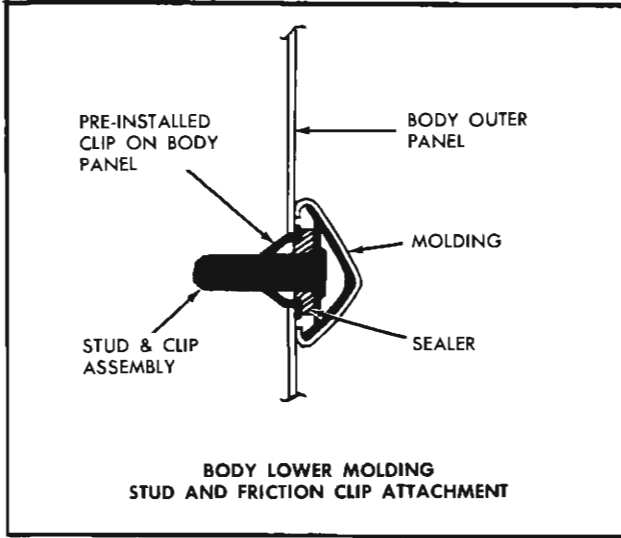


Fig. 84—Typical Methods of Molding Attachment

During removal and installation of body exterior moldings, certain precautions should be exercised. Adjacent paint finishes should be protected to avoid refinishing. Proper tools and methods should be employed to guard against molding damage particularly if the part is to be reused. Special care must be given to all body exterior moldings below the belt line because they are of anodized aluminum construction. Whenever a sealing operation is disturbed, appropriate sealing materials and methods should

be used to provide the required water tight seal. Every screw, nut or clip that secures a molding to a body outer panel, including the attaching hole, requires a specialized type of sealing operation. An approved grade of medium-bodied sealer and body caulking compound are the sealers used most generally in the effective sealing of these moldings. The exterior moldings are identified in Figures 85, 86 and 87.

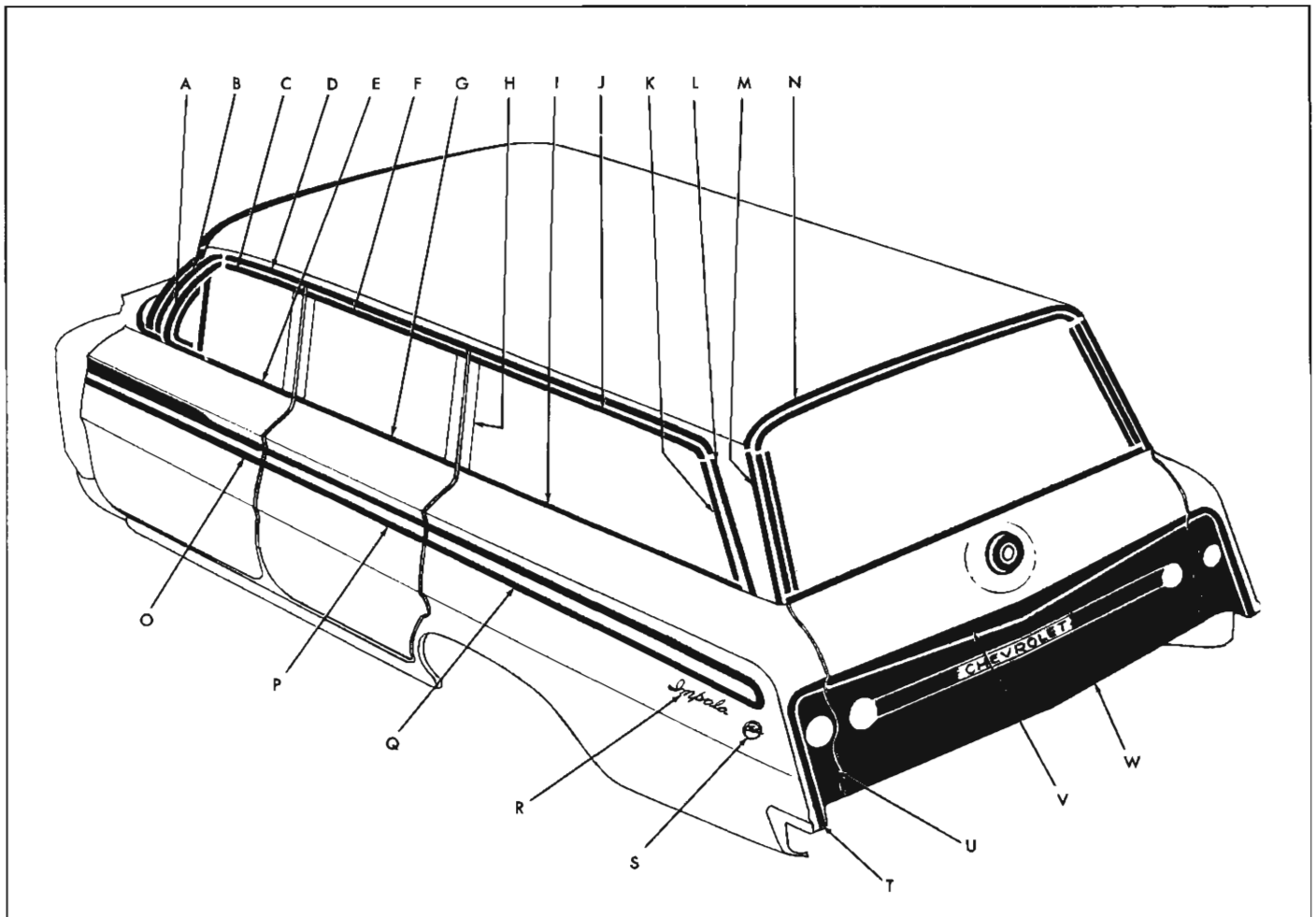


Fig. 85-1835, 45 Styles Exterior Moldings

- |   |   |   |
|---|---|---|
| A. Front Door Window Frame Front Vertical Scalp Molding | I. Rear Quarter Window Lower Reveal Molding             | P. Rear Door Outer Panel Lower Molding  |
| B. Windshield Pillar Drip Molding Scalp                 | J. Rear Quarter Window Upper Scalp Molding              | Q. Rear Fender Lower Molding            |
| C. Front Door Window Frame Upper Scalp Molding          | K. Rear Quarter Window Rear Scalp Molding               | R. Rear Fender Name Plate               |
| D. Roof Drip Molding Front Scalp                        | L. Roof Drip Molding Rear Scalp                         | S. Rear Fender Emblem                   |
| E. Front Door Window Reveal Molding                     | M. Back Body Opening Side Pinch Weld Finishing Molding  | T. Rear of Rear Fender Molding          |
| F. Rear Door Window Frame Upper Scalp Molding           | N. Back Body Opening Upper Pinch Weld Finishing Molding | U. Rear of Rear Fender Insert Molding   |
| G. Rear Door Window Reveal Molding                      | O. Front Door Outer Panel Lower Molding                 | V. Tail Gate Outer Panel Lower Molding  |
| H. Rear Quarter Window Front Scalp Molding              |   | W. Tail Gate Outer Panel Insert Molding |

**Windshield Pillar Drip Molding Scalp**  
**1611, 35, 37, 45, 69 Styles**  
**1835, 45, 69 Styles**

The scalp is secured to the drip molding by snap retention. On "37" model, the scalp is overlapped by the windshield pillar weatherstrip installation.

To remove the scalp: on "37" model, remove the windshield pillar weatherstrip and retainer. On all styles, use a suitable, pointed hook tool and, by starting at the lower end under the drip molding, unsnap the scalp from the drip molding.

To install the scalp: on all styles, position the scalp over the upper lip of the windshield pillar drip molding and over the roof drip molding scalp. Snap the lower rolled edge of the scalp under the drip molding. On "37" model, complete the installation of the windshield pillar weatherstrip.

**Windshield Pillar to Roof Drip Molding Escutcheon**  
**1211, 35, 69 Styles**

The escutcheon is painted body color and is secured to both drip moldings by snap retention. The escutcheon is used only on those applicable styles that do not include the special order bright finish scalp moldings.

To remove the escutcheon: use a suitable pointed hook tool and unsnap the escutcheon by carefully prying outward under the drip moldings.

To install the escutcheon: position the escutcheon over the upper lip of the windshield pillar and roof drip moldings. Snap the lower rolled edge of the escutcheon under the drip moldings. Form the escutcheon to fit the drip moldings and touch it up as required.

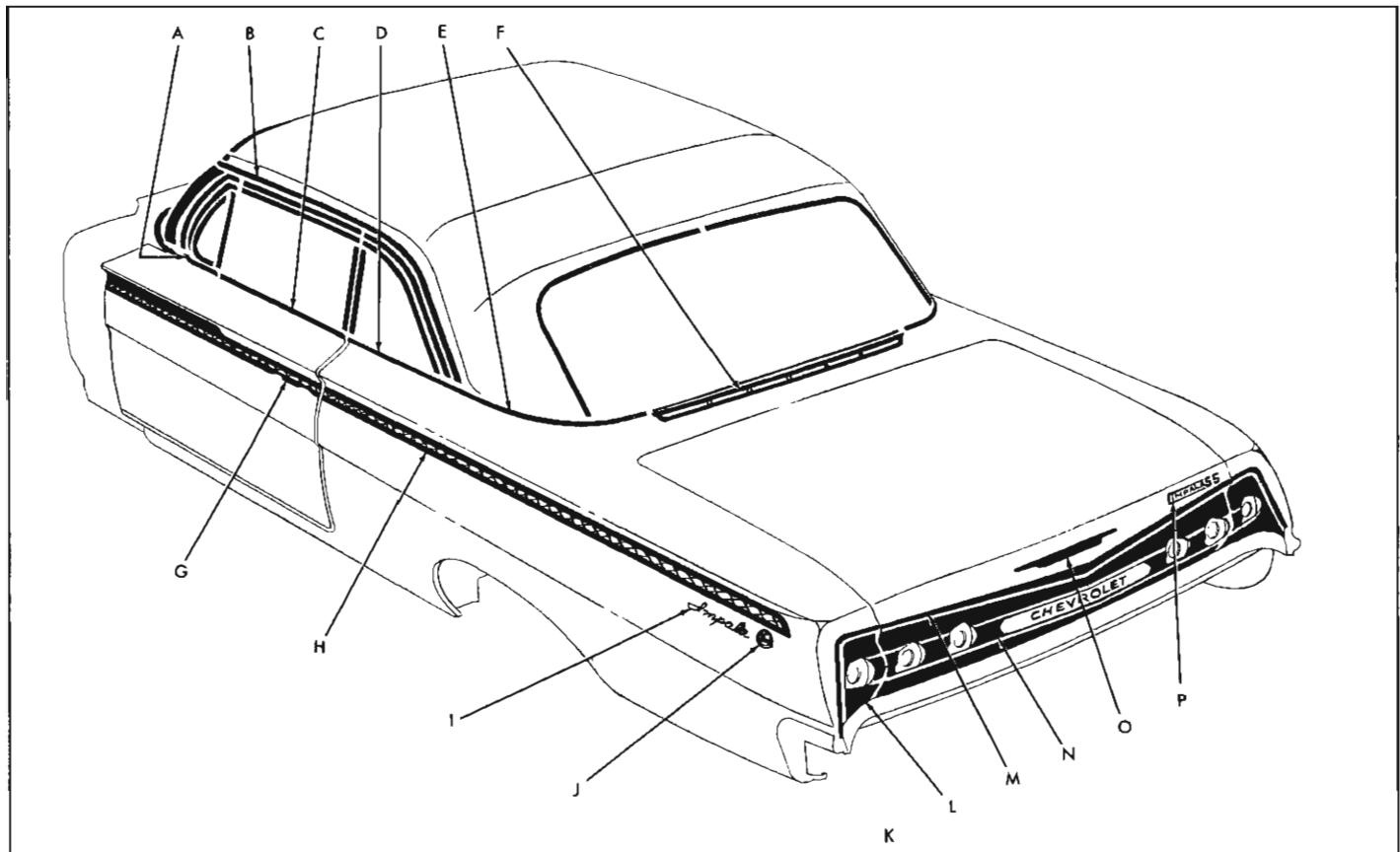


Fig. 86—1847 Style Exterior Moldings

- |   |  |   |
|---|--|---|
| <p>A. Front Door Window Reveal Molding (At Vent)</p> <p>B. Roof Drip Scalp Molding</p> <p>C. Door Window Lower Reveal Molding</p> <p>D. Rear Quarter Window Lower Reveal Molding</p> <p>E. Rear Quarter Belt Reveal Molding</p> | <p>F. Rear Compartment Front Panel Ornament Grille</p> <p>G. Door Outer Panel Lower Molding</p> <p>H. Rear Fender Lower Molding</p> <p>I. Rear Fender Name Plate</p> <p>J. Rear Fender Emblem</p> <p>K. Rear of Rear Fender Molding</p> <p>L. Rear of Rear Fender Insert Molding</p> | <p>M. Rear Compartment Lid Outer Panel Molding</p> <p>N. Rear Compartment Lid Outer Panel Insert Molding</p> <p>O. Rear Body Emblem</p> <p>P. Rear Compartment Lid Outer Panel Emblem</p> |
|---|--|---|

**Roof Drip Molding Scalp**  
**1611, 69, 37 Styles**  
**1847, 69 Styles**

The scalp, of one-piece construction, is secured to the drip molding by snap retention. At the front, the scalp is overlapped by the windshield pillar drip molding scalp. On "37" and "47" styles, the scalp is overlapped by the side roof rail weatherstrip and reveal molding over the doors and by the rear quarter window sealing strip at the rear.

To remove the scalp: remove the windshield pillar drip molding scalp. On "37" and "47" styles, remove the side roof rail weatherstrip retainer and reveal molding and the rear quarter window sealing strip. With a suitable, pointed, hook-tool, unsnap the scalp from the drip molding at either end.

To install the scalp: position the scalp over the upper lip of the drip molding and snap the lower rolled edge of the scalp under the drip molding. Install the previously removed parts.

**Roof Drip Molding Front Scalp**  
**and Roof Drip Molding Rear Scalp**  
**1635, 45 Styles**  
**1835, 45 Styles**

The scalps are secured to the drip molding by snap retention. The front scalp is overlapped at the front by the windshield pillar drip molding scalp.

To remove the front scalp: first remove the windshield pillar drip molding scalp. To remove the rear scalp, detach only the required length of the front scalp.

To remove either scalp: use a suitable, pointed hook tool and unsnap the scalp from the drip molding. Start the removal on the underside of the drip molding at either end of the scalp.

To install either scalp: position the scalp over the upper lip of the drip molding and snap the lower rolled edge of the scalp under the drip molding. Install the previously removed parts.

**Roof Drip Molding Front Scalp**  
**Roof Drip Molding Rear Scalp**  
**and Roof Drip Molding Scalp Escutcheon**  
**1839 Style**

The scalps, of three-piece construction, a front scalp, a rear scalp and a scalp escutcheon, are secured to the drip molding by snap retention. The scalp installation is overlapped by the windshield side reveal molding at the front and by corresponding sections of the side roof rail weatherstrip retainer and reveal moldings.

To remove the front scalp: remove the weather-

shield side reveal molding and the side roof rail weatherstrip retainer and reveal molding.

To remove the rear scalp: remove the rear body lock pillar weatherstrip retainer and reveal molding.

After preliminary removal operations, remove the scalp escutcheon by unsnapping it from the drip molding. To remove either scalp, use a suitable, pointed hook tool and unsnap the scalp from the drip molding. Start the removal on the underside of the drip molding at either end of the molding.

To install either scalp: position and locate the scalp over the upper lip of the drip molding and snap the lower rolled edge of the scalp under the drip molding. Position the escutcheon and snap it into place. Seal and install the previously removed parts.

**Front Door Window Reveal Molding (At Vent)**  
**1847, 39, 67 Styles**

The molding is secured to the return flange of the door by two attaching screws. The molding is overlapped by the door ventilator at the return flange.

To remove the molding: remove the door trim assembly. Remove the attaching screws which are accessible on each side of the door ventilator. Loosen the ventilator to door upper attaching screws and remove the molding.

To install the molding: position the molding to the door, align the attaching holes and install the attaching screws. Tighten the door ventilator to door upper attaching screws and install the door trim assembly.

**Front Door Window Frame Front**  
**Vertical Scalp Molding**  
**1835, 45, 69 Styles**

The front vertical scalp molding is secured to the window frame by snap retention and by a metal tab which is retained by a screw behind the door ventilator.

To remove the molding: remove the door ventilator. Remove the lower end attaching screw and unbend the metal tab. With a flat-bladed hook tool, unsnap the scalp molding from the window frame by working toward the center of the window opening.

To install the molding: position the molding to the inside edge of the window frame and to the window lower reveal line and snap it into place. Bend the molding tab at the lower end to the return flange of the door, drill the attaching hole as required on a replacement molding and install the attaching screw. Install the door ventilator and the previously removed parts.

**Front Door Window Frame Upper Scalp Molding  
1835, 45, 69 Styles**

The molding is secured to the window frame by a screw under the glass run channel, and by a metal tab at the rear. The upper scalp molding is overlapped at the front by the front vertical scalp molding.

To remove the molding: detach the door upper glass run channel. Remove the door ventilator upper attaching screws. Move the door ventilator rearward slightly and detach the rear of the front vertical scalp molding slightly for clearance purposes. Remove screw and unbend the metal tab at the rear of the upper scalp molding. With a flat-bladed hook

tool detach the upper scalp molding from the window frame by starting at the rear and by working toward the center of the window opening. Before unsnapping the front of the molding, slide it rearward to clear the front vertical scalp molding. Use care not to damage any door parts during this operation.

To install the molding: position the molding to the inside edge of the window frame, engage the front end of the molding, and slide it under the rear edge of the front vertical scalp molding. With the molding aligned at the upper rear corner, install the molding to the window frame and secure the metal tab at the rear and attaching screw. Complete the installation of the front vertical scalp molding, the door ventilator and the door upper glass run channel.

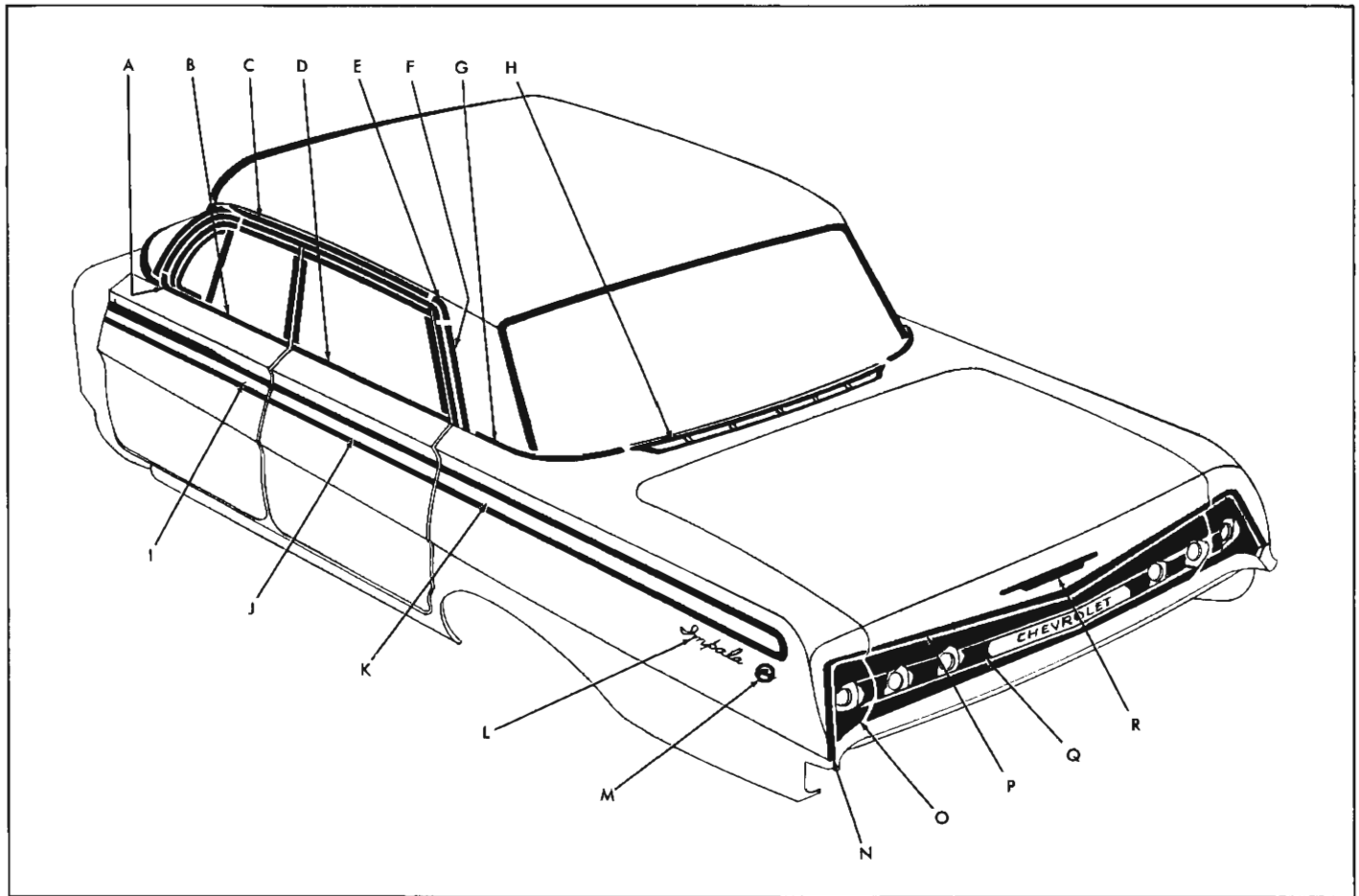


Fig. 87—1839 Style Exterior Moldings

- |   |   |   |  |
|---|---|---|--|
| A. Front Door Window Reveal Molding (At Vent) | E. Roof Drip Molding Scalp Escutcheon           | I. Front Door Outer Panel Lower Molding | O. Rear of Rear Fender Insert Molding              |
| B. Front Door Window Reveal Molding           | F. Roof Drip Molding Rear Scalp                 | J. Rear Door Outer Panel Lower Molding  | P. Rear Compartment Lid Outer Panel Molding        |
| C. Roof Drip Molding Front Scalp              | G. Rear Quarter Belt Reveal Molding             | K. Rear Fender Lower Molding            | Q. Rear Compartment Lid Outer Panel Insert Molding |
| D. Rear Door Window Reveal Molding            | H. Rear Compartment Front Panel Ornament Grille | L. Rear Fender Name Plate               | R. Rear Body Emblem                                |
|   |   | M. Rear Fender Emblem                   |  |
|   |   | N. Rear of Rear Fender Molding          |  |



### **Front Door Outer Panel Lower Molding All 1600 and 1800 Series**

The molding is secured to the door by a screw at the front and rear hemming flanges and by snap-in clips which are installed in the molding.

To remove the molding: remove the door handle on 1800 series, remove the front and rear hemming flange screws. Protect the paint finish. Remove the molding with a thin, flat-bladed tool, such as a putty knife. Use the tool at the bottom of the molding to gain initial access to each clip. Engage and squeeze the side of clip with the tool and disengage it from the outer panel. Start at either end of the molding. Position an insulated, small, wedge-shaped shim behind the molding during the removal operation to prevent the clips from re-engaging the outer panel.

To install the molding: secure replacement clips as required. Apply body caulking compound to the edges of the attaching holes in the outer panel and to the clips. Align the molding clips with the attaching holes and snap them into place. Use care to apply a gradual, uniform pressure on a large area of the molding to prevent damage. Seal and install the front and rear hemming flange attaching screws. Replace the door handle and previously removed parts.

### **Rear Door Window Frame Upper Scalp Molding 1835, 45, 69 Styles**

The upper scalp molding is secured to the window frame by a screw under the upper glass run channel and by a metal tab at each end. One end only on "69" style.

To remove the molding: detach the glass run channel across the top (and rear on "69" styles) of the window opening. Remove attaching screws and unbend the metal tab at the end of the molding. Working toward the center of the window opening, with a flat-bladed hook tool, detach the molding from the window frame.

To install the molding: position the molding to the inside edge of the upper window frame. Secure the metal tab at each end of the molding and attach screw. Complete the installation of the glass run channel across top of the window opening.

### **Front Door Window Reveal Molding All 1800 Series and Rear Door Window Reveal Molding 1835, 45, 69 Styles**

The molding is secured to the return flange of the door by screws. The molding is installed before the door window installation.

To remove the molding: on "69" and "35" and "45" style rear doors, remove the door window. On all other styles, disengage the window lower attachment and lower window below the reveal molding attaching screws. Remove the attaching screws and the molding.

To install the molding: position the molding to the door and install the attaching screws. On all models, complete the door window installation, seal the water deflector, and install the previously removed parts.

### **Rear Door Outer Panel Lower Molding 1635, 45, 69 Styles 1835, 45, 39, 69 Styles**

The molding is secured to the door by a clip stud and nut at the front hemming flange, by a screw at the rear hemming flange and by molding clips which snap into the outer panel attaching holes.

To remove the molding: remove rear door outer handle 1800 series, remove the front attaching nut and the rear attaching screw. Protect the paint-finish. Remove the molding with a thin, flat-bladed tool, such as a putty knife. Use the tool at the bottom of the molding to gain initial access to each clip. Engage and squeeze the side of each clip with the tool and disengage it from the outer panel. Start at either end of the molding. Position an insulated, small, wedge-shaped shim behind the molding during the removal operation to prevent the clips from re-engaging the outer panel.

To install the molding: secure replacement clips as required. Apply body caulking compound to the edges of the attaching holes in the outer panel and to the clips. Align the molding clips with the attaching holes and snap them into place. Use care to apply a gradual, uniform pressure on a large area of the molding to prevent molding damage. Seal and install the front attaching nut and the rear attaching screw. Replace the door handle, and previously removed parts.

### **Rear Quarter Window Upper Scalp Molding 1211, 1611 Styles**

The molding, finished with body color, is secured to the side roof rail pinchweld flange with attaching screws.

To remove the molding: remove the rear quarter window upper glass run channel and garnish molding. Remove the scalp molding attaching screws and the molding.

To install the molding: apply body caulking compound to the attaching holes in the roof rail pinchweld flange and to the attaching screws. Assemble "U" spring nuts to the molding flange at the slot

locations. Position the molding to the front reveal molding, align the "U" spring nuts with the body attaching holes and install the attaching screws. Seal and install the previously removed parts.

### **Rear Quarter Window Upper, Front and Rear Scalp Moldings "35" and "45" Styles**

The moldings, of painted finish, are secured to the body by means of molding clips and screws prior to the installation of the rear quarter window. The upper scalp molding overlaps the front and rear scalp moldings.

To remove the moldings: remove the rear quarter window and the applicable attaching screws. To remove the front and/or rear scalp molding(s), first remove the upper scalp molding. On the 1835-45 models, the upper scalp is retained by the second and fifth attaching screws from the front. The rear scalp is retained by the center screw only.

To install the moldings: apply body caulking compound to the molding attaching holes on the body, to the clips and to the screws. Align the moldings with the respective attaching holes on the body and install the front screws to effect a water-tight seal. Install the front and rear scalp moldings before installing the upper scalp molding. Seal and install the rear quarter window and the previously removed parts.

### **Rear Quarter Window Front Reveal Molding 1211, 1611 Styles**

The molding is finished with body color and is secured to the rear body lock pillar by molding clips and attaching screws. The molding is overlapped at the top by the upper scalp molding.

To remove the molding: remove the rear quarter window upper scalp molding. Remove the molding attaching screws and the molding.

To install the molding: apply body caulking compound to the attaching holes in the lock pillar, to the clips and to the attaching screws. Position the molding to the lock pillar, align the clip holes with the attaching holes in the body and install the attaching screws to effect a water-tight seal. Seal and install the upper scalp molding.

### **Rear Quarter Window Upper Reveal Molding Rear Quarter Window Rear Reveal Molding 1835-45 Styles**

The moldings are secured to the rear quarter window opening pinchweld flange by attaching screws and scalp molding "U" spring nuts. The rear reveal

molding is overlapped at the top by the upper reveal molding.

To remove the moldings: remove the rear quarter window and the applicable attaching screws. To remove the rear reveal molding, first remove the upper reveal molding.

To install the moldings: apply body caulking compound to the molding attaching holes on the body and to the attaching screws. Align the reveal moldings over the previously installed scalp moldings and install the attaching screws to effect a water-tight seal. The attaching screws pass through the molding slots, through the holes in the pinchweld and secure in the scalp molding clips. Install the rear reveal molding before installing the upper reveal molding. Seal and install the rear quarter window and the previously removed parts.

### **Rear Quarter Window Lower Reveal Molding 1835-45 Styles**

The molding is secured to the rear quarter panel return flange with screws. The molding fits flush, at the rear, to the rear quarter window rear scalp and reveal moldings.

To remove the molding: remove the rear quarter window and the molding attaching screws. Protect the molding and adjacent parts from damage during the molding removal. Raise the forward end of the molding from the rear quarter panel and slide the molding forward to remove it.

To install the molding: apply a ribbon of medium bodied sealer (1/4" diameter) along the entire length of the inboard upper corner of the molding. Protect the bottom of the rear reveal and scalp moldings. With the front of the molding raised, slide the rear of the molding to a flush position under the rear reveal and scalp moldings and then position the molding to the rear quarter panel. Install the attaching screws. Seal and install the rear quarter window. Install the previously removed parts.

### **Rear Quarter Window Reveal Molding 1847-67 Styles**

The molding is secured to the rear quarter panel return flange by screws.

To remove the molding: remove the rear quarter window. Remove the attaching screws and the molding.

To install the molding: position the molding along the rear quarter panel return flange. Install the attaching screws and the previously removed parts.

**Rear Quarter Belt Reveal Molding  
1611, 1669, 1869 Styles  
(Optional) 1839 Style**

The molding is secured to the roof extension panel by snap in type clips. A retaining screw is also used on the "39" and "69" styles at the lock pillar facing.

To remove the molding: remove the attaching screw on the "39" and "69" styles. Protect the paint finish. Remove the molding with a thin, flat-bladed tool. Use the tool at the top of the molding to gain initial access to each clip. Engage and squeeze the side of each clip with the tool and disengage it from the outer panel. Start at front end of the molding. Position a small, insulated, wedge-shaped shim behind the molding during the removal operation to prevent the clips from re-engaging the outer panel.

To install the moldings: replace damaged clips as required. Apply body caulking compound to the panel attaching holes. Position the molding to the panel and snap in all clips. Use care to apply a gradual, uniform pressure on a large area of the moldings to prevent damage. Seal and install the attaching screw on the "39" and "69" styles.

**Rear Quarter Belt Reveal Molding  
1847 Style**

The molding is secured to the extension panel by belt and clip assemblies. The front of the molding is overlapped by the rear quarter window lower reveal molding.

To remove the molding: remove the roof extension trim panel. Remove attaching nuts at roof extension panel. Remove the rear attaching nut at the rear compartment location. Slide the molding rearward and lift the rear until the molding is disengaged from the rear quarter window lower reveal.

To install the molding: apply body caulking compound around the molding studs. Position the molding and insert the front end of the molding under the quarter window lower reveal molding. Slide the molding forward until it fits the body contour. Secure the attaching nut at rear compartment. Secure the attaching nuts at roof extension panel. Install removed trim.

**Rear Quarter Pinch Weld Finishing Moldings  
1867 Style**

The moldings are secured to the quarter pinch weld with snap-on clips which are previously installed on the pinch weld around the rear and side sections and with a screw at each forward end. The right molding overlaps the left molding.

To remove the moldings: remove the front attach-

ing screws at the rear quarter windows. Detach the front end of the folding top compartment bag from the rear seat back. Remove the attaching screws from the three back curtain trim retainers and pull them away from the body pinch weld. With a wood block and hammer or with a flat-bladed tool, carefully disengage the moldings from the clips. To remove the left molding, detach only a short section of the overlapping right molding.

To install the moldings: clean and seal the pinch-weld flange. Apply waterproof tape over the pinch-weld flange to seal it completely. Replace damaged clips as required. Position and locate the left molding to the body and snap it into place. Install the right molding. Install the previously removed parts.

**Rear Fender Lower Molding  
1611, 37, 39, 1839, 47, 67, 69  
1835, 45 Right Side Only  
1635, 45 Right Side Only**

The molding is secured to the rear fender by snap-in clips which were previously installed on the molding at the front half and a bolt and clip assembly at the rear half.

To remove the molding: on "35" and "45" styles remove the spare tire cover panel, remove the attaching nuts inside the rear compartment. With a thin, flat-bladed tool inserted at the bottom of the molding to gain initial access to each clip engage and squeeze the side of each clip with the tool and disengage it from the outer panel. Start at rear end of the molding. Position an insulated, small, wedge-shaped shim behind the molding during the removal operation to prevent the clips from re-engaging the outer panel.

To install the moldings: replace damaged clips as required. Apply body caulking compound to the attaching holes, to the snap-in clips, to the clip bolts and to the attaching nuts. Position the molding to the fender, and snap the molding flush to the fender. Install the attaching nuts to effect a watertight seal and install the previously removed parts.

**Rear Fender Lower Molding  
1635, 45 Left Side Only  
1835, 45 Left Side Only**

The molding is secured by snap-in clips on the 1600 series and on the front half of the 1800 series. Integral snap-in studs and friction type clips secure the rear half of the molding on the 1800 series.

To remove the molding: protect the paint finish. Remove the moldings with a thin, flat-bladed tool. Use the tool at the bottom of the molding to gain initial access to each clip. Engage and squeeze the side of each clip with the tool and disengage it from

the outer panel. The studs must be pried straight out in sequence. Start at front end of the molding. Position an insulated, small, wedge-shaped shim behind the molding during the removal operation to prevent the clips from re-engaging the outer panel.

To install the molding: replace damaged clips as required. Apply body caulking compound to the fender attaching holes, to the molding clips and studs. Position the molding and snap it flush to the fender. Use care to apply a gradual, uniform pressure on a large area of the molding to prevent damage.

### **Rear Compartment Front Panel Ornament Grille 1847, 39 Styles**

The ornament grille is secured to the front panel by integral attaching studs and sealed attaching nuts.

To remove the grille: remove the attaching nuts accessible in the rear compartment.

To install the grille: install sealing washers over the attaching studs. Position the grille studs through the attaching holes and install sealing washers to grille studs. Install the attaching nuts to effect a watertight seal.

### **Rear or Rear Fender Molding 1600 and 1800 Series Except Wagon Styles**

The molding is secured to the rear fender by bolt and clip assemblies with attaching nuts.

To remove the molding: remove the attaching nuts.

To install the molding: install the sealing washers over the attaching studs. Position the molding to the panel and install the attaching nuts.

### **Rear or Rear Fender Molding—Station Wagons**

The molding is secured to the rear fender by bolt and clip assemblies with attaching nuts and by retaining screws at each end.

To remove the molding: remove the rear bumper. Remove the attaching screws. Remove the spare tire cover panel and the rear quarter trim panel. Remove the attaching nuts.

**NOTE:** In first production run the molding will be in two sections. The lower section is secured to the fender by two attaching screws and telescopes into the upper section. The upper molding must be removed first to gain access to the upper screw of the lower molding. Replacement moldings will be of one piece construction.

To install the molding: install the sealing washers over the attaching studs. Position the molding to the

panel and install the attaching nuts. Install the attaching screws. Install the previously removed parts.

### **Rear of Rear Fender Insert Molding 1800 Series Except Station Wagon**

The insert molding is secured to the rear of rear fender by bolt and clip assemblies with attaching nuts and is overlapped by the rear of rear fender molding.

To remove the insert: remove rear of rear fender molding. Remove the tail lamp assembly. Remove the insert attaching nuts.

To install the insert: replace damaged bolt and clip assemblies as required. Apply body caulking compound around the attaching hole. Position the insert to the panel and install the attaching nuts to effect a watertight seal. Install the previously removed parts.

### **Rear of Rear Fender Insert Molding 1835, 45 Styles**

The insert molding is secured to the rear fender by attaching screws, and is overlapped by the rear of rear fender molding.

To remove the insert: remove the tail lamp assembly. Remove the rear bumper to remove the lower attaching screw at the quarter panel flange. Remove the rear of the rear fender molding to remove the upper attaching screw.

To install the molding: position the molding to the rear fender and install the attaching screws. Install the rear of rear fender molding, tail lamp assembly and the rear bumper.

### **Rear Compartment Lid Outer Panel Molding 1611, 37, 69 Styles 1847, 39, 67, 69 Styles**

The molding is secured to the outer panel by bolt and clip assemblies and attaching nuts.

To remove the molding: remove the attaching nuts through the inner panel cutouts.

To install the molding: replace damaged clips as required. Apply sealing washers on attaching bolts. Position the molding to the outer panel and install the attaching nuts to effect a watertight seal.

### **Rear Compartment Lid Outer Panel Name Plate 1211, 69 Styles 1611, 37, 69 Styles**

The name plate is secured to the lid by integral attaching studs and sealed attaching nuts.

## **BODY 14-66**

To remove the name plate: remove the attaching nuts through the lid inner panel access holes.

To install the name plate: apply body caulking compound to the attaching studs and nuts. Position the name plate to the lid outer panel and install the attaching nuts to effect a watertight seal.

### **Rear Compartment Lid Outer Panel Emblem "Impala SS" 1847, 67 Styles**

The emblem is secured to the lid by integral attaching studs and sealed attaching nuts.

To remove the emblem: remove the attaching nuts through the lid inner panel access cutouts.

To install the emblem: apply body caulking compound to the attaching studs and nuts. Position the emblem to the lid outer panel and install the attaching nuts to effect a watertight seal.

### **Rear Compartment Lid Outer Panel Insert Molding Assembly 1839, 47, 67, 69 Styles**

The insert molding is secured by attaching screws at the lower and side return flange of the compartment lid and the upper end is overlapped by the compartment lid molding.

To remove the insert molding: remove the tail lamp assemblies. Remove the compartment lid molding. Remove the attaching screws.

To install the insert molding: apply body caulking compound around attaching holes of compartment lid. Replace screw retaining clips as required. Position the molding to the compartment lid and install the attaching screws. Install the previously removed parts.

### **Rear Body Emblem All Except "35" and "45" Styles**

The emblem is secured to the compartment lid by integral studs with attaching nuts.

To remove the emblem: remove the attaching nuts through the compartment lid inner panel access holes.

To install the emblem: apply body caulking compound to the attaching studs and nuts. Position the emblem to the lid outer panel and install the attaching nuts to effect a watertight seal.

### **Back Body Opening Upper Pinch Weld Finishing Molding All "35" and "45" Styles**

The molding, of painted finish on the 1235 styles

and of bright finish on the 1635-45 and 1835-45 styles, is secured to the body by snap retention over special pinch weld clips. The molding is overlapped at each end by the side pinch weld finishing moldings.

To remove the molding: remove the back body opening side pinch weld finishing moldings. Then, with a flat-bladed tool, unsnap the molding at each clip location.

To install the molding: replace and seal any damaged clips as necessary. Hook one edge of the molding over the clips and snap the opposite side over the clips to secure it. Install the previously removed parts.

### **Rear Fender Name Plate and Rear Fender Emblem 1200, 1600, 1800 Series**

The name plate and emblem is secured to the fender by integral attaching studs and sealed attaching nuts.

To remove the name plate or emblem: on "35" and "45" styles, remove the spare tire cover panel and rear quarter rear trim. On all styles, remove the attaching nuts and the name plate or emblem.

To install the name plate or emblem: apply body caulking compound to the integral attaching studs and to the fender and install the attaching nuts to effect watertight seal.

### **Back Body Opening Side Pinch Weld Finishing All "35" and "45" Styles**

The molding, of painted finish on the 1235 style and of bright finish on the 1635-45 and 1835-45 styles is secured to the body by snap retention over special pinch weld clips.

To remove the molding, use a flat-bladed tool and unsnap the molding at each clip location.

To install the molding: replace and seal any damaged clips as necessary. Hook the side molding over the end of the upper molding and snap the side molding down into position.

### **Tail Gate Name Plate 1235 Style 1635-45 Styles**

The name plate is secured to the tail gate outer panel by integral attaching studs which slide into friction-type clips previously installed in the outer panel.

To remove the name plate: use a flat-bladed tool and carefully pry each integral stud from the retaining clip a little at a time until the name plate is removed.

To install the name plate: replace damaged clips as required. Apply body caulking compound to the outer panel attaching slots before installing the clips. Position the name plate studs to the attaching clips and snap the name plate flush to the outer panel. Apply a gradual, uniform pressure on the entire name plate to facilitate the installation and to prevent damage.

**Tail Gate Outer Panel Lower Molding  
1635-45 Styles  
1835-45 Styles**

The molding is secured to the tail gate by a hemming flange screw at each outer end of the molding and by molding clips which snap into the outer panel holes.

To remove the moldings: remove the attaching screw at each hemming flange. Disengage each snap-in clip by prying the retaining clip out of the attaching hole.

To install the moldings: replace damaged clips as required. Position the molding and clips to the attaching holes in the outer panel and snap the clips into place. Use care to apply a gradual, uniform pressure on a large area of the molding to prevent damage. Attach and seal hemming flange screws.

**Tail Gate Outer Panel Insert Molding  
1835-45 Styles**

The insert is secured to the tail gate by screws at the lower hemming flange and by screws at the top. The screws at the top are overlapped by the tail gate lower molding.

To remove the insert: remove the tail light, the lower molding and the attaching screws.

To install the insert: position the insert to the tail gate and install the upper attaching screws. Install the lower molding and the attaching screws at the hemming flange. Install the tail lamp assemblies.

**SPECIAL TOOLS**

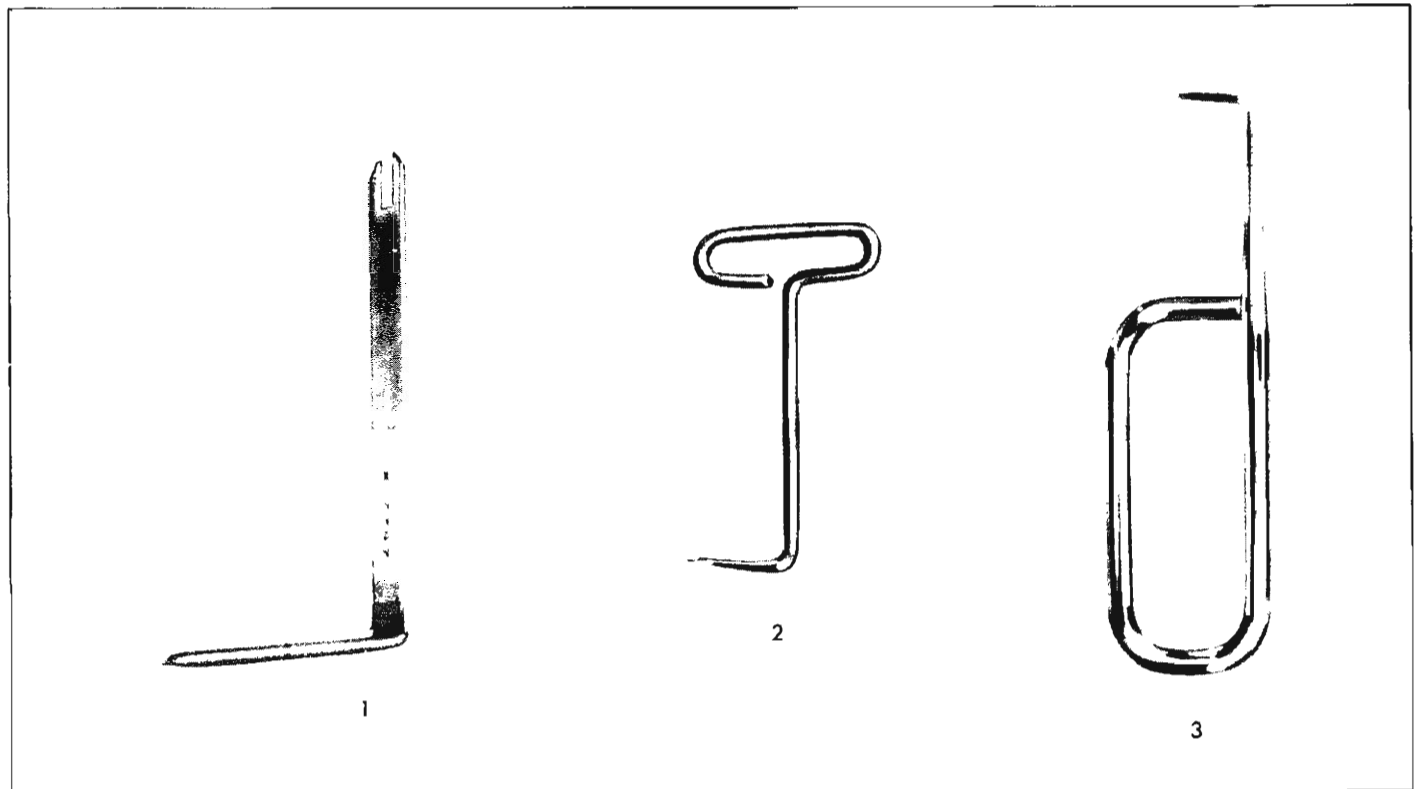


Fig. 88—Passenger Body Special Tools

1. J-7797 Door Handle Remover

2. J-6335 Trim Panel Removing Tool

3. J-7898-01 Molding Removing Tool

# SECTION 14

## CHASSIS SHEET METAL

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## GENERAL DESCRIPTION

Most notable of front end changes is the design of the front fender and fender skirt. Unlike the conventional fender skirt that joins with the top of the front fender to form the wheelhouse, this unique skirt covers the wheel and protects the fender inner surface from corrosive elements.

Bolted to the fender along the entire length of wheelhouse opening with eight bolts, the new skirt effectively exposes the entire fender inner surface to drying action of engine heat. Now enclosed, the fender is no longer vulnerable to road slush, mud and stones. The new hood hinge bracket, bolted to the dash panel, rigidly ties the fender edge to the skirt.

The newly styled fender is reinforced along the upper edge with a full-length "Z" member. A total of 20 bolts securely attaches fender, fender skirt and brackets to other front end components.

The new front bumper, a bolted assembly of approximately equal segments, is deeper in section than previous bumpers, and permits the elimination of the front valance panel. The center segment forms a recess for license plate attachment.

Hood hinges are new as are the hood inner and outer panels. The spring loaded toggle-type hinges are bolted to the support bracket and the hood inner panel. Figure 89 shows an exploded view of front end Sheet Metal Assembly.

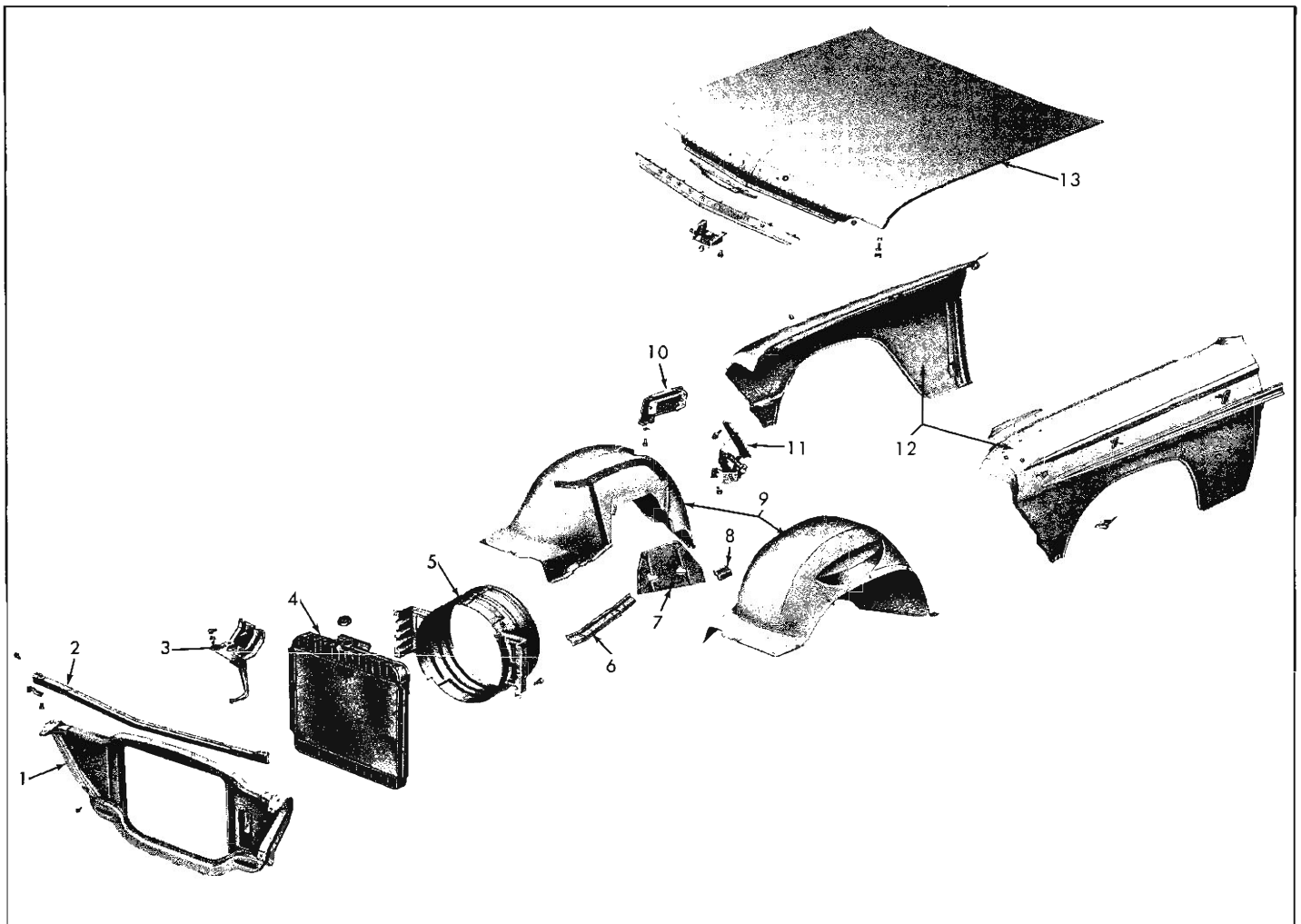


Fig. 89—Front Sheet Metal Explode

- |                        |                            |                         |                           |
|------------------------|----------------------------|-------------------------|---------------------------|
| 1. Radiator Support    | 5. Radiator Shroud         | 8. Skirt Rear Seal      | 11. Hood Hinge            |
| 2. Fender Tie Bar      | 6. Skirt Forward Seal      | 9. Left and Right Skirt | 12. Left and Right Fender |
| 3. Hood Catch Assembly | 7. Skirt Intermediate Seal | 10. Hood Hinge Support  | 13. Hood Assembly         |
| 4. Radiator            |                            |                         |                           |

## MAINTENANCE AND ADJUSTMENTS

### HOOD ADJUSTMENT

The alignment of the hood proper in relation to other sheet metal parts is controlled by the position of the hood hinges and the height of the two bumpers located one at each end of the forward edge of the hood. The adjustments at the hood latch must be made after the hinges and bumpers are positioned to yield the dimensions shown in (fig. 92). Latch adjustments are made so that effort required to open and close the hood is reasonable and so that the hood alignment obtained by hinge and bumper adjustment is maintained when the hood is closed. Note that the hood latch is not designed or intended to correct basic hood alignment faults.

To align the hood and lock, proceed as follows:

#### Hood Hinge (fig. 90)

1. Note that the mounting holes in the body mounted end of the hinge are slotted to provide up and down movement of the hood assembly while the hood mounted end is slotted to provide fore and aft movement.
2. Scribe a mark around the entire hinge plate which will be involved in the adjustment.
3. Loosen the appropriate screws and shift the position of the hood on the hinge plate the approximate amount to correct misalignment using the



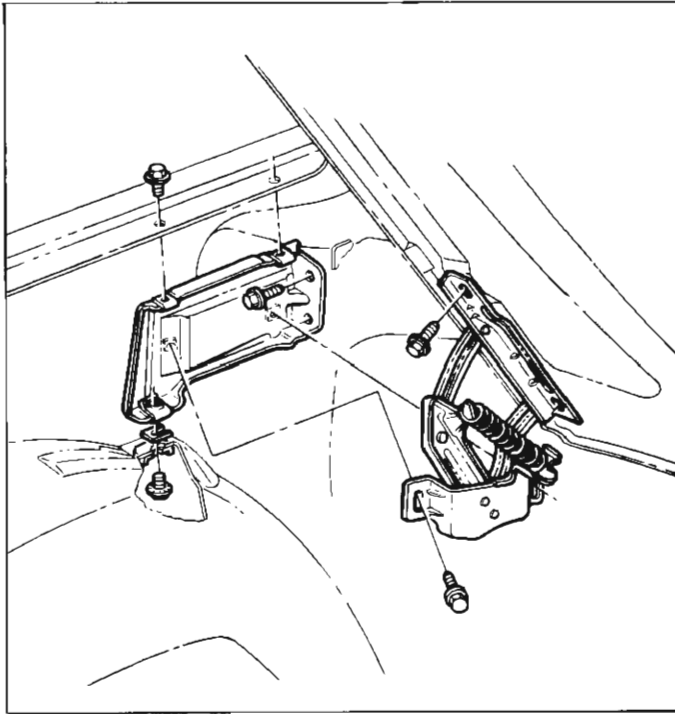


Fig. 90—Hood Hinge

scribed marks to check amount of movement. Check condition of adjustment by tightening cap screws and closing hood.

**Hood Bumpers**

Hood bumpers must be adjusted so that the hood

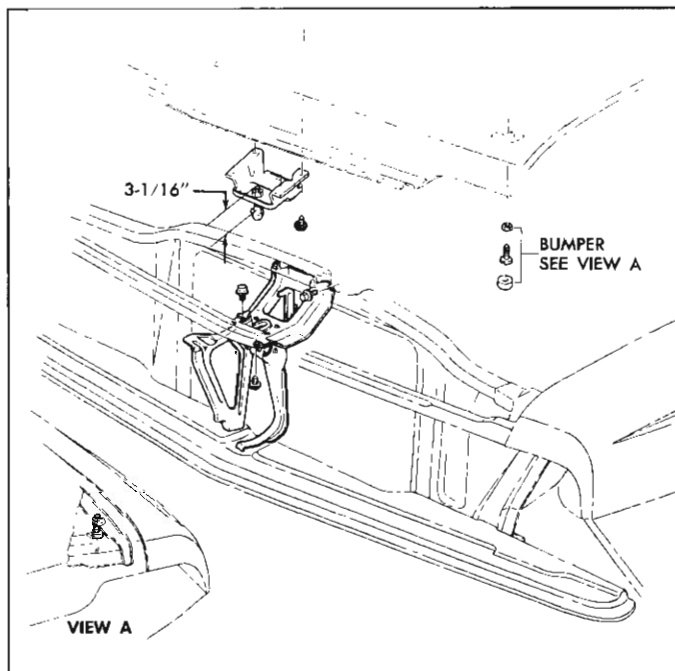


Fig. 91—Hood Catch and Bumpers

top surface is flush with the fender top surface within 1/16 as shown in Figure 91.

**Hood Catch**

Hood lock plate mounting holes are slotted to provide fore and aft adjustment of the hood lock bolt. The hood lock bolt itself is adjustable for up and down positioning of the lock bolt head so that its proper engagement in the catch assembly may be provided for. The distance that the lock bolt protrudes out of the lock plate should be adjusted so that the hood bumpers are slightly compressed by the fully latched hood and so that the effort required to release the hood catch is reasonable.

**SHEET METAL ADJUSTMENTS**

For proper function of doors and hood, and for presentable appearance, front sheet metal must fit within the tolerances shown in Figures 92 and 93.

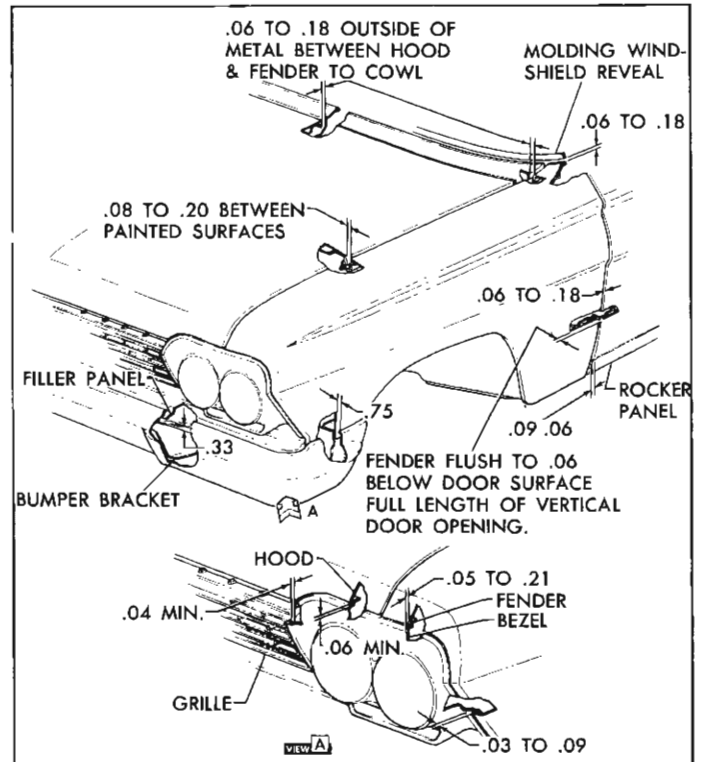


Fig. 92—Sheet Metal Adjustment (Related Parts)

The sheet metal is adjustable at six points (three on each side of car) by means of spacer shims shown in Figures 94 and 95.

The fender-to-cowl and rocker panel shimming allows adjustment of fender surfaces to door surface and upper cowl surface.

The radiator support shimming provides a means of raising or lowering the forward part of front sheet

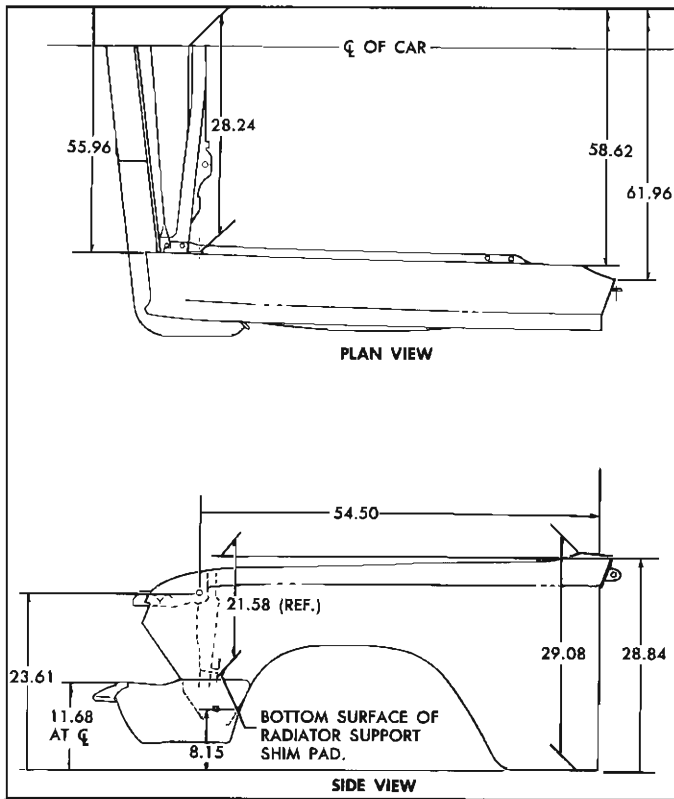


Fig. 93—Basic Height and Width Dimensions

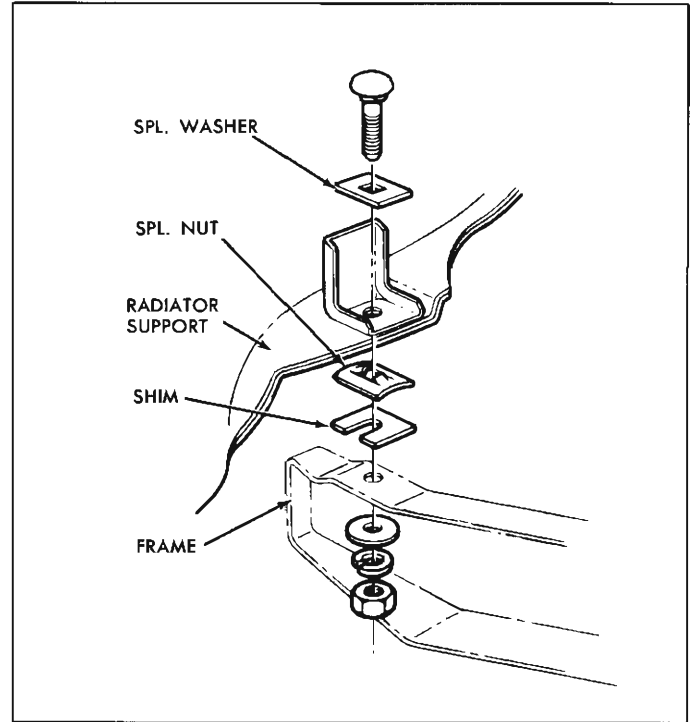


Fig. 95—Frame to Radiator Support Shimming

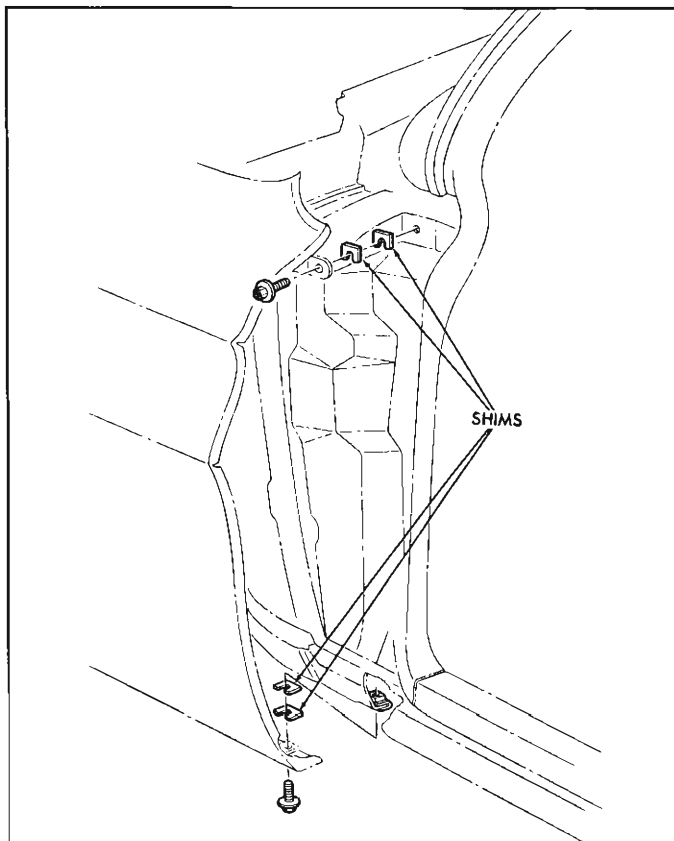


Fig. 94—Fender to Cowl and Rocker Panel Shimming

metal assembly to correct faulty sheet metal-to-front bumper relationship and fender trailing edge-to-door parallelism (cowl and rocker panel shimmed mounts should be loosened before raising or lowering radiator support).

Note that it is possible and sometimes desirable to shift entire front sheet metal assembly to the left or right by loosening these shimmed mounts and applying the necessary force. Cases of extremely poor hood fit, overly wide fender-to-door gap, etc., will often be corrected by this method more quickly than by any other.

## SERVICE OPERATIONS

### FRONT BUMPER ASSEMBLY (fig. 96)

#### Removal

1. Raise vehicle from floor.
2. Remove six bolts (three per side) retaining bumper brackets and mounting braces to front end of frame.
3. Remove lower bolts retaining fender braces to bumper tips.
4. Remove screw retaining lock support bracket to bumper center brace. From under hood, remove lock support brace retaining nut from lower end of lock support.
5. Remove bumper from vehicle.

#### Disassembly

1. Remove bolts retaining bumper mounting braces, to bumper mounting bar.
2. Remove bolts retaining center bracket assembly to mounting bar.
3. Remove remaining bolts attaching mounting bar to left and right hand mounting brackets. Remove mounting bar from bumper assembly.
4. Separate face bar sections by removing three bolts at each joint.

#### Assembly

Assemble following disassembly procedure in reverse order. Install all bolts loosely (do not tighten any bolts until all bolts are installed).

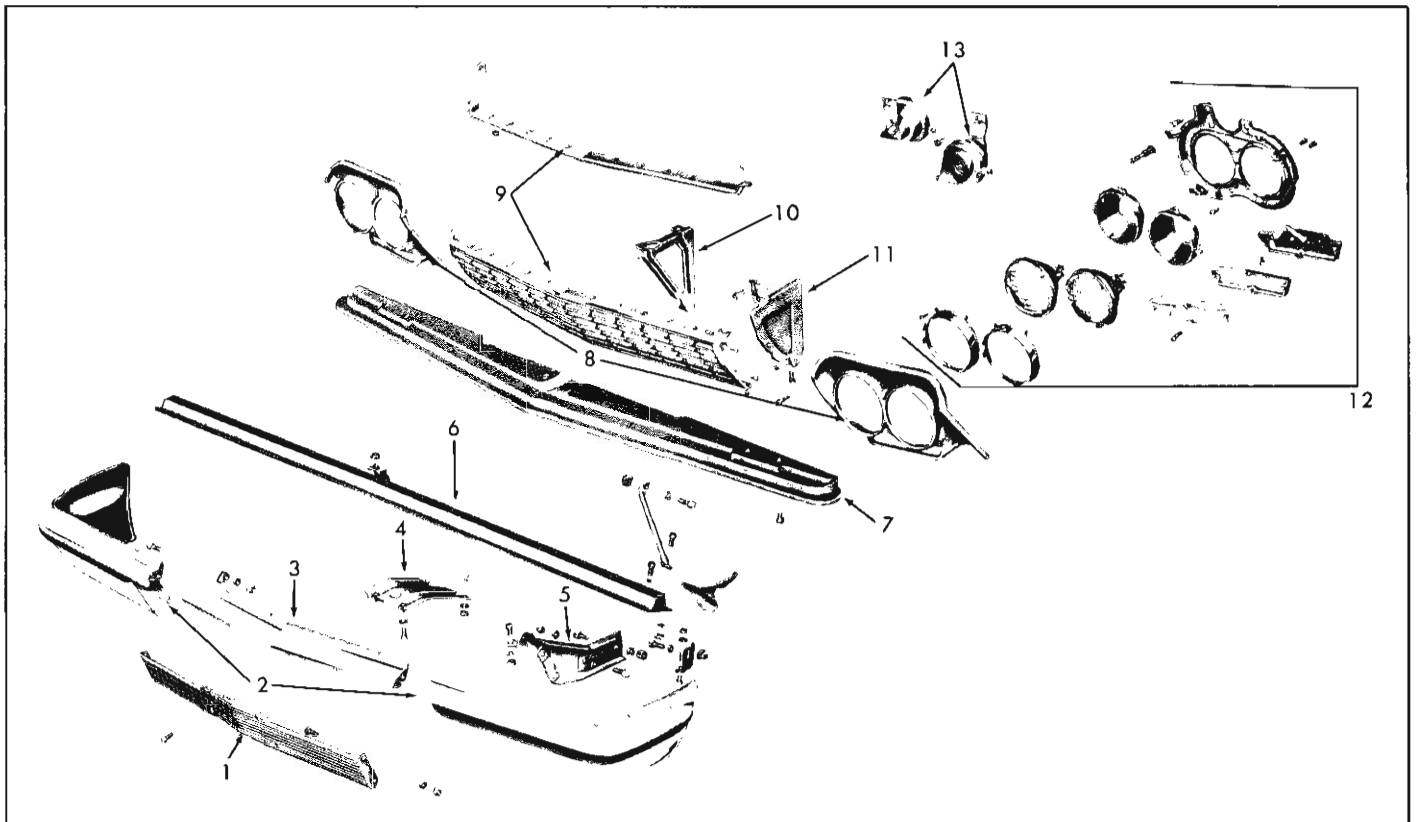


Fig. 96—Exploded View of Grille and Bumper

- |                            |                           |                        |                                      |
|----------------------------|---------------------------|------------------------|--------------------------------------|
| 1. Face Bar Center Panel   | 5. Outer Mounting Bracket | 9. Upper Grille Bar    | 12. Headlamp - Parking Lamp Assembly |
| 2. Outer Face Bars         | 6. Mounting Bar           | 10. Hood Latch Support | 13. Horns                            |
| 3. Center Face Bar         | 7. Bumper Filler Panel    | 11. Grille End Baffle  |                                      |
| 4. Center Mounting Bracket | 8. Headlamp Bezels        |                        |                                      |

### Installation

1. Position assembled bumper on frame horns, aligning holes in mounting brackets with holes in frame work.
2. Install bolts, lock washers and nuts, but do not tighten.

Note that eight-sided eccentric washer is installed under forward bolt and regulates mounted height of bumper. "Dial" the washer within the retaining notches on bracket to position the bumper at desired height.

3. Install bolts retaining mounting braces to frame horns.
4. Install bolts retaining fender lower corner to bumper tips.
5. Tighten all mounting bolts securely.

### REAR BUMPER

#### Removal

1. Disconnect license lamp wire as shown in Figure 97.
2. Remove four bolts (two-per side) retaining bumper brackets to frame horns.
3. Remove bumper from vehicle.

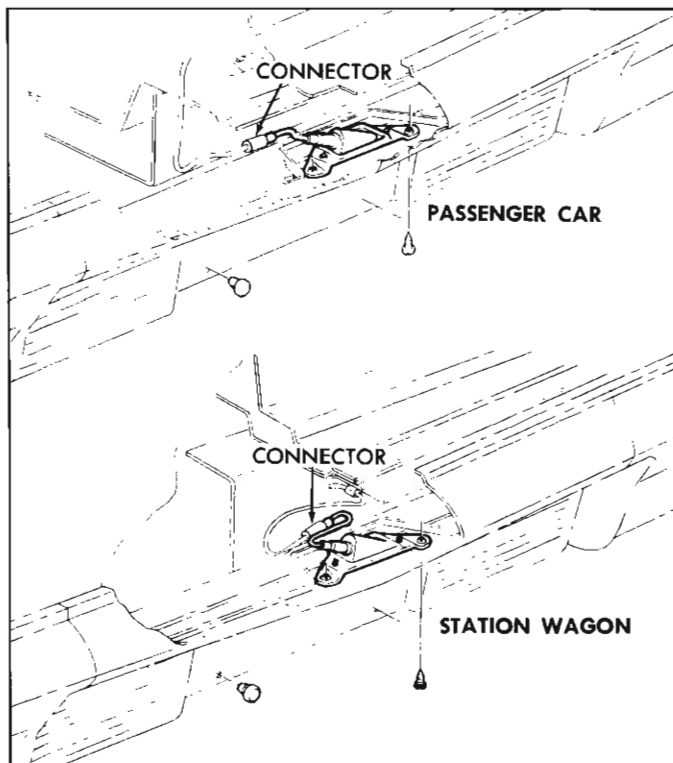


Fig. 97—Rear License Plate Lamp

### Disassembly (fig. 98)

1. Remove license plate lamp by removing two retaining screws.
2. Remove four bolts retaining each mounting bracket to bumper.
3. Center face panel may be separated from reinforcements by removal of special clips shown in Figure 99.
4. Separate three sections of face bar by removing bolts shown in Figure 98.

### Assembly

Assemble, following disassembly procedure in reverse order. Install all bolts loosely (do not tighten any bolts until all bolts are installed). Check condition of seal attached to truck sill shown in Figure 100. Replace if necessary. Install license plate lamp on bumper.

#### Installation

1. Position bumper assembly on vehicle. Align holes and brackets with holes in frame horn. Install all bolts, nuts and washer assemblies loosely.
2. Note that eight-sided washer is installed under head of rearmost mounting bolt. Adjust bumper to desired height by "Dialing" this washer within retaining notches on bumper mounting bracket.
3. With bumper adjusted to desired height, tighten all mounting bolts securely.

### BUMPER FILLER PANEL (fig. 101)

#### Removal

1. Remove front bumper as outlined in this section.
2. At each end of panel.
  - a. Remove two screws retaining head lamp assembly to filler panel.
  - b. Remove two screws retaining filler panel to skirt front flange.
  - c. Remove one screw retaining filler panel to radiator support.
  - d. Remove one screw retaining filler panel to grille baffle.
  - e. Remove one screw retaining filler panel to lock support.
3. Remove filler panel from vehicle.

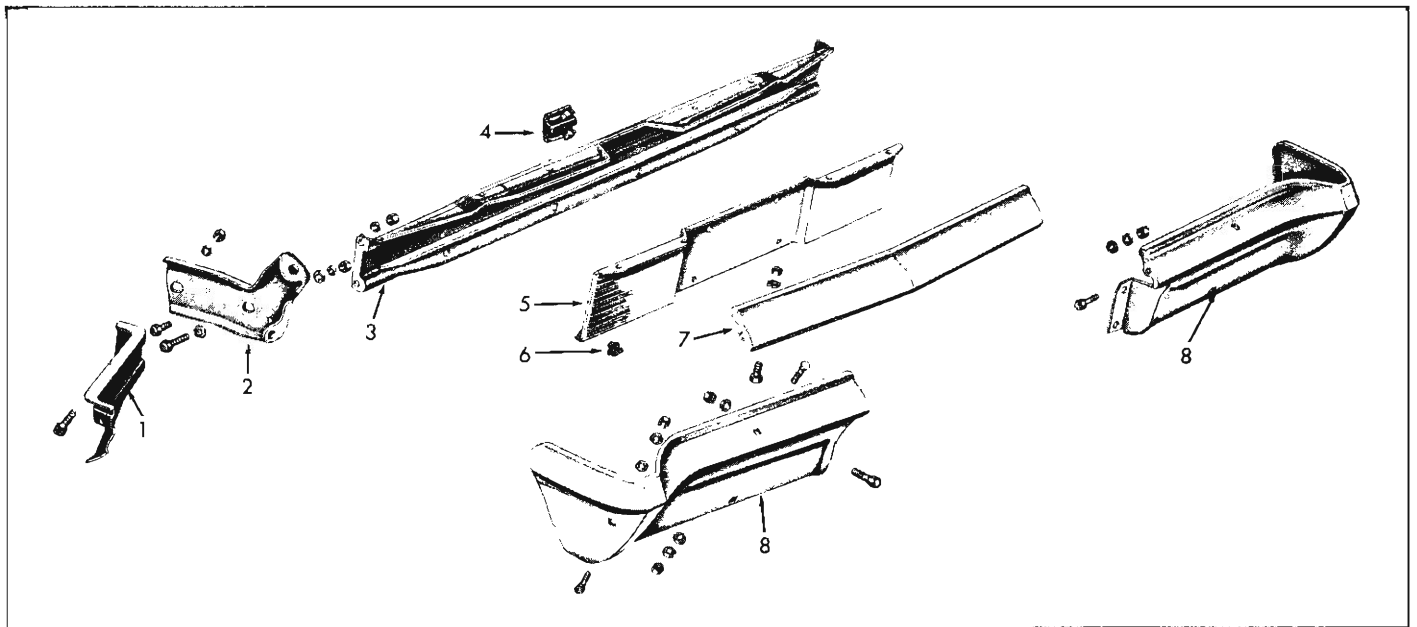


Fig. 98—Exploded View of Rear Bumper

- |                                  |                      |
|----------------------------------|----------------------|
| 1. Mounting Brace                | 5. Center Face Panel |
| 2. Mounting Bracket              | 6. Special Clip      |
| 3. Reinforcement                 | 7. Center Face Bar   |
| 4. Spacer (Not on Station Wagon) | 8. Bumper Face Bar   |

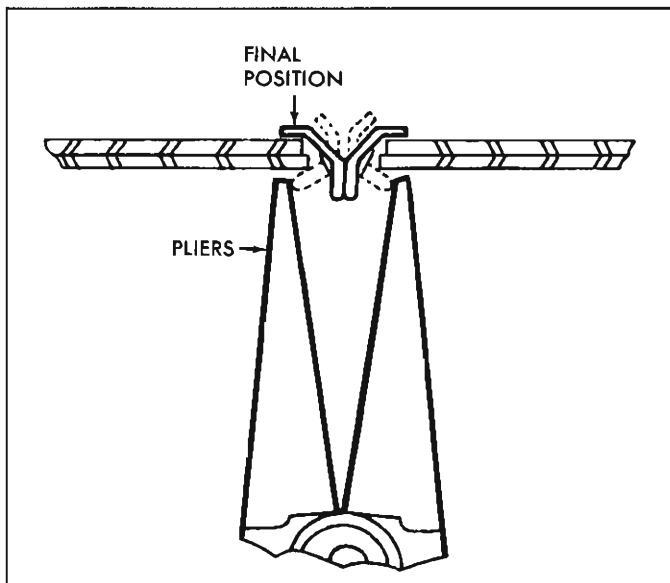


Fig. 99—Special Clip

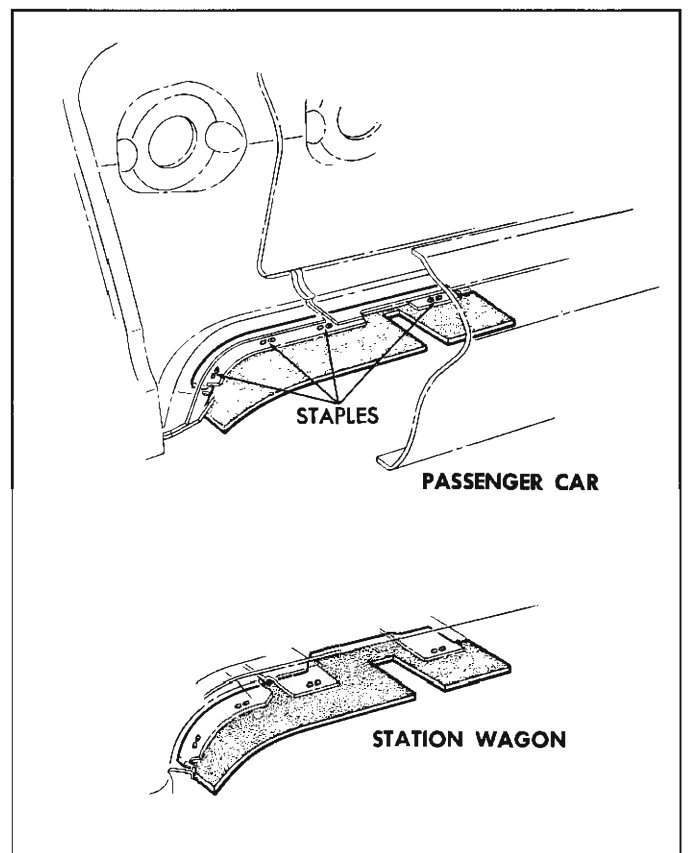


Fig. 100—Rear Bumper-to-Body Seal

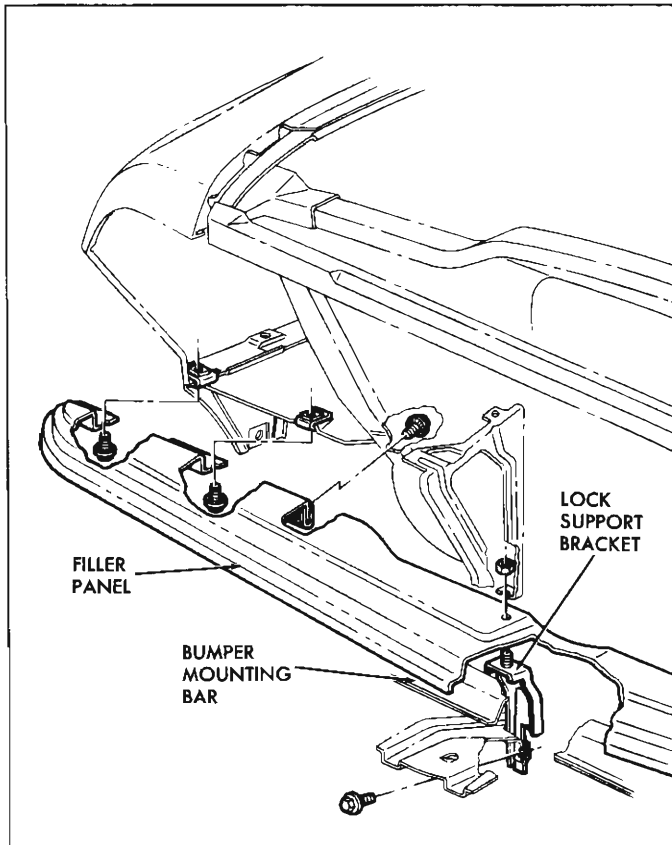


Fig. 101—Bumper Filler Panel

### Installation

Position filler panel in vehicle, align all screw and bolt holes with drift punch. Install all screws and bolts loosely. Do not tighten any screws or bolts until all are installed. Note that it will be necessary to aim head lamps as outlined in Section 9 of this Shop Manual.

### GRILLE ASSEMBLY (fig. 102)

#### Removal

1. Remove head lamp bezels.
2. Remove screws retaining grille end baffles to tie bar and bumper filler panel.
3. Remove lock support bracket from bumper mounting bar and remove nut from lock support bracket upper screws.
4. Remove screw retaining lock support bracket to lock support.
5. Remove grille assembly from vehicle.

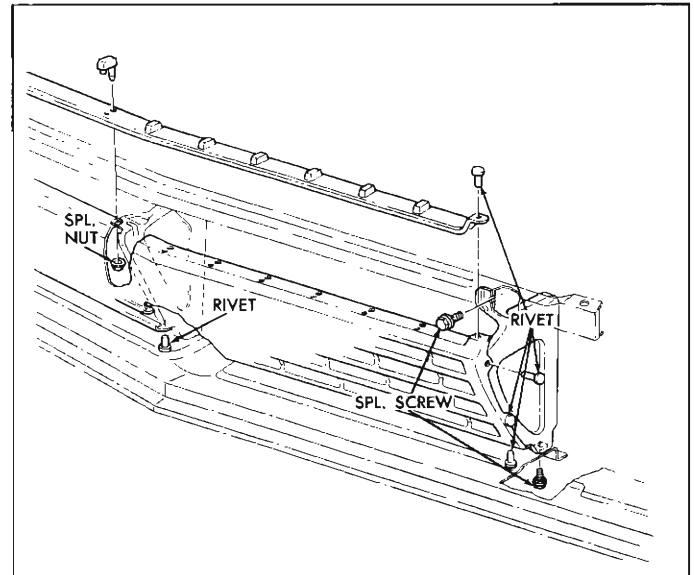


Fig. 102—Grille Assembly

### Repairs

If hood lock support and end baffle assemblies are undamaged, they may be transferred to new grille by drilling out and removing the rivets retaining them to the old grille. Attachment to new grille may be made by using either rivets, screws and nuts or patent clips.

### Installation

1. Position grille in vehicle aligning all screw holes. Be sure all retaining screws are started before any final tightening is done.
2. Install head lamp bezels.
3. Check head lamp aiming as outlined in Section 9 of the shop manual.

### BATTERY TRAY (fig. 103)

#### Removal

1. Disconnect battery cables.
2. Remove screw and nut retaining battery hold-down assembly and remove battery from vehicle.
3. Remove four screws retaining battery tray assembly to fender skirt and radiator support, and remove battery tray from vehicle.

#### Installation

1. Position battery tray on fender skirt and install cap screws.

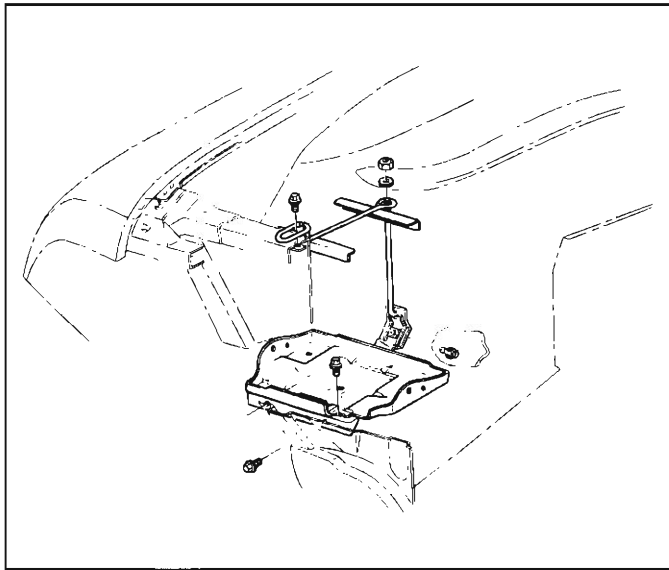


Fig. 103—Battery Tray

2. Place battery in tray and install retainer assembly.
3. Install battery cables.

## RADIATOR SUPPORT (fig. 104)

### Removal

1. Remove head lamp assemblies as outlined in Section 9.
2. Remove bumper assembly, grille assembly, filler panel, horns, voltage regulator, battery tray, etc., as outlined in this section.
3. Remove screws retaining radiator to radiator support. Note that it is not necessary to drain radiator or to disconnect radiator hoses from engine if radiator is supported in vehicle.
4. Remove two screws retaining each end of tie bar to fender assembly. Remove two screws retaining tie bar to hood catch assembly and remove tie bar from vehicle.
5. Remove remaining screw retaining fender flange to top surface of radiator support.
6. Remove screw located immediately rearward of screw removed in Operation 5 and under fender flange. Figure 105.
7. Remove screw retaining radiator support to forward edge of fender skirt.
8. Remove mounting bolts retaining radiator support to each frame horn. Record number of shims found at each mount.
9. Spread fenders apart enough to allow radiator support to be removed from vehicle.

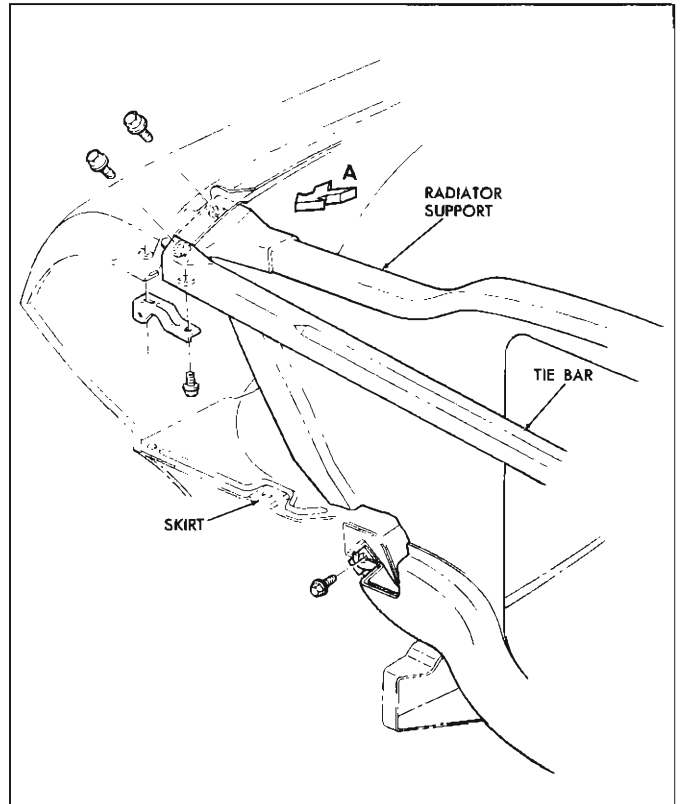


Fig. 104—Radiator Support and Tie Bar

### Installation

1. Position radiator support on vehicle, aligning mounting screw and bolt holes with drift punch.
2. Install cap screws and bolts loosely until all are started; refer to Disassembly procedure for location.
3. Replace all parts removed in Operation 2 in Disassembly procedure referring to write-up for part involved.
4. Aim head lamps as outlined in Section 9 of this book.

## FRONT FENDER ASSEMBLY

### Removal

1. Remove four screws retaining each head lamp bezel.
2. Referring to Figures 104 and 105: Remove two screws retaining fender to radiator support. Remove one screw retaining fender to tie bar. Remove one screw retaining fender to tie bar extension.
3. Referring to Figure 96: Remove one screw from bumper tip.

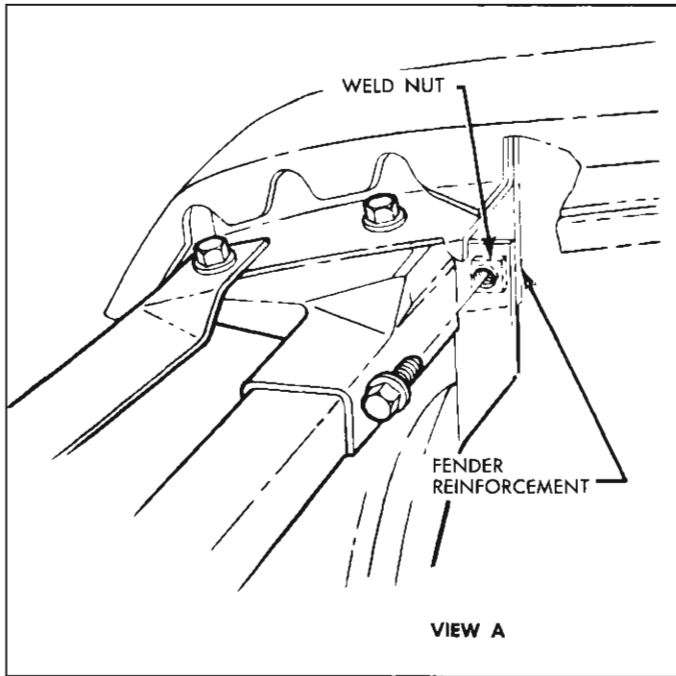


Fig. 105—Radiator Support Installation

4. Referring to Figure 106: Remove eight screws retaining fender to skirt.
5. Referring to Figure 94: Remove one screw retaining fender to rocker panel and record number of shims found at this location. Remove one

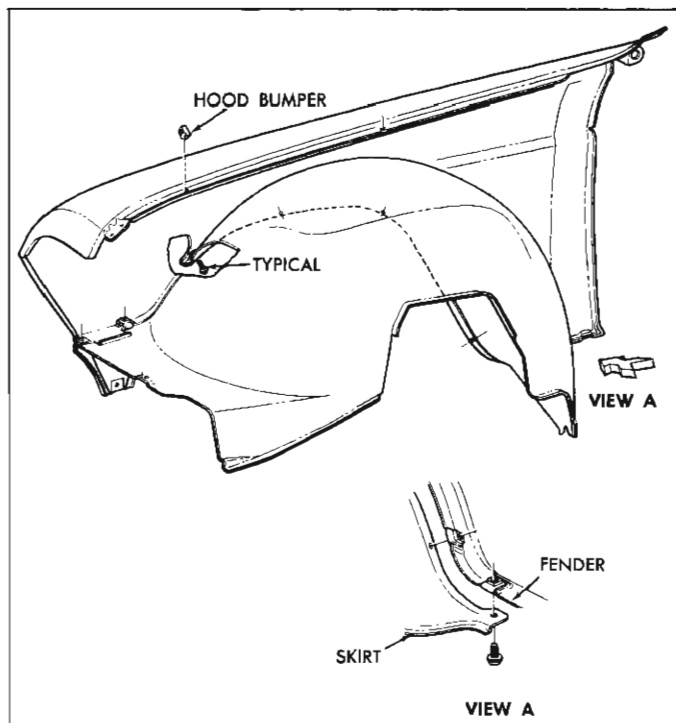


Fig. 107—Fender-to-Fender Skirt Attachment

screw retaining fender to cowl and record number of shims found at this location.

6. Remove two screws retaining fender to hood hinge. Remove fender from vehicle.

### Installation

When replacing fender, all screws should be installed loosely. Refer to disassembly procedure for location of screws. The shimmed screws located at rocker panel and cowl should be installed and adjustments should be made before tightening any of the other screws. Always start adjustment with original amount of shims, then add or subtract shims as required.

### FRONT FENDER TRIM

Figure 107 illustrates correct installation position of fender trim with dimensions for installation of

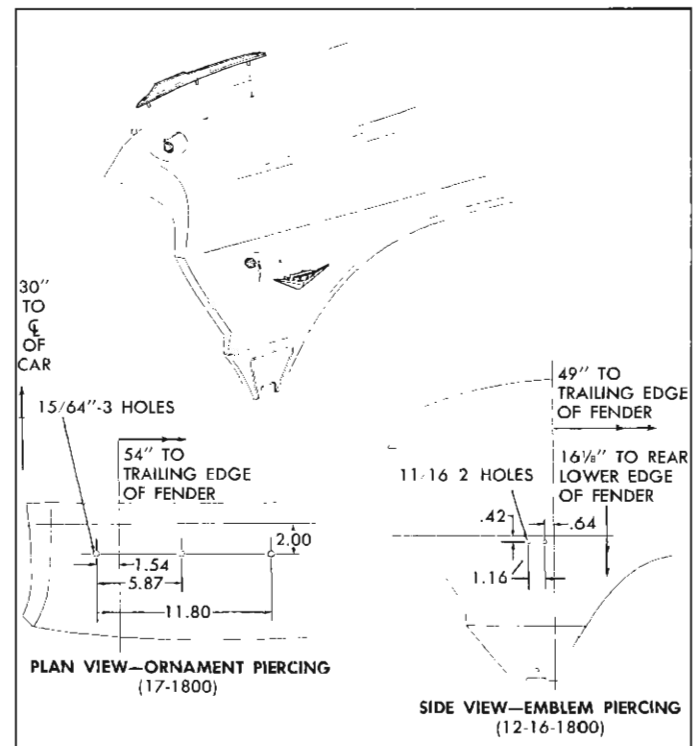


Fig. 107—Front Fender Trim Installation

trim on service fender. If fender spear moulding is to be replaced without removing fender from vehicle, proceed as follows:

1. Open front door and remove rearmost trim retaining nut as shown in Figure 108.
2. To gain access to remaining trim retaining clips, remove skirt assembly as outlined in the following section.



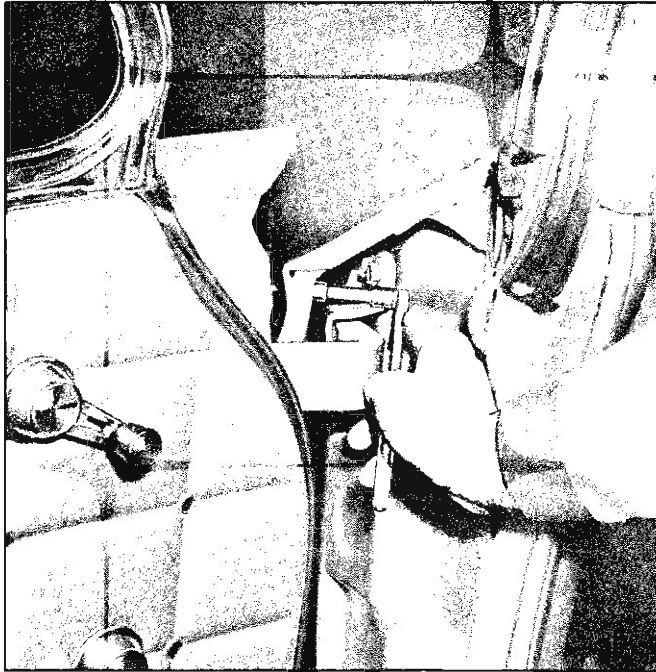


Fig. 108—Removing Molding Rear Nut

## FRONT FENDER SKIRT ASSEMBLY

### Removal

1. Jack up front end of vehicle with front suspension hanging free and remove front wheel.
2. Remove all wires, hoses, etc. attached to skirt. Note that it is not necessary to remove battery tray if working on right hand side of car.

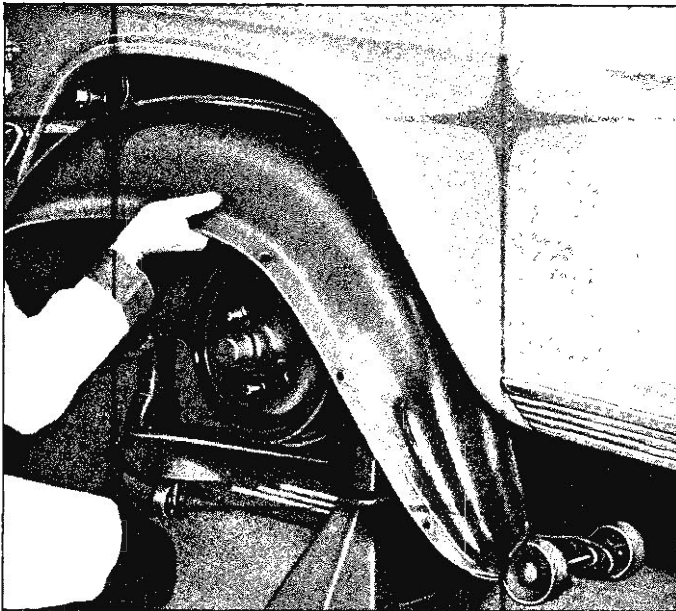


Fig. 109—Removing Front Fender Skirt

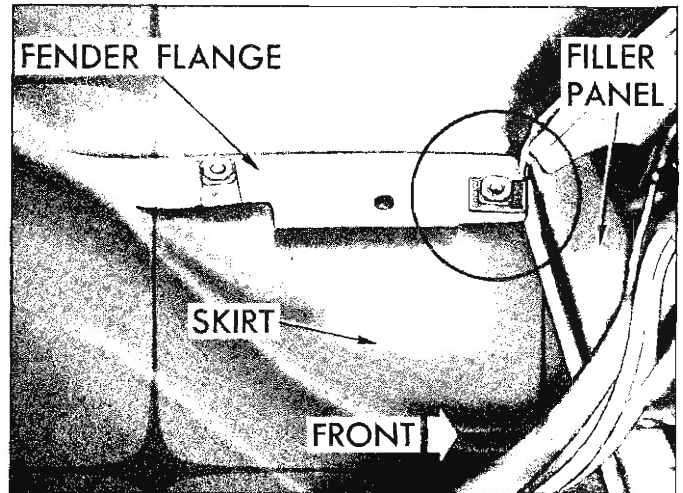


Fig. 110—Position of Left Front Fender Skirt

3. Remove cap screws retaining skirt to fender, bumper filler panel and hood hinges (in that order). Observe length of screws as they are removed; note that those screws installed at top of wheel opening are somewhat shorter than the others. Note also the location of pointed screws.
4. With all screws removed, lower the skirt toward floor, rotate the upper portion toward you and remove the skirt from the vehicle as shown in Figure 109.

### Installation

1. Position skirt on vehicle so that the front flange lies between the fender and bumper filler panel flanges in the area shown in Figure 110.
2. Align hole in crown of skirt with hole in hood hinge and loosely install cap screw with large cupped washer in place.
3. Align holes and install remaining screws; do not tighten until all screws are started. Be sure that short screws and pointed screws are installed in locations from which they were removed.
4. Install all wiring and/or hoses removed previously.
5. Install wheel and lower vehicle to floor.

## FENDER AND SKIRT ASSEMBLY

### Removal

1. Remove four screws retaining head lamp bezel and remove bezel.
2. Remove battery and battery tray (right hand fender and skirt assembly only) as outlined in this section.

3. Remove wiring harness, heater hoses, ect., which may be attached to the fender skirt.
4. Proceed with removal, following operations 1 through 6 under Front Fender Removal. Note, however, that it will not be necessary to remove the eight screws which hold fender to skirt in order to remove fender and skirt assembly from vehicle.

### Installation

When replacing the assembly, all screws should be started and left loose. The shimmed mounts located at the rocker panel and cowl should be installed and adjustments made before any other screws are finally tightened.

If the assembly is to be removed and replaced for some reason other than collision damage, indexing marks may be made at the shimmed mounts to make reassembly easier. Inspect skirt seals at this time and replace any which are defective (fig. 111).

Refer to disassembly procedure for location of all mounting screws.

### HOOD ASSEMBLY

Hood may be removed either with or without hinges. To shorten aligning time, hood hinge plates may be located by scribing a mark on hood and/or hood mounting bracket which outlines entire plate. See Maintenance and Adjustments - Hood Hinge for hood adjustment procedure. Hood hinge springs may be easily and safely removed and installed through the use of Tool J-9559 as follows:

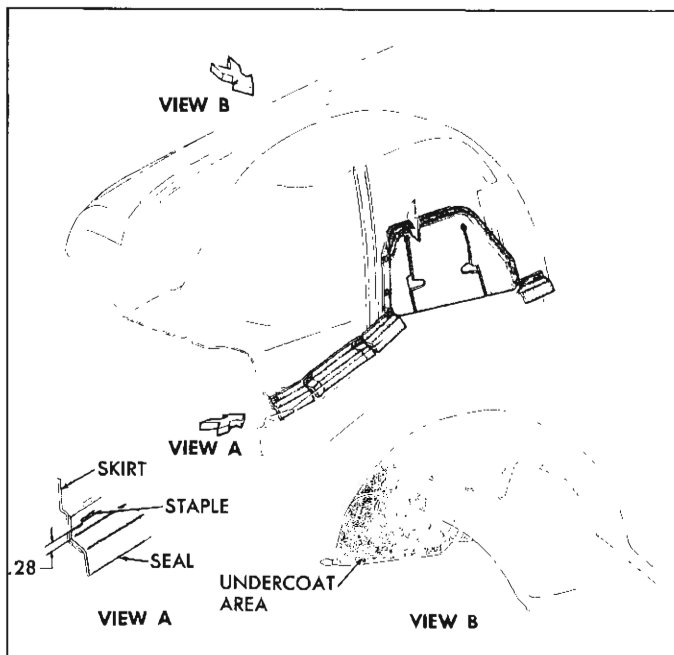


Fig. 111—Skirt Seals

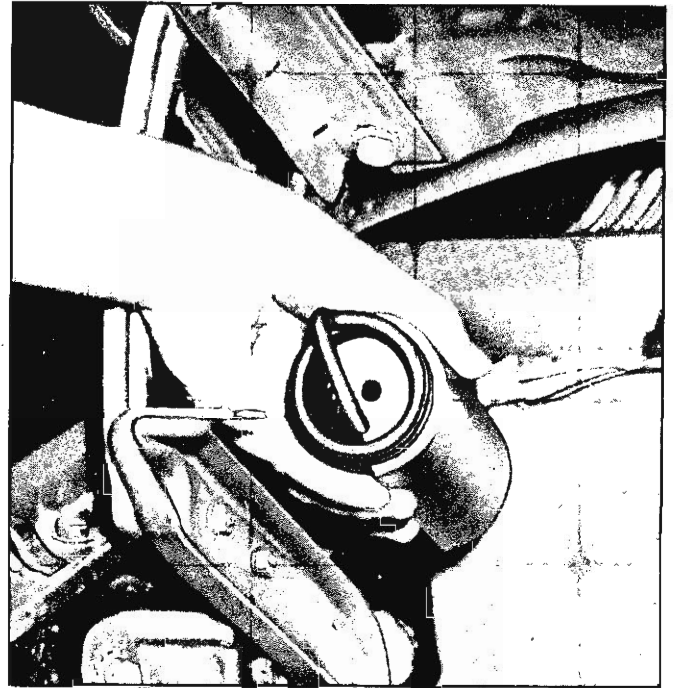


Fig. 112—Removing Spring with J-9559

1. With hood opened only far enough to allow passage of mechanic's arm between hood and fender, insert ends of J-9559 (through bolt removed) between coils of spring until barrel of tool contacts outer diameter of spring.

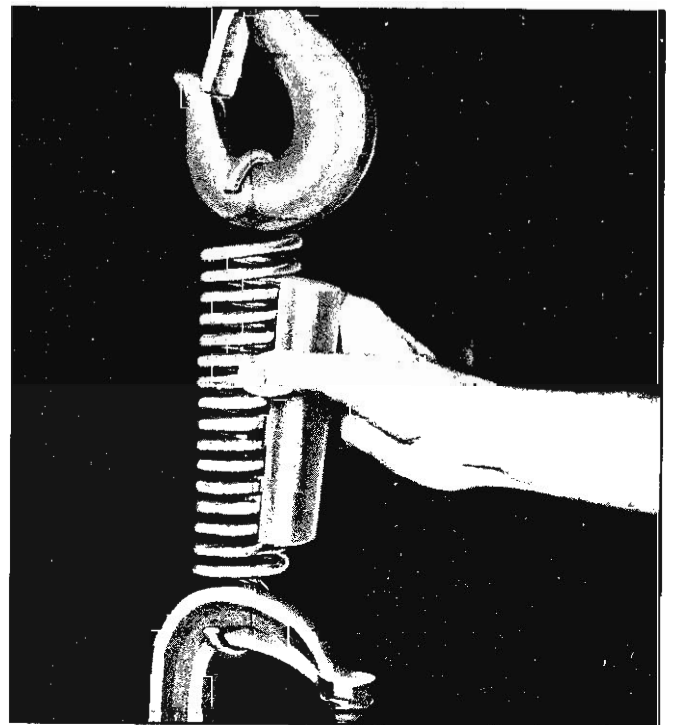


Fig. 113—Installing J-9559 in New Spring

## CHASSIS SHEET METAL 14-80

2. Open hood full while still holding spring (with tool installed) in hand; when hood is near fully opened position, spring may be removed as shown in Figure 112.
3. As soon as spring is removed, insert long bolt supplied with J-9559 through holes in end of tool (passing it through spring) and install nut on bolt.

Spring may be removed from J-9559 or J-9559 may be installed in a new spring by the following method.

1. Place a closed 6 or 8 inch "C" clamp in a vice or fasten it to a heavy bench top (bench should be fastened to floor).
2. Hook one end of spring in clamp and the other end in hook of chain hoist, "cherry-picker" or equivalent, as shown in Figure 113.
3. Stretch the spring enough to allow insertion of J-9559. Install through bolt if spring is not to be installed on hinge at once.

### HOOD LOCK ASSEMBLY (fig. 114)

#### Removal

1. Remove catch assembly as follows:

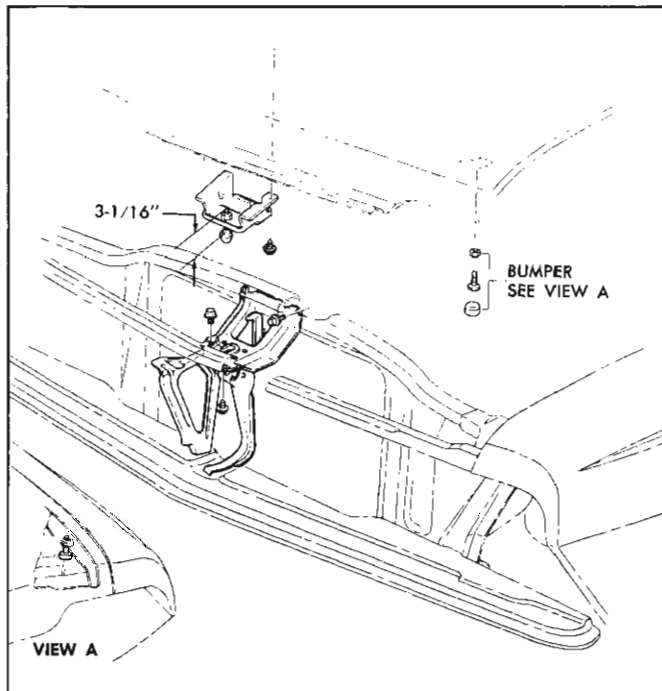


Fig. 114—Hood Catch Assembly

- a. Remove two cap screws retaining catch assembly to radiator support.
- b. Remove cap screw retaining catch assembly to catch support assembly
- c. Remove two screws retaining catch assembly to fender tie bar.

2. Before removing hood lock plate from hood, locate position on hood by scribing around "feet" of lock plate. Remove four cap screws retaining lock plate to hood and remove lock plate from vehicle.

#### Installation

1. Install both catch and lock assemblies in reverse order of removal procedure.
2. Align as outlined under Maintenance and Adjustments - Hood Catch.

### HOOD TRIM AND INSULATION

Figure 115 shows the installation details of both the hood ornamentation and insulating pads. The hood emblem and molding retaining nuts may be reached from the underside of the hood panel.

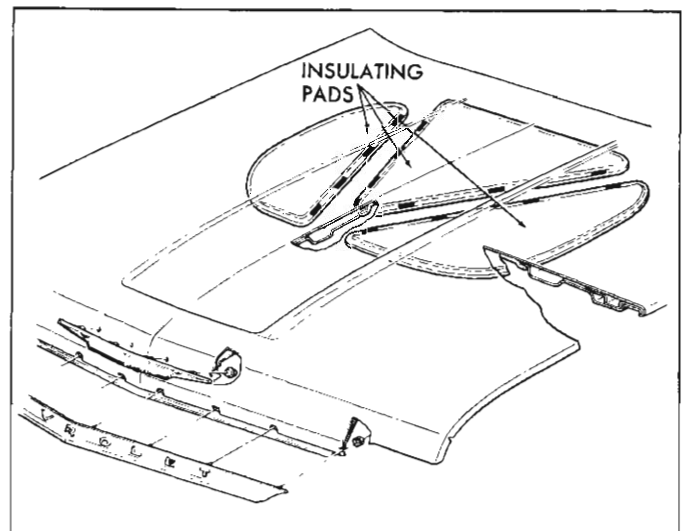


Fig. 115—Hood Trim and Insulation

## SPECIAL TOOLS

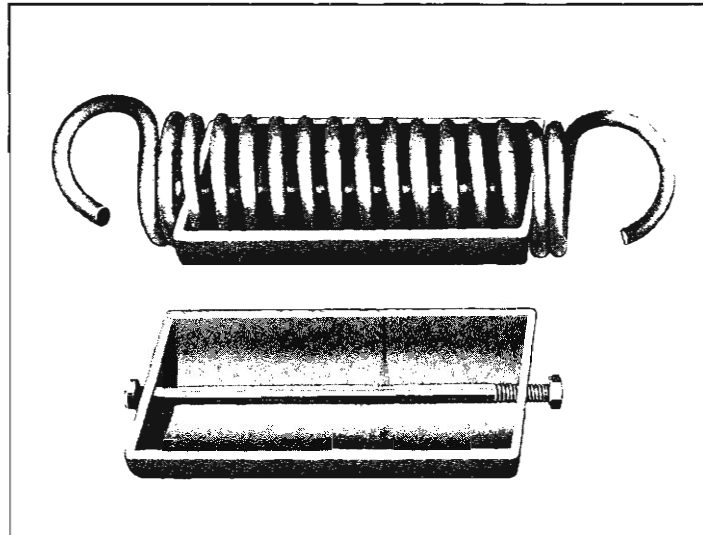


Fig. 116—Special Tools—Sheet Metal

1. J-9559 Hood Spring Tools

# SECTION 15

## ACCESSORIES

### CONTENTS OF THIS SECTION

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Speed and Cruise Control .....	15-31

## AIR CONDITIONING SYSTEMS

### GENERAL DESCRIPTION

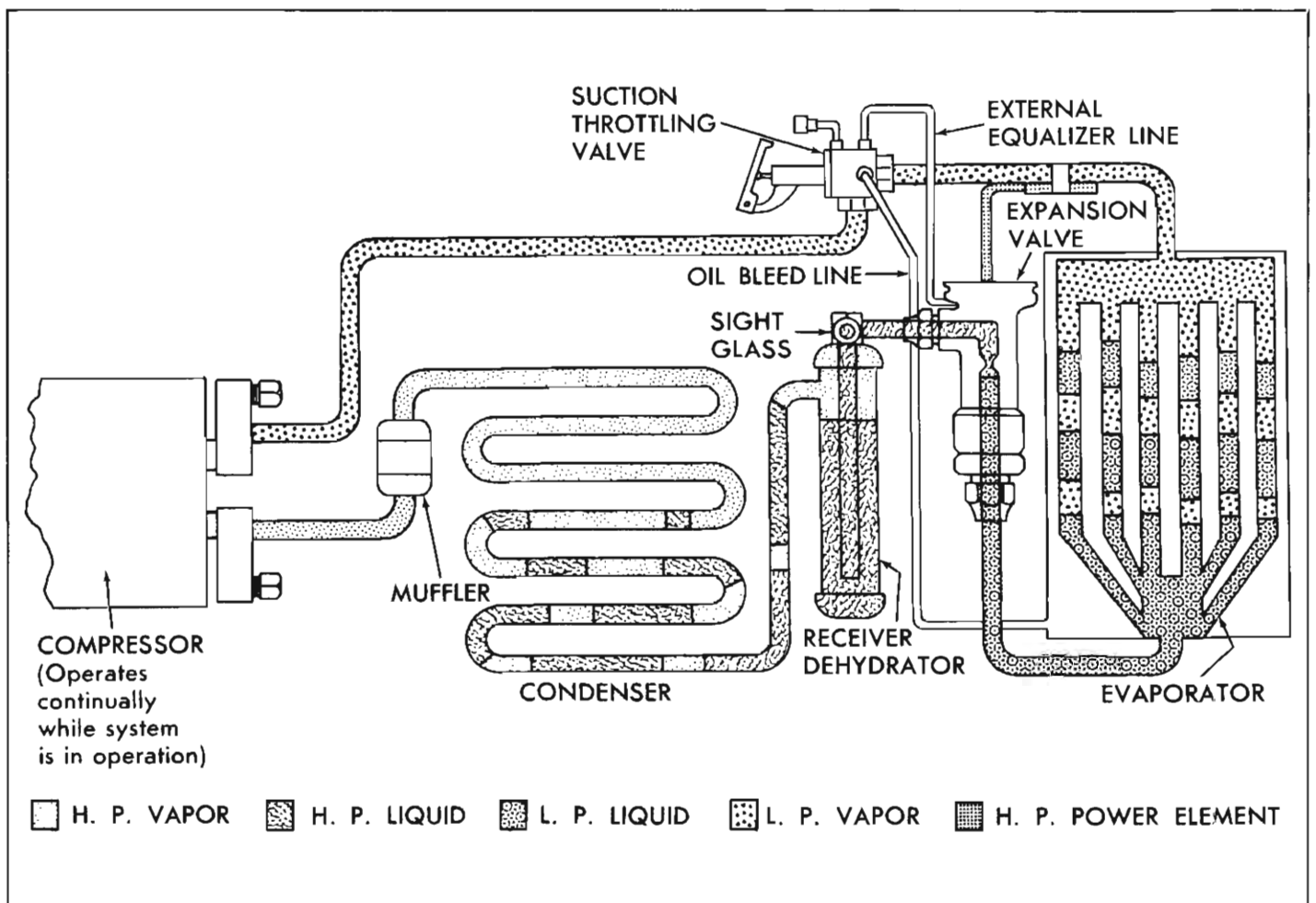


Fig. 1—Cycle of Operation - All Weather System

Both the All Weather and Cool Pack Systems remain much the same as covered in the 1961 Passenger Car Shop Manual, however both systems have been improved due to the use of an entirely new six cylinder compressor in place of the former five cylinder model. This new compressor is smaller and quieter than past models and is completely field serviceable. However, revised oil checking procedures are necessary. A muffler is utilized on the compressor discharge connector line to reduce gas pulsation and provide a quieter operating system.

Another major change, in the All Weather System only, is the use of a Suction Throttling Valve, providing more effective and efficient means of temperature control, in place of the Hot Gas Valve used in past model years.

A repositioned Receiver-Dehydrator, making necessary revisions in removal and installation procedures, is used in both systems.

A selenium rectifier is utilized in each system as a night blower-speed cutback feature. When the headlights are being used, the selenium rectifier will not allow the air conditioning blower to be operated above medium speed. This feature was present in both 1961 systems but entered production too late to be covered in the 1961 Passenger Car Shop Manual.

The suction line on the Cool Pack system has been increased from 1/2" diameter to 5/8" diameter. This change has made it necessary to relocate the expansion valve bulb down to the suction manifold of the evaporator core.

Only new or revised service information will be covered in this manual.

### Suction Throttling Valve

The suction throttling valve, operating on a spring pressure vs. suction pressure basis, controls evapo-

rator pressure by "throttling" or choking off the freon suction line when evaporator pressure drops below a predetermined setting. With the line thus restricted, the pressure in the evaporator rises. As the pressure rises above the valve setting, the valve will open as required. In this way the predetermined evaporator setting is accurately maintained. A manual lever at the suction throttling valve, actuated by the COLD lever on the control panel through a bowden cable, permits adjustment of the cooling capacity of the evaporator. An adjustment is provided on the valve to set minimum evaporator pressure, thus preventing evaporator freeze-up.

Operation of the suction throttling valve differs considerably from the hot gas valve used in past Chevrolet systems. For instance, during higher speed operations with the STV in a throttled condition (system not calling for cooling), compressor inlet pressure may be 15 to 20 psi lower than evaporator pressure. This inlet pressure may drop as low as 10 to 15 psi with resultant freon temperatures of 5 to 10°F. Minimum load conditions may result in even lower compressor inlet pressures, in extreme cases even reaching 6 inches to 8 inches of vacuum. Frosting or icing of the compressor body is probable under these conditions and is to be expected.

Since the pressures at the compressor inlet are obviously unreliable for performance testing, an evaporator gauge fitting provided at the suction throttling valve is used to measure actual evaporator pressure.

The expansion valve external equalizer connection and the oil bleed line from the evaporator bottom tank are both connected to the downstream side of the suction throttling valve. The oil bleed line insures adequate compressor lubrication during periods of low Freon charge by allowing freon and oil from the evaporator lower tank to bypass the closed suction throttling valve.

## INSPECTION AND PERIODIC SERVICE

Information contained in this section of the 1961 Passenger Car Shop Manual applies as well to the 1962 systems except for any reference to the Hot Gas Valve. One additional item should be added to the Periodic Service information.

### PERIODIC SERVICE

- Every week - during winter months or other periods when the system is not being operated regularly - run the system, set for maximum cooling, for 10 or 15 minutes to insure proper lubrication of seals and moving parts.

## MAINTENANCE AND ADJUSTMENTS

### PERFORMANCE TEST

Conduct the performance test on the Cool Pack System in the same manner as described in the 1961 Manual. The use of the Suction Throttling Valve in the All Weather System makes the compressor suction gauge fitting unsuitable for checking evaporator pressure. Therefore, when making the All Weather System Performance Test the low pressure gauge line must be connected to the evaporator gauge connection on the suction throttling valve through a

#### All Weather System

Grille Air Temperature	70°	80°	90°	100°	110°	120°
Engine RPM	1500 RPM					
Compressor Head Pressure	130-150	155-175	180-200	190-210	220-235	250-260
Suction Pressure at STV	28 psi					
Discharge Air Temperature at R.H. Outlet	38°--44*					

\*Depending on ambient temperatures.

gauge line adapter since this is a cored valve fitting. However, do not attempt to charge the system through the suction throttling valve connection. Always charge through the compressor connection.

NOTE: The cap (with gasket) must be installed on the STV gauge connection at all times except when making evaporator pressure checks.

Because of the new compressor, 1961 performance data is incorrect for 1962. Correct 1962 performance data is given below.

#### Cool Pack System

Grille Air Temperature	70°	80°	90°	100°	110°	120°
Engine RPM	1500 RPM					
Compressor Head Pressure	125-135	135-145	165-175	190-200	220-230	245-255
Compressor Suction Pressure	11	13	14	16	16	17
Discharge Air Temperature at R.H. Outlet	35°-40°	35°-40°	36°-41°	38°-43°	38°-43°	40°-45°

## INITIAL CHECKS AND ADJUSTMENTS

### SUCTION THROTTLING VALVE (All Weather System)

The suction throttling valve controls the discharge

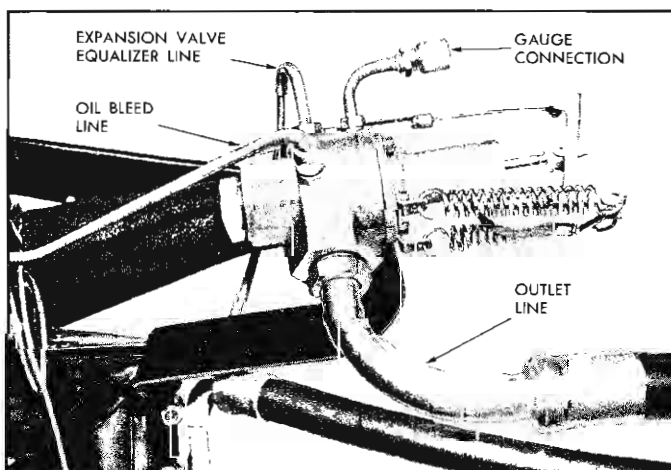


Fig. 2--Suction Throttling Valve

air temperature by regulating evaporator pressure, thus controlling the cooling capacity of the evaporator. The valve, properly adjusted, should hold the evaporator at the pressure indicated on the All Weather System Performance Data Table. Evaporator pressure falling below this point will result in a "freeze-up" causing a reduction or complete loss of cooling capacity.

### Checking For Proper Suction Throttling Valve Operation

If it is suspected that the suction throttling valve is malfunctioning, proceed as follows:

1. Set up vehicle as outlined under Performance Test after first checking suction throttling valve bowden cable for proper operation and adjustment.
2. Movement of the COLD control lever from maximum to minimum cooling should result in a definite change in evaporator pressure.

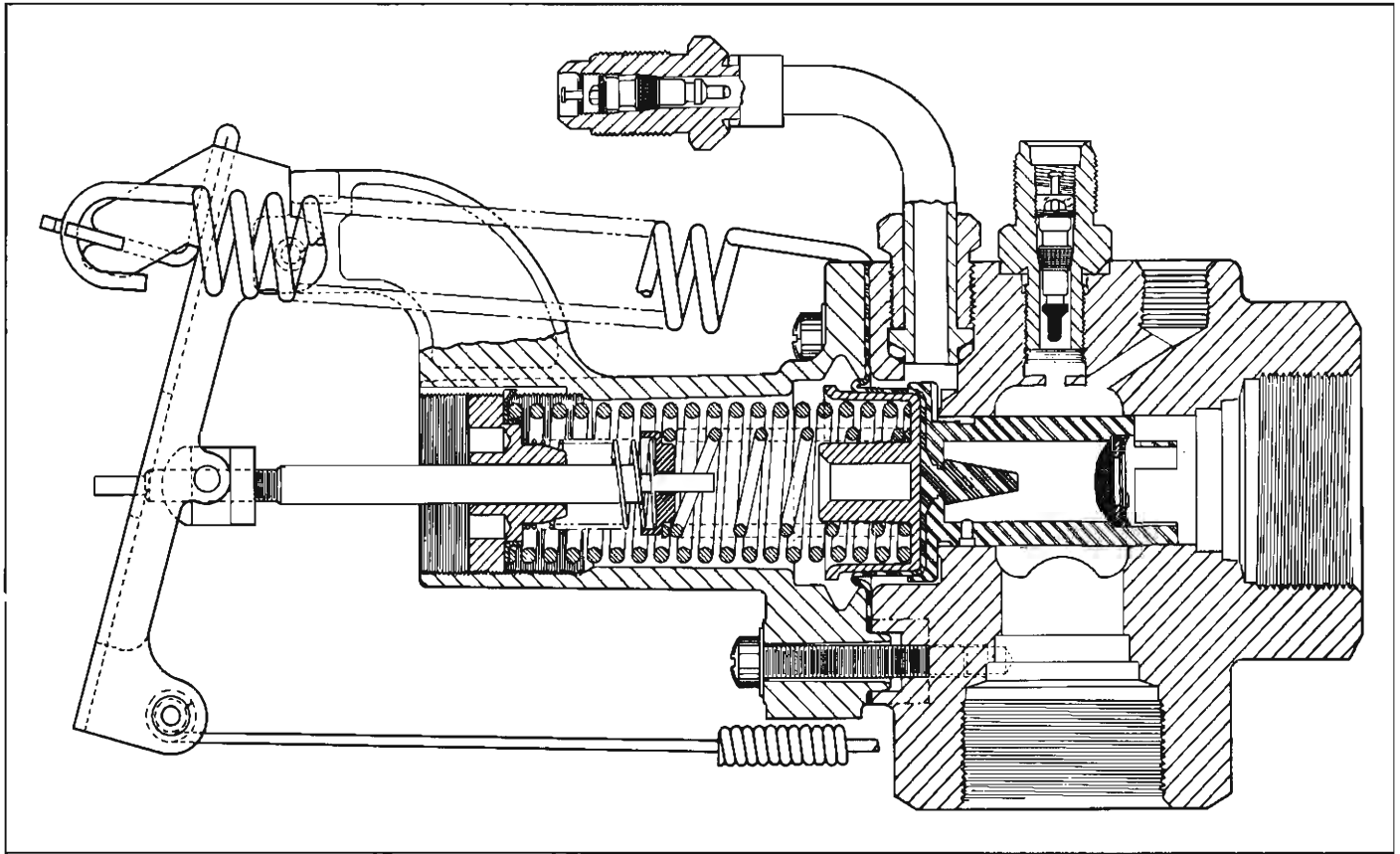


Fig. 3—Suction Throttling Valve - Sectioned View

3. If no pressure change is noted, using Tool

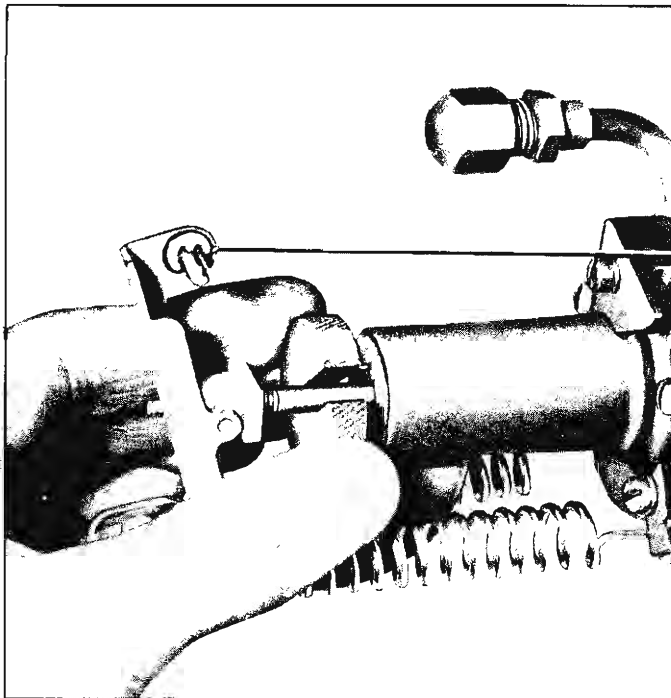


Fig. 4—Adjusting Suction Throttling Valve

J-9505, turn the adjusting screw in and out (fig. 4).

4. If there is still no change in evaporator pressure:
  - a. The valve is set too low and has iced up. Move the valve lever toward the rear of the vehicle, its warmest position, and allow it to remain there for several minutes. This should thaw out the valve and result in pressure changes in Steps 2 and 3 above. Valve should then be properly adjusted.
  - b. The valve is defective and should be repaired or replaced.

#### Adjustment

If, in the checking procedure outlined above, the suction throttling valve is found to be operating properly, it may be correctly set, if necessary, in the following manner:

1. The vehicle should remain set up as in the performance test. After the system has settled out the suction pressure should read as indicated in the All Weather System performance test.
  2. a. If the valve is properly set, turn off the en-



- gine and remove the gauge lines.
- b. If the pressure is incorrect, adjust the valve as follows:
3. Hold the lever in its fully extended (maximum cold) position by moving the COLD lever on the control panel all the way to the right.
  4. Use Tool J-9505 to turn the adjustment screw in one turn increments until suction pressure reaches the proper level. Turn clockwise to raise and counterclockwise to lower the pressure.

**CAUTION:** If the evaporator pressure falls too low the suction throttling valve piston will freeze up and further movement of the adjusting screw will have no effect. Should this occur, move the COLD control lever fully to the left until the condition is corrected. Then carefully readjust the valve.

5. Check for proper valve operation by moving the COLD control lever back and forth and observing the suction gauge for corresponding pressure changes.
6. Remove the gauge set.

## DIAGNOSIS

The diagnosis information contained in the 1961 Manual will apply to the 1962 systems except that references to the hot gas valve should be read as "suction throttling valve".

Page 15-14 of the Diagnosis procedures refers,

under "Failure to Cool", to an air gap measurement of .035" to .045", and to checking and adjusting shims. This coil housing to rear clutch plate measurement and the shim adjustment will not be required on the 1962 compressor because of design changes.

## SYSTEM SERVICE OPERATIONS

### 1962 AIR CONDITIONING SYSTEM CAPACITIES

	Freon Charge	525 Viscosity Oil Charge
All Weather System	3 lb., 12 oz.	10 oz.
Cool Pack System	3 lb.	10 oz.

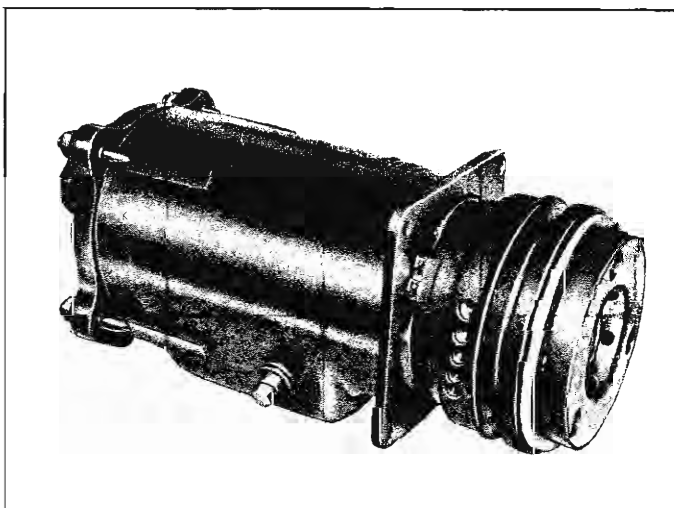


Fig. 5—Compressor

### COMPRESSOR

#### Suction and Discharge Connectors

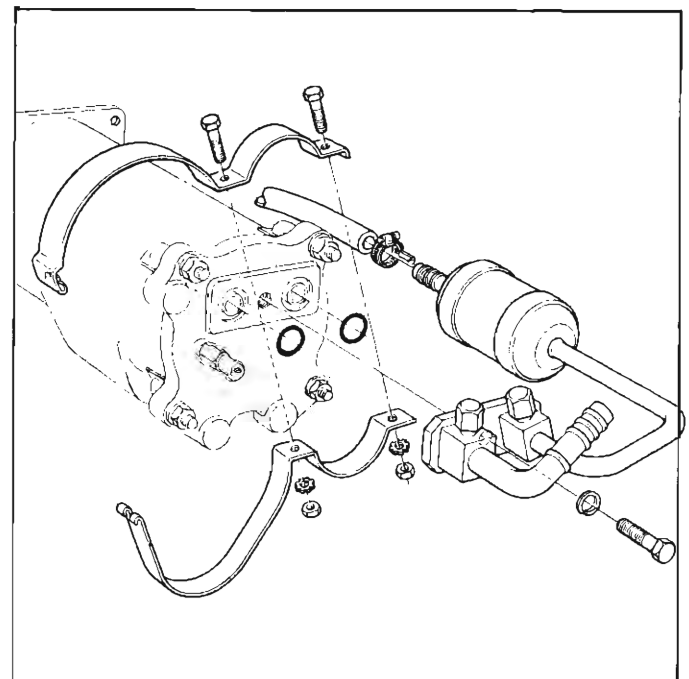


Fig. 6—Compressor Connector

Figure 6 illustrates the compressor connector in the 1962 All Weather system. All connectors, All Weather and Cool Pack, used for 1962 have valve core type fittings. No hand shutoff valves are used. Installation procedures given in the 1961 Manual will apply to the 1962 systems.

## REFRIGERANT LINE CONNECTIONS

### “O” Rings

Always replace the “O” ring when a connection has been broken. When replacing the “O” ring, first dip it in refrigeration oil. Always use a backing wrench on “O” ring fittings to prevent the hose from twisting and damaging the “O” ring. Do not overtighten. Correct torque specifications are as follows:

Metal Tube O.D.	Thread and Fitting Size	Steel Tubing Torque*	Aluminum Tubing Torque*
1/4	7/16	10-15	5-7
3/8	5/8	30-35	11-13
1/2	3/4	30-35	11-13
5/8	7/8	30-35	18-21
3/4	1 1/16	30-35	23-28

\* Foot Pounds

**NOTE:** Where steel to aluminum connections are being made, use torque for aluminum fittings.

### Checking and Adding Oil

Compressors are originally full charged with 10 oz. of Special Frigidaire 525 viscosity refrigeration oil. Design and configuration of the six cylinder compressor require a radical departure from the oil checking procedure used on the five cylinder compressor in past years.

In the six cylinder compressor it is not recommended that the oil be checked as a matter of course. Generally, compressor oil level should be checked only where there is evidence of a major loss of system oil such as might be caused by:

- A broken refrigerant hose.
- A severe hose fitting leak.
- A very badly leaking compressor seal.
- Collision damage to the system components.

To check the compressor oil charge, it is necessary to remove the compressor from the vehicle, drain and measure the oil.

### Checking Compressor Oil Charge

1. Run the system for 10 minutes at 1000-1500 engine rpm with controls set for maximum cooling and high blower speed.
2. Turn off engine, evacuate the system, remove compressor from vehicle, place it in a horizontal position with the drain plug downward and drain the oil into a clean container, measure and discard the oil.
3.
  - a. If the quantity drained was 4 fluid oz. or more, add the same amount of new refrigeration oil to the replacement compressor.
  - b. If the quantity drained was less than 4 fluid oz., add 6 fluid oz. of new refrigeration oil to the replacement compressor.
  - c. If a new service compressor is being installed, drain all oil from it and replace only the amount specified in Steps 3a and 3b above.
  - d. If a field repaired compressor is being installed, add an additional 1 fluid oz. to the compressor.
4. In the event that it is not possible to idle the compressor as outlined in Step 1 to effect oil return to it, proceed as follows:
  - a. Remove the compressor, drain, measure and discard the oil.
  - b. If the amount drained is more than 1 1/2 fluid oz. and the system shows no signs of a major leak, add the same amount to the replacement compressor.
  - c. If the amount drained is less than 1 1/2 fluid oz. and the system appears to have lost an excessive amount of oil, add 6 fluid oz. of clean refrigeration oil to replacement compressor, 7 fluid oz. to a repaired compressor.

If the oil contains chips or other foreign material, replace the receiver-dehydrator and flush or replace all component parts as necessary. Add the full 10 fluid oz. of new refrigeration oil to the replacement compressor.

**NOTE:** If the entire amount of oil cannot be added to the compressor on the bench, it may be necessary to use the oil injector method outlined in the 1961 Shop Manual to complete the charging procedure after the compressor has been reinstalled on the vehicle.
5. Add additional oil in the following amounts for any system components being replaced.

Evaporator . . . . . 3 fluid oz.  
 Condenser . . . . . 1 fluid oz.  
 Receiver-dehydrator . . . . . 1 fluid oz.

## COMPONENT PARTS SERVICE OPERATIONS

### CONDENSER AND/OR RECEIVER-DEHYDRATOR (All Systems)

The basic replacement information printed in the 1961 Manual is correct for the 1962 Condenser and Receiver-Dehydrator. However, the location external appearance of the units vary enough to warrant showing Figure 7 here to relocate mounting bolts

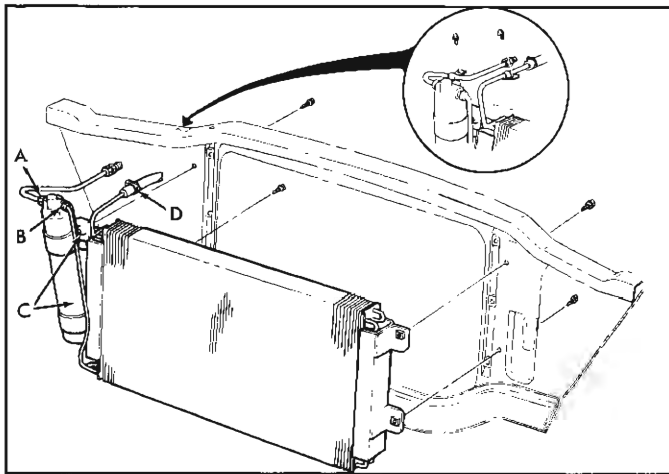


Fig. 7—Condenser and Receiver - Dehydrator

referred to in the 1961 instructions. Note also the fact that condenser inlet and receiver-dehydrator outlet lines are clip retained to the top of the radiator support.

### EVAPORATOR (All Weather System)

#### Removal

1. Purge the system of refrigerant, then remove the right fender and skirt.
2. Disconnect the high pressure line between the condenser and thermostatic expansion valve at the condenser and the line from the suction throttling valve, to the compressor at the suction throttling valve.
3. Complete the removal procedure as outlined in the 1961 Shop Manual.

### SELENIUM RECTIFIER (All Systems)

Figure 8 illustrates the Selenium Rectifier (adapter) assembly which has been used since early pro-

duction All Weather and Cool Pack Systems in 1961 and which will be carried over into the 1962 systems. Removal and installation procedures for the All Weather blower assembly and the Cool Pack evaporator assembly will remain the same as in 1961 except for the necessity of also disconnecting the wiring to this adapter.

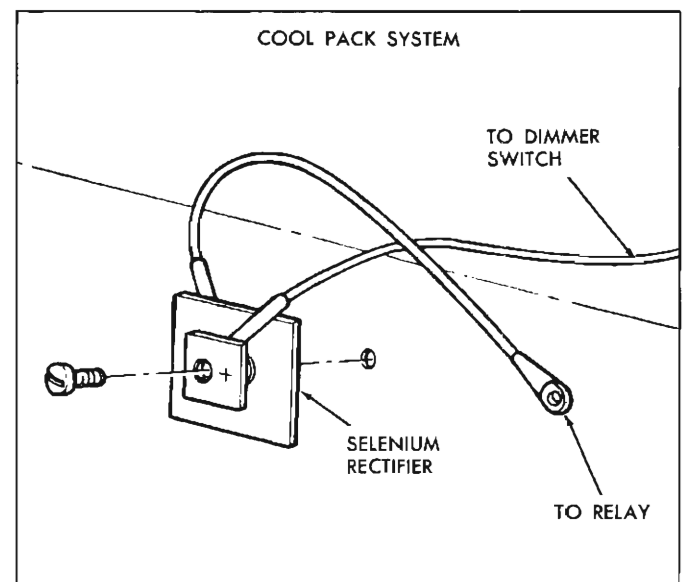
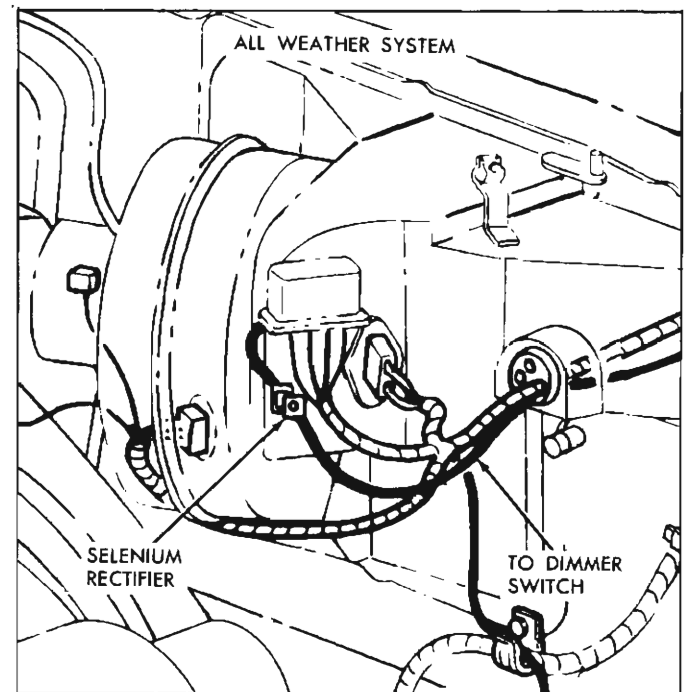


Fig. 8—Selenium Rectifier

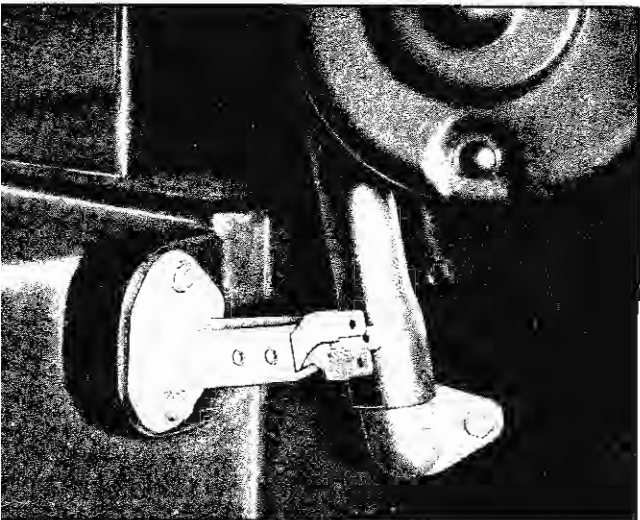


Fig. 9—Clutch Switch

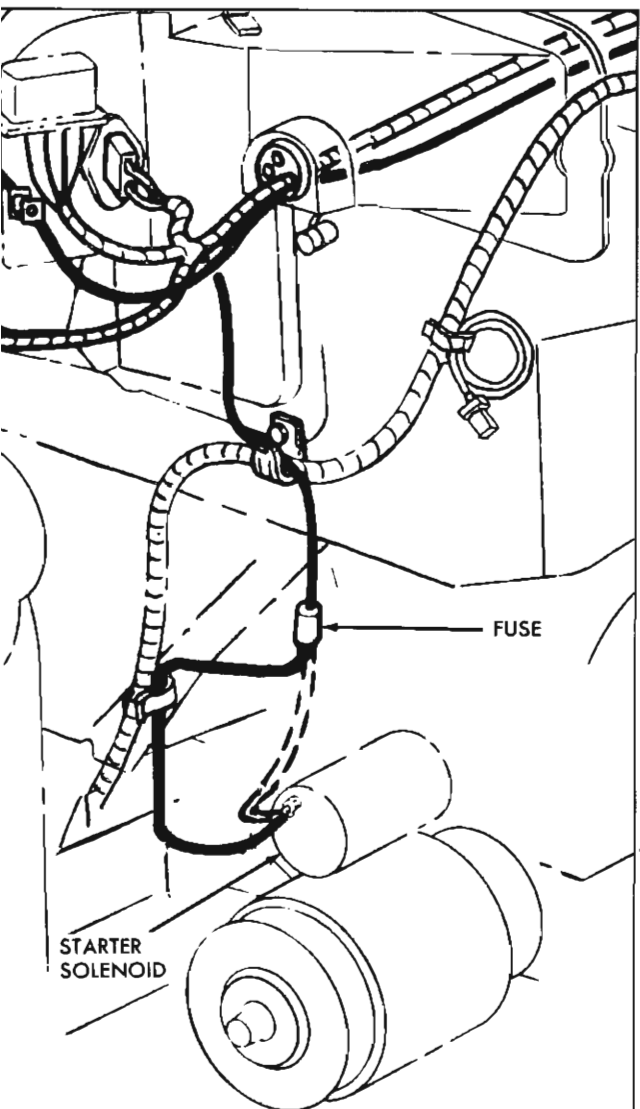


Fig. 10—Fuse Location

## BLOWER ASSEMBLY (All Weather System)

### Clutch Switch Replacement

The clutch switch is located on the blower assembly near the blower motor. It is actuated by the movement of the selector door controlled by the NOZZLE OUTLET knob on the air conditioning control panel. Normally closed, this switch is held open by the selector door when the door is positioned to allow air to flow to the heater core (NOZZLE OUTLET knob IN). When this knob is pulled OUT to permit air flow through the evaporator core, the selector door moves away from the switch allowing the switch to close, thus activating the compressor clutch.

In the event of a switch failure, the switch should be replaced. Remove the electrical connector, remove the switch from the blower assembly, install the new switch and electrical connector.

### FUSES

Two fuses are included in each air conditioning system. They are:

1. AN SAE 20 ampere fuse located in the main junction block. This fuse protects the entire air conditioning system except for the blower when operating at HIGH speed.
2. Since the blower, when being operated at HIGH speed, receives its current flow direct from the battery (through the BATT terminal of the starter solenoid), a second SAE 20 ampere fuse is located in the line between the starter and the blower to protect the blower motor.

### COMPRESSOR

In past model years a malfunctioning compressor had to be replaced with a service compressor because the internal mechanism was not considered field serviceable. This situation has been remedied in the 1962 air conditioning systems through the use of the completely new six cylinder compressor. Used in both All Weather and Cool Pack Systems, the new compressor is so constructed that the entire internal mechanism may be serviced as a unit or, if so desired, may be completely disassembled for replacement of components. These service operations, with the aid of trained personnel and the proper service tools, may be simply and easily performed, eliminating the costly necessity of replacing the entire compressor.

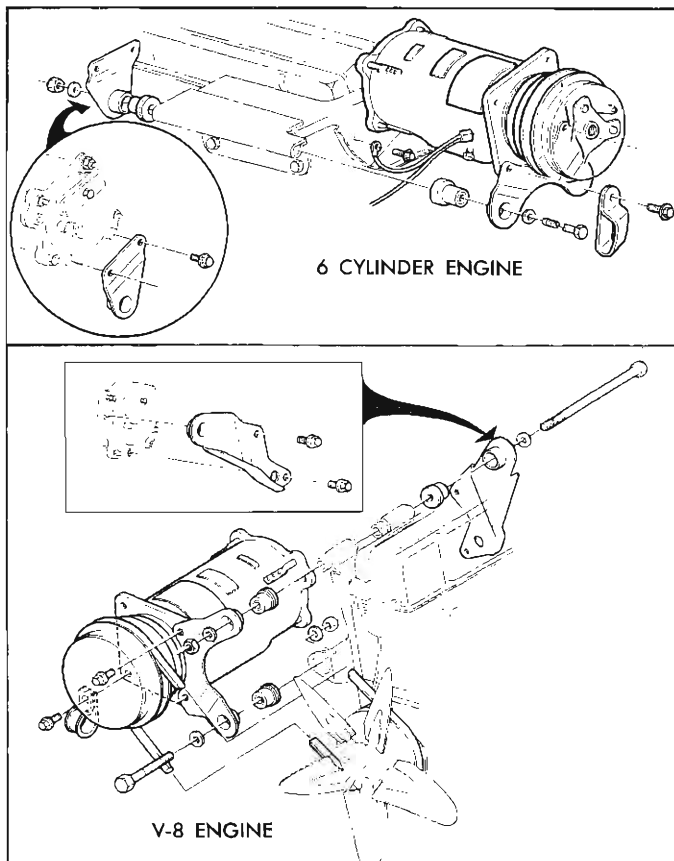


Fig. 11—Compressor Mounting

### Removal

1. Purge the refrigerant from the system as outlined in the 1961 Passenger Car Shop Manual.
2. Remove connector attaching bolt and connector. Seal connector outlets.
3. Disconnect electrical lead to clutch actuating coil.
4. Loosen brace and pivot bolts and detach belt.
5. Remove the nuts and bolts attaching the compressor brackets to the mounting bracket.
6. Before beginning any compressor disassembly, drain and measure oil in the compressor. Check for evidence of contamination to determine if remainder of system requires servicing.

### Installation

1. If oil previously drained from the compressor upon removal shows no evidence of contamination, replace a like amount of fresh re-

frigeration oil into the compressor before reinstallation. If it was necessary to service the entire system because of excessive contamination in the oil removed, install a full charge of fresh refrigeration oil in the compressor.

2. Position compressor on the mounting bracket and install all nuts, bolts and lockwashers.
3. Install the connector assembly to the compressor rear head, using new "O" rings. Tighten to 17 to 23 ft. lbs. torque.
4. Connect the electrical lead to the coil and install and adjust compressor belt.
5. Evacuate and charge the system as outlined in the 1961 Passenger Car Shop Manual.
6. Leak test the system and check for proper operation.

## MINOR SERVICE OPERATIONS

### Compressor Belt Tension Adjustment

Adjust the compressor belt to give 1/2" to 3/4" deflection under a fifteen lb. load measured midway between the compressor pulley and the crankshaft pulley.

### Hub and Drive Plate, Pulley, and Coil Housing

Service operations may be performed on the hub and drive plate, pulley and bearing assembly and coil housing assembly without the necessity of purging the refrigerant from the system or removing the compressor from the vehicle. The shaft seal assembly may also be serviced without removing the compressor from the vehicle but the refrigerant must first be purged from the system.

Pictures used in describing these operations show the compressor removed from the vehicle to more clearly illustrate the various operations.

### Hub and Drive Plate

#### Removal

1. If disassembly is being performed on a bench, mount support bracket J-9396 in a vice and attach the compressor to the bracket.

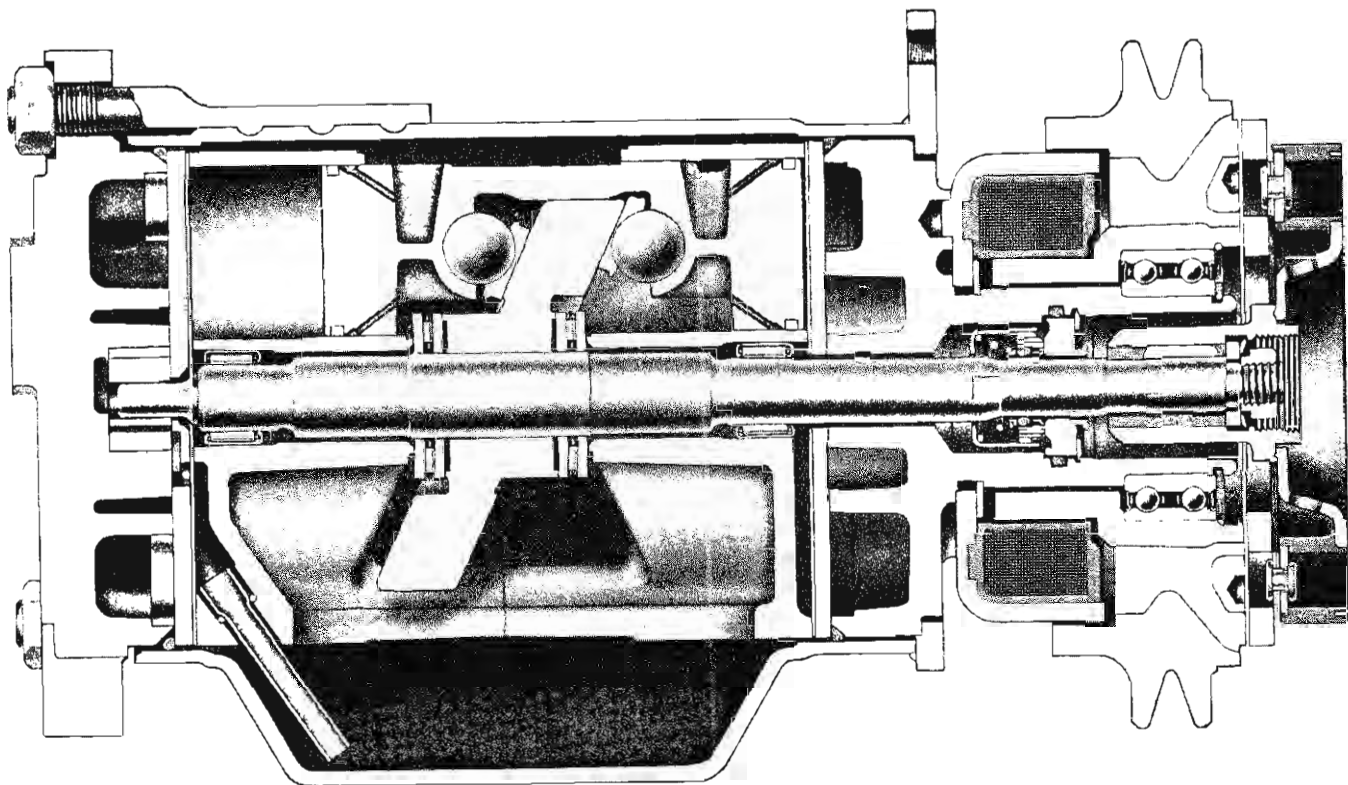


Fig. 12—Six Cylinder Compressor - Sectioned View

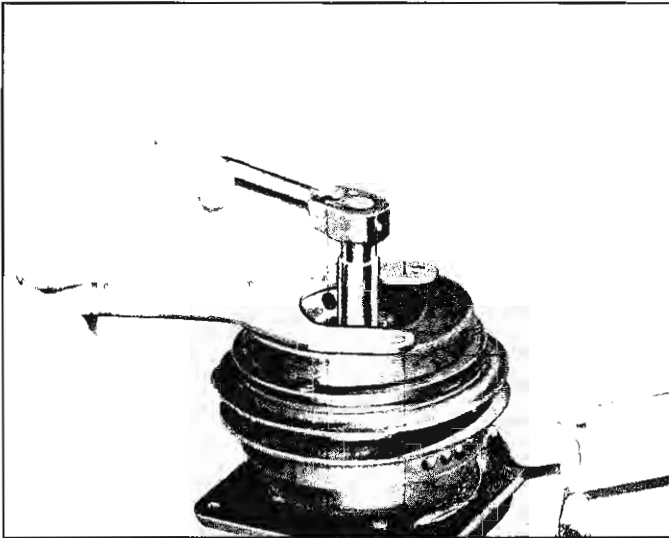


Fig. 13—Removing Shaft Locknut

2. Using drive plate holding Tool J-9403 and socket J-9399, remove the locknut from the shaft (fig. 13). Discard locknut.
3. Tool J-9401 may now be used to remove the hub and drive plate assembly (fig. 14).
4. Use snap ring pliers J-5403 to remove the retainer ring. Then remove the hub spacer.

**NOTE:** Carefully snug tool into place with wrench to insure engagement with threads.

**Inspection**

If the frictional surface shows signs of warpage due to excessive heat, the hub and drive plate should be replaced.

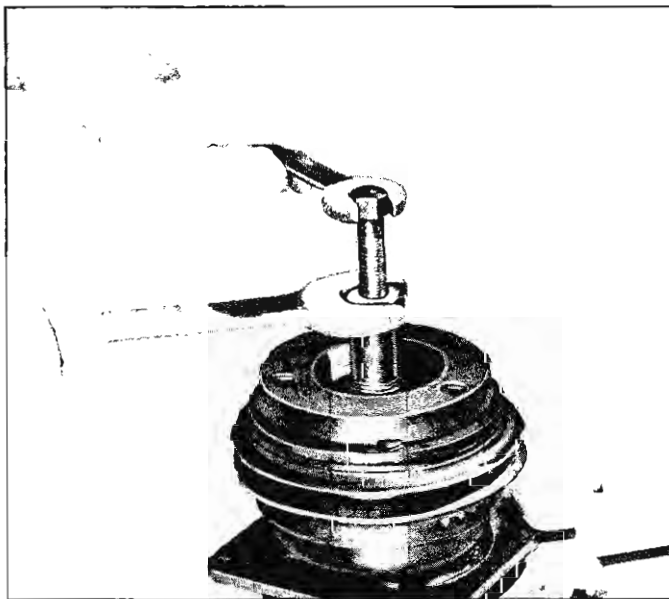


Fig. 14—Removing Hub and Drive Plate Assembly

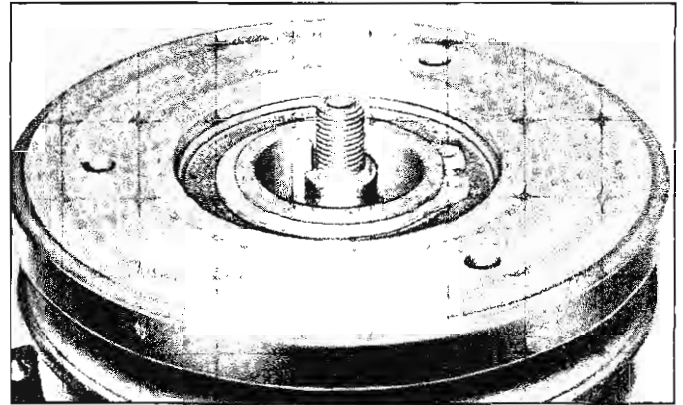


Fig. 15—Drive Plate Key Installed in Keyway

**Installation**

**NOTE:** When hub and drive plate assembly is ready for installation, clean its frictional face with a suitable cleaner.

1. Insert the square hub and drive plate key into the keyway in the drive shaft allowing it to project approximately 3/16" out of the end of the keyway (fig. 15).
2. Line up the key in the shaft with the keyway in the hub.
3. Using Tool J-9480 and washer J-9480-2 (fig. 16), install the hub and drive plate assembly. Pull the assembly onto the shaft until there is approximately 3/32" space between the frictional sur-

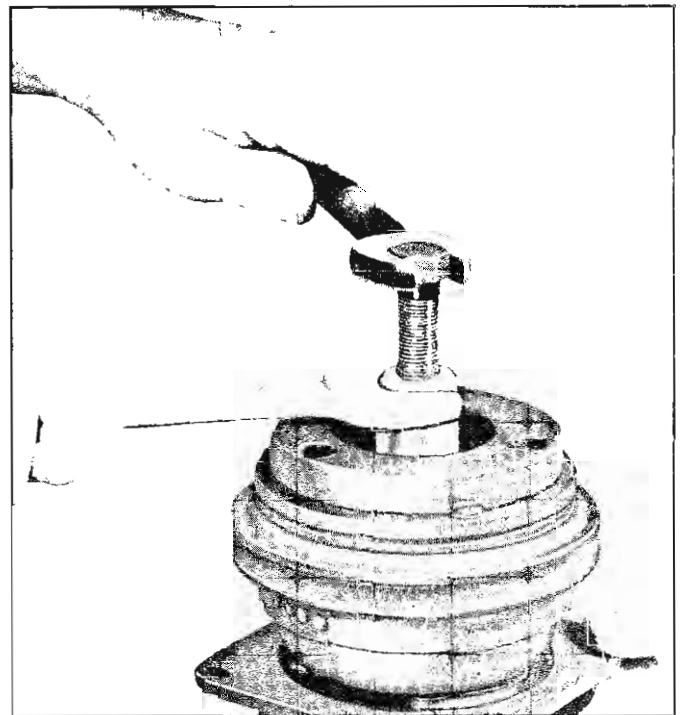


Fig. 16—Installing Hub and Drive Plate Assembly

faces of the drive plate and pulley. (A ZERO thrust race is approximately 3/32" in thickness and may be used to roughly gauge this operation.)

**NOTE:** Use Tool J-9403 to hold hub and drive plate if necessary.

4. Install the hub spacer washer and, using snap ring pliers J-5403, install the retainer ring, convex side of ring facing washer.
5. Use J-9399 and J-9403 to install a new locknut. Tighten the nut to 14-16 ft. lbs. torque. Air gap between the frictional faces should now be .002" to .068" (1/32" to 1/16").

**NOTE:** Notch on the locknut must face towards retainer ring.

6. The pulley should now rotate freely.

**CAUTION:** Never pound or drive the hub and drive plate into position. Always use the proper tools when removing or replacing clutch parts. Failure to do so may result in serious internal compressor damage.

7. Operate the refrigeration system and rapidly cycle the clutch (by turning the air conditioning off and on at least 20 times at approximately one second intervals) to seat the mating parts of the clutch.

## Pulley and Bearing Assembly

### Removal

1. Remove the hub and drive plate assembly.

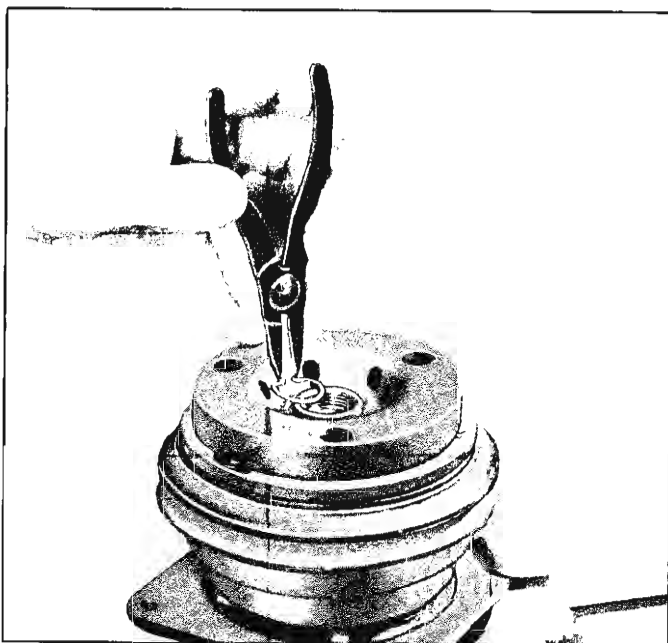


Fig. 17—Removing Pulley and Bearing Assembly Retainer Ring

2. Using snap ring pliers J-6435, remove the pulley and bearing retainer ring (fig. 17).
3. Remove shaft key.
4. Place puller pilot J-9395 over the compressor shaft and pull off the pulley assembly using J-8433 pulley puller (fig. 18).

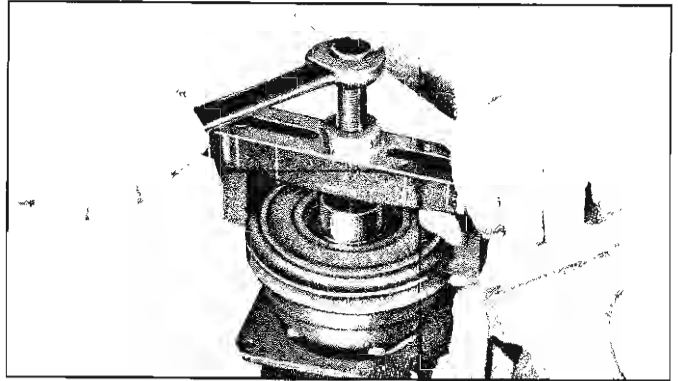


Fig. 18—Removing Pulley

### Inspection

Check the appearance of the pulley and bearing assembly. If the frictional surface of the pulley shows signs of warpage due to excessive heat, the pulley should be replaced. If the pulley bearing shows signs of excessive looseness, noise or grease leakage, it should be replaced. The frictional surfaces of the bearing to be used should be cleaned with a suitable solvent before reinstallation.

### Bearing Replacement

1. With the pulley and bearing assembly removed from the compressor, use a sharp pointed instrument to remove the wire retainer ring.
2. From the rear of the pulley, press or drive bearing out of pulley using Tool J-9398 and handle J-8092.
3. Wipe excess grease from the new bearing.
4. From the front of the pulley and using Tool J-9481 with handle J-8092, press or drive the new bearing into the pulley.

### Installation

1. Using Tool J-9481, press or drive the pulley and bearing assembly onto the compressor neck. The pulley should now rotate freely.
2. Install retainer ring using snap ring pliers J-6435.
3. Replace the hub and drive plate assembly. Use proper tools. **DO NOT** drive or pound on the hub assembly.



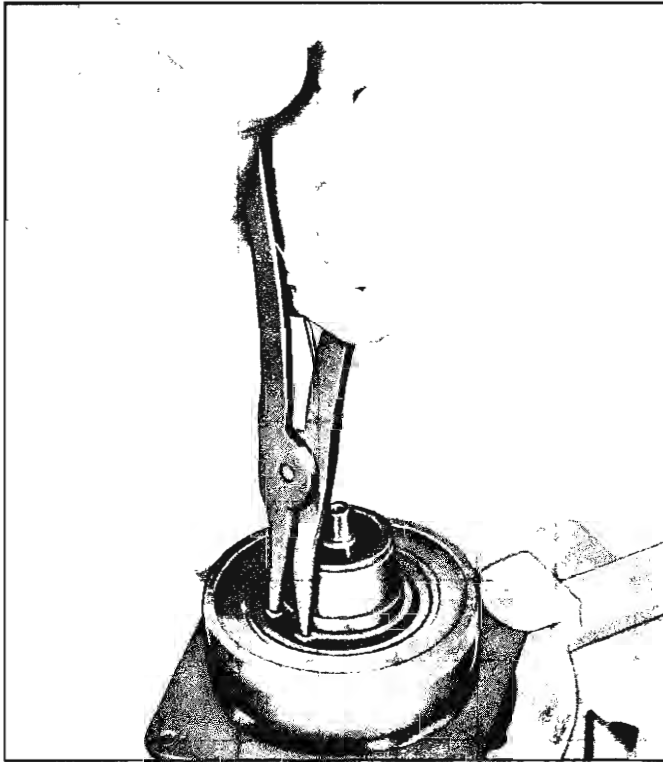


Fig. 19—Removing Coil Housing Retainer Ring

4. Install the wire bearing retainer ring.

## Coil Housing Assembly

### Removal

1. Remove the hub and drive plate assembly, the pulley and bearing assembly, and electrical connector.
2. Scribe the location of the coil housing to the compressor body. This operation is to insure that the electrical terminals will be reassembled in the same position.
3. Using snap ring pliers J-6435, remove the coil housing retainer ring (fig. 19).
4. Remove the coil housing assembly.

### Inspection

Check coil for loose connectors or cracked in-

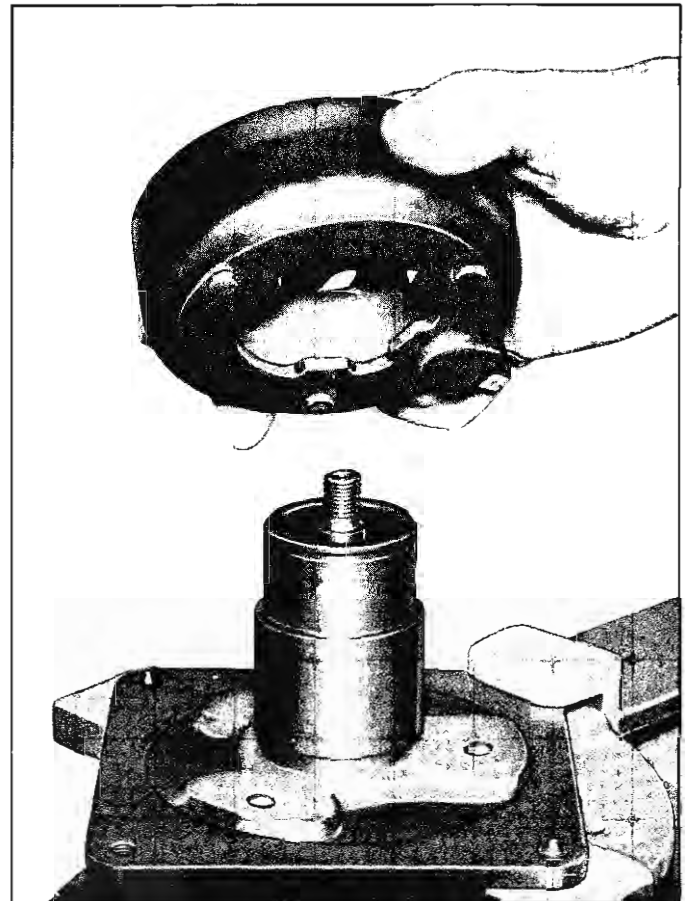


Fig. 20—Installing Coil Housing

sulation. Amperage should not be more than 3.2 amps at 12 volts D.C. at room temperature.

### Installation

1. Rotate the coil housing to the correct position as indicated by the scribe marks and the location of the electrical terminals and fit into place. (fig. 20).
2. Use snap ring pliers J-6435 to install retainer ring.

**NOTE:** Install flat surface of the retainer ring facing the coil housing.

3. Replace the pulley and bearing assembly and the hub and drive plate assembly. DO NOT drive or pound on the hub assembly.
4. If the compressor is installed in the vehicle, connect the electrical connections.

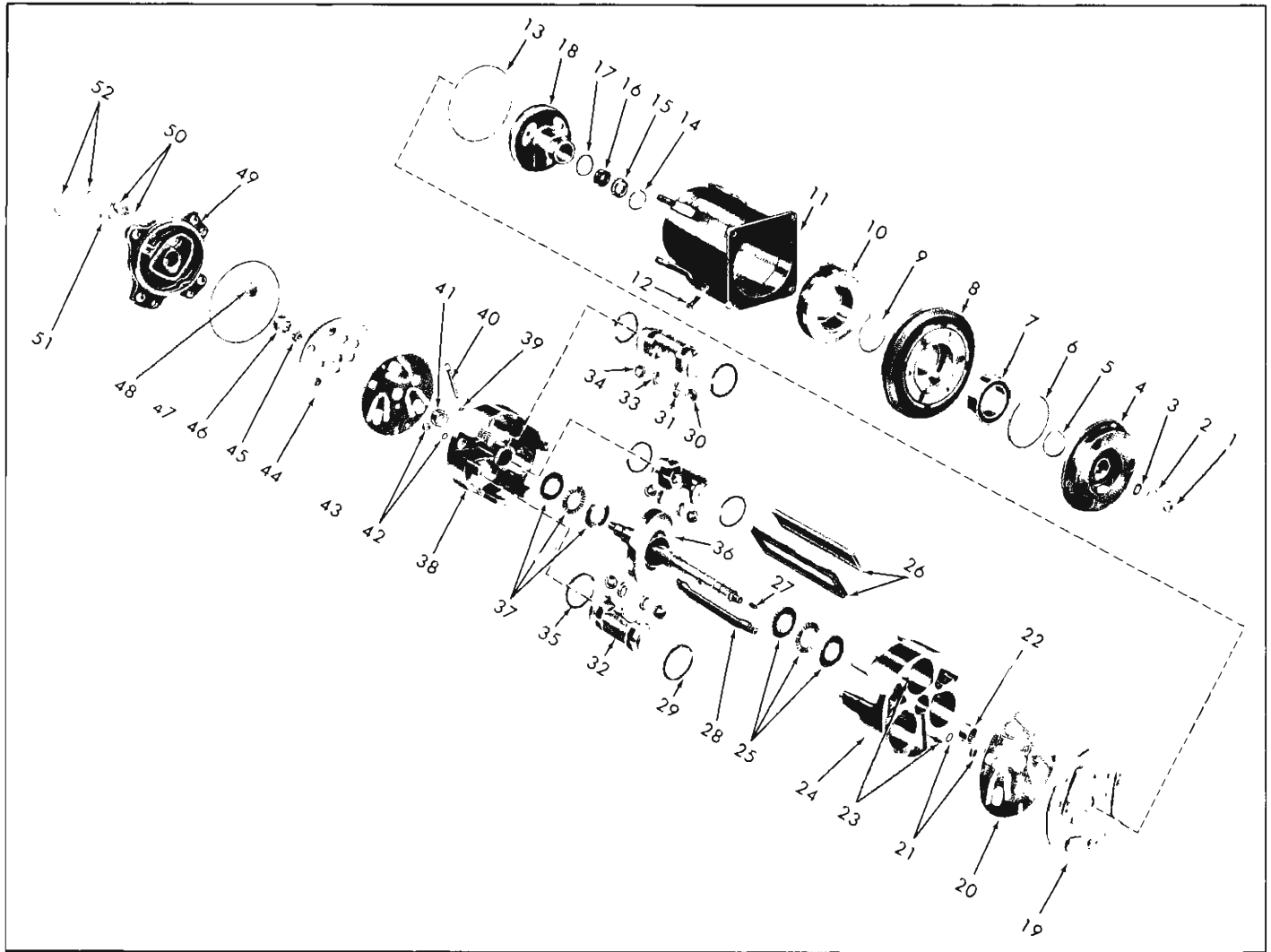


Fig. 21—Six Cylinder Compressor - Exploded View

- |   |  |  |   |
|---|--|--|---|
| 1. Shaft Nut                            | 15. Shaft Seal Seat                                    | 27. Drive Key                            | 42. Discharge Crossover Tube Rear "O" Ring and Spacer |
| 2. Clutch Hub Retainer Ring             | 16. Shaft Seal   | 28. Discharge Crossover Tube             | 43. Rear Suction Reed Plate                           |
| 3. Spacer                               | 17. Shaft Seal Seat "O" Ring                           | 29. Piston Ring                          | 44. Rear Discharge Valve Plate                        |
| 4. Clutch Hub and Drive Plate, Assembly | 18. Compressor Front Head                              | 30. Piston Front Drive Ball              | 45. Oil Pump Drive Gear                               |
| 5. Pulley and Bearing Retainer Ring     | 19. Front Discharge Valve Plate                        | 31. Piston Front Shoe Disc               | 46. Oil Pump Driven Gear                              |
| 6. Pulley Bearing Retainer Ring         | 20. Front Suction Reed Valve                           | 32. Piston                               | 47. Rear Head-to-Shell "O" Ring                       |
| 7. Pulley Bearing                       | 21. Discharge Crossover Tube Front "O" Ring and Spacer | 33. Piston Rear Shoe Disc                | 48. Strainer Screen                                   |
| 8. Pulley                               | 22. Mainshaft Front Bearing                            | 34. Piston Rear Drive Ball               | 49. Compressor Rear Head                              |
| 9. Coil Housing Retainer Ring           | 23. Head Locating Pins                                 | 35. Piston Ring                          | 50. High Pressure Relief Valve and "O" Ring           |
| 10. Coil Housing                        | 24. Front Cylinder Half                                | 36. Drive Shaft and Swash Plate Assembly | 51. Rear Head-to-Shell Retaining Nuts                 |
| 11. Compressor Shell                    | 25. Front Thrust Race and Bearing Pack                 | 37. Rear Thrust Race and Bearing Pack    | 52. Compressor-to-Connector "O" Rings                 |
| 12. Oil Drain Plug                      | 26. Suction Crossover Cover and Gasket                 | 38. Rear Cylinder Half                   |   |
| 13. Front Head-to-Shell "O" Ring        |  | 39. Oil Inlet Tube "O" Ring              |   |
| 14. Shaft Seal Seat Retainer Ring       |  | 40. Oil Inlet Tube                       |   |
|   |  | 41. Mainshaft Rear Bearing               |   |

## MAJOR SERVICE OPERATIONS

The following service procedures are considered major since the refrigeration system must be completely purged of refrigerant before proceeding and because major internal operating and sealing components of the compressor are being disassembled and serviced. A clean workbench, preferably covered with a sheet of clean paper, orderliness in the work area and a place for all parts being removed and replaced is of great importance as is the use of the proper service tools. Any attempt to use make-shift or inadequate equipment may result in damage and/or improper compressor operation.

These procedures are based on the use of the proper service tools and the condition that an adequate stock of service parts is available. This service parts stock should include the following:

1. Major interior mechanism assembly - ready for installation in shell as is.
2. Service cylinder assembly - front and rear halves with main bearings in place and halves dowel pinned together.
3. Standard size piston drive balls.
4. Shoe discs - total of 10 sizes, including the ZERO shoe.
5. Thrust races - total of 14 sizes, including the ZERO race.
6. Pistons.
7. Main shaft bearings.
8. Thrust bearings.
9. Compressor shaft, swash plate and Woodruff key assembly.
10. Suction reed valves.
11. Discharge valve plate - front and rear.
12. Seal kit - service - contains all seals and "O" rings. To be used each time a compressor is rebuilt.
13. Shaft seal kit.
14. Nuts - head to shell, and shaft.
15. Retainer rings - all necessary sizes.
16. Cylinder locator (dowel) pins.
17. Valve and head locator (dowel) pins.
18. Service discharge crossover tube kit.

All parts required for servicing are protected by a preservation process and packaged in a manner which will eliminate the necessity of cleaning, wash-in or flushing of the parts. The parts can be used

in the mechanism assembly just as they are removed from the service package.

Piston shoe discs and shaft thrust races will be identified on the parts themselves to denote their size and dimension.

## Shaft Seal Assembly

When replacing the shaft seal assembly, even if the compressor remains on the vehicle during the operation, it will be necessary to purge the system of refrigerant as outlined in the 1961 Passenger Car Shop Manual.

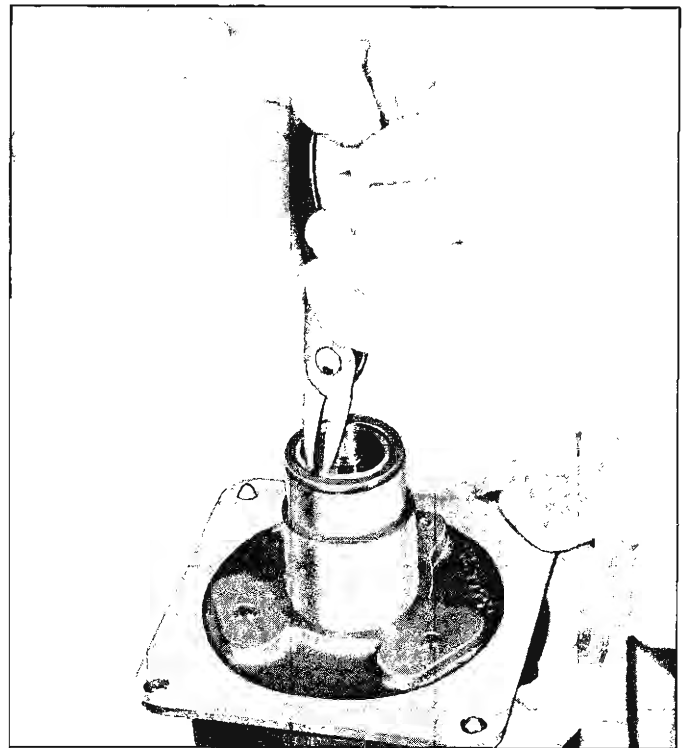


Fig. 22—Removing Seal Seat Retaining Snap Ring

## Removal

1. After first purging the system of refrigerant, remove the clutch hub and drive plate, and the shaft key.
2. Remove the seal seat retaining ring using snap ring pliers J-5403 (fig. 22).
3. Using Tool J-9393 (1 and 2), grasp the flange on the seal seat and lift out the seal seat (fig. 23).

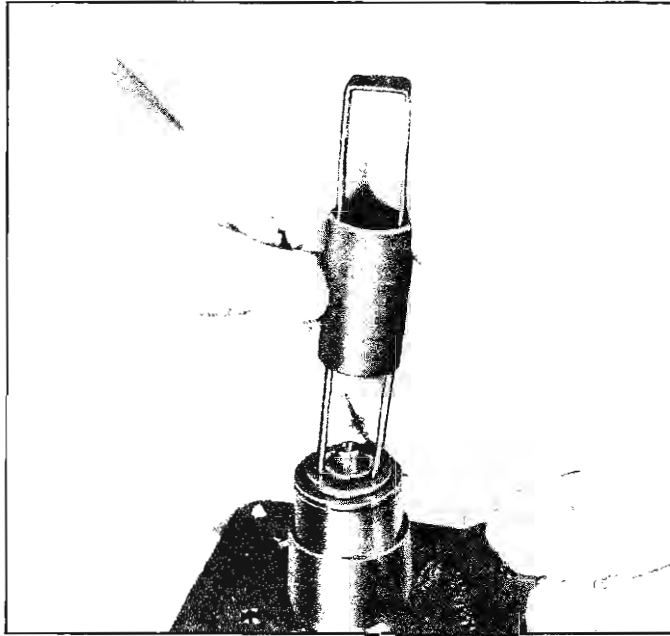


Fig. 23—Removing Seal Seat

4. Remove the seal seat "O" ring from the housing bore using Tool J-5139.
5. Engage the tabs on the seal assembly with the locking tangs on Tool J-9392 by pressing down and twisting the tool, then lift the seal out.

### Inspection

Check the face of the seal for nicks, gouges or serrations. If damage of any kind is evident, replace

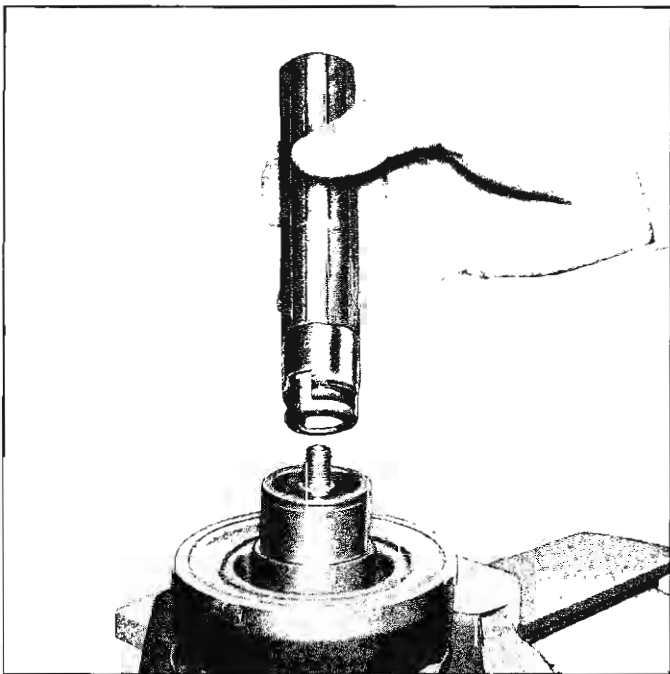


Fig. 24—Replacing Seal

the seal. Be extremely careful that the face of the seal which is to be installed is not scratched or damaged in any way.

### Installation

1. Engage seal onto the locking tangs of Tool J-9392 (fig. 24) and carefully insert the seal and tool over the end of the shaft. Turn seal to engage the flat on the shaft, then remove the tool.
2. Coat a new "O" ring and the interior of the seal cavity, shaft and seal with clean refrigeration oil and install it in its groove just above the seal.
3. Using Tool J-9393, grasp the seal seat and set in place on top of the seal.
4. Using snap ring pliers J-5403, replace the retaining ring.

**NOTE:** Install the retaining ring with the flat surface facing the seal seat.

5. Leak test the compressor as described under "Leak Testing the Compressor" in this section.
6. Reinstall the clutch hub and drive plate.
7. Replace the compressor on the vehicle, if it was previously removed, and evacuate and charge the system.

### Pressure Relief Valve

When a faulty pressure relief valve, located in the rear head casting, is encountered, the valve assembly should be removed after purging the system and a new valve and gasket installed. The entire system should then be evacuated and recharged.

### Compressor Rear Head and Internal Mechanism

Service operations to the rear head or internal mechanism of the compressor should be performed with the compressor removed from the vehicle to insure that the necessary degree of cleanliness may be maintained. Clean hands and a clean bench, preferably covered with clean paper, are of extreme importance.

### Rear Head, Oil Pump and Valve Assemblies

#### Removal

1. Remove the compressor from the vehicle, drain compressor oil into a clean container, clean the exterior of the compressor case and rear head casting with a suitable solvent and mount the compressor, rear head up, in holding fixture J-9396 which should then be mounted securely in a vise.

2. Remove the four nuts from the shell studs. Discard nuts.
3. Remove the rear head. Examine the teflon surface on the casting webs. If this surface is damaged by nicks or scratches, the head should be replaced.
4. Examine the suction screen in the rear head for any damage or contamination. Clean or replace the screen as necessary.
5. Remove and examine the oil pump gears. If either of the gears shows any wear or damage, replace both gears.

**NOTE:** Keep the ends of the two oil pump gears matched and replace the same end toward the discharge plate upon reassembly.

6. Remove the rear head-to-shell "O" ring and discard.

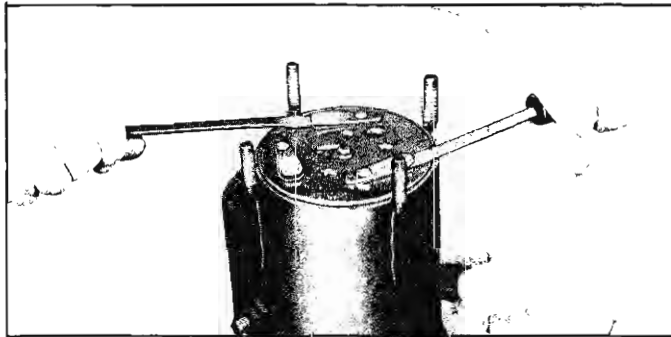


Fig. 25—Removing Rear Discharge Valve Plate

7. With two screwdrivers, carefully pry up on the rear discharge valve plate assembly (fig. 25). Check for broken reeds or damaged seats and replace entire assembly if such is found.
8. Carefully lift off the rear suction reed valve. Valve must be replaced if any damage is evident.

### Installation

1. Carefully replace the suction reed valve and the rear discharge plate over the dowel pins and ports in the cylinder assembly.
2. Position the rear head casting to align with the dowel pins. The two lower mounting pads will be in alignment with the oil sump in the shell. Rotate the cylinder assembly back and forth by hand, if necessary, to permit this alignment. Remove the rear head from this trial assembly.
3. Install the inner oil pump gear over the "D" flat on the shaft and place the outer oil pump gear over the inner gear. Position the outer gear as follows:
  - a. Observe the position of the oil sump in the shell.

- b. Locate the approximate centerline of this sump.
- c. Facing the centerline of the sump and viewing from the sump side (bottom) of the compressor, move the OUTER gear toward the right (side having the oil test fitting) until it is at approximately 90° (3 o'clock position) from the centerline of the oil sump (fig. 26).

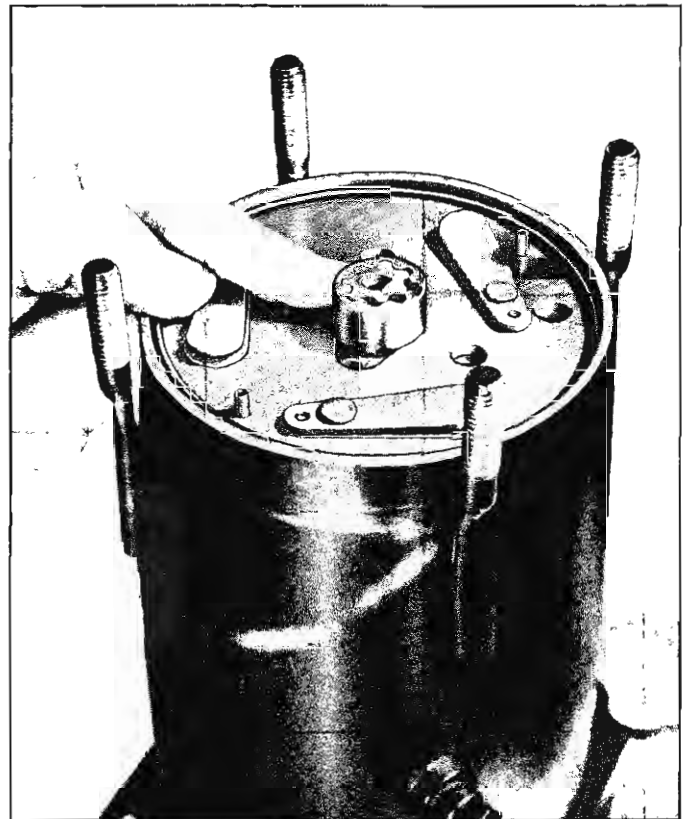


Fig. 26—Proper Oil Pump Gear Positioning

4. Coat the head-to-shell "O" ring with clean refrigeration oil and generously lubricate the area around the outer edge of the valve plate where the "O" ring will be placed. Oil also the oil pump gears, valve reeds and the area where the teflon gasket will contact the valve plate.
5. Install the head-to-shell "O" ring.
6. Be sure that the suction screen is properly positioned in the rear head, then assemble the rear head to the compressor shell being careful not to damage the teflon gasket.

**NOTE:** As an aid to replacing the head in the proper position, be sure the inlet and outlet ports are toward the top of the compressor.

**CAUTION:** Be sure head does not bind against oil pump gears when being installed.

7. Install new nuts to the threaded shell studs and tighten to 19-23 ft. lbs. torque.
8. Leak test the compressor as outlined under "Leak Testing the Compressor" in this section.
9. Install compressor as described under "Compressor - Installation."

MAJOR INTERNAL MECHANISM

Removal From Shell

1. Remove the rear head, discharge plate and suction reed valve from the compressor as outlined under "Rear Head and Reed Valve Assemblies" above.

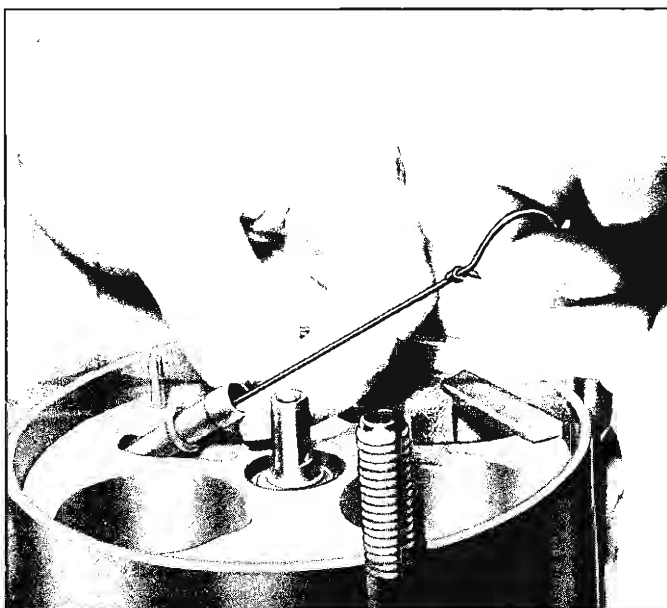


Fig. 27—Removing Oil Inlet Tube and "O" Ring

2. Remove the oil inlet tube and "O" ring with J-5139 as shown in Figure 27.
3. Carefully lay the compressor shell on its side and slide out interior mechanism and front head assembly. Do not hammer or use undue force to remove the mechanism; however, gentle taps on the head casting may aid in removing the assembly.
4. Remove front head casting, front discharge valve plate and suction reed valve from the mechanism. Examine parts for damage and replace if necessary. Check particularly for damage to the teflon surfaces on the front head casting webs.
5. Examine the mechanism for any obvious damage.
6. Remove the suction crossover cover (fig. 28) and discard the old gasket.
7. If desired, the mechanism may be assembled in

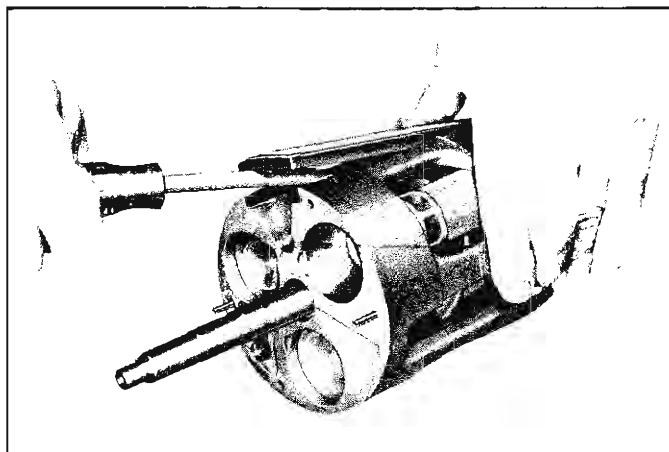


Fig. 28—Removing Suction Crossover Cover

checking cage J-9397 and operated on a motor test stand, or by same other suitable means, to observe sound level and general operation. Tighten cage nuts evenly to 15 ft. lbs. torque.

8. While in the checking cage, make a check of the shoe clearances between each rear piston shoe and the swash plate (reading must be between .0005 -.0010 ). Check also the clearance between the rear thrust race and rear thrust bearing. (Maximum clearance should be .0015 .) These checks may give some indication of the cause of the trouble.
9. Remove mechanism from the cage.

Disassembly

If the mechanism has sustained major damage, due possibly to loss of refrigerant and/or oil, it may be necessary to replace it with a complete service interior mechanism assembly rather than to replace individual parts. If further disassembly is considered worthwhile, proceed as follows:

1. Before disassembling the cylinder and mechanism, number the pistons and cylinder locations so that all parts may be replaced in their original location. Pistons and cylinder bores may be identified by numbering them 1, 2 and 3 with a pencil.
2. Use J-9492 to drive discharge tube out of cylin-

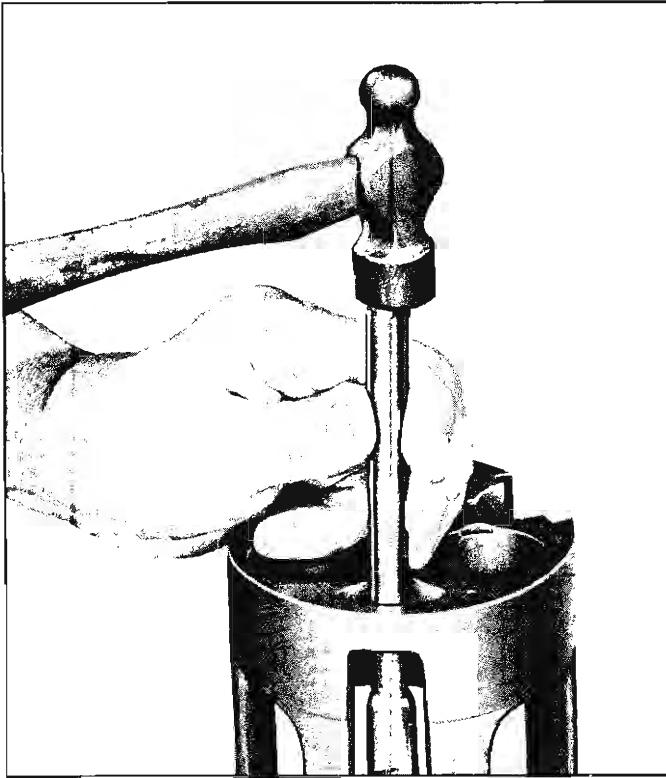


Fig. 29—Unseating Discharge Crossover Tube

der (fig. 29). (Drive toward REAR of cylinder.)

3. Drive the cylinder halves apart and free from the dowel pins and discharge crossover tube using a fiber block and mallet (fig. 30). Discard the discharge crossover tube.

**NOTE:** Before driving cylinder apart, position swash plate so low part is under crossover tube toward rear of cylinder assembly.

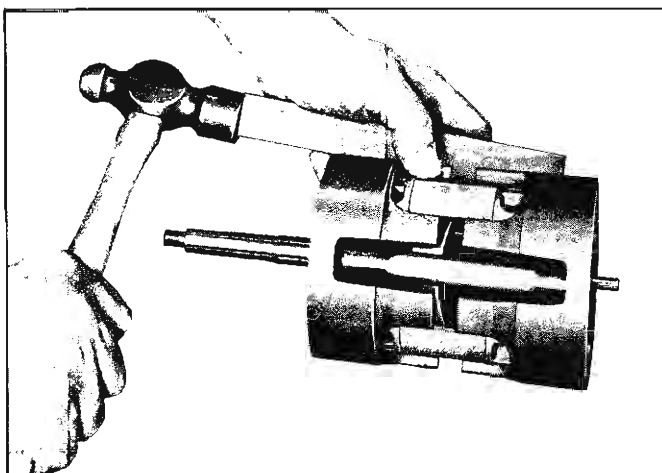


Fig. 30—Separating Cylinder Halves

4. Carefully remove the rear half of the cylinder from the pistons and set the front cylinder half, with the pistons, shaft and swash plate, in J-9397.
5. Push up on the shaft and, one assembly at a time, remove pistons, rings, shoes and balls placing all parts in tray J-9402 in the compartment associated with the proper end of the piston. Discard all piston shoe discs.

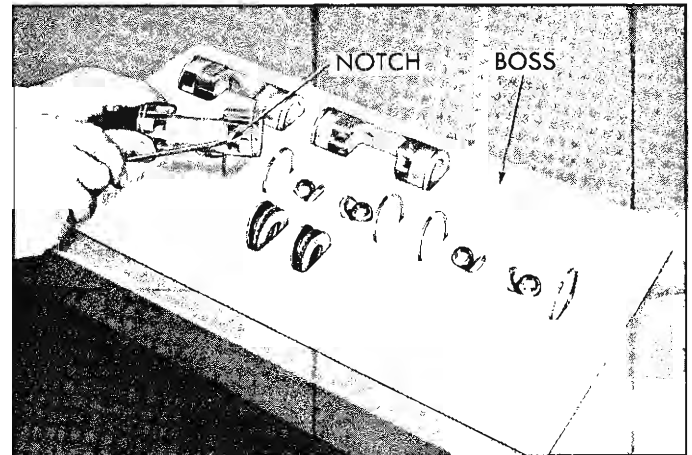


Fig. 31—Notch Identifying Front End of Piston

**NOTE:** The front of the piston may be identified by a notch in the casting web. See Figure 31. The piston compartments in tray J-9402 have a boss at this notch location to indicate the front.

6. Remove and inspect all piston rings. Replace all broken or damaged rings. Damaged pistons must also be replaced.
7. Examine piston balls. Replace if they show burning or excessive wear.
8. Remove the rear combination of thrust races and bearing from the shaft and discard all three pieces.
9. Remove the shaft and swash plate assembly from the front half of the cylinder.
10. Remove the front combination of thrust washers and bearing and discard all three pieces.
11. Examine all surfaces of the swash plate and, if satisfactory, reuse. If it shows signs of excessive wear, replace the shaft and swash plate as an assembly. Use care not to move swash plate on the shaft. This is factory set.
12. Examine the front and rear cylinder halves and replace if cylinder bores are deeply scored or damaged.
13. Wash all parts to be reused in a suitable cleaner. Blow dry all parts.
14. If cylinder main bearings are to be replaced,

they may be removed and reinstalled at this time using Tool J-9432.

**Gauging Procedure**

The gauging operations which follow have been worked out on a simple basis to establish and provide necessary running clearances. Two gauging procedures are necessary.

The first gauging operation is made to choose the proper size shoe discs to provide, at each piston, a .0005" to .0010" total clearance between the shoes and the swash plate at the tightest place through the 360° rotation of the swash plate. Ten bronze shoe discs are provided in .0005" variations including a basic ZERO shoe.

The second gauging operation, performed at the rear shaft thrust bearing and race pack, is designed to obtain .0005" to .0015" running clearance between the hub surfaces of the swash plate and the front and rear hubs of the cylinder. A total of 14 steel thrust races, including a basic ZERO race, are provided in increments of .0005" thickness to provide the required clearance.

Proper selection of thrust races and shoe discs is of extreme importance. If tolerance is greater than maximum clearance, noisy operation of the compressor will result while tolerance less than minimum clearance could result in galling and seizure of the parts.

1. Secure from service parts stock:
  - Four-ZERO thrust races
  - Three-ZERO shoe discs
  - Two-New thrust bearings
2. Assemble a ZERO thrust race, a new needle thrust bearing and another ZERO thrust race, in that order, to the front end of the shaft. (A dab of petroleum jelly will hold the bearing-race pack together and in place on the shaft.) Lubricate front and rear faces of the swash plate with refrigeration oil.)
3. With the front half of the cylinder assembly resting on Tool J-9397, insert the shaft, threaded end through the front main bearing until the thrust race assembly rests on the front cylinder hub.
4. Assemble a ZERO thrust race, a new needle bearing and a second ZERO thrust race in that order, to the rear of the shaft.
5. Apply a light smear of clean petroleum jelly to the ball pockets of each of the three pistons.
6. Place the balls in the piston pockets. The petroleum jelly will hold the balls in place.
7. Apply a light smear of petroleum jelly to the cavity of three new ZERO shoe discs and place

one shoe over each front piston ball. There should now be a ball and shoe in the front ball pocket of each piston and a ball only in the rear ball pocket.

**NOTE:** Do not assemble any of the piston rings at this time.

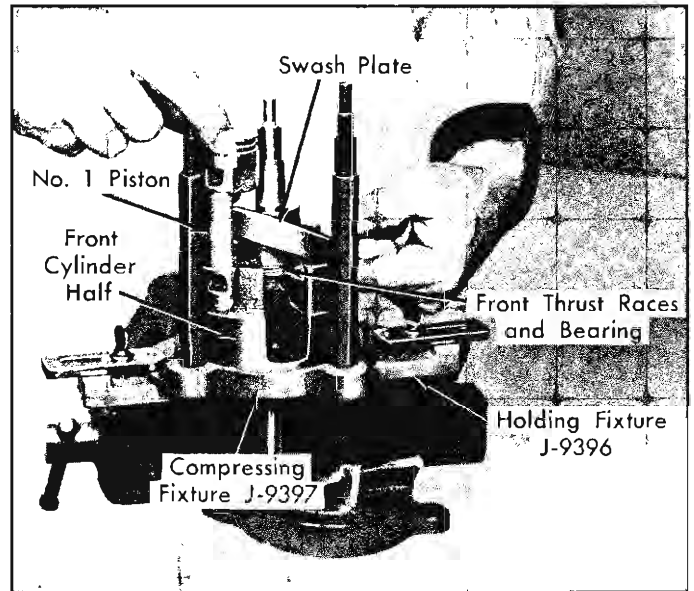


Fig. 32—Installing Piston, Front Ball and Shoe and Rear Ball

8. Rotate the shaft and swash plate until the high point of the swash plate is directly over the cylinder bore previously designated as No. 1. Lift up slightly on the shaft and swash plate assembly, insert the front (notched) end of the No. 1 piston into the cylinder bore, and at the same time, place the front ball and shoe and the rear ball only over the swash plate (fig. 32).

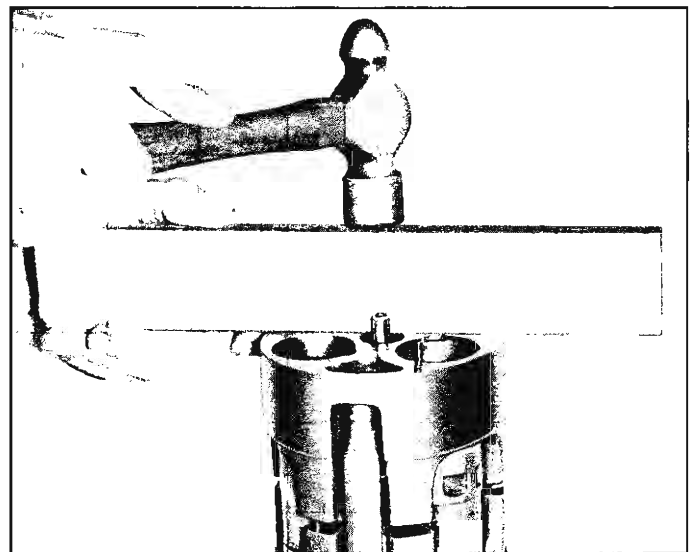


Fig. 33—Assembling Cylinder Halves



Hold front thrust bearing pack tight against swash plate hub while lifting shaft.

9. Repeat this operation with pistons No. 2 and No. 3.
10. Align the rear head casting with bores, suction passage, discharge crossover holes, and dowel pins. Tap into place, using a plastic block and mallet (fig. 33).
11. Place the cylinder assembly in the checking cage with the front of the compressor shaft pointing up, positioning the discharge tube opening between the cage bolts. This will provide access for the feeler gauge. Assemble the cage and tighten all nuts evenly to 19-23 ft. lbs. torque.
12. Use a leaf type feeler gauge and a suitable spring scale to check clearance between the REAR ball

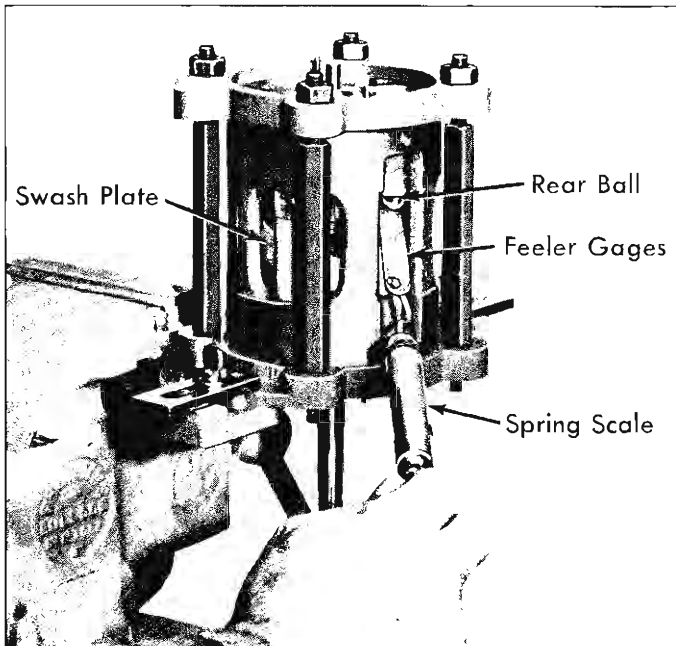


Fig. 34—Checking Clearance between Rear Ball and Swash Plate

and the swash plate (fig. 34) of the No. 1 piston. Use a suitable combination of feeler gauge leaves until 4 to 8 oz. of force is required to pull gauge from between the ball and the plate.

**NOTE:** Use undamaged feeler gauges generously lubricated with refrigeration oil. Support the spring scale so that only the actual force required to pull the feeler gauge free is measured.

Rotate the shaft approximately 120° and again check with a feeler gauge between the parts. Rotate the shaft another 120° and make a third check. From this total of three feeler gauge checks, use the MINIMUM reading to select a

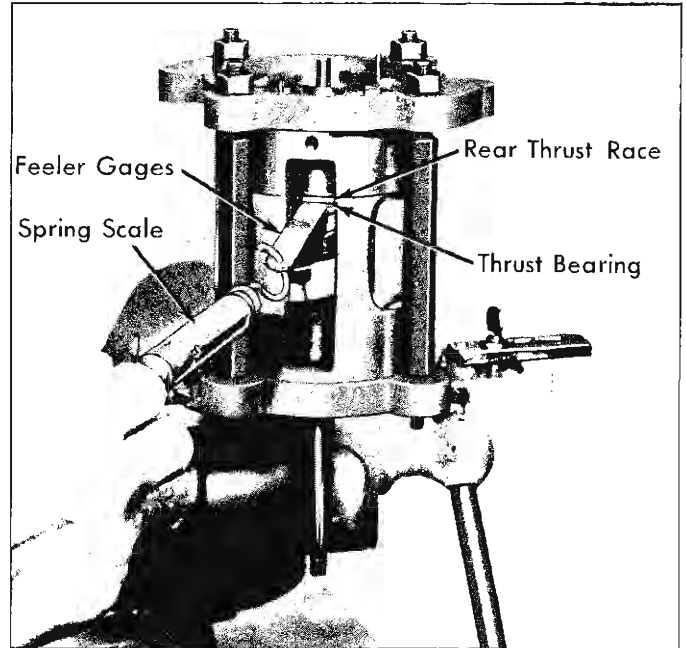


Fig. 35—Checking Clearance between Rear Thrust Bearing and Outer Thrust Race

numbered shoe to correspond to the feeler gauge reading (i.e. - if minimum reading was .019, use a No. 19 shoe. If reading was .0195, use a No. 19 1/2 shoe.) Place this shoe in the parts tray in the compartment corresponding to the rear ball position of the No. 1 piston.

13. Repeat the operation described in Step 12 for pistons No. 2 and No. 3.
14. The next gauging operation is to determine the space between the REAR thrust bearing and the upper (outer) rear thrust race. Use a suitable combination of feeler gauge leaves so that 4 to 8 oz. of force is required to pull gauge free (fig. 35). Select a numbered thrust race to correspond to this feeler gauge reading and place this race in parts tray in the rear thrust race compartment.
15. Loosen the nuts and ring from the checking cage.
16. Drive the cylinder halves apart, using a fiber block and mallet.
17. Carefully remove the rear half of the cylinder and set the front half (including the pistons and shaft and swash plate assembly) on J-9397.
18. Carefully remove one piston at a time from the swash plate and the front half of the cylinder. Transfer each piston, ball and shoe to its proper place in the parts tray along with the numbered rear shoe chosen in Steps 12 and 13 above.

**CAUTION:** When the balls and shoe are removed from the piston, be sure that they are placed in the proper parts tray pocket so as not to lose the relationship of the balls and shoes to the proper end of the piston.

19. Remove the rear outer (upper) ZERO thrust race from the compressor shaft and replace it with the numbered thrust race (determined in Step 14 above) from the parts tray.

**NOTE:** This ZERO thrust race may be put aside for reuse in future gauging and/or re-build operations.

20. The gauging operations are now complete.

### Assembly

After properly performing the gauging procedure and choosing the correct shoe discs and thrust races as outlined under "Gauging Procedures", the cylinder assembly may be reassembled. Be sure to install all new seals and "O" rings. All are included in the compressor seal service kit.

1. Support the front half of the cylinder assembly on fixture J-9397 and install the shaft and swash plate, threaded end down, with its front bearing race pack (ZERO race, bearing and ZERO race) and its rear bearing race pack (ZERO race, bearing, numbered race) if this was not already done at the end of the "Gauging Procedure."
2. Assemble a piston ring, scraper groove toward the center of the piston, to each end of the three pistons.
3. Apply a light smear of petroleum jelly to the numbered shoe discs chosen in the gauging procedure and install all balls and shoes (if removed in Step 18 of the gauging procedure) in their proper place in the piston.
4. Rotate the swash plate so that the high point is above cylinder bore No. 1. Carefully assemble piston No. 1, complete with ball and ZERO shoe on the front and ball and numbered shoe on the rear, over the swash plate. Hold front thrust pack tight against swash plate hub while lifting hub. Compress and enter the piston ring into the front cylinder half.
5. Repeat this operation for pistons No. 2 and No. 3.
6. Assemble one end of a service discharge crossover tube into the hole in the front cylinder half.
7. Rotate the shaft to position the pistons in a stairstep arrangement, then carefully place the rear cylinder half over the shaft and start the pistons into the cylinder bores.
8. Compress the piston ring on each piston to permit its entrance into the cylinder.
9. When all three pistons and rings are in their respective cylinders, align the end of the discharge crossover tube with the hole in the rear half of the cylinder..

**NOTE:** Be sure the flattened portion of this tube faces the inside of the compressor

to allow for swash plate clearance.

10. When all parts are in proper alignment, tap with a fiber block and mallet to seat the rear half of the cylinder over the locating dowel pins. If necessary, clamp the cylinder in J-9397 to complete drawing the cylinder halves together.
11. Generously lubricate all moving parts with clean refrigeration oil and check for free rotation of the parts.

**NOTE:** It may be desirable to clamp the cylinder assembly in compressing fixture J-9397 and check on the motor test stand for proper operation before proceeding further. If any improper operation is observed, the mechanism should be regauged to insure proper operation. Complete the assembly procedure when correct operation is obtained.

12. Assemble a new rectangular gasket to the suction crossover cover. Coat the gasket with clean refrigeration oil. Start one side of the gasket and cover into the "dove tail" slot in the cylinder, centering the gasket and cover with the ends of the cylinder faces. Use Tool J-9433 or a flat piece of spring steel (.015" to .020" thickness) as shoe horn (fig. 36) and press or tap the cover into place. Remove the piece of sheet metal with a pair of vice grip pliers, using a "prying-up" motion, with the pliers resting on

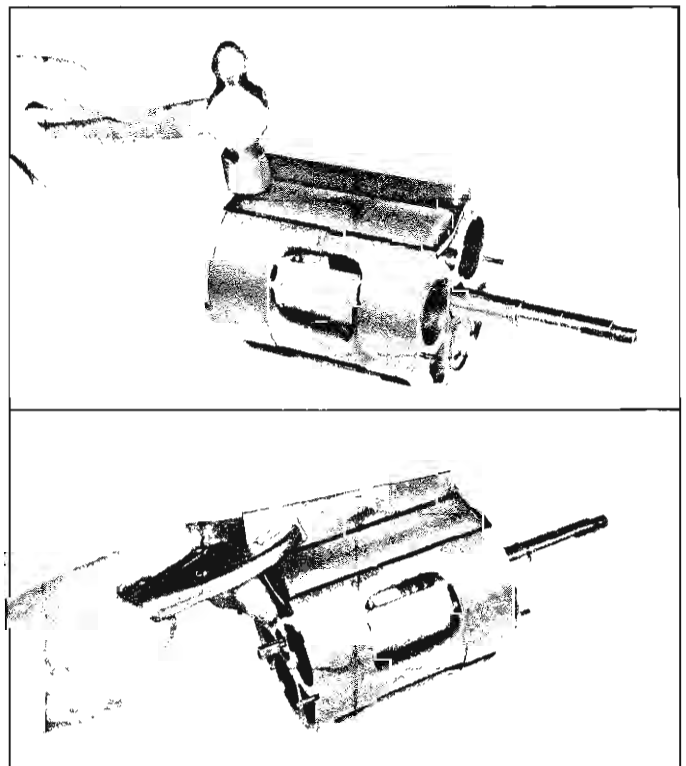


Fig. 36—Installing Suction Crossover Cover

the cover to retain it in the slots. Be sure cover and gasket are properly seated.

The cylinder assembly is now complete.

### Installation Into Shell

1. Support the cylinder on fixture J-9521 with the threaded end of the shaft up.
2. Assemble the two dowel pins in the front cylinder if they are not already in place.

**NOTE:** A rod drilled 1/4" deep to the O.D. of the dowel pins will aid in installing.

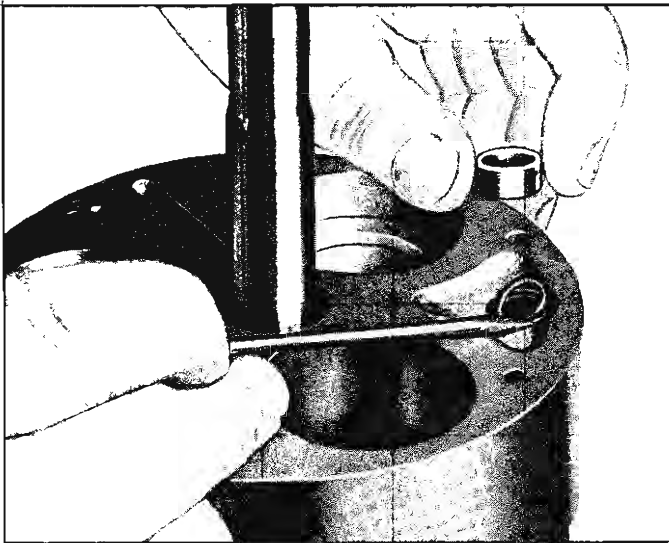


Fig. 37—Installing Discharge Crossover Tube Front "O" Ring and Spacer

3. Install the discharge crossover tube front "O" ring and spacer (fig. 37).
4. Aligning the dowel pin holes, discharge crossover and oil return slot, assemble the suction reed valve to the front end of the cylinder.
5. Assemble the front discharge valve plate, aligning the holes with the dowel pins and proper openings in the head.

**NOTE:** The front discharge plate has a larger diameter hole in the center than the rear discharge plate.

6. Check the teflon surface on the compressor front head casting webs and replace the entire casting if there is any evidence of damage. Discard the "O" ring.
7. Coat the valve plate with clean refrigeration oil. Rotate the front head casting until it is properly positioned over the discharge reed retainers and dowel pins, then set it in place (being careful not to damage the teflon surfaces) and seat it over dowels with light mallet taps.

**NOTE:** Dowel pin and hole location can be marked with pencil to aid in locating proper position.

8. Apply clean refrigeration oil to a new "O" ring and "O" ring groove at the lower edge of the front head casting and carefully assemble the "O" ring in the groove.
9. Coat the inside machined surfaces of the compressor shell with refrigeration oil.
10. Locate the oil intake tube hole in the rear discharge plate. Line up the oil sump with this hole location and slide the shell down over the mechanism while supporting the mechanism on J-9521 (fig. 38).

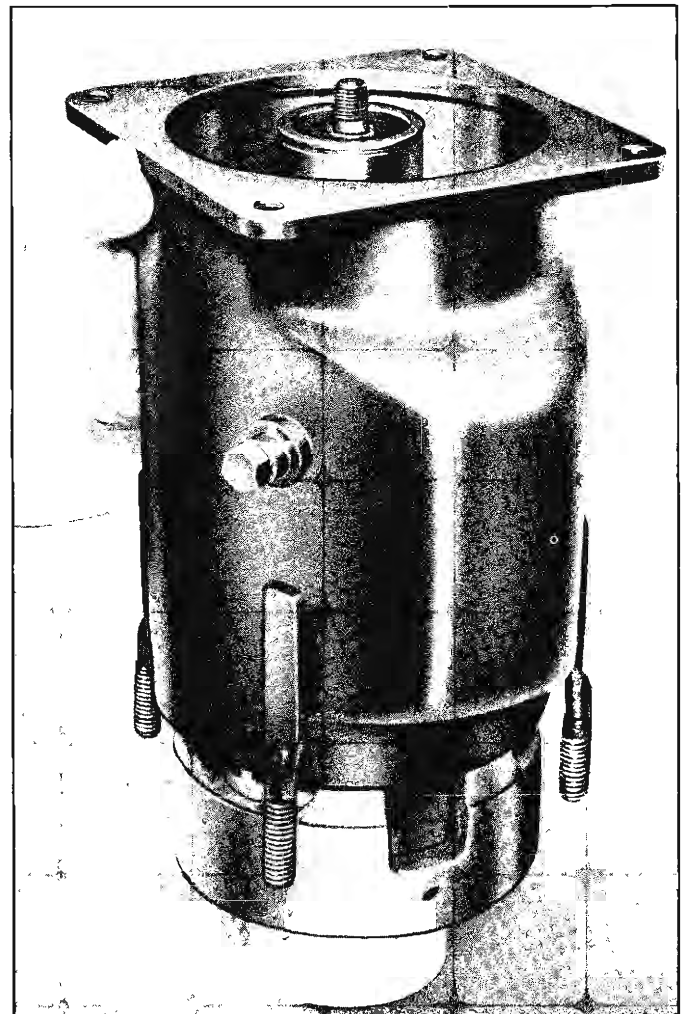


Fig. 38—Installing Shell over Internal Mechanism

11. Place compressor support bracket J-9396 in a vice and, carefully inverting the compressor case with the mechanism inside, mount the front compressor flange on the support bracket.
12. Place a new "O" ring in the oil intake tube hole applying clean refrigeration oil to the oil intake

tube hole and the "O" ring. Rotating the compressor mechanism to line up with the hole in the compressor case baffle, install the pickup tube. Be sure that the "O" ring and intake tube are properly seated.

13. Assemble the dowel pins into the rear cylinder.
14. Install the discharge crossover tube rear "O" ring and spacer.
15. Replace the rear suction reed valve, rear discharge valve plate, oil pump gears, rear head and head nuts as outlined previously under "Rear Head and Reed Assemblies - Installation."

### Leak Testing The Compressor

Whenever service operations are performed on the compressor shaft seal assembly or on the interior mechanism, use the following procedure to leak test the reassembled compressor.

1. Install "O" rings and cover plate J-9527 over the suction and discharge ports on the compressor head.
2. Hook up a Freon-12 container and charging line (using adapter J-5420) to cover plate fitting over

the suction port, charge the compressor up to can pressure, and leak test compressor with a leak detector.

3. Turn off the Freon container valve, transfer gauge line and adapter to cover plate fitting over the discharge port and repeat the procedure outlined in Step 2.
4. Correct any leaks present.

### High To Low Side Leak Test

1. Attach low pressure gauge line (on gauge set J-5725) to adapter J-6163 or J-9459 and attach the adapter to the cover plate fitting over the compressor suction port.
2. Attach the Freon can, gauge line and adapter to the cover plate fitting over the discharge ports and charge the compressor up to can pressure.
3. Observe the pressure gauge. Any pressure reading on the gauge indicates a high side to low side pressure leak, probably caused by damage to the Teflon seals on front or rear compressor heads. The cause of the leak must be found and corrected.

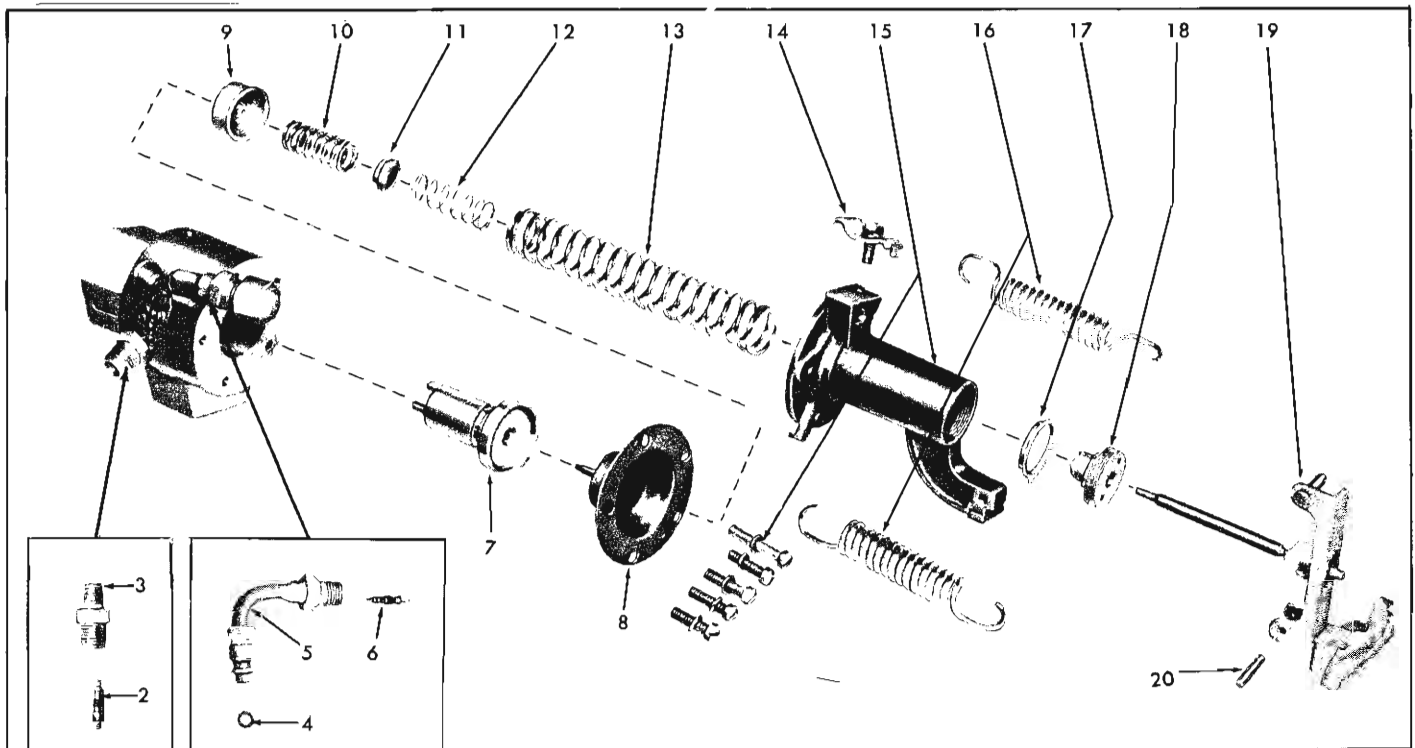


Fig. 39—Suction Throttling Valve - Exploded View

- |  |   |                                 |                             |
|--|---|---------------------------------|-----------------------------|
| 1. Body  | 5. Evaporator Pressure Gauge Connection       | 9. Spring Retainer Cup          | 15. Cover and Cover Screws  |
| 2. Oil Bleed Line Connector                      | 6. Evaporator Pressure Gauge Connection Valve | 10. Inner Spring                | 16. Compensating Springs    |
| 3. Oil Bleed Line Connector Valve                | 7. Piston                                     | 11. Inner Spring Retainer       | 17. Thrust Washer           |
| 4. Evaporator Pressure Gauge Connection "O" Ring | 8. Diaphragm                                  | 12. Buffer Spring               | 18. Adjusting Screw         |
|  |   | 13. Outer Spring                | 19. Actuating Lever and Rod |
|  |   | 14. Bowden Cable Clamp and Bolt | 20. Lever Attaching Pin     |

## SUCTION THROTTLING VALVE (STV)

Dirt and other foreign material in the system and scoring of the piston represent the most frequent causes of sticking and "hanging-up" of the suction throttling valve. A clean, properly installed system represents the best method of assuring proper suction throttling valve operation. If valve malfunctioning occurs, proceed as follows:

### Removal

1. Purge the system of refrigerant.
2. Remove the right front fender skirt as outlined in Section 14 of this shop manual.
3. Remove and cap the refrigerant line at the STV outlet and at the thermostatic expansion valve external equalizer and oil bleed line connections at the suction throttling valve.
4. Remove the bracket to STV attaching bolts.
5. Back off on the connector at the STV inlet and remove the valve. Cap the evaporator outlet line.

### Disassembly

1. Securely hold the valve and unhook the upper end of the external helper or compensating springs from the notch in the lever arm.
2. Remove the slotted spring pin from the lever. Remove the lever and threaded actuating rod, pulling it free from the center of the adjusting screw.
3. Remove the adjusting screw with Tool J-9505. Slowly remove this screw so as to release the springs contained in the cover.

**CAUTION:** The OUTER spring is under considerable compression and should be restrained until this force has been removed from it. If this is not done, the springs may pop out.

4. When the outer spring has been removed, invert the valve so as to remove all internal springs and retainers. They will drop out freely in this inverted position.
5. Remove the five screws from the flange of the cover and body. Usually the cover will be easily removed from the body, but since there are protrusions about the holes that register with the holes in the body it may in some cases be necessary to rock the cover slightly back and forth to remove it.
6. The diaphragm and piston assembly can now be removed. The diaphragm may be removed from the piston by grasping the piston in one hand and the diaphragm with the other hand, stretch-

ing the diaphragm until the tab is released from the piston.

7. The diaphragm should be handled with care to avoid damage to the rubber and fabric surfaces.
8. Examine the screen and retainer in the lower portion of the piston for any foreign material or contamination. Clean the screen if necessary using an approved solvent. Do not remove the screen.

**NOTE:** Solvent should be thoroughly removed from the parts prior to reassembly.

9. Replace the piston if its exterior surface is scored, scratched or nicked.

**NOTE:** Do not scrape, stone or crocus cloth these damaged areas due to the close tolerance that is required in the fitting of the parts for proper operation.

10. If the diaphragm is found to be damaged it should be replaced with a new one. If a new diaphragm is to be installed, first apply a light coat of 525 viscosity Frigidaire oil to the tab of the diaphragm.

11. Examine the body bore surfaces for any surface imperfections, foreign material and any obvious damage that would cause the piston to not operate freely. The body should be replaced if the bore is damaged or if any cross threading or damage has been sustained around the connector ports.

**NOTE:** Do not scrape, stone or "dress out" any damage as it may result in improper performance of the valve.

### Inspection and Repair

Check valve components for broken or bent parts. Check the piston and valve body for dirt or other foreign material or scored condition. Clean or replace as necessary. When cleaning the valve components, use extreme care not to leave any grit, lint or other foreign material, particularly on the piston or adjacent areas of the valve body. Check the condition of the diaphragm and replace if it has been damaged. If the filter screen in the piston is dirty, clean or replace the piston.

### Assembly

1. Hold the piston in one hand and insert the thumb of the other hand into the top of the diaphragm and carefully insert the tab into the hole in the top of piston, slowly press with a downward and rotating motion until the tab is seated into position.
2. A very light application of powdered Molykote Type Z should be applied to the upper or fabric

surface of the depressed section of the diaphragm where the spring retainer cup will fit into it.

3. Apply a light coat of 525 viscosity oil to the wall of the piston and insert it into the body of the valve.
4. Assemble the spring cup to the diaphragm and place the cover in proper location over the diaphragm, being sure the diaphragm holes are in line with the locating protrusions under the cover flange. Start the five screws into the body, but DO NOT TIGHTEN.
5. With the cover and body held loosely in one hand, insert a clean smooth rod, approximately 3/8 in diameter, through the inlet opening so as to contact the screen retainer in the bottom of the piston. Carefully press the piston upward into the cover so as to cause the convolution of the diaphragm to position properly into the cavity of the cover and so not become "pinched" under the flange.
6. Remove the rod from the inlet opening and insert it through the upper portion of the cover. It should contact the center post of the cup. Press lightly downward so as to cause the piston to seat against the inner shoulder of the body. While the cup, diaphragm and piston are held down, tighten the five screws to 45 to 50 inch pounds torque.
7.
  - a. Install the short high rate inner spring into the cup over the center post.
  - b. Assemble the center spring retainer (dished side up) into the inner spring.
  - c. Nest the light buffer spring into the retainer.
  - d. Install the long OUTER spring into the cover. It will "seat" into the bottom of the cup.
8. After being certain all the springs are properly located in the cover, place the tabbed thrust washer on top of the outer spring. The tab should be directly over the slot in the inner threaded wall of the cover.
9. Place the adjustment screw on top of the thrust washer so the tapered end will enter and engage the light buffer spring. Insert the pins of the Tool J-9505 into the spanner holes and press straight downward, making certain the tab enters the cover slot, and compress the springs into the cover. Continue to press the parts together until it is possible to start and engage the threads on the adjusting screw into the threads in the cover.

Rotate the tool until at least two threads are engaged before releasing this downward force on the tool.

10. Turn the screw approximately ten full turns with

the tool or until the screw is approximately 3/16" below the top of the cover.

11. Insert the actuating pin into the center hole in the adjusting screw, being certain the small diameter end of the actuating pin passes through hole in the center retainer.
12. Engage the slots of the plastic nut on the upper end of this pin between the protrusions or dimples in the actuating lever.
13. Bring the holes in the end of the lever into alignment with the hole in the curved cover arm. Insert the slotted spring pin into a hole in one side of the lever. After supporting the cover arm under the pin, lightly tap the slotted pin into position.
14. With the actuating lever in the full upward position, the actuating pin should travel downward .093" (3/32") before contact is made with the inner spring retainer.

**NOTE:** This contact is determined by feel as the lever is moved downward from the full up position.

If the movement or travel of the actuating pin is not to this dimension, make the following adjustment. The upper threaded end of the actuating pin which projects through the plastic nut has two milled flats to provide surface for wrench grip for changing the adjustment. Turning the actuating pin clockwise or downward will decrease the travel before contact. Conversely, turning the actuating pin counterclockwise or upward will increase the travel before contact.

15. After the correct travel of the pin has been made, assemble the helper or compensating springs. Attach the one hook of the springs to the tabs on the cover flange. Stretch and hook the opposite ends of the springs into the outside notches of the lever arm.

#### Installation

1. Using a new "O" ring, install the suction throttling inlet to the evaporator outlet connector.
2. Install the bracket to valve attaching bolts.
3. Using new "O" rings, install the STV outlet line, expansion valve equalizer line and oil bleed line to the valve.

**CAUTION:** Do not over-tighten these connections.

4. Evacuate and charge the system.
5. Check the suction throttling valve for proper operation and adjust if necessary.
6. Replace and readjust the bowden cable.
7. Replace the fender.

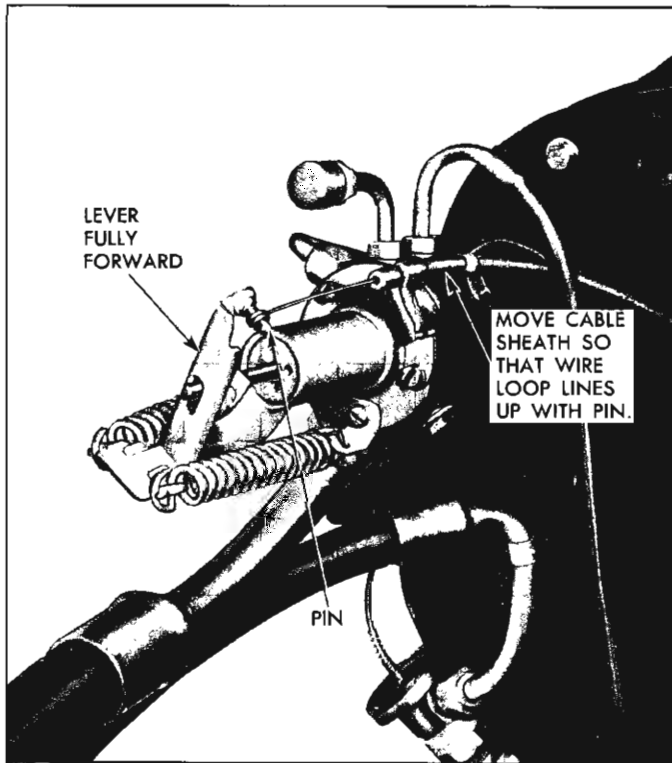


Fig. 40—Suction Throttling Valve Cable Adjustment

### Bowden Cable Adjustment (COLD lever control)

1. Check the operation of the cable, making sure it is not bent or kinked but operates freely.
2. Move the COLD lever on the Air Conditioning control panel to the extreme right. This is the maximum cold position.
3. Move the lever arm fully forward, toward the front of the vehicle.
4. Using a screwdriver, loosen the clamp holding the bowden wire sheath and move the sheath until the bowden wire loop matches the lever arm pin. Tighten the clamp on the sheath in this position.
5. Place the bowden wire loop on the pin.

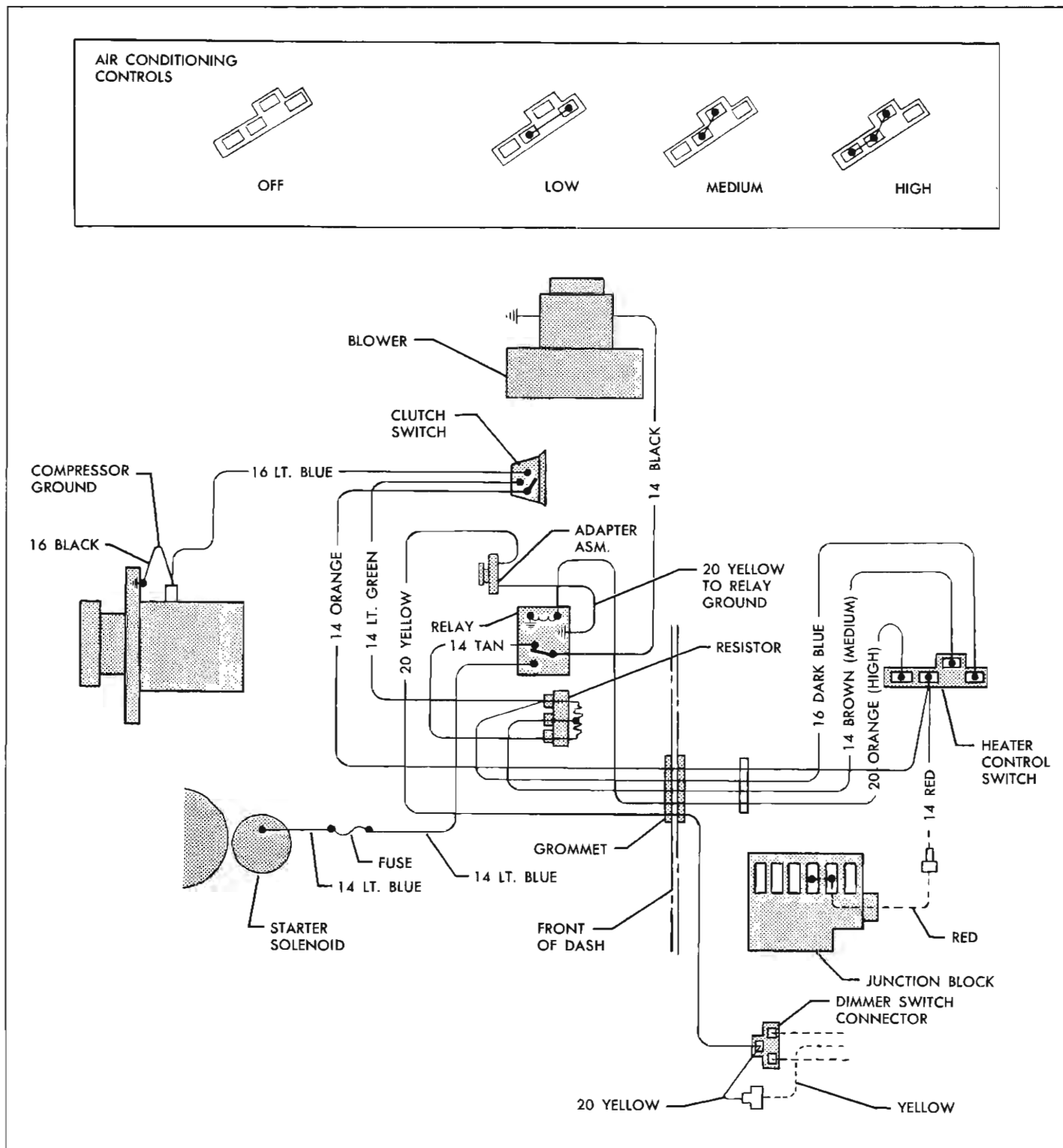


Fig. 41—All-Weather System Wiring Diagram



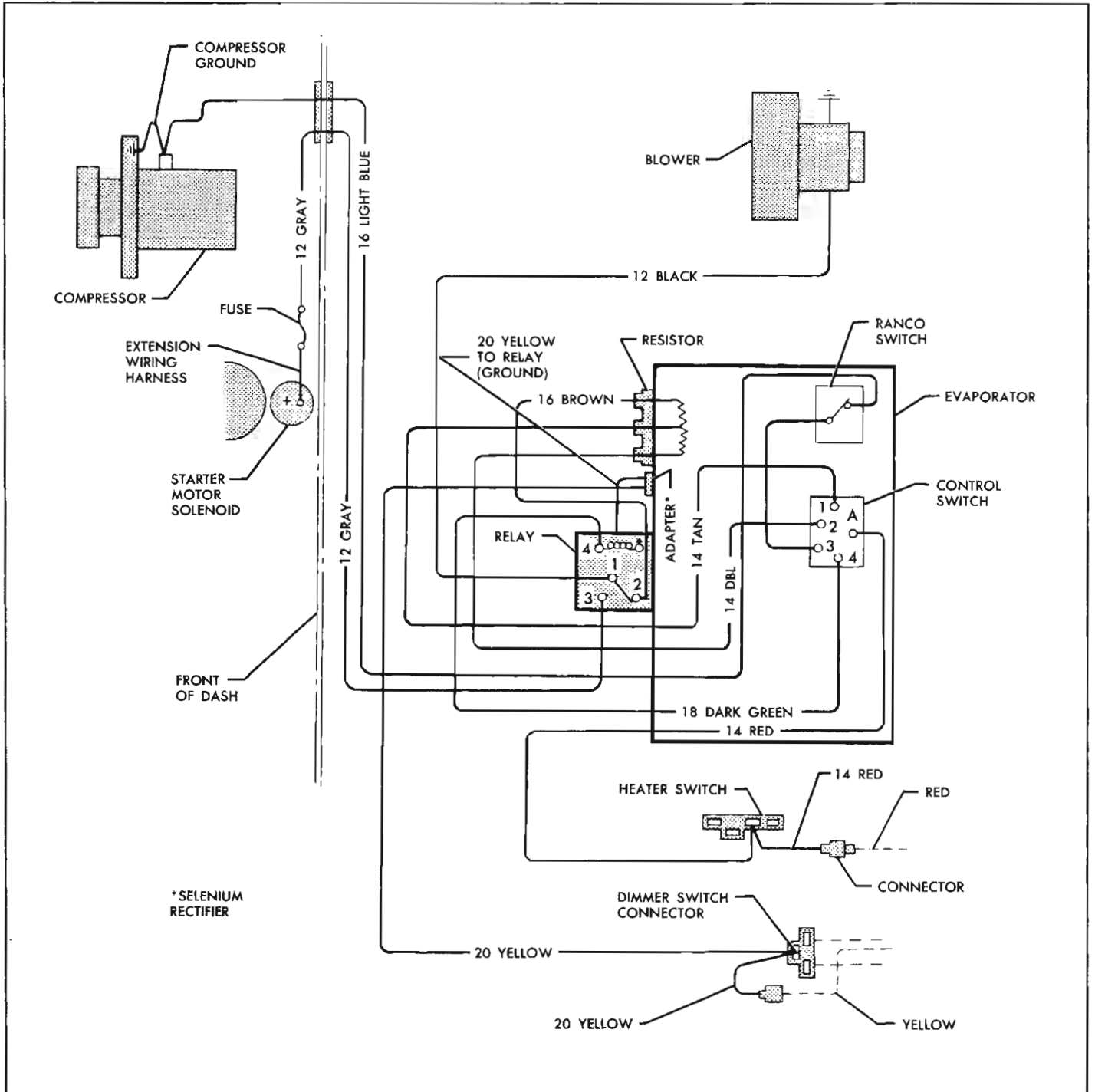


Fig. 42—Cool Pack System Wiring Diagram

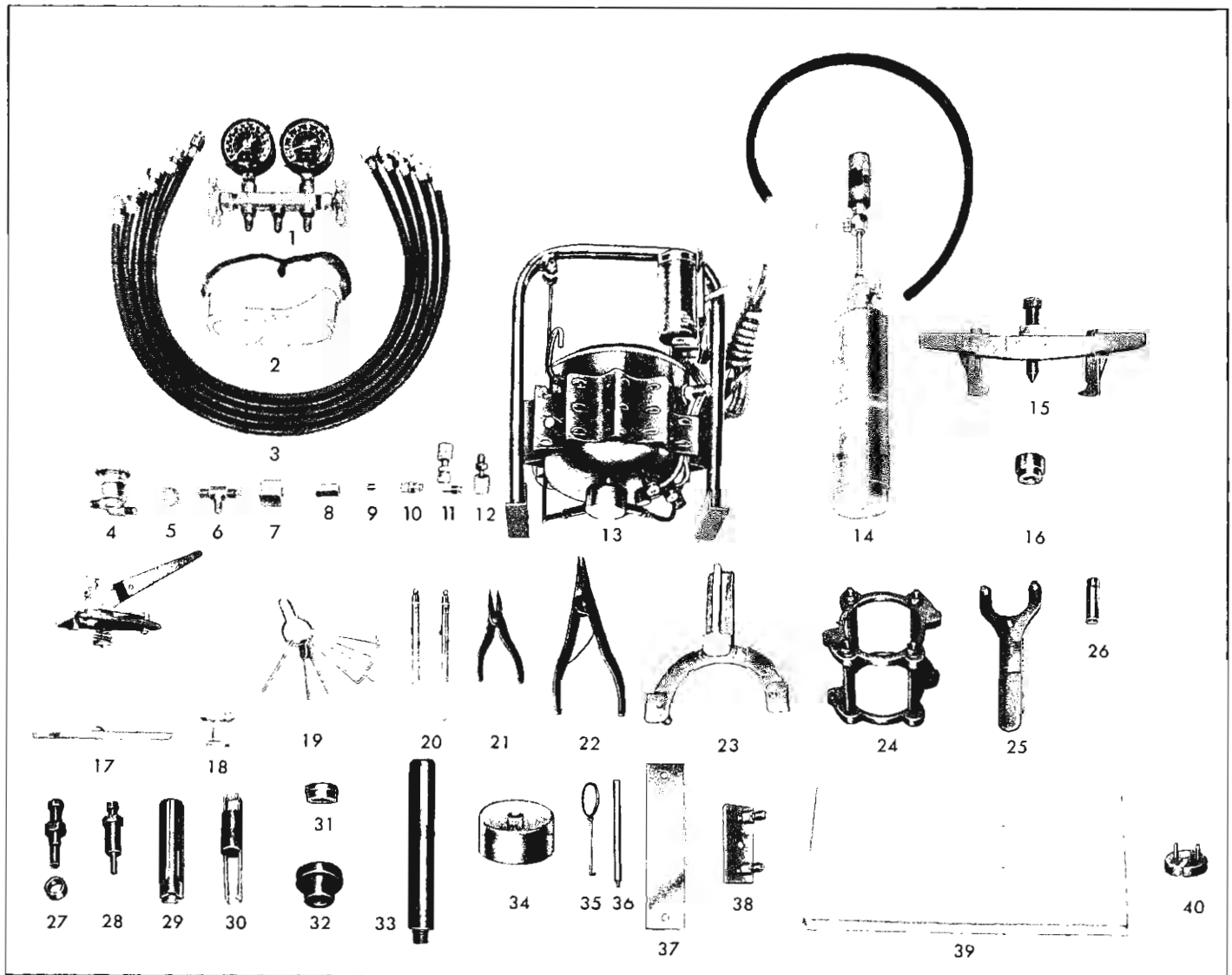


Fig. 43—Air Conditioning Special Tools

- |              |                            |            |  |
|--------------|----------------------------|------------|--|
| 1. J-5725-A  | Gauge Manifold Test Unit   | 20. J-5421 | Pocket Thermometers (2)                |
| 2. J-5453    | Goggles                    | 21. J-5403 | #21 Snap Ring Pliers                   |
| 3. J-5418    | Gauge Charging Lines (5)   | 22. J-6435 | #26 Snap Ring Pliers                   |
| 4. J-5462-1  | 2-Way Valve                | 23. J-9396 | Compressor Holding Fixture             |
| 5. J-5462-3  | Refrigerant Drum Washer    | 24. J-9397 | Compressing Fixture                    |
| 6. J-5462-2  | 3-Way "T"                  | 25. J-9403 | Clutch Hub Holding Tool                |
| 7. J-5462-4  | Refrigerant Drum Reducer   | 26. J-9399 | 9/16" Thin Wall Socket                 |
| 8. J-5462-7  | Female Connection          | 27. J-9401 | Hub and Drive Plate Assembly Remover   |
| 9. J-5462-8  | Ring Seat                  | 28. J-9480 | Hub and Drive Plate Assembly Installer |
| 10. J-5462-9 | Pipe Fitting (1/4" x 1/4") | 29. J-9392 | Seal Remover                           |
| 11. J-9459   | 90° Gauge Line Adapter     | 30. J-9393 | Seal Seat Remover                      |
| 12. J-5420   | Gauge Line Adapter         | 31. J-9398 | Pulley Bearing Remover                 |
| 13. J-5428   | Vacuum Pump                | 32. J-9481 | Pulley and Bearing Installer           |
| 14. J-8094   | Leak Detector              | 33. J-8092 | Handle                                 |
| 15. J-8331   |                            | 34. J-9521 | Internal Assembly Support Block        |
| or           |                            | 35. J-5139 | Oil Pickup Tube Remover                |
| J-9405       | Puller                     | 36. J-9432 | Needle Bearing Installer               |
| 16. J-9395   | Puller Pilot               | 37. J-9433 | Suction Crossover Seal Installer       |
| 17. J-6272   | No. 3 Multi-Opener (3-Can) | 38. J-9527 | Pressure Test Connector                |
| 18. J-6271   | Fitzall Valve (Single Can) | 39. J-9402 | Parts Tray                             |
| 19. J-7151   | Non-Magnetic Clutch Shims  | 40. J-9505 | Suction Throttling Valve Adjuster      |

## DELUXE HEATER

The Deluxe Heater, optional in 1961, is standard equipment for all 1962 Chevrolet passenger cars. The recirculating heater is no longer available.

Information contained in the 1961 Passenger Car Shop Manual concerning the Deluxe Heater will apply as well to the 1962 Deluxe Heater with the exception of blower motor removal and installation. Water valve adjustment is also covered here.

### Blower Motor Replacement

The blower motor and blower cage assembly may be removed after removing the right hood hinge. First remove the electrical connector, then the five motor flange-to-housing attaching bolts. Work the blower motor and fan cage assembly from under the fender. Replace in the same manner.

### Blower Housing Replacement

The blower housing installation is such that the right fender must be removed to gain access to the mounting screws. Since the motor and fan cage may be removed without the necessity of removing the entire housing, it is probable that this operation would not be performed except in the event of severe collision damage.

### Water Valve Adjustment (Fig. 44)

1. Loosen the two screws attaching the valve to the air inlet assembly.
2. Loosen the control cable clamp screw.

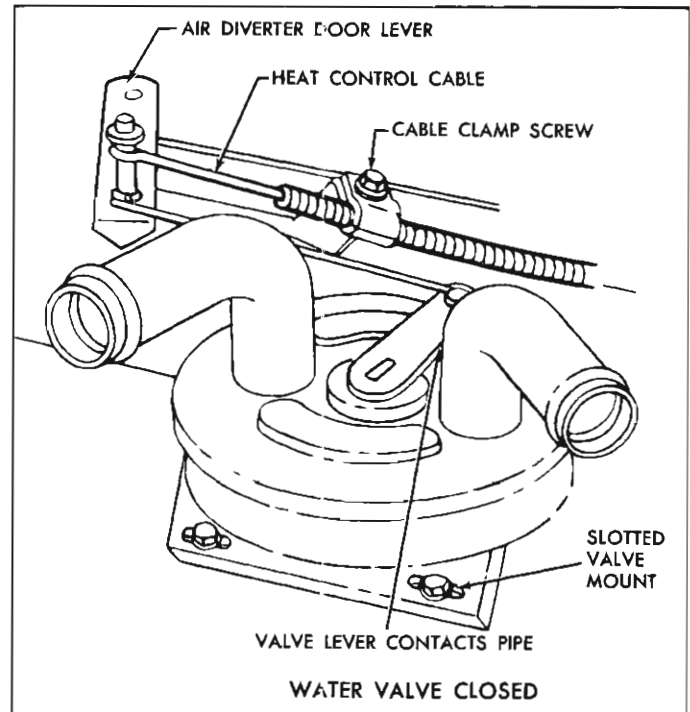


Fig. 44—Deluxe Heater Water Valve Adjustment

3. Hold the air valve lever fully inboard and tighten cable clamp screw. Be sure the clamp and cable remain in alignment.
4. Holding the air valve lever fully inboard, position the water valve in the mounting slots so that the water valve lever just touches the hose nipple.
5. Tighten attaching screws.

## SPEED AND CRUISE CONTROL

Service information contained in the 1961 Passenger Car Shop Manual will apply as well to the 1962 model Speed and Cruise Control. Slight differences which can be watched for when performing service operations on the 1962 unit are:

- A spring washer is now utilized on each end of the pintle assembly.
- The ball socket shield has been lengthened.

# SECTION 16 SPECIFICATIONS

## GENERAL

Refer to Section 1 for general information and data.

## SUSPENSION (Section 3)

### FRAME

#### General

Type . . . . . X-design  
Material . . . . . Hot rolled, pickled steel  
Maximum Overall Length (approx.) . . . . 194.45  
Maximum Width (over sidemembers  
at rear crossmember) . . . . . 47.50  
Convertible Frame . . . . . Steel plates  
welded to top and bottom of sidemember and  
center beam.

### FRONT SUSPENSION

#### General

Type . . . . . Independent, combining long and  
short control arms with spherical joints and  
springs.

#### Wheel Travel

Vertical Loaded Conditions:  
Metal to Metal . . . . . 3.90 up, 4.54 down  
Wheel to Spring Ratio . . . . . 1.87:1

#### Spring Bumpers

Material and Number . . . . . Rubber,  
2 each RH & LH  
Location . . . . . On topside of lower control arm  
and topside of frame crossmember.

#### Shock Absorbers

Make . . . . . Delco  
Type . . . . . Direct, double acting hydraulic  
Mounting . . . . . Vertically from lower control  
arm through coil spring to front suspension  
crossmember.  
Piston Diameter and Travel . . . . . 1.00; 4.9375

#### Steering Knuckle

Type . . . . . Forged steel with integral brake  
cylinder mounting, detachable steering arms.

#### Spindle Diameters:

At inner bearing . . . . . 1.2492-1.2497  
At outer bearing . . . . . .7491- .7496

#### Spherical Joints

Type . . . . . Ball stud and socket in  
assembly, self-adjusting for wear.  
Number . . . 1 each, upper and lower; LH & RH  
Ball Stud:  
Material . . . . . Hot rolled steel hardened  
and ground.

#### Ball Spherical Diameter:

Upper . . . . . 1.304-1.308  
Lower . . . . . 1.246-1.250  
Bearings . . . . . Non-metallic,  
molded, phenolic impregnated fabric.

#### Seals:

Upper . . . . . Rubber with bonded nylon bushing  
Lower . . . . . Rubber with steel cover

#### Socket:

#### Type and material:

Upper . . . . . Two cup-shaped steel stampings  
bonded by grease-tight weld with rubber  
type loading ring to compensate for wear.  
Lower . . . . . Forged seat and stamped  
socket, each cup shaped and bonded by  
grease tight peening.

Lubrication . . . . . Through high pressure  
fitting at top of each socket.

#### Control Arm Pivot Bushings

Type and Number . . . . . Pre-loaded rubber; 8  
(2 each pivot shaft, left hand and right hand).  
Material . . . . . Steel encased rubber  
Size:  
Upper . . . . . .670-.677 x 1.76 approximately  
Lower . . . . . .737-.744 x 2.08 approximately

#### Stabilizer Bar (where applicable)

Type . . . . . Link  
Diameter . . . . . 0.6875  
Bushings . . . . . Rubber; 10  
(1 each at frame side rail and 4 each left  
hand and right hand at link attachment.)

**SPECIFICATIONS 16-2**

**Front Wheel Alignment**

Caster . . . . .	0° ± 1/2°
Camber . . . . .	+1/2° ± 1/2°
Steering Axis Indication . . . . .	+7 1/4° ± 1/2°
Toe-In . . . . .	1/8" to 1/4" Total
Toe-Out on Turns	
Inner Wheel . . . . .	20° ± 1°
Outer Wheel . . . . .	18° ± 1°

**REAR SUSPENSION**

**General**

Type . . . . . Four-link with an upper control arm, a lateral control bar, and 2 lower control arms. Coil springs.

**Control Arms**

Mounting:

Upper . . . . . Pivotaly attached at forward end to frame crossmember, and on axle housing at rear.

Lower . . . . . Pivotaly attached at forward ends to frame brackets and at rear to axle housing brackets.

**Lateral Control Bar**

Mounting . . . . . Pivotaly attached to right side of axle housing and at frame left sidemember.

Diameter . . . . . .750

Length (ϕ to ϕ of bushing) . . . . . 31.45

**Wheel Travel**

Vertical Load Conditions:

Metal to Metal . . . . . 4.32 up, 5.56 down

Wheel to Spring Ratio . . . . . 1.51:1

**Suspension Bumpers**

Material and Number . . . . . Rubber,  
1 each RH & LH

Location . . . . . On underside of frame at top of kick-up.

**Shock Absorbers**

Make . . . . . Delco

Type . . . . . Direct, double acting hydraulic

Mounting . . . . . Short cantilever brackets welded to frame sidemember at upper end and rear spring anchor plate at lower end.

Piston Diameter and Travel . . . . . 1.00; 8.4375

**WHEELS AND TIRES**

**Wheels**

Type . . . . . Short spoke disc

Attachment to Hub . . . . . 5 hex nuts, 7/16-20

Bolt Circle Diameter . . . . . 4.75  
Offset and Rim Size . . . . . 5.60 x 14 x 5J  
(modified) (14 x 6-JK on 9-Pass. Wagon).

**Tires**

Type . . . . . Tubeless, blackwall

Size and Ply Rating:

Convertible and Station Wagons . . . 8.00-14.4

Balance of line . . . . . 7.50-14.4

Tire Size and Rating	Loaded Rolling Radius	Loaded, Rev's per Mile	Loaded Cap each Tire	Pressure	
				Front	Rear
7.50-14-4	12.78	789	1085	24	24
8.00-14-4	13.01	774	1175	24	24†

†Rear pressure on 6-pass. & 9-pass. wagon—28 lb.

**SUSPENSION BOLT TORQUES (FT. LBS.)**

**Front**

**Upper Control Arm**

Pivot Shaft to Crossmember . . . . . 45-55

Pivot Shaft . . . . . 35-40

Ball Stud Nut . . . . . 42-47

Service Ball Joint . . . . . 20-25

**Lower Control Arm**

Pivot Shaft to Crossmember

Front . . . . . 45-55

Rear . . . . . 120-150

Pivot Shaft . . . . . 65-75

Ball Stud Nut . . . . . 35-45

Service Ball Joint . . . . . 20-25

**Stabilizer Bar Link . . . . . 9-12**

**Shock Absorber**

Upper . . . . . 9-12

Lower . . . . . 15-25

**Rear**

Tie Rod Link . . . . . 51-73

Tie Rod Stud . . . . . 95-125

**Shock Absorber**

Upper . . . . . 10-14

Lower . . . . . 35-50

**Upper Control Arm**

Bracket to Crossmember . . . . . 60-80

Pivot Bolts . . . . . 80-90

Lower Control Arm - Pivot Bolt . . . . . 80-90



**SPECIFICATIONS 16-4**

Number and Type . . . . . Two, open  
 Hotchkiss (adjustable) tubular.  
 Tube O.D. . . . . 1.995-2.003  
 Tube Wall Thickness . . . . . .092- .097

Type . . . . . Yoke and Spider (trunnion)

**REAR AXLE BOLT TORQUES  
 (FT. LBS.)**

Axle Bearing Retainer Nuts . . . . . 25-35  
 Ring Gear Bolts . . . . . 40-60  
 Differential Bearing Cap Bolts . . . . . 70-75  
 Positraction Case Bolts . . . . . 35-45

**Universal Joints**

Make . . . . . Chevrolet  
 Number . . . . . Three

**Rear Axle Gear Ratios**

Engine	Transmission	Gear Type	Standard Axle Ratio	Positraction Axle Ratio
235 L-6	3-Speed Sedans & Coupes	Hypoid	3.36:1	3.08:1, 3.36:1 & 3.55:1, 3.70:1
	3-Speed Station Wagons		3.55:1	
	Overdrive		3.70:1	
	Powerglide		3.36:1	
283 V-8 2-Barrel Carburetor	3-Speed		3.36:1	
	Overdrive		3.70:1	
	Powerglide		3.36:1	
327 V-8 4-Barrel Carburetor	3-Speed		3.36:1	
	4-Speed		3.36:1	
	Powerglide		3.08:1	
327 V-8 Large Aluminum 4 Barrel Carburetor	3-Speed		3.36:1	
	4-Speed			
	Powerglide			
409 V-8 Large 4-Barrel	3-Speed	3.36:1		
	4-Speed			
409 V-8 Two 4-Barrel Aluminum Carburetors	3-Speed	3.36:1		
	4-Speed			

**BRAKES  
 (Section 6)**

Refer to the specifications section of the 1961 Shop Manual for Brake Specifications.

**TUNE-UP  
 (Section 7)**

For tune-up specifications, refer to Tune-Up, Section 7 in this manual.

## ENGINE (Section 8)

ENGINE & RPO	235 L-6	283 V-8	327 V-8(300)	327 V-8(397)	409 V-8(580)	409 V-8(587)
<b>GENERAL DATA:</b>						
Horsepower @ rpm	135 @ 4000	170 @ 4200	250 @ 4400	300 @ 5000	380 @ 5800	409 @ 6000
Torque @ rpm	217 @ 2400	275 @ 2200	350 @ 2800	360 @ 3200	420 @ 3200	420 @ 4000
Type	In Line Valve-In-Head	"V" - Valve-In-Head				
Carburetor	1 BBL	2 BBL	4 BBL	4 BBL - Aluminum	Dual-4 BBL	
Number of Cylinders	6	8				
Bore	3.56	3.875	4.00		4 5/16	
Stroke	3.94	3.00	3.25		3.5	
Displacement (cu. in.)	235.5	283	327		409	
Taxable Horsepower (A.M.A.)	30.4	48	51.2		59.5	
No. System (Front to Rear)	Left Bank	1-3-5-7				
	Right Bank	2-4-6-8				
Firing Order	1-5-3-6-2-4		1-8-4-3-6-5-7-2			
Compression Ratio	8.25:1	8.5:1	10.5:1		11.0:1	
Compression Pressure * (PSI)	130		150		150	
Idle Speed (RPM)	Manual	500				700
	Auto. (In Drive)	475				—
Recommended Fuel	Regular		Premium		Premium	
Cylinder Head Material	Cast Alloy Iron					
<b>PISTONS:</b>						
Material	Cast Alloy Aluminum				Impact Extruded Aluminum	
Type	Flat Head Controlled Expansion	Flint Notched Head Controlled Expansion			Gabled Roof Slipper Skirt	
Clearance Limits	Top Land	<u>.033</u> .042	<u>.017</u> .020	.013 - .016		.199 - .201
	Skirt	<u>.0005</u> .0011	<u>.0006</u> .0010	.0006 - .0010		.0031 - .0035
Ring Groove Depth	Compression	<u>.184</u> .192	.195 .203	.205 - .213		.165 - .223
	Oil	<u>.184</u> .192	.178 .188	.188 - .196		.199 - .201
<b>PISTON RINGS:</b>						
Compression	Material	Cast Alloy Iron				
	Type	Thick Wall - Inside Bevel				
	Coating	Upper	Wear Resistant	Flash Chrome Plate		Full-Chrome Plate
		Lower		Wear Resistant		Wear Resistant
	Width	.0930 .0935		.0775 - .0780		.077 - .078
Gap	.010 - .020		.013 - .023		.015 - .025	

\* At cranking speed with throttle open.



**SPECIFICATIONS 16-6**

ENGINE & RPO			235 L-6	283 V-8	327 V-8(300)	327 V-8(397)	409 V-8(580)	409 V-8(587)
<b>PISTON RINGS (Cont'd.)</b>								
Oil Ring	Material		Steel					
	Type		Multi-Piece (Rails, Spacer and Expander)					
	Coating		Rails - Chrome Plated O.D.					
	Width (Assembled)		$\frac{.184}{.188}$	$\frac{.184}{.188}$	.187 - .189		.184 - .188	
	Gap		.015 to .055					
	Wall Thickness		$\frac{.150}{.156}$	.177 - .182		.169 - .175		
	Expanders		Yes					
<b>PISTON PINS:</b>								
Material		Chrome Steel						
Length		$\frac{3.168}{3.198}$	2.990 to 3.010		3.250 - 3.270			
Diameter		$\frac{.8660}{.8665}$	.9270 - .9273		.9895 - .9898			
Type		Locked In Rod	Pressed-In-Rod					
Clearance	In Piston	.00015 - .00025				.00045 - .00055		
	In Rod	Locked	Pressed-In-Rod					
Offset Direction		Major Thrust Side (Right)				On-Center		
<b>CONNECTING RODS:</b>								
Material		Drop Forged Steel						
Length (C/L to C/L)		6.81	5.70	5.70		6.009 - 6.011		
Bearing	Material		Durex - 100A		Moraine 400		Moraine 500	
	Overall Length		1.143	$\frac{.832}{.842}$	$\frac{.832}{.842}$		$\frac{.882}{.892}$	
	Clearance	New	.001 - .003		.0007 - .0028		.0007 - .0028	
		Used	.001 - .004					
End Play		.005 - .012		.0017 - .0038		.0017 - .0038		
<b>CRANKSHAFT:</b>								
Material		Forged Steel						
Vibration Damper Type		Rubber Floated	None	Rubber Mounted Inertia Weight				
End Play		$\frac{.0035}{.0095}$	.002 - .006		.006 - .010			
End Thrust Taken by		No. 3 Brg.		No. 5 Brg.		No. 5 Brg.		
Main Bearing	Nominal Journal Diameter and Bearing Overall Length	No. 1	2.6835 x 1.063		2.2988 x .920		2.4977 x 1.200	
		No. 2	2.7150 x .907		2.2988 x .920		2.4977 x 1.200	
		No. 3	2.7460 x .979		2.2988 x .920		2.4977 x 1.200	
		No. 4	2.7770 x 1.189		2.2988 x .920		2.4977 x 1.200	
		No. 5	—		2.2988 x 1.720		2.4977 x 1.815	
	Material		Steel Back Copper Nickel Lead Overlay	Steel Backed Babbit	Moraine 400		Moraine 500	
Type		Precision Removable						

ENGINE & RPO		235 L-6	283 V-8	327 V-8(300)	327 V-8(397)	409 V-8(580)	409 V-8(587)
<b>CRANKSHAFT (Cont'd.):</b>							
Main Bearing (Cont'd.)	Clearance	.0008 .0026	.0008 - .0034			.0006 - .0032	
Crankpin Journal Diameter		$\frac{2.311}{2.312}$	1.999 - 2.000			2.1998 - 2.1988	
<b>CAMSHAFT:</b>							
Material		Cast Alloy Iron					
Lobe Lift *		.222	.222	.266		.2813-I — .2649-X	
Cam Bearings	Nominal Journal Diameter and Bearing Length	No. 1	2.1562 x 1.120	1.8687 x .740		1.8687 x .860	
		No. 2	2.0937 x .940	1.8687 x .740		1.8687 x .860	
		No. 3	2.0312 x .940	1.8687 x .740		1.8687 x .860	
		No. 4	1.9687 x .938	1.8687 x .740		1.8687 x .860	
		No. 5	—	1.8687 x .940		1.8687 x .960	
Material		Steel-Backed-Babbit					
Type of Drive		Gear	Chain and Sprocket				
Crankshaft Gear Material		Steel	Cast Iron				
Camshaft Gear Material		Bakelite & Fabric Composition	Cast Iron				
Timing Chain	Type	—	Link Chain				
	No. of Links	—	46			48	
	Width	—	.875			.865	
<b>VALVE SYSTEMS:</b>							
Lifters Type		Hydraulic	Hydraulic			Mechanical	
Rocker Arm Ratio		1.477:1	1.5:1			1.75:1	
Valve Lash	Intake (Hot)	1 Turn To Center Place				.008	
	Exhaust (Hot)	Same				.018	
Timing Marks Location		Flywheel	Harmonic Balancer			Harmonic Balancer	
Valve Timing	Inl.	Opens (°BTC)	62°	18°	12°30'	12°30'	59° 12'
		Closes (°ABC)	94°	54°	57°30'	57°30'	106° 36'
	Exh.	Opens (°BBC)	92° 30'	52°	54°30'	54°30'	86° 5'
		Closes (°ATC)	63° 30'	20°	15°30'	15°30'	26° 44'
Material		Alloy Steel					
Intake	Overall Length		$\frac{6.272}{6.282}$	4.9024 - 4.9924		5.095 - 5.115	
	Head Diameter		$\frac{1.870}{1.880}$	1.72	1.94	2.190	
	Face Angle		30°	45°			45°
	Seat Angle		31°	46°			46°
	Stem Diameter		$\frac{.3410}{.3417}$	Top .3410 - .3417 Bottom .3400 - .3407		.3715 - .3722	
	Stem to Guide Clearance		$\frac{.0010}{.0027}$	.0010 - .0027			.0010 - .0027
	Lift **		.3275	.333	.3987		.4922

\* Measured at Push Rod  
 \*\* Measured at Valve Stem

**SPECIFICATIONS 16-8**

ENGINE & RPO		235 L-6	283 V-8	327 V-8(300)	327 V-8(397)	409 V-8(580)	409 V-8(587)
<b>VALVE SYSTEMS (Cont'd.)</b>							
Intake (Cont'd.)	Outer Spring Press. and Length	Free Length	2.16	2.03	2.08	2.06	
		Pressure lb. @ in.	62 - 68 @ 1.858	84 - 92 @ 1.660	78 - 86 @ 1.660	130 - 138 @ 1.68	
		Pressure lb. @ in.	158 - 168 @ 1.528	163 - 173 @ 1.330	170 - 180 @ 1.26	273 - 285 @ 1.29	
	Inner Spring	Damper	—	—	.045 x .250 Flat Wound		
Exhaust	Material		Alloy Steel				
	Overall Length		4.913 - 4.933			5.105 - 5.125	
	Head Diameter		1.495 - 1.505			1.715 - 1.725	
	Face Angle		45°			45°	
	Seat Angle		46°			46°	
	Stem Diameter		.3410 - .3417			.3710 - .3717	
	Stem to Guide Clearance		.0016 - .0033			.0025 - .0042	
	Lift *		.3275	.333	.3987	.4735	
	Outer Spring Press. and Length	Free Length	.216	2.03	2.08		
		Pressure lb. @ in.	62 - 68 @ 1.858	84 - 92 @ 1.660	78 - 86 @ 1.660	130 - 138 @ 1.68	
		Pressure lb. @ in.	158 - 168 @ 1.528	163 - 173 @ 1.330	170 - 180 @ 1.26	273 - 285 @ 1.29	
Inner Spring	Damper	—	—	.045 x .750 Flat Wound			
Recommended Valve Seat Width	Intake				1/32 to 1/16		
	Exhaust				1/16 to 3/32		
<b>ENGINE LUBRICATION</b>							
Type Oil Pump		Gear		Gear			
Normal Oil Pressure (lb. @ rpm)		35 @ 2000		45 @ 2000			
Oil Intake Type		Fixed		Screen			
Oil Filter Type		Replaceable Element					
Crankcase Capacity (Refill)	W/Filter	6	5	5	7		
	W/O Filter	5	4	4	6		
Oil Grade Recommended	32°F. and Above	SAE 20 or 10W-30					
	0°F. and Above	SAE 10 or 10W-20					
	0°F. and Below	SAE 5 or 5W-10 or 5W-20					
<b>COOLING SYSTEM:</b>							
Type		Liquid Cooled					
Radiator Cap Pressure		13 PSI					
Thermostat	Location	Cyl. Head Water Outlet	Manifold Water Outlet				
	Open at °F.	170°	170°				
Radiator Core Type		Harrison Tube and Center					
Cooling System Capacity	W/Heater				Add one Quart with Heater		
	W/O Heater	16 1/2 to 17	17 1/4 to 17 3/4				

\* Measured at Valve Stem

ENGINE & RPO		235 L-6	283 V-8	327 V-8(300)	327 V-8(397)	409 V-8(580)	409 V-8(587)
COOLING SYSTEM (Cont'd.)							
Radiator Hose	Lower	Type	Moulded				
		Inside Dia.	1.75				
	Upper	Type	Moulded				
		Inside Dia.	1.50				
Fan	Number of Blades		4	5			
	Diameter		17 11/16		18"		
	Fan to C/S Ratio		.95 to 1	.95:1	Variable		
	Fan Cutout Type		—	Thermo-Modulated Fan Clutch			
Water Pump	Capacity		55 G.P.M. @ 4000 R.P.M.				
	Bearing Type		Permanently Lubricated and Sealed Ball Bearing				
Fan Belt	Tension		90 lb. new - 75 lbs. used (Approx. 1000 miles is considered used)				
	Width		3/8"				
	Adjustment		Movable Generator				

## ELECTRICAL (Section 9) ENGINE ELECTRICAL

BATTERY MODEL	1980458	1980558				
Application	All, Except 327 Eng.	327 Eng.				
Ground	Neg	Neg				
Plates	54	66				
Capacity (20 Hour Rate)	53	61				
GENERATOR MODEL	1102096	1102097	1102174	1100600	1100601	1117765
Application	All, 6 Cyl.	All 8 Cyl.	Corvette	A/C	Opt.	Opt.
Brush Spring Tension, oz.	28	28	28	-	-	-
Cold Output	30A @ 14V,2240 RPM	30A @ 14V,2240 RPM	30A 14V,2240 RPM	12A@1100 RPM 42A@6500 RPM	5A@1100RPM 52A@6500RPM	24A@1100RPM 62A@6500RPM
Field Current Draw @ 12V, 80°F	1.69-1.79A	1.69-1.79A	1.69-1.79A	1.9-2.2A	1.9-2.2A	4.1-4.5A
REGULATOR MODEL	1119001E	1119002E	REGULATOR MODEL		1119502	9000567
Application	All	Corvette	Application		For Gen. 1100600 1100601	For Gen. 1117765
Cutout Relay:			Field Relay:			
Air Gap	.020	.020	Air Gap		.015	.014
Point Opening	.020	.020	Point Opening		.015	.027
Closing Voltage	11.8-13.5	11.8-13.5	Closing Voltage		6.5-8.5V	5.0-9.5V
Voltage Regulator:			Voltage Regulator:			
Air Gap	.060	.060	Air Gap		.067	.075
Adjust to:	13.8-14.7	125°F.	Adjust to *		13.5-14.3 125°F.	13.3-13.9@ 125°F.
Current Regulator:			Indicator Light Relay			
Air Gap	.075	.075	Air Gap		.010	
Adjust to:	27.0-31.0 @ 125°F	31.0-35.5 @ 125°F	Point Opening		.010	
			Closing Voltage		3.8-5.2V	

\*Set Lower Contact .1-.3 Volts Less on Double Contact Regulator.

CRANKING MOTOR MODEL	1107888	1107889	1107233	1107242			
Application	All, 6 Cyl.	All, 8 Cyl.	327 Eng. Std.	327 Eng. P.G.			
Brush Spring Tension, oz.	35	35	40	40			
Free Speed:							
Volts	10.6	10.6	10.6	10.6			
Amperes	49-76	49-76	65-100	65-100			
RPM	6300-9400		3600-5100	3600-5100			
Resistance Test (Armature Locked)							
Volts	4.25		3.5	3.5			
Amperes	270-310		300-360	300-360			
SOLENOID MODEL	1119910	1119910	1119910	1119910			
Hold-in Winding	10.5-12.5A @ 10V	10.5-12.5A @ 10V	10.5-12.5A @ 10V	10.5-12.5A @ 10V			
Both Windings	42-49A @ 10V	42-49A @ 10V	42-49A @ 10V	42-49A @ 10V			
RELAY MODEL	1115811	1116781	1116904	1115812	1116992		
Application	All, Horn	Corvette Horn	Corvette Solenoid	Overdrive	A/C		
Air Gap (Points closed)	.020	.020	.011	.011	.011		
Point Opening	.018	.018	.025	.025	.025		
Closing Voltage	1.5-9.5	1.5-9.5	3.8-5.0	8.3-10.2	8.3-10.2		
DISTRIBUTOR MODEL	1112403	1110947	1110984	1110990	1110985	1110987	1110919
Application	All, 6 Cyl.	283 Eng.	Corvette	Corvette F.I.	Corvette 4 BBL Carb.	327 Eng.	409 Eng.
Viewing Drive End Rotation	cc	cc	cc	cc	cc	cc	cc
Cam Angle Set Within:	.016 P.O. 28°-35°	30°±2°	30°±2°	29°±1° ea. 34°±1° Both	30°±2°	30°±2°	29°±1°
Centrifugal Advance	DEG RPM	DEG RPM	DEG RPM	DEG RPM	DEG RPM	DEG RPM	DEG RPM
Start	0-2 375	0-2 375	0-2 425	0-2 425	0-2 425	0-2 425	.5-2.5 400
Intermediate	5-7 750	4-6 700	4.5-6.5 800	4.5-6.5 800	4.5-6.5 800	4.5-6.5 800	6.5-8.5 775
Intermediate	10-12 1450	9-11 1350	8-10 1600	8-10 1600	8-10 1600	8-10 1600	9.5-11.5 1600
Maximum	13-15 1875	12-14 1750	11-13 2300	11-13 2300	11-13 2300	11-13 2300	13-15 2500

**SPECIFICATIONS 16-12**

VACUUM CONTROL MODEL	1116089	1116148	1116148		1116148
Application	For Dist. 1112403	For Dist. 1110947	For Dist. 1110984		For Dist. 1110987
Inches of Mercury to start advance	4-6	7-9	7-9		7-9
Inches of Mercury for full advance	7.5-10	15-16	15-16		15-16
Maximum Advance (Distributor)	7.5°	7.5°	7.5°		7.5°
IGNITION COIL MODEL	1115165	1115115	1115091	1115107	
Application	All, 6 Cyl.	283 & 327 Eng.	Corvette	Corvette F.I.	
Primary Resistance, ohms	1.45-1.63	1.28-1.42	1.02-1.13	1.03-1.13	
Secondary Resistance, ohms	5600-6900	7200-9500	8000-10,500	8000-10,500	
Ignition Resistor Model	In Wiring Harness				
Resistance at 80°F, ohms	1.8				
SPARK PLUGS	AC46	AC46	AC44	AC43N	
Application	235 Cu. In.	283 Cu. In.	327 Cu. In. Corvette	409 Cu. In.	
Gap	.035	.035	.035	.035	

## CHASSIS ELECTRICAL

### Bulb Specifications

	Candle- power	Number
Headlamp Unit--		4002
Outer--High Beam . . .	37-1/2W	(Sealed
Low Beam . . .	50W	Beam)
		4001
Inner--High Beam Only	37-1/2W	(Sealed
		Beam)
Parking Lamp and		
Directional Signal . . .	4-32	1034
Tail and Stop and Turn		
Signal Lamps . . . . .	4-32	1034
Back-up Lamp . . . . .	32	1073
Instrument Lamps . . .	2	57
Directional Signal		
Indicator Lamp . . . . .	1	53
Oil Pressure Indicator		
Lamp . . . . .	2	57
Generator Indicator Lamp	2	57
Headlamp Beam Indicator		
Lamp . . . . .	1	53
Ignition Lock Lamp . . .	1	53
Glove Compartment Lamp	2	57
Dome Lamp . . . . .	12	211
Side Rail Lamp--Sport		
Coupe and Sport Sedan.	6	90
Courtesy Lamp		
(Convertible) . . . . .	6	89
or Rear Quarter Lamp		
(9 Passenger Station		
Wagon) . . . . .	6	90
License Plate Lamp . . .	4	67
Radio Dial Lamp . . . . .	2	1891
Heater Control Panel		
Lamp . . . . .	2	53
Clock Lamp . . . . .	2	57
Brake Alarm Lamp		
(Flashing) . . . . .	2	257
Temperature Indicator		
Lamp . . . . .	2	57
Luggage Compartment		
Lamp . . . . .	15	93

### Fuses and Circuit Breaker:

A 30 amp. Circuit Breaker in the light control switch protects the headlamp circuit, thus eliminating one fuse. Where current load is too heavy, the circuit breaker rapidly opens and closes, protecting the circuit until the cause is found and eliminated.

Fuses, located in the Junction Block beneath the dash are:

Instrument and Clock	
Lights . . . . .	3AG/AGC- 3 amp.
Tail, Stop, Courtesy, Glove Box, License Plate, Dome Lights and Clock . . . . .	3AG/AGC-15 amp.
Radio (Manual and Push Button) . . . . .	3AG/AGC- 4 amp.
Heater . . . . .	3AG/AGC-10 amp.
Air Conditioning (including Heater) . . . . .	SAE-20 amp.
Backup Light, Brake Signal Light . . . . .	3AG/AGC-10 amp.
Spotlight . . . . .	3AG/AGC-15 amp.

Overdrive Fuse--SAE-9 amp. Located in wiring harness on engine side of the dash panel just forward of the instrument panel.

### WIPER MOTOR

#### Single Speed

Type . . . . .	Electric
Crank Arm Rotation (looking at the crank arm) . . . . .	Counterclockwise
Crank Arm Speed--No Load . . . . .	43 rpm
Operating Voltage . . . . .	12 VDC
Current Draw (Free Speed) . . . . .	30 amp. max.
(Dry Windshield) . . . . .	35 amp. max.
Stall Current . . . . .	11 amp.

#### Two Speed

Operating Volts . . . . .	12 VDC
Gear Ratio . . . . .	3.36:1
Crank Arm Rotation (Looking at Crank Arm . . . . .	CC
Crank Arm Speed--RPM (No Load)	
Lo . . . . .	34 min.
Hi . . . . .	65 min.
Current Draw (Amps.)	
No Load (Lo Speed) . . . . .	3.6
Installed in Car--(Dry Glass) . . . . .	4.5
Stall . . . . .	12
Shunt Field Resistance . . . . .	24

### Washer Pump

Number of Squirts at Full Pressure . . . . .	12
Pressure (PSI) . . . . .	11-15
Coil Resistance (Ohms) . . . . .	20



## FUEL AND EXHAUST (Section 10)

### CARBURETORS Carter

PART NUMBER	327 SYN.		327 P.G.		327 HI-PERF.		409	
	3788246 WCFB (3191S)		3788245 WCFB (3190S)		3797699 AFB (3269S)		3797698 AFB (3270S)	
	Prim.	Second.	Prim.	Second.	Prim.	Second.	Prim.	Second.
Float Level *	7/32	1/4	7/32	1/4	5/16	5/16	7/32	7/32
Float Drop	-	-	3/4	-	3/4	-	3/4	-
Pump Rod	1/2	-	1/2	-	1/2	-	1/2	-
Metering Rod	.042 .069	- -	.042 .069	- -	.060 .069	- -	.044 .060	- -
Fast Idle	1750 RPM Hot on Car		1750 RPM Hot on Car		1750 RPM Hot on Car		1750 RPM Hot on Car	
Unloader	3/16	-	3/16	-	1/4	-	1/4	-
Bowl Vents	5 Inside	-	5 Inside	-	1 Outside 4 Inside	- -	2 Outside 2 Inside	- -
Throttle Lock-Out	.020	-	.020	-	.020	-	.020	-
Automatic Choke Setting	AD Coil Index	-	AW Coil Index	-	AR Coil Index	-	AR Coil Index	-
Throttle Bore	1 7/16	1 7/16	1 7/16	1 7/16	1 9/16	1 11/16	1 5/8	1 11/16
Main Venturi	1 1/16	1 1/4	1 1/16	1 1/4	1 1/4	1 9/16	1 11/32	1 9/16
Main Jet	.086	.0635	.086	.0635	.104	.0689	.1015	.086
Nozzle Bleed	.040	.033	.040	.033	.028	.029	.028	.040
Nozzle Clearance	.280	.280	.280	.280	.325	.203	.325	.203
Power Step-Up Spring	61-134	-	61-134	-	61-135	-	61-485	-
Idle Jet	.031	-	.031	-	.035	-	.040	-
Bypass	.0595	-	.0595	-	.052	-	.052	-
Economizer	.0465	-	.0465	-	.0495	-	.052	-
Idle Air Bleed	.067	-	.067	-	.059	-	.059	-
Idle Port	.030 .175 Long	- -	.030 .175 Long	- -	.030 .200 Long	- -	.030 .200 Long	- -
Pump Intake	.016	-	.116	-	.115	-	.115	-
Pump Discharge	.021	-	.021	-	.028	-	.028	-
Choke Piston Vacuum Break	.060	-	.035	-	.082	-	.210	-

\*With Air Horn Gasket

## Rochester

CARBURETOR MODEL	ECONOMY BC		BC		ROCHESTER 2GC		ROCHESTER 4GC 7020006—7020012		
	SYN.	P.G.	SYN.	P.G.			Primary	Secondary	
Part Number	7020106	7020107	7020000	7020003	7019007	7019008			
Float Level	1 19/32	1 19/32	1 19/32	1 19/32	1 23/64	1 23/64	1 33/64	1 37/64	
Float Drop	1 3/4	1 3/4	1 3/4	1 3/4	1 29/32	1 29/32	2 1/4	2 1/4	
Pump Rod	—	—	—	—	57/64	57/64	1	—	
Idle Vent	—	—	—	—	4 9/64	49/64	31/32	—	
Automatic Choke Setting	1 Notch Rich	2 Notches Rich	Index	2 Notches Rich	1 Notch Lean	Index	Index	—	
Choke Rod adj.	.040	.040	.030	.040	.089	.089	.055	—	
Unloader adj.	.230	.230	.230	.230	.230	.230	.235	—	
Throttle Bore	1 9/16	1 9/16	1 9/16	1 9/16	1 7/16	1 7/16	1 7/16	1 7/16	
Main Venturi	1 1/16	1 1/16	1 11/32	1 11/32	1 3/32	1 3/32	1 1/8	1 1/4	
Small Venturi	19/32	19/32	19/32	19/32	1/8	1/8	1/4	1/4	
Idle Needle Orifice	.080	.080	.080	.080	.037	.037	.052	—	
Idle Tube Restrictions	.063	.063	.067	.063	.027	.027	.027	.036	
Main Metering Jets	.042	.042	.057	.056	.058	.055	.058	.068	
Main Well Vents	—	—	—	—	.035	.035	.040	.026	
Cluster or Bar	Top Bleed	.028	.028	.028	.028	.032	.040	.040	.034
	Side Bleed	—	—	—	—	.036	.036	—	—
	Channel Rest.	—	—	—	—	.042	.043	.046	—
Lower Idle Bleed	—	—	—	—	—	—	.048	—	
Idle Discharge Holes	Lower	.040	.040	.040	.040	.031	.031	.030	.043
	Middle	.028	.028	.028	.028	.026	.026	.038	—
	Upper	—	—	—	—	.028	.028	.038	—
Power Restrictions	.028	.028	.039	.040	.030	.034	.040	—	
Pump Jets	.031	.031	.031	.031	.026	.026	.026	—	

## CLUTCH (Section 11)

Engines		235 Cubic Inch		283 Cu. In.	283 Cu. In.	327 Cu. In.	409 Cu. In.	
Transmissions		3-Speed		3-Speed	Overdrive	RPO 300	RPO 397	RPO 580 and 587
		Standard & Overdrive	Heavy Duty Clutch			3-Speed & 4-Speed	3-Speed & 4-Speed	3-Speed & 4-Speed
Type		Single plate, dry disk					#	
Drive (cover to pressure plate)		Spring Steel Straps					3 Lugs	
Clutch Spring	Type	Circular plate diaphragm					12 coil springs	
	Material	Heat-treated spring steel						
	Effective Plate Load (lb)	1600-1775	1900-2000	1700-1875		1900-2100	2100-2380	
	Release	Diaphragm action					Lever Action	
Driven Plate	Type	Spring cushioned, double faced						
	Dampers	6 Springs			6 sets of two concentrically mounted springs	5 sets of two concentrically mounted springs		
	Friction Facing	Material	Woven asbestos*				Woven asbestos**	
		O.D. (in.)	9.5	10.0	10.0	10.5		
		I.D. (in.)	6.0	6.0	6.5	6.5		
		Total area (Sq. inches)	85.22	100.53	90.68	106.81		
		Thickness (ea., no load, inches)	.14					
Bearings	Throw-out	Type	Single Row Ball					
		Lubrication	Packed with high temperature high viscosity grease					
	Pilot	Make	Chevrolet					
		Material	Sintered powdered bronze bushing					
		O.D. (inches)	1.0935-1.0945					
		I.D. (inches)	.5915-.5925					
		Length (inches)	.740-.760					
Lubrication	Oil impregnated							
Controls	Clutch Fork Type	Drop forged steel, pivot mounted on ball						
	Pedal mounting	Pendent, from brace on dash						
Flywheel Assy	Ring Gear	Flywheel Material	Cast Alloy Iron					
		Material	4375 HR Steel					
		Teeth No.	168					
		Depth and P.D. (inches)	.4110-.4160; 14.00					
Clutch Housing Material		Cast Iron				Aluminum Alloy		
Cover Attachment to Flywheel		6-3/8-16 UNC-3A Bolts, 1 inch long; Shank Dia. .374 inches						

\* Molded option for 235 cubic inch engine standard & heavy duty clutches

\*\* Premium Grade.

# Single plate dry disk centrifugally assisted.

# MANUAL TRANSMISSION (Section 12)

## THREE AND FOUR SPEED TRANSMISSIONS

		235 Cu. In. 6 Cyl.	283 Cu. In. V-8	327 Cu. In. V-8	409 Cu. In. V-8	Options (W/409 Cu. In. V-8)	
Make		Own, synchromesh, manual shift					
Type		3-Speed			4-Speed		
Gearshift	Control	Remote					
	Type	Lever					
	Location	On steering column			On floor		
Gears	Type	All helical					
	Material	Forged steel, hardened					
	Synchronization	2nd and 3rd			1st, 2nd, 3rd, 4th		
	Constant mesh gears	2nd			1st, 2nd, 3rd		
	Sliding gears	1st and reverse			Reverse		
	Gear Ratios	First	2.94:1	2.47:1	2.54:1	2.20:1	
		Second	1.68:1	1.53:1	1.92:1	1.66:1	
		Third	Direct	Direct	1.51:1	1.31:1	
		Fourth				Direct	
		Reverse	2.94:1	2.80:1		2.26:1	
Speedometer Gears	Tooth pitch		28				
	Teeth	Drive	8				
		Driven	21	20	20	19	
Lubricant	Type recommended	SAE 90 transmission multi-purpose or mineral oil lubricant					
	Capacity	2 pints			2.5 pints		
Oil seal (transmission extension)		Steel encased double seal of spring loaded synthetic rubber and felt					

## OVERDRIVE TRANSMISSION

### Overdrive

#### General Data

Type . . . . . 3-speed synchro-mesh with 3-pinion planetary drive unit. The drive unit with its integral mainshaft replaces the mainshaft and extension of the regular 3-speed transmission.

Lockout Switch . . . . . Manually controlled by "pull type" cable located under instrument panel to right of steering column. With handle fully extended, overdrive is locked-out.

Kickdown Switch . . . . . On carburetor, actuated by accelerator pedal.

Minimum Cut-in Speed . . . . . 27-30 MPH

Cut-out Speed . . . . . 18-22 MPH

#### Gear Ratios

Overdrive Unit	Locked Out	Locked In
First	2.94:1	2.058:1
Second	1.68:1	1.176:1
Third	1.00:1	0.700:1
Reverse	2.94:1	

#### Speedometer Gears

Tooth Pitch . . . . .	30
Teeth-Driving and Driven . . . . .	8 and 24

#### Lubricant

Type . . . . SAE 90 transmission or mineral oil  
Capacity

Transmission . . . . .	2 pints
Overdrive Unit . . . . .	1 pint
Total . . . . .	3 pints

# AUTOMATIC TRANSMISSION (Section 13)

## CAST IRON POWERGLIDE (235 and 283 Cu. In. Engine)

There are no changes in the specifications for this Powerglide in 1962. Refer to the 1961 Chevrolet Shop Manual, Section 16, for specifications.

## ALUMINUM POWERGLIDE (327 Cu. In. Engine)

### General Data

Make and Type . . . Own, automatic hydraulic torque converter with planetary gear system for reverse and low; converter maximum torque ratio (at stall) . . . . . 2.1:1  
 Total Transmission Torque Multiplication (converter planetary gear ratio)  
     Maximum overall transmission ratio . . . 3.68:1  
     Low gear drive or low range . . . 3.68:1 to 1.76:1  
     Reverse range . . . . . 3.68:1 to 1.76:1  
 Oil Type . . . . Automatic transmission fluid, type A Suffix "A".  
 Oil Capacity . . . . 9 quarts; refill 1-1/2 quarts  
 Oil Cooler . . . . Integral with radiator assembly and connected to transmission by inlet and outlet pipes.

### Selector Lever

Location . . . . . On steering column  
 Operation . . . . . Actuates manual valve in hydraulic control system.  
 Positions (indicated in quadrant on steering column) . . . . Five; (left to right), Park--Reverse--Neutral--Drive--Low.

### Parking Lock

Type . . . . . Pawl and gear  
 Operation . . . . . Applied by selector lever through spring actuated mechanism.  
 Flywheel . . . . . Steel stamping with welded-on ring gear.  
 Drive Range--Representative Shift Points:

### Hydraulic Torque Converter

Type . . . . . Three element  
 Driving Member (pump) . . . . Inner and outer sheet steel shells separated by sheet metal vanes. Converter cover welded to outer shell (pump housing).  
 Driven Member (Turbine) . . . Sheet metal, multi-

vane type supported by pilot in torque converter cover. Turns independently of housing. Splined to input shaft.

Reaction Member (stator) . . Aluminum air foil type supported on a stationary sleeve by an overrunning clutch of cam and roller design.

### High Clutch

Type . . . . . Multiple-disc  
 Discs:  
     Driving; number and type . . . . . Four, steel with non-metallic facings.  
     Driven; number and type . . . . . Five, steel

### Reverse Clutch

Type . . . . . Multiple-disc  
 Discs:  
     Driving; number and type . . . . . Six, steel with non-metallic facings, bonded.  
     Driven; number and type . . . . . Six, steel

### Planetary Gear Unit

Type . . . . . Planetary  
 Gear Ratios  
     Cruising range . . . . . 1.1 (Direct drive)  
     Low range . . . . . 1.76:1  
     Reverse . . . . . 1.76:1  
     Low brake band . . . . Double wrapped design (linked circular segments)  
     Low band servo  
         Type . . . . . Piston, one release spring  
     Reverse clutch servo  
         Type . . . . . Piston with release springs

### Hydraulic Controls

Manual valve  
     Type . . . . . Spool  
 Pressure Regulator Valve:  
     Type . . . . . Spool  
     Reverse Pressure . . . . . 135-157

**SPECIFICATIONS 16-20**

**Governor**

Type . . . . . Centrifugal  
Drive . . . . . From transmission output shaft  
Location . . . . . In extension  
Operation . . . . . Regulates pump oil pressure to automatic shifting control valve body.

**Speedometer Gears**

Teeth  
Drive gear . . . . . 8  
Driven gear  
327 cu. in. engine . . . . . 18

# ACCESSORIES (Section 15)

## AIR CONDITIONING

### Compressor

Make . . . . . Frigidaire  
 Type . . . . . 6 Cylinder Axial  
 Displacement - Cool Pack . . . . . 10.8 Cu. In.  
                   - All Weather . . . . . 12.6 Cu. In.  
 Rotation . . . . . Clockwise

### Blower Motor

All Weather  
 Volts . . . . . 14  
 Amps (Cold) . . . . . 14.3 (Max.)  
 RPM . . . . . 3550  
 Cool Pack  
 Volts . . . . . 14  
 Amps (Cold) . . . . . 10 (Max.)  
 RPM (Cold) . . . . . 3100

### Compressor Clutch Coil

Ohms (at 80°F) . . . . . 3.85  
 Amps (at 80°F) . . . . . 3.2 12 Volts  
 Refrigerant . . . . . Freon-12  
 Compressor Oil . . . . . Frigidaire 525 Viscosity

### System Capacities

All Weather  
 Freon-12 . . . . . 3 lbs. 12 oz.  
 525 Viscosity Oil . . . . . 10 oz.  
 Cool Pack  
 Freon-12 . . . . . 3 lbs.  
 525 Viscosity Oil . . . . . 10 oz.

### Fuse

All Weather . . . . . 20 amp.  
 Cool Pack . . . . . 20 amp.

### Torque Specifications

Compressor Suction and Discharge  
 Connector Bolt . . . . . 17-23 ft. lbs.  
 Rear Head to Shell Studs Nuts . . . . . 19-23 ft. lbs.  
 Shaft Mounting Nut . . . . . 14-16 ft. lbs.

## SPEED AND CRUISE CONTROL

Motor . . . . . 12 Volt Reversible  
 Fuse . . . . . 10 Amp. in Junction Block  
 Accelerator Linkage  
     Adjustment . . . . . .0625" (use gauge pin)  
 Locking Arm Latch Clearance . . . . . .001" to .006"

Electrical Points . . . . . 4 (Replaceable)  
 Gap Between Motor Point No. 2 and  
     Contact Arm . . . . . .030"-.045"  
 Gap Between Motor Point No. 1 and  
     Contact Arm . . . . . .050"-.070"



## DECIMAL EQUIVALENTS

$\frac{1}{64}$ _____ .015625	$\frac{33}{64}$ _____ .515625
$\frac{1}{32}$ _____ .03125	$\frac{17}{32}$ _____ .53125
$\frac{3}{64}$ _____ .046875	$\frac{35}{64}$ _____ .546875
$\frac{1}{16}$ _____ .0625	$\frac{9}{16}$ _____ .5625
$\frac{5}{64}$ _____ .078125	$\frac{37}{64}$ _____ .578125
$\frac{3}{32}$ _____ .09375	$\frac{19}{32}$ _____ .59375
$\frac{7}{64}$ _____ .109375	$\frac{39}{64}$ _____ .609375
$\frac{1}{8}$ _____ .125	$\frac{5}{8}$ _____ .625
$\frac{9}{64}$ _____ .140625	$\frac{41}{64}$ _____ .640625
$\frac{5}{32}$ _____ .15625	$\frac{21}{32}$ _____ .65625
$\frac{11}{64}$ _____ .171875	$\frac{43}{64}$ _____ .671875
$\frac{3}{16}$ _____ .1875	$\frac{11}{16}$ _____ .6875
$\frac{13}{64}$ _____ .203125	$\frac{45}{64}$ _____ .703125
$\frac{7}{32}$ _____ .21875	$\frac{23}{32}$ _____ .71875
$\frac{15}{64}$ _____ .234375	$\frac{47}{64}$ _____ .734375
$\frac{1}{4}$ _____ .25	$\frac{3}{4}$ _____ .75
$\frac{17}{64}$ _____ .265625	$\frac{49}{64}$ _____ .765625
$\frac{9}{32}$ _____ .28125	$\frac{25}{32}$ _____ .78125
$\frac{19}{64}$ _____ .296875	$\frac{51}{64}$ _____ .796875
$\frac{5}{16}$ _____ .3125	$\frac{13}{16}$ _____ .8125
$\frac{21}{64}$ _____ .328125	$\frac{53}{64}$ _____ .828125
$\frac{11}{32}$ _____ .34375	$\frac{27}{32}$ _____ .84375
$\frac{23}{64}$ _____ .359375	$\frac{55}{64}$ _____ .859375
$\frac{3}{8}$ _____ .375	$\frac{7}{8}$ _____ .875
$\frac{25}{64}$ _____ .390625	$\frac{57}{64}$ _____ .890625
$\frac{13}{32}$ _____ .40625	$\frac{29}{32}$ _____ .90625
$\frac{27}{64}$ _____ .421875	$\frac{59}{64}$ _____ .921875
$\frac{7}{16}$ _____ .4375	$\frac{15}{16}$ _____ .9375
$\frac{29}{64}$ _____ .453125	$\frac{61}{64}$ _____ .953125
$\frac{15}{32}$ _____ .46875	$\frac{31}{32}$ _____ .96875
$\frac{31}{64}$ _____ .484375	$\frac{63}{64}$ _____ .984375
$\frac{1}{2}$ _____ .5	$1$ _____ 1.

## DRILL SIZES

Letter Sizes	Drill Diam. Inches	Wire Gage Sizes	Drill Diam. Inches	Wire Gage Sizes	Drill Diam. Inches	Wire Gage Sizes	Drill Diam. Inches
Z	0.413	1	0.2280	28	0.1405	55	0.0520
Y	0.404	2	0.2210	29	0.1360	56	0.0465
X	0.397	3	0.2130	30	0.1285	57	0.0430
W	0.386	4	0.2090	31	0.1200	58	0.0420
V	0.377	5	0.2055	32	0.1160	59	0.0410
U	0.368	6	0.2040	33	0.1130	60	0.0400
T	0.358	7	0.2010	34	0.1110	61	0.0390
S	0.348	8	0.1990	35	0.1100	62	0.0380
R	0.339	9	0.1960	36	0.1065	63	0.0370
Q	0.332	10	0.1935	37	0.1040	64	0.0360
P	0.323	11	0.1910	38	0.1015	65	0.0350
O	0.316	12	0.1890	39	0.0995	66	0.0330
N	0.302	13	0.1850	40	0.0980	67	0.0320
M	0.295	14	0.1820	41	0.0960	68	0.0310
L	0.290	15	0.1800	42	0.0935	69	0.0292
K	0.281	16	0.1770	43	0.0890	70	0.0280
J	0.277	17	0.1730	44	0.0860	71	0.0260
I	0.272	18	0.1695	45	0.0820	72	0.0250
H	0.266	19	0.1660	46	0.0810	73	0.0240
G	0.261	20	0.1610	47	0.0785	74	0.0225
F	0.257	21	0.1590	48	0.0760	75	0.0210
E	0.250	22	0.1570	49	0.0730	76	0.0200
D	0.246	23	0.1540	50	0.0700	77	0.0180
C	0.242	24	0.1520	51	0.0670	78	0.0160
B	0.238	25	0.1495	52	0.0635	79	0.0145
A	0.234	26	0.1470	53	0.0595	80	0.0135
...	.....	27	0.1440	54	0.0550	...	.....

## GAGES

GAGE NO.	U. S. STANDARD GAGE* Approx. Thickness—Inches	AMERICAN WIRE or B & S GAGE Thickness—Inches
0000000	0.490	
000000	.460	0.5800
00000	.429	.5165
0000	.398	.4600
000	.368	.4096
00	.337	.3648
0	.306	.3248
1	.2757	.2893
2	.2604	.2576
3	.2451	.2294
4	.2298	.2043
5	.2145	.1819
6	.1991	.1620
7	.1838	.1443
8	.1685	.1285
9	.1532	.1144
10	.1379	.1019
11	.1225	.0907
12	.1072	.0808
13	.0919	.0720
14	.0766	.0641
15	.0689	.0571
16	.0613	.0508
17	.0551	.0453
18	.0490	.0403
19	.0429	.0359
20	.0368	.0320
21	.0337	.0285
22	.0306	.0253
23	.0276	.0226
24	.0245	.0201
25	.0214	.0179
26	.0184	.0159
27	.0169	.0142
28	.0153	.0126
29	.0138	.0113
30	.0123	.0100
31	.0107	.00893
32	.0100	.00795
33	.0092	.00708
34	.0084	.00630
35	.0077	.00561
36	.0069	.00500
37	.0065	.00445
38	.0061	.00397
39	.0057	.00353
40	.0054	.00314
41	.0052	
42	.0050	
43	.0048	
44	.0046	