1962

OLDSMOBILE

88 • S-88 • 98

STARFIRE

SUPPLEMENT TO THE 1961

SERVICE MANUAL

1962 OLDSMOBILE SERVICE MANUAL

FOREWORD

This supplement to the 1961 manual is compiled to provide service procedures, adjustments and specifications that are new for the 1962 Oldsmobiles. For information not covered in this manual, refer to the 1961 Service Manuals. An understanding of the material contained herein and in supplementary Dealer Technical Information Bulletins, issued when necessary, will assist service personnel in properly maintaining the quality to which Oldsmobile cars are built.

SERVICE DIVISION

OLDSMOBILE DIVISION

GENERAL MOTORS CORPORATION

LANSING, MICHIGAN

88, S88, STARFIRE & 98

Litho in U.S.A.

GENERAL INFORMATION

CONTENTS OF SECTION 1

1962 MODEL IDENTIFICATION

A four digit number, called the car series and body style designation number, identifies any car as to series and style. Reading from left to right, the digits represent the following:

First and second digits: Series designation.
Third and fourth digits: Body Style.

Example: The number 3235 identifies a car as a Fiesta sedan. Note that "32" identifies the car as an 88 and that "35" represents a Fiesta sedan.

1962 MODEL DESIGNATION

Series	Body Style	Designation Series Style
88	Fiesta Sedan	3235
	Holiday Coupe	3247
	Holiday Sedan	3239
	Fiesta Sedan (3 seat)	3245
	Convertible Coupe	3267
	4 Door Sedan	3269
Super 88	Fiesta Sedan	3535
	Holiday Coupe	3547
	Holiday Sedan	3539
	4 Door Sedan	3569
Starfire	Holiday Coupe	3647
	Convertible Coupe	3667
98	4 Door Sedan (6 Window)	3819
	Holiday Sedan (6 Window)	3829
	Holiday Coupe	3847
	Holiday Sedan (4 Window)	3839
	Convertible Coupe	3867

BODY AND STYLE NUMBERS

The body and style numbers are stamped on a plate which is located under the hood below the left windshield wiper transmission. (Fig. 1-1) The plate shows:

1. Year and Style Number of Body
2. Body Number
3. Trim Number
4. Paint Number (Color Specification Number)

All Fisher Body numbers are prefixed by letters indicating the plant at which the body was assembled.

LA - Lansing	BC - South Gate
BA - Doraville	BW - Wilmington
BK - Kansas City	BT - Arlington
BL - Linden	

Fiesta sedan bodies are made by the Ionia manufacturing Division of the Mitchell-Bentley Corporation. The body and style number plate is similar to the Fisher Body plate as shown in Fig. 1-1.

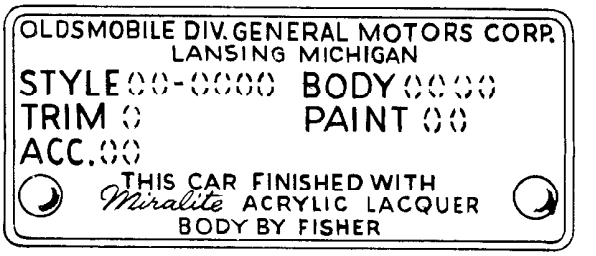


Fig. 1-1 Body and Style Number Plate

NOTE: WHEN WRITING SERVICE ORDERS, PREPARING A.F.A.'s OR CORRESPONDENCE, IT IS VERY IMPORTANT THAT ALL LETTERS AND NUMBERS BE INCLUDED FOR CORRECT BODY IDENTIFICATION.

VEHICLE IDENTIFICATION NUMBER PLATE

The 1962 vehicle identification number plate is located on the left front door hinge pillar and is visible through a hole in the hinge pillar cover

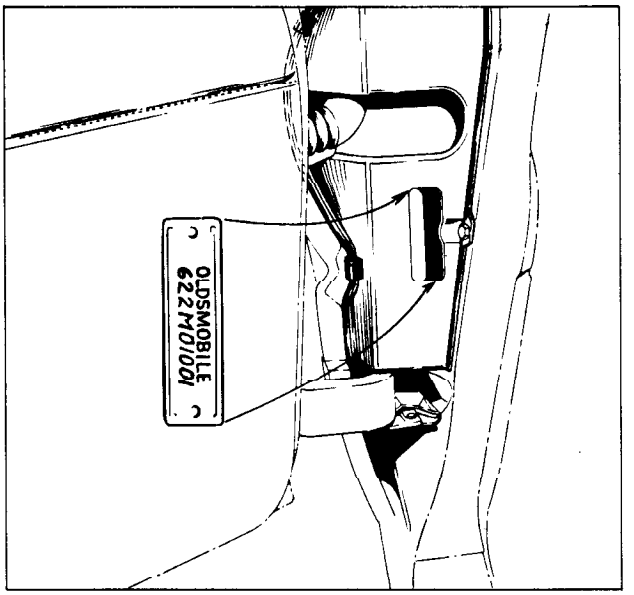


Fig. 1-2 Vehicle Identification Number Plate

as illustrated in Fig. 1-2. Each identification number is prefixed by three numbers and a letter. The first two numbers (62) indicate the year 1962. The third number designates the series.

2 - 88 (32 Series)
5 - Super 88 (35 Series)
6 - Starfire (36 Series)
8 - 98 (38 Series)

The letter in the identification number indicates the assembly plant at which the car was built. "M" indicates a Lansing-built car. "A" an Atlanta-built car, etc. (See STARTING VEHICLE IDENTIFICATION NUMBER CHART.)

NOTE: ALWAYS SHOW COMPLETE ENGINE UNIT AND VEHICLE IDENTIFICATION NUMBER IN REPORTS AND CORRESPONDENCE.

ENGINE UNIT NUMBER (For Manufacture and Service Use)

The engine unit number is stamped on the left cylinder head. (Fig. 1-3) For engine usage refer to the ENGINE IDENTIFICATION CHART.

TRANSMISSION SERIAL NUMBER

The Hydra-Matic serial number plate is riveted to the left side of the transmission case. The

STARTING VEHICLE IDENTIFICATION NUMBERS FOR 1962

Built At:	88 (32 Series)	Super 88 (35 Series)	Starfire (36 Series)	98 (38 Series)
Lansing, Michigan	622M01001	625M01001	626M01001	628M01001
Atlanta, Georgia	622A01001	625A01001	626A01001	628A01001
Kansas City, Kansas	622K01001	625K01001	626K01001	628K01001
Linden, New Jersey	622L01001	625L01001	626L01001	628L01001
South Gate, California	622C01001	625C01001	626C01001	628C01001
Wilmington, Delaware	622W01001	625W01001	626W01001	628W01001
Arlington, Texas	622T01001	625T01001	626T01001	628T01001

ENGINE IDENTIFICATION

Series	Engine Unit Number			Engine Color	Carburetor Type	Head Gasket Thickness	Compression Ratio
	Prefix (Code Letter)	Starting Unit No.	Suffix (Code Letter)				
88	F	300,001	--	Red	2 Bbl.	.025"	10.25:1
88 (Opt. W4)	F	300,001	L	Green	2 Bbl.	.025"	8.75:1
88 (Opt. W3)	G	300,001	--	Red	4 Bbl.	.025"	10.25:1
88 (Export)	F	300,001	E	Green	2 Bbl.	.040"	8.3:1
S88 & 98	G	300,001	--	Red	4 Bbl.	.025"	10.25:1
Starfire	G	300,001	S	Red	4 Bbl.	.040"	10.50:1
S88, Starfire & 98 (Export)	G	300,001	E	Red	4 Bbl.	.040"	8.3:1

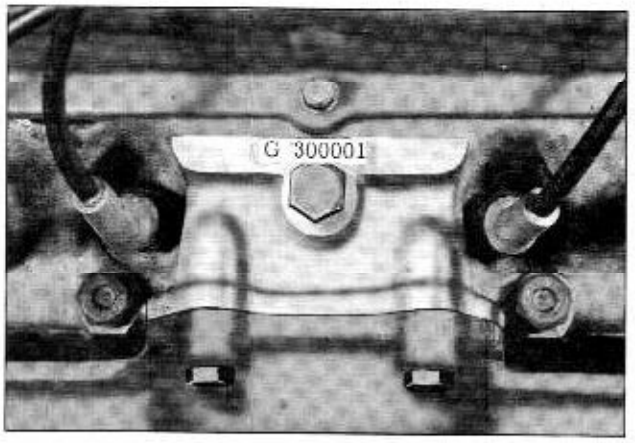


Fig. 1-3 Engine Unit Number Location

starting serial number (62-1001) is prefixed by code letters that identifies the transmission as to usage. (Fig. 1-4)

NOTE: ALWAYS INCLUDE THE TRANSMISSION SERIAL NUMBER IN CORRESPONDENCE CONCERNING HYDRA-MATIC TRANSMISSIONS.

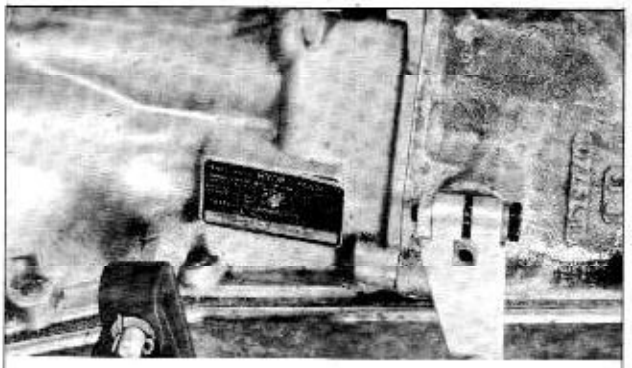
Synchromesh transmissions do not have a serial number.

STARTING CAR WITH BATTERY FAILURE

For safety reasons the Hydra-Matic transmission is designed so that in the event of battery failure the engine cannot be started by pushing the car. To start a car when the battery has failed, use an auxiliary battery with jumper cables.

TOWING PRECAUTIONS

Always place a wooden 4" x 4" adjacent to the bumper back bars and frame cross member and a rubber mat or other suitable protector between the bumper and the tow chains or cables to prevent distortion and/or marring of the bumpers. For front end lift, place the chains or cables around the ends of the frame side rails at both sides. All models can be towed without disconnecting the propeller shaft except in the case of transmission or propeller shaft failures, the propeller shaft must be disconnected from the differential and wired to the exhaust pipe or the car must be towed with the rear wheels off the ground.



PREFIX "O" ON AN ORANGE PLATE	-	2 BBL. CARB. LOW COMPRESSION ENGINE
PREFIX "OC" ON A DARK GREEN PLATE	-	2 BBL. CARB. HIGH COMPRESSION ENGINE
PREFIX "OA" ON A RED PLATE	-	4 BBL. CARB. ENGINE (ALL EXCEPT STARFIRE)
PREFIX "OD" ON A LIGHT BLUE PLATE	-	STARFIRE SERIES

Fig. 1-4 Transmission Serial Number Plate

If the propeller shaft is disconnected and the "U" joint bearing retaining strap is broken, wrap tape around the bearing caps to prevent loss. When towing with rear wheels off the ground, the steering wheel must be centered and held in position by a steering wheel holding clamp or by tying it to the window division channel. Tire to ground clearance should not exceed 6 inches while towing the car and SPEED SHOULD NOT EXCEED 30 M.P.H.

HOISTING THE CAR

When supporting car on a floor jack or floor stands, the car should be supported at the suspension points only. Under no condition should the car be supported at the extreme ends of frame or on the frame side rail (between the torque boxes).

When using a frame contact hoist the car should be lifted at the torque boxes (where front and rear frame sections join the frame side rails).

The car should not be lifted at the front or rear bumper with anything other than the bumper jack provided with the car.

GENERAL SPECIFICATIONS

	88	Super 88 & Starfire	98
Wheelbase			
All Except Fiestas	122.9"	122.9"	125.9"
Fiestas	121.85"	121.85"	--
Overall Length	213.9"	213.9"	220"
Overall Width	77.9"	77.9"	77.9"
Overall Height	55.6"*	55.6" *	55.6"*
Tread Width, Front and Rear	61"	61"	61"
Engine Displacement	394.1 Cu. In.	394.1 Cu. In.	394.1 Cu. In.
Compression Ratio	10.25 to 1**	10.25 to 1***	10.25 to 1

* With 5 passenger load - 8.00 x 14 tires
** Low Compression Option - 8.75 to 1
*** Starfire - 10.50 to 1

CAPACITIES

ITEM	CAPACITY
Differential	5 Pts.
Engine Crankcase Only, Drain and Refill	4 Qts.
Engine Crankcase, Drain and Refill and Filter Change	5 Qts.
Cooling System	
With Air Conditioning	22 Qts.
Without Air Conditioning	20-1/4 Qts.
Gasoline Tank	20 Gal.
Synchromesh Transmission	2-1/2 Pts.
Hydra-Matic Transmission	
Without Removing Oil Pan	5-1/2 Qts.
With Oil Pan Removal	6-1/2 Qts.
After Complete Overhaul	9 Qts.
Power Steering	
Complete System	1-3/4 Qts.
Pump Only	1 Qt.

TIRE INFLATION

SERIES	Front p.s.i.	Rear p.s.i.
88, S88 & Starfire (8.00 x 14 Tires)	24	22*
88, S88 & Starfire (8.50 x 14 Tires)	22	22*
Starfire (9.00 x 14 Tires) & 98	22**	22

*24 Fiestas NOTE: For Fiestas - When carrying heavy loads for an appreciable distance, it is recommended that rear tire pressure be increased 4 pounds to improve steering characteristics.

**24 p.s.i., with 8.50 x 14 tires and Air Conditioning.

PERIODIC MAINTENANCE

CONTENTS OF SECTION 2

LUBRICATION CHART

ENGINE OIL CHANGE

The initial oil change and subsequent changes should be made in accordance with the following chart.

Prevailing Daylight Temperature	Change Interval
Above 32°F.	*Every 60 days or every 4,000 miles, whichever occurs first.
Below 32°F.	*Every 30 days or every 4,000 miles, whichever occurs first.

*IMPORTANT: Certain driving conditions such as dust storms, and frequent driving on dusty roads, necessitate more frequent oil changes. If the car has been driven in a dust or sand storm, the oil and oil filter should be changed as soon as possible.

SERVICE AT TIME OF ENGINE OIL CHANGE AS INDICATED BY OIL CHANGE INTERVAL CHART

Observe front suspension ball joint seals at every other oil change interval for damage or cracks due to stone abrasions or other road hazards. If a seal should be damaged, water and dirt may enter the joint and cause the joint to become noisy. In this event refer to the SUSPENSION SECTION for service correction.

1. Engine Oil - Drain and Refill with MS oil of proper viscosity.
2. Crankcase Inlet Breather - Wash in solvent and re-oil with engine oil.
3. Rocker Arm Cover Inlet Breather (Positive Crankcase Ventilation) Wash in solvent and re-oil with engine oil.

CHECK FLUID LEVEL—REPLENISH

4. Differential (Conventional and Anti-Spin). . Special Lubricant Part No. 531536. (Small amounts of SAE 90 Multi-Purpose Gear Lubricant may be used to replenish differential.)
5. Brake Master Cylinder. . . . . GM Brake Fluid No. 11
6. Hydra-Matic . . GM Hydra-Matic Fluid, Type "A"
7. Synchromesh Transmission . . SAE 80 (Preferred) or SAE Multi-Purpose Gear Lubricant
8. Steering Gear (Power) . . . . . GM Hydra-Matic Fluid
9. Steering Gear (Manual). . . . . SAE 80 Multi-Purpose Gear Lubricant
10. Battery . . . . . Distilled Water
11. Radiator. . . . . Water or Anti-Freeze

(Cont'd. on Next Page)

LUBRICATION CHART (Cont'd)

LUBRICATE FOLLOWING POINTS

12. Throttle and Transmission Linkage Pivot Points . . . . . SAE 20 engine oil

13. Synchromesh Clutch Linkage (Including Felt washers at each end end of the clutch release bellcrank, and the clutch pedal bellcrank . SAE 20 engine oil.

14. BODY LUBRICATION - CHECK - LUBRICATE AS REQUIRED (Wipe Off Old Lubricant)

Gas Tank Filler Door Hinge - SAE 20 engine oil.

Door Lock Striker Teeth - Light coat of stick type lubricant.

Rotary Lock - Drop or two of SAE 20 oil on lock pivot. Light coat of stick type lubricant on surface of lock housing.

Door Hinge and Hold Open Assembly - Thin film of Lubriplate on friction surfaces. A drop of oil on all pivot points.

Door Jamb Switch - Thin film of Dow Corning 4X Weatherstrip grease to end of plunger.

Hood Hinges - SAE 20 oil at pivot points.

Hood Latch - Thin film of Lubriplate on friction surface. A drop of oil on all pivot points.

Rear Compartment Lid and Tail Gate - Apply Lubriplate 630 AAW to bolt at striker contact area.

Rear Compartment Lid Hinges and Torque Rods - Apply Lubriplate 630 AAW to hinges and torque rods at friction points. Apply Lithium Soap Grease to torque rod silencer.

Tail Gate Hinges - Lubricate pivot points with SAE 20 oil.

Weatherstrip, Door Bottom Drain Hole Sealing Strip, and Door Bumpers - Thin film of Dow Corning 4X Weatherstrip Grease.

Manual Seat Adjuster - Thin film of Lubriplate 630 AAW on seat tracks.

2, 4 and 6-Way Seats - Thin film of Lubriplate 630 AAW on jack screw.

Folding Top Linkage - Light coat of SAE 20 oil on friction points. Clean and lubricate lift cylinder rods with brake fluid.

EVERY 4,000 MILES

15. Engine Oil Filter - Install a new filter every 4,000 miles or every 6 months, whichever occurs first.

EVERY 8,000 MILES

16. Distributor - Lubricate Breaker Cam - Thin film of Delco Remy cam and ball bearing lubricant.

17. Air Cleaner (Non-Disposable Element Type) - Wash in solvent and re-oil with SAE 40 engine oil.

EVERY 10,000 MILES

10. Battery - Clean top of battery and cable terminals. Apply a thin film of petrolatum to battery post and clamps.

3. Check Valve (Positive Crankcase Ventilation) - Disassemble check valve and clean.

EVERY 16,000 MILES

17. Air Cleaner (Disposable Element Type) - Replace element.

EVERY 24,000 MILES

6. Hydra-Matic - Drain and refill with GM Hydra-Matic fluid Type "A".

18. Speedometer Cable - Lubricate lower 2/3 sparingly with AC Speedometer Grease.

FOR DETAILED RECOMMENDATIONS REFER TO CORRESPONDING NUMBERS ON FOLLOWING PAGES.

1. ENGINE CRANKCASE OIL

It is recommended that an oil which, according to the label on the can, is (1) "Intended for service MS" and (2) "Passes car makers' tests" or "Meets General Motors Standard GM-4745M".

The useful life of the oil is affected by many factors such as oil quality, length of trips, driving speed, atmospheric temperature, dusty roads, etc.

The proper oil viscosity to use depends on the prevailing atmospheric temperature.

The following chart will serve as a guide in selecting the proper oil viscosity.

Anticipated Lowest Temperatures	Use SAE Viscosity Number
Above Freezing (+32° F.)	SAE 10W-30, SAE 20, SAE 20W
Below Freezing (+32° F.) and above 0° F.	SAE 10W-30, SAE 10W
Below 0° F.	SAE 5W-20, SAE 5W

The oil change interval chart applies to the initial oil change as well as subsequent oil changes. An MS oil which meets General Motors Standard GM-4745M is installed at the factory.

NOTE: SAE 5W oil is not recommended for sustained high speed driving when the temperature is above 60°F.

SAE 30 oil may be used when the prevailing daylight temperature is above 90°F.

Certain driving conditions, such as dust storms and frequent driving on dusty roads, necessitate more frequent oil changes.

If higher detergency is required to reduce varnish and sludge formation, a thoroughly tested and approved concentrate - "High Detergency Concentrate" - is available.

The use of "break-in" oil, "tune-up" compounds, "friction reducing" compounds, etc. in Oldsmobile engines is specifically NOT recommended.

When changing oil, drain the crankcase after the engine has reached normal operating temperature to insure complete removal of the oil. Oil pan drain plug torque is 30 to 45 ft. lbs.

Crankcase Capacity

Oil change only, 4 qts.

Oil change and filter change, 5 qts.

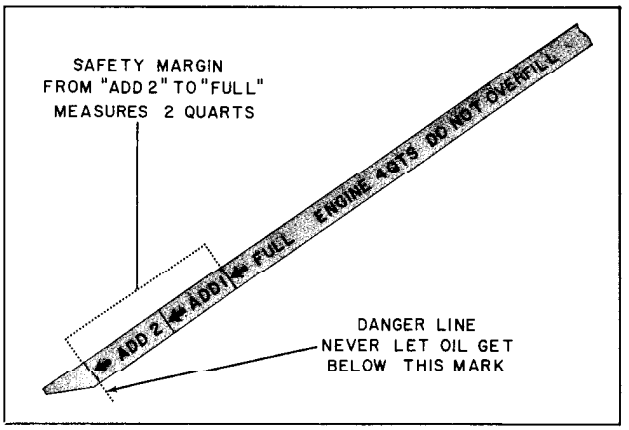


Fig. 2-1 Engine Oil Dipstick

Oil Level (Fig. 2-1)

The engine oil dipstick, located on the left side of the engine, is marked "Full", "Add 1", and "Add 2". The oil level should be maintained in the safety margin, neither going above the "Full" line nor under the "Add 2" line. The oil level should be checked at every refueling and oil added to maintain the proper level.

2. CRANKCASE BREATHER

The crankcase inlet breather cap should be washed in solvent and re-oiled with SAE 20 oil at every oil change.

3. INLET BREATHER (POSITIVE CRANKCASE VENTILATION)

The rocker arm cover inlet breather should

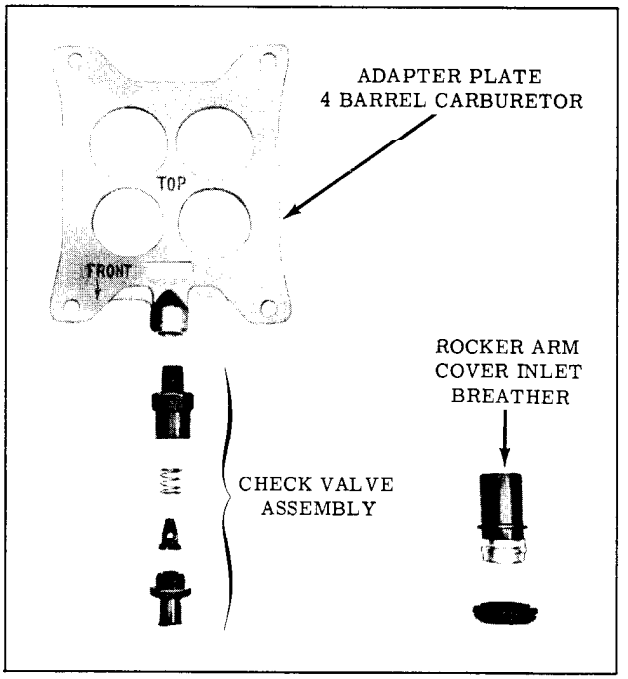


Fig. 2-2 Adapter, Check Valve and Breather

be removed, cleaned in a solvent and re-oiled at every oil change interval. (Fig. 2-2)

Check Valve and Hose

The check valve and hose should be cleaned every 10,000 miles.

1. Remove the check valve to rocker arm cover hose and blow out with compressed air.
2. Remove the check valve assembly and clean as follows.
   a. Disassemble check valve and clean parts in solvent. Clean small bleed hole in valve with a 1/16" drill. Twist drill by hand only.
   b. Inspect valve and valve spring for distortion or etching.
   c. Assemble check valve as shown in Fig. 2-2.
   d. Reinstall check valve and hose.

4. DIFFERENTIAL

Conventional or Anti-Spin

Periodic or seasonal changes are not recommended. The lubricant level should be checked at the oil change interval and if necessary, add lubricant to bring it up to the filler plug level. Small additions of SAE 90 Multi-Purpose Gear Lubricant may be used.

CAUTION: Always clean dirt or foreign materials from around plug opening before removing filler plug.

If for any reason all of the lubricant must be replaced, it is essential that only Special Lubricant (Part No. 531536) be used. Use of other than the above recommended type of lubricant may result in noise under certain conditions and may cause chatter in the Anti-Spin Differential. If the wrong type of lubricant is used, it will require draining the differential and installing the recommended lubricant (Part No. 531536). It may be necessary to drive Anti-Spin equipped cars for a short distance to allow the new lubricant to cover the plates before the chatter will disappear.

Capacity of the differential is approximately 5 pints.

5. SERVICE BRAKES

The fluid level in the master cylinder located at the left rear side of the engine compartment should be checked at each engine oil change interval. If necessary to add fluid, use GM Brake Fluid No. 11. Standard and Power Brake fluid level must be maintained at 1/4" below the top of the reservoir.

CAUTION: Extreme care must be exercised to prevent entry of dirt into the master cylinder.

6. HYDRA-MATIC TRANSMISSION

G.M. Hydra-Matic Fluid

Hydra-Matic fluid is an all season fluid, designed for year-round operation. Only fluid with the following identification on the container should be used: brand name, including the words " . . . Fluid Type A", plus the mark AQ-ATF and number and a letter "A" embossed on top of can as follows: "AQ-ATF-number-A".

Checking Hydra-Matic Fluid Level (Fig. 2-3)

Fluid level should be checked at the oil filler tube, located at the rear of the right exhaust manifold, at each engine oil change interval. Check must be made with the engine idling and the selector lever in the park poisition. Fluid level must be maintained at the full mark (transmission warm).

CAUTION: Do not fill above full mark as this will cause foaming and will result in improper operation.

Draining Hydra-Matic Transmission

The Hydra-Matic fluid should be changed every 24,000 miles.

To drain the Hydra-Matic transmission oil, proceed as follows:

1. Remove oil filler pipe from transmission oil pan permitting fluid to drain.

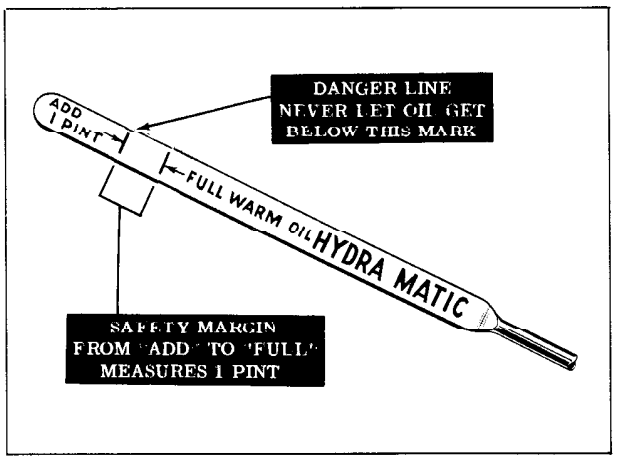


Fig. 2-3 Hydra-Matic Oil Dipstick

2. Connect filler pipe to oil pan.

3. Add 5 quarts of Hydra-Matic fluid to the transmission.

4. Put selector lever in park position and start engine. With engine running add fluid to bring level to "FULL" mark on the dipstick.

   NOTE: AFTER FLUID HAS BEEN ADDED AND TRANSMISSION IS WARM, FLUID SHOULD BE CHECKED TO MAKE SURE THAT IT IS AT THE "FULL" MARK ON THE OIL LEVEL DIPSTICK. Approximately 5-1/2 quarts of oil are required to fill the Hydra-Matic transmission after the transmission has been drained. Approximately 6-1/2 quarts will be required to fill the transmission if the oil pan has been removed and drained at the same time that the fluid is changed. Approximately 9 quarts are required after an overhaul.

7. SYNCHROMESH TRANSMISSION

Remove the filler plug from the transmission case and fill to the level of the opening with SAE 80 (preferred) or SAE 90 Multi-Purpose Gear Lubricant. The lubricant level should be checked at each engine oil change interval. Periodic or seasonal change of lubricant is not recommended.

CAUTION: Always clean dirt or foreign material from around plug before removing.

Capacity of the unit overhauled is 2-1/2 pints.

8. POWER STEERING GEAR AND PUMP

Check at each engine oil change interval and maintain oil level at "full" mark. Oil must be warm when checking oil level. Use Hydra-Matic Transmission Fluid. Power steering gear lubrication is accomplished by the oil supplied to the gear by the power steering pump.

9. MANUAL STEERING GEAR

Check steering gear lubricant level at each engine oil change interval. The necessity for frequent addition of lubricant indicates leakage and the source of leakage must be found and corrected. Use SAE 80 Multi-Purpose Gear Lubricant. Regular or seasonal changes are unnecessary.

10. BATTERY

Check battery liquid level at each engine oil change interval or once a month or more often, when refueling, in hot weather. Level should reach the bottom of the split ring in the vent well.

CAUTION: DO NOT OVERFILL.

Clean top of battery and terminals every 10,000 miles and check tightness of battery hold-down bolt. To properly clean battery:

1. Make sure vent plugs are closed tight.

2. Remove battery cables from battery.

3. Clean battery with a diluted ammonia or soda solution. When the solution stops foaming, rinse with clear water.

4. Clean battery cable clamps with a wire brush and diluted ammonia or soda and rinse with clear water. Apply a thin coating of petrolatum to terminals and clamps, after installing clamps.

11. COOLING SYSTEM

The coolant should be kept at a level below top of filler neck seat as follows:

3/4" - Coolant Cold

1/4" - Coolant Hot

The cooling system requires the following periodic maintenance:

Spring - Drain system completely, refill with water and add 16 ozs. of cooling system inhibitor, Part No. 989498.

Fall* - Drain system completely, add anti-freeze as required.

*In areas where temperatures do not require anti-freeze, it is recommended to drain in the spring and add cooling system inhibitor, Part No. 989498.

12. THROTTLE AND TRANSMISSION LINKAGE

At each engine oil change interval, apply engine oil to all friction and bearing surfaces on transmission control linkage and throttle linkage except the ball and sockets which should be lubricated with Special Lubricant, Part No. 567196, whenever they are disassembled.

13. SYNCHROMESH AND CLUTCH LINKAGE

At each engine oil change interval, apply engine oil to all friction and bearing surfaces on the linkage. The felt washers at both ends of the clutch release bellcrank and the clutch pedal bellcrank should also be oiled.

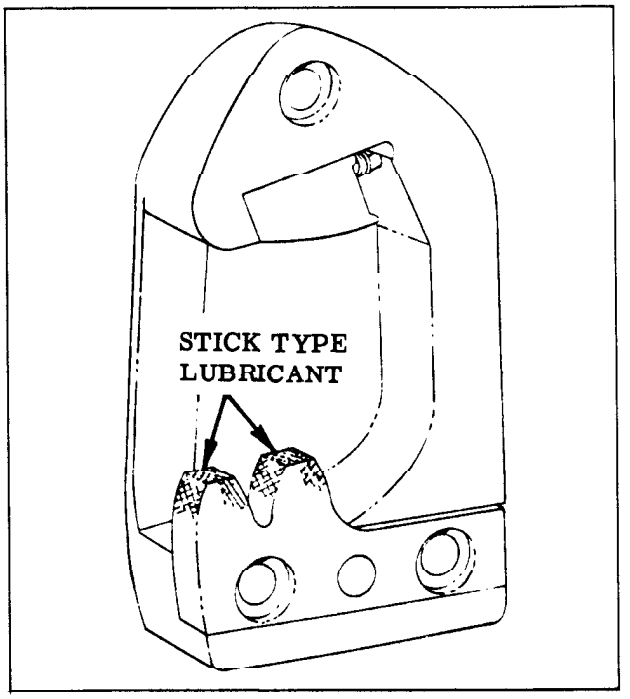


Fig. 2-4 Door Lock Striker

14. BODY LUBRICATION

Door Lock Striker

Wipe off dirt and apply a thin coat of stick type lubricant to top surface of lock bolt striker teeth indicated in Fig. 2-4. After lubrication, close door several times and remove excess lubricant along the side edge of teeth.

Door Locks

Wipe off dirt and apply a thin coat of stick type lubricant and oil as indicated in Fig. 2-5.

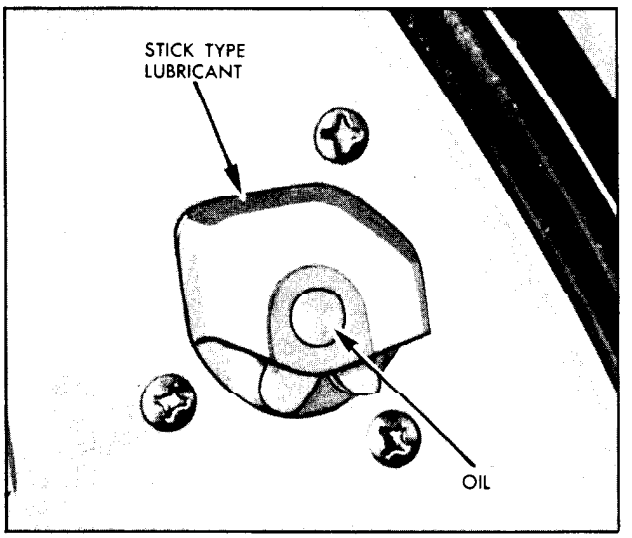


Fig. 2-5 Door Lock Housing

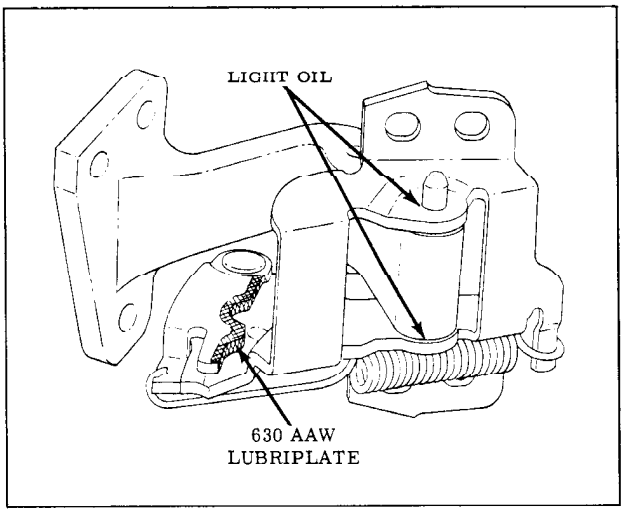


Fig. 2-6 Front Door Hinge

Door Hinge and Hold Open Assembly

Wipe off dirt and apply a light coat of Lubriplate 630 AAW or its equivalent at points indicated in Fig. 2-6 and 2-7. The hinge pins should be lubricated with engine oil.

Door Jamb Switch

Apply a thin film of Dow Corning 4X Weatherstrip grease to end surface of switch plunger.

Hood Hinges

SAE 20 oil should be used to lubricate the hood hinges, care being taken not to allow the oil to drop on fenders or other exposed painted surfaces.

Hood Latch

Lubricate the latch pilot bolts and latch locking plates with a thin film of No. 630 AAW Lubriplate. Use a light oil for pivot points.

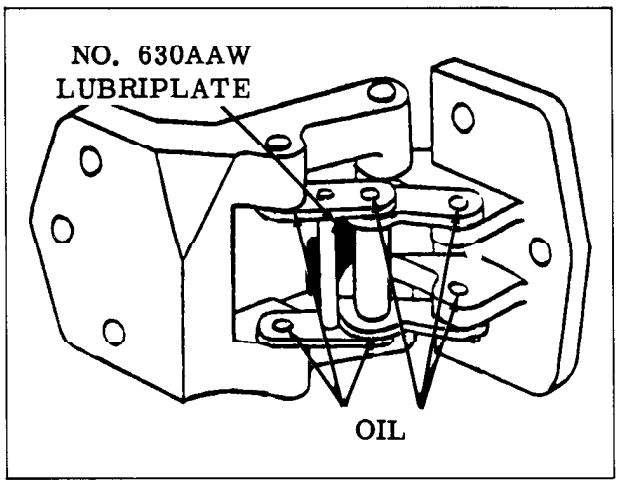


Fig. 2-7 Rear Door Hinge

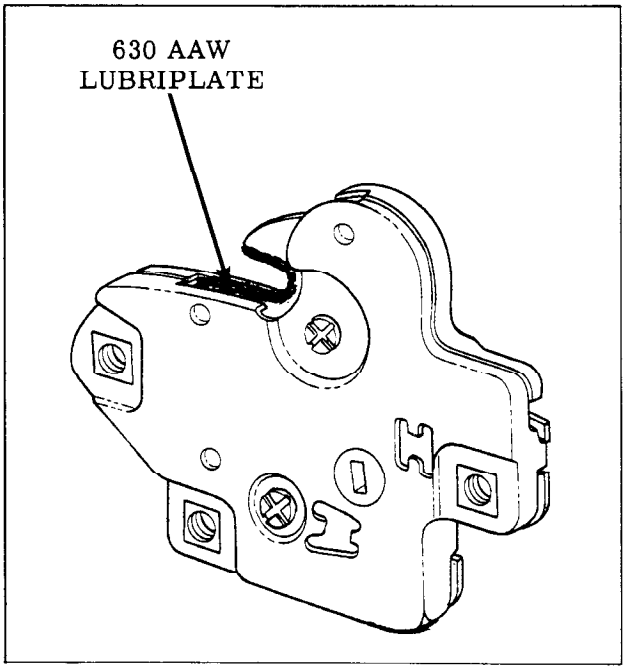


Fig. 2-8 Rear Compartment Lock Bolt

Rear Compartment Lid and Tail Gate Locks

On rear compartment lid locks, apply a thin film of No. 630 AAW Lubriplate or its equivalent as shown in Fig. 2 8.

On tail gate locks, apply a thin film of No. 630 AAW Lubriplate or its equivalent to the bolt at the striker contact areas.

Door, Rear Compartment and Tail Gate Lock Cylinders

A small quantity of lock lubricant occasionally applied to the lock cylinders will prevent sticking.

Rear Compartment Lid Hinges and Torque Rods

Apply Lubriplate 630 AAW or equivalent to hinge and torque rods at friction points. Apply a thin coat of Lithium Soap Grease to torque rod silencer at area contacted by torque rod.

Tail Gate Hinges

The hinges should be lubricated lightly at all pivot points with SAE 20 oil.

Tail Gate

Wipe off dirt from all exposed frictional surfaces and lubricate with 630 AAW Lubriplate.

Weatherstrip Door Bottom Drain Hole Sealing Strip and Door Bumpers

A thin film of Dow Corning 4X Silicone Lubricant should be used on weatherstrips, hood and door bumpers and hood lacings to prevent squeaking. Apply a thin film of Dow Corning 4X Silicone Lubricant to surface of door drain hole sealing strip as indicated in Fig. 2-9.

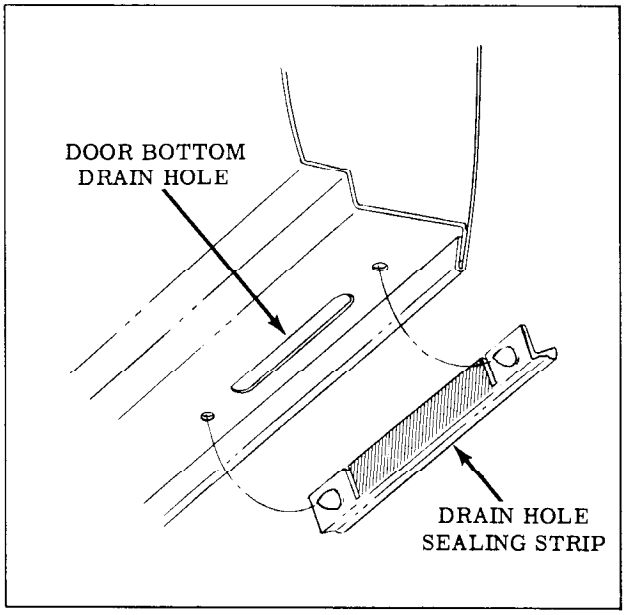


Fig. 2-9 Door Bottom Drain Hole Sealing Strip

FRONT SEAT ADJUSTER MECHANISM

Manual Seat

A thin film of Lubriplate 630 AAW or its equivalent should be applied to the seat tracks as needed.

Seat Adjuster Locking Wire Retainer

Wipe off dirt and apply No. 630 AAW Lubriplate or equivalent to frictional area of retainer indicated in Fig. 2-10.

2, 4 and 6-Way Electric Seats

Thoroughly wipe off old lubricant to clean jack

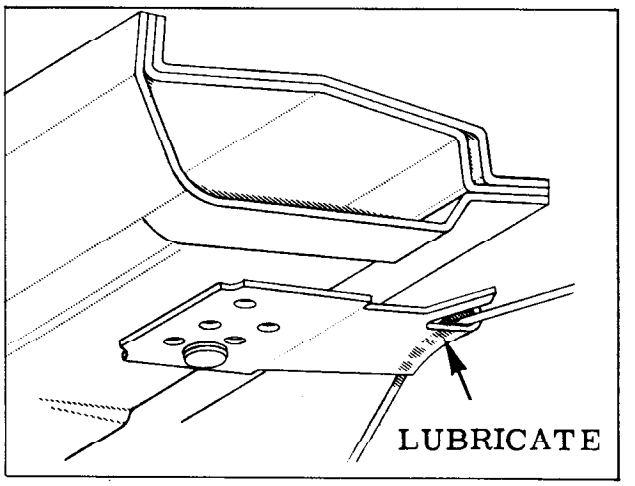


Fig. 2-10 Seat Adjuster Locking Wire Retainer

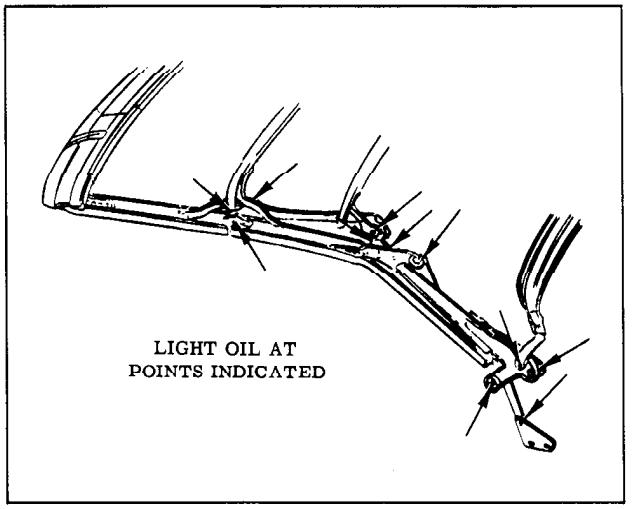


Fig. 2-11 Folding Top Linkage

screw. Apply a thin film of Lubriplate 630 AAW or its equivalent to jack screw being careful not to soil seat trim. Operate the seat adjuster to limit of all positions. Apply a small amount of oil to linkage. Wipe off excess lubricant.

Folding Top Linkage—(Convertible)

Apply a sparing amount of light oil to bearing points indicated in Fig. 2-11. Wipe off excess lubricant to prevent soiling trim.

Folding Top Lift Cylinder Piston Rods

With folding top in raised position, wipe exposed portion of each top lift cylinder piston rod with a cloth dampened with brake fluid to remove any oxidation or accumulated grime. With another clean cloth, apply a light film of brake fluid to the piston rod to act as a lubricant.

NOTE: Use caution so that brake fluid does not come in contact with any painted or trimmed parts of the body.

15. OIL FILTER

A full flow oil filter, provided as standard equipment on all models, filters 100% of the oil delivered by the oil pump. For this reason the interval of change is very important. The oil filter should be replaced every 4,000 miles or every 6 months, whichever occurs first. Operating conditions may require more frequent replacement.

It is recommended that the engine oil be changed whenever the oil filter is replaced.

Replace oil filter as follows:

1. Loosen filter with a wrench, then remove and discard filter.
2. Clean out filter body casting.
3. With a new seal seated on face of new filter, install filter and tighten 15 to 17 ft. lbs.
4. Add oil, start engine and check for leaks.

16. DISTRIBUTOR

The breaker cam should be lubricated with a thin film of Delco-Remy Ball Bearing Lubricant every 8,000 miles or whenever the contact assembly is replaced. No other lubrication is required.

17. AIR CLEANER

Non-Disposable Element Type

The aluminum mesh air cleaner element should be serviced every 8,000 miles. Operating conditions may require more frequent service.

The air cleaner should be serviced as follows:

1. Remove the filter element.
2. Wash accumulated dirt from the filter element by plunging it up and down several times in clean solvent.
3. Oil the filter element with SAE 40 oil and replace in the silencer unit.

Heavy Duty Disposable Element Type

The heavy duty air cleaner incorporates a disposable air filter element. The outside surface of the element is covered with a coarse material for primary filtering of large particles. The inner surface is a less porous material for filtering fine particles. Soft plastic flanges are used as self contained gaskets which seal the air cleaner body and cover. Therefore, all air must pass through the filter element.

The air filter element should be replaced every 16,000 miles under normal driving conditions, and more frequently under dusty driving conditions. Do not attempt to service the element.

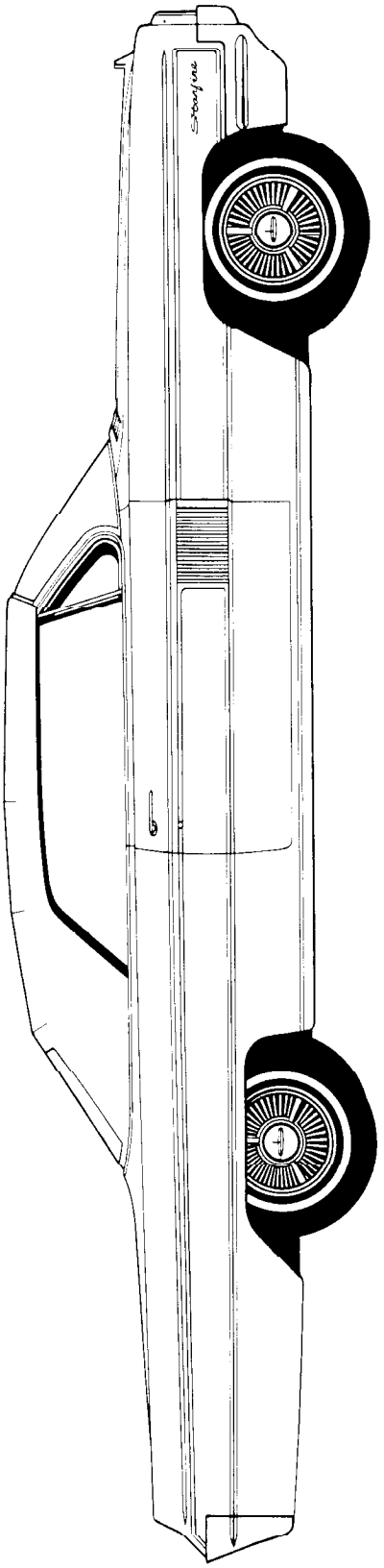
The filter element should be replaced as follows:

1. Remove air cleaner assembly to prevent dirt from falling into carburetor.
2. Remove filter element from air cleaner.
3. Clean dust and dirt from metal surfaces of air cleaner body and install new filter element.
4. Install air cleaner assembly on carburetor.

18. SPEEDOMETER CABLE

The cable should be lubricated every 24,000 miles. Apply a thin coating of A.C. Speedometer Cable Grease to the lower two-thirds of the cable only. This will properly lubricate the upper one-third of the casing, giving an even coating of lubricant the full length of the flexible cable, without danger of excess grease working up into the speedometer head.

NOTE: Care must be exercised to prevent entrance of dirt into the speedometer casing.


Starion

HYDRA-MATIC

(4-S)

CONTENTS OF SECTION 3

PERIODIC MAINTENANCE

The fluid level should be checked at every engine oil change interval and should be changed at 24,000 mile intervals. The fluid level should be checked with the selector lever in "Park" position, the engine running at idle speed and the car on a level surface. The level indicator and filler tube are located under the hood at the right rear corner of the engine.

Approximately 5-1/2 quarts of oil are required to fill the Hydra-Matic transmission after the transmission has been drained. Approximately 6-1/2 quarts will be required to fill the transmission if the oil pan has been removed and drained at the same time that the fluid is changed. Approximately 9 quarts are required after an overhaul.

When changing the transmission oil, add 5 quarts, start the engine, and add oil to bring fluid level to the "Full" mark on the dipstick.

Fluid only with the following identification on the container should be used: brand name, including the words ". . . . Fluid Type A, plus the mark "AQ-ATF" - number and a letter "A" embossed on the top of the can as follows: "AQ-ATF - number - A".

GENERAL INFORMATION

The 1962 4-S Hydra-Matic, service procedure-wise only, is basically the same as the 1961 transmission, however, it includes the following changes that will affect servicing the 1962 Hydra-Matic.

1. BEARING, NEEDLE THRUST - Coupling cover to case cover.

   The new bearing has 32 rollers.

2. SEAL RING - PUMP TO CASE COVER

   The 1962 design has a square type cut for improved sealing.

3. REVERSE STATIONARY CONE

   The reverse stationary cone and retaining key are an integral part for 1962.

4. ROLLER CLUTCH AND OUTER RACE

   The 1961 design sprag and race assemblies and a 1962 design roller clutch will be used in mixed production.

5. SNAP RING - FRONT SUN GEAR SHAFT TO REAR INTERNAL GEAR

   This ring has been eliminated in 1962.

6. PUMP ASSEMBLY

   New pump assemblies are used in 1962, which incorporate an additional ball check, which has been added as part of the line drop system on the 2-3 shift.

7. CASE COVER ASSEMBLY

   The case cover provides a feed hole for the line drop ball check, located in the oil pump.

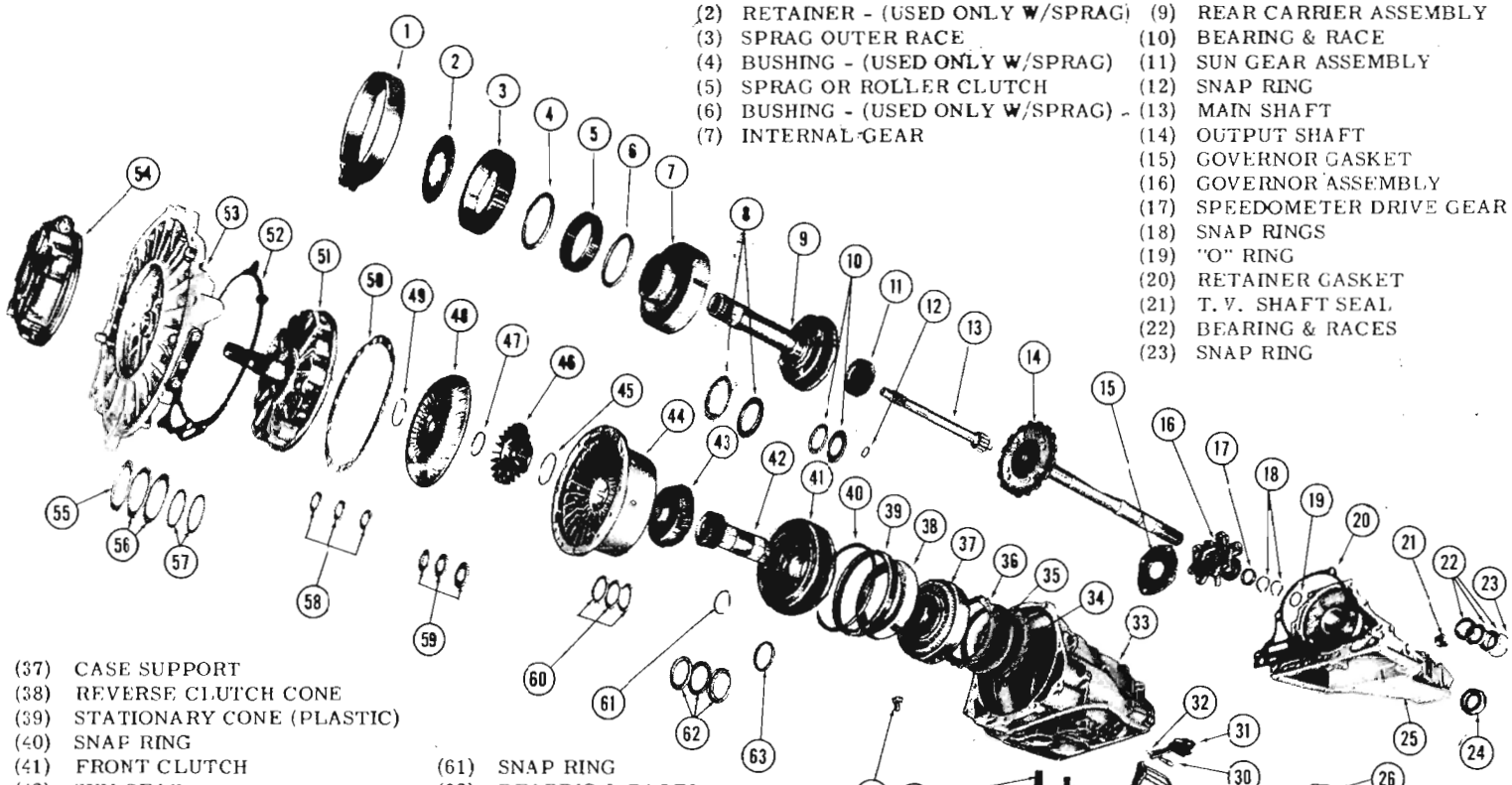
ROLLER CLUTCH

DISASSEMBLY

1. Remove the roller clutch and outer race from the rear internal gear.
2. Carefully remove the roller clutch assembly from the outer race.
3. Remove the rollers and energizing springs from the cage.

INSPECTION

1. Inspect the rollers for pits, scratches, pick-up, galling or flat spots.
2. Inspect the energizing springs for distortion, cracks, permanent set or loss of tension.



(1) BAND
(2) RETAINER - (USED ONLY W/SPRAG)
(3) SPRAG OUTER RACE
(4) BUSHING - (USED ONLY W/SPRAG)
(5) SPRAG OR ROLLER CLUTCH
(6) BUSHING - (USED ONLY W/SPRAG)
(7) INTERNAL GEAR
(8) THRUST BEARING RACE
(9) REAR CARRIER ASSEMBLY
(10) BEARING & RACE
(11) SUN GEAR ASSEMBLY
(12) SNAP RING
(13) MAIN SHAFT
(14) OUTPUT SHAFT
(15) GOVERNOR GASKET
(16) GOVERNOR ASSEMBLY
(17) SPEEDOMETER DRIVE GEAR
(18) SNAP RINGS
(19) "O" RING
(20) RETAINER GASKET
(21) T. V. SHAFT SEAL
(22) BEARING & RACES
(23) SNAP RING

(37) CASE SUPPORT
(38) REVERSE CLUTCH CONE
(39) STATIONARY CONE (PLASTIC)
(40) SNAP RING
(41) FRONT CLUTCH
(42) SUN GEAR
(43) FRONT CARRIER ASSEMBLY
(44) DRIVE TORUS ASSY. W/ COVER
(45) OIL RING
(46) TORQUE MULTIPLIER
(47) OIL RING
(48) DRIVEN TORUS
(49) OIL RING
(50) GASKET
(51) TORUS COVER ASSEMBLY
(52) GASKET
(53) CASE COVER ASSEMBLY
(54) PUMP ASSEMBLY
(55) SELECTIVE WASHER
(56) BEARING & RACE
(57) OIL RINGS
(58) BEARING & RACES
(59) BEARING & RACES
(60) BEARING & RACES
(61) SNAP RING
(62) BEARING & RACES
(63) THRUST WASHER (FIBER)
(64) NEUTRAL CLUTCH DRUM KEY
(65) UPPER ACCUMULATOR SPRING
(66) OIL CLEANER "O" RING
(67) UPPER PISTON
(68) ACCUMULATOR PISTON
(69) ACCUMULATOR SPRING (LOWER)
(70) ACCUMULATOR PISTON PIN
(71) SERVO & ACCUMULATOR COVER
(72) OIL CLEANER
(73) OIL PAN GASKET
(74) OIL PAN
(75) COMPENSATOR BODY
(76) COVER GASKET
(77) SEAL SPRINGS
(78) SEALS
(79) SERVO PISTON
(80) SERVO RELEASE SPRING

(24) SEAL
(25) CASE
(26) BOOST VALVE BODY ASSY.
(27) SEPARATOR PLATE
(28) VALVE BODY ASSY.
(29) PIPE ASSEMBLY
(30) PAWL PIVOT SHAFT
(31) PAWL & LEVER ASSY.
(32) SHAFT SPACER
(33) CASE ASSEMBLY
(34) BACKING PLATE
(35) NEUTRAL DRIVEN PLATE
(36) NEUTRAL DRIVE PLATE

Fig. 3-1 Hydra-Matic (4-S)

3. Inspect the outer race for pitting, scratches, cracks, galling or broken ramp corners.
4. Inspect cage for bent or broken struts, broken or distorted corners or teeth.

ASSEMBLY

1. Install the release springs on the cage struts with the upper tab on the springs pointing the same direction as the teeth or stops on the sprag cage. Be sure the center spring tab snaps securely over the strut to retain the spring.
2. Install the rollers into cage between the springs in such a way that the upper tab on the spring fits over the roller.
3. Carefully, install the roller clutch assembly into the outer race so that the rollers do not pop out. The teeth or stops on the cage should align with the ramps in the outer race.
4. Place the outer race and roller clutch assembly on the bench with the word "front" on the roller clutch cage facing the bench.
5. Twist the rear internal gear (counterclockwise) into the roller clutch assembly.

OPERATING PRINCIPLES

Two planetary units are used to obtain neutral, four forward stages and reverse. A parking pawl locks the output shaft to the case for a positive lock park position. A flywheel and damper are used to transmit power from the engine to the transmission.

A fluid coupling is used to provide additional torque multiplication for first and reverse and to lock members of the two planetary gear sets together to provide fourth (direct drive). A multiple disc clutch is used to lock the drive torus and front unit internal gear together to provide reduction in the front unit for third. This clutch is also used with the fluid coupling to lock the front and rear units together to provide fourth (direct drive).

A sprag or roller clutch is used to lock one member of the front or rear unit to the case to provide reduction for first, second and third.

TRANSMISSION OPERATION

OPERATION IN DRIVE RANGE

The transmission offers three selective drive ranges, "D", "S" and "L". In "D" range, the transmission starts in first and shifts automatically to second, third and fourth.

With the selector lever in "S" range, the transmission will shift to third and remain in third until approximately 70 to 82 M.P.H., regardless of throttle opening. This provides additional acceleration for long hills or traffic driving, as well as engine braking power when descending long grades. When car speed reaches approximately 70 to 82 M.P.H. the transmission automatically upshifts to fourth. If the car speed decreases to approximately 65 to 78 M.P.H., the transmission will automatically downshift to third.

With the selector lever in "L" range, the transmission will not shift beyond second regardless of throttle opening or car speed. "L" range is designed for engine braking when descending steep grades. It may also be used to hold the car in second for maximum pulling power.

PART THROTTLE DOWNSHIFT— FOURTH TO THIRD

A part throttle downshift can be made any time the transmission is in fourth and the car speed is below approximately 35 M.P.H. Since this downshift will occur at part throttle opening, the advantage of third stage power is obtained without a wide open throttle. This feature is desirable in traffic conditions where a wide open throttle would be unnecessary.

FORCED DOWNSHIFTS (Detent)

In "D" range the transmission can be downshifted from fourth to third, and from third to second within set speed ranges. In "S" range a third to second forced downshift can be made within a set speed range. A warning "feel" on the accelerator pedal makes it possible for the driver to obtain full throttle performance with or without downshift, as desired.

CLOSED THROTTLE DOWNSHIFTS

DRIVE RANGE

When the transmission is in fourth "Drive" range and the driver takes his foot off the accelerator and stops the car, the transmission will automatically downshift from fourth to second at approximately 7 M.P.H.

SUPER RANGE

When the transmission is in fourth "Super Range" (over 75 M.P.H.) and the driver takes his foot off the accelerator and stops the car, the transmission will automatically downshift from fourth to third at approximately 75 M.P.H. and downshift from third to second at approximately 7 M.P.H.

LOW RANGE

It the car is being driven in "Low" range, the

transmission will not upshift to third.

If the car is being driven in "Super" range and the driver moves the selector lever to "Low" range and takes his foot off the accelerator, the transmission will automatically downshift from third to second at approximately 35 M.P.H.

If the car is being driven in "Drive" range (above 75 M.P.H.) and the driver moves the selector lever to "Low" range and takes his foot off the accelerator, the transmission will automatically downshift from fourth to third at approximately 70 M.P.H. and from third to second at approximately 35 M.P.H.

REVERSE

Reverse is accomplished through use of a friction clutch applied by oil pressure and designed for ease in "rocking" the car. A reverse blocker piston prevents movement of the selector lever to the "Reverse" position above 13 M.P.H.

PARKING

The Hydra-Matic indicator has a "Park" (P) position which is desirable for parking and starting the car when on an incline. The engine can also be started with the selector lever in the "Neutral" (N) position.

With the selector lever in "Park" position, a parking pawl engages with lugs on the output shaft flange and locks the output shaft to the transmission case. A detent in the steering column prevents accidental movement of the selector lever to the "Park" position.

STALL TESTING

Under NO condition should the transmission be "stall tested" because the excessive heat developed will damage the unit.

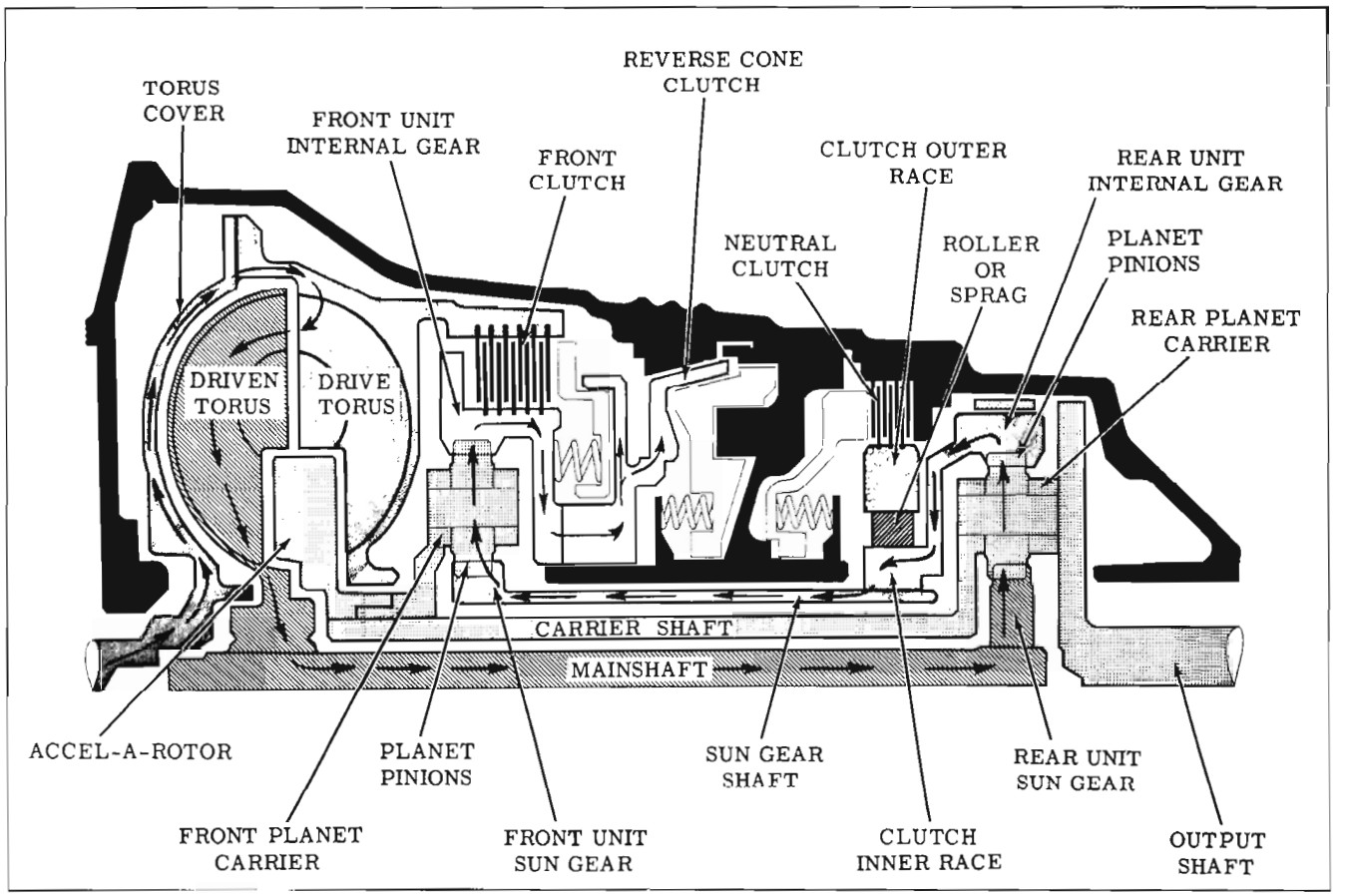


Fig. 3-2 Neutral

NEUTRAL—ENGINE RUNNING

FLUID COUPLING—FILLED **ACCEL-A-ROTOR—INEFFECTIVE** **NEUTRAL CLUTCH—RELEASED**

FRONT CLUTCH—RELEASED **REVERSE CLUTCH—RELEASED** **SPRAG OR ROLLER CLUTCH— INEFFECTIVE**

Power from the engine is mechanically transmitted to the torus cover and to the drive torus member. The drive torus then directs the oil against the driven torus causing it to turn the main shaft and rear unit sun gear clockwise.

In neutral the neutral clutch is released thus preventing the sprag or roller clutch from holding the rear unit internal gear against turning counterclockwise. Therefore, as the rear unit sun gear turns clockwise, the rear unit pinions turn counterclockwise driving the rear internal gear counterclockwise.

The front unit sun gear is mechanically connected to the rear internal gear and is also turning counterclockwise, this causes the front unit planet pinions to rotate clockwise on their pins. The clockwise motion of the front unit pinions drive the front internal gear clockwise.

Because both the rear unit internal gear and the front unit internal gear are spinning freely, there is no transfer of torque from the front or rear units to the planet pinion carriers or output shaft.

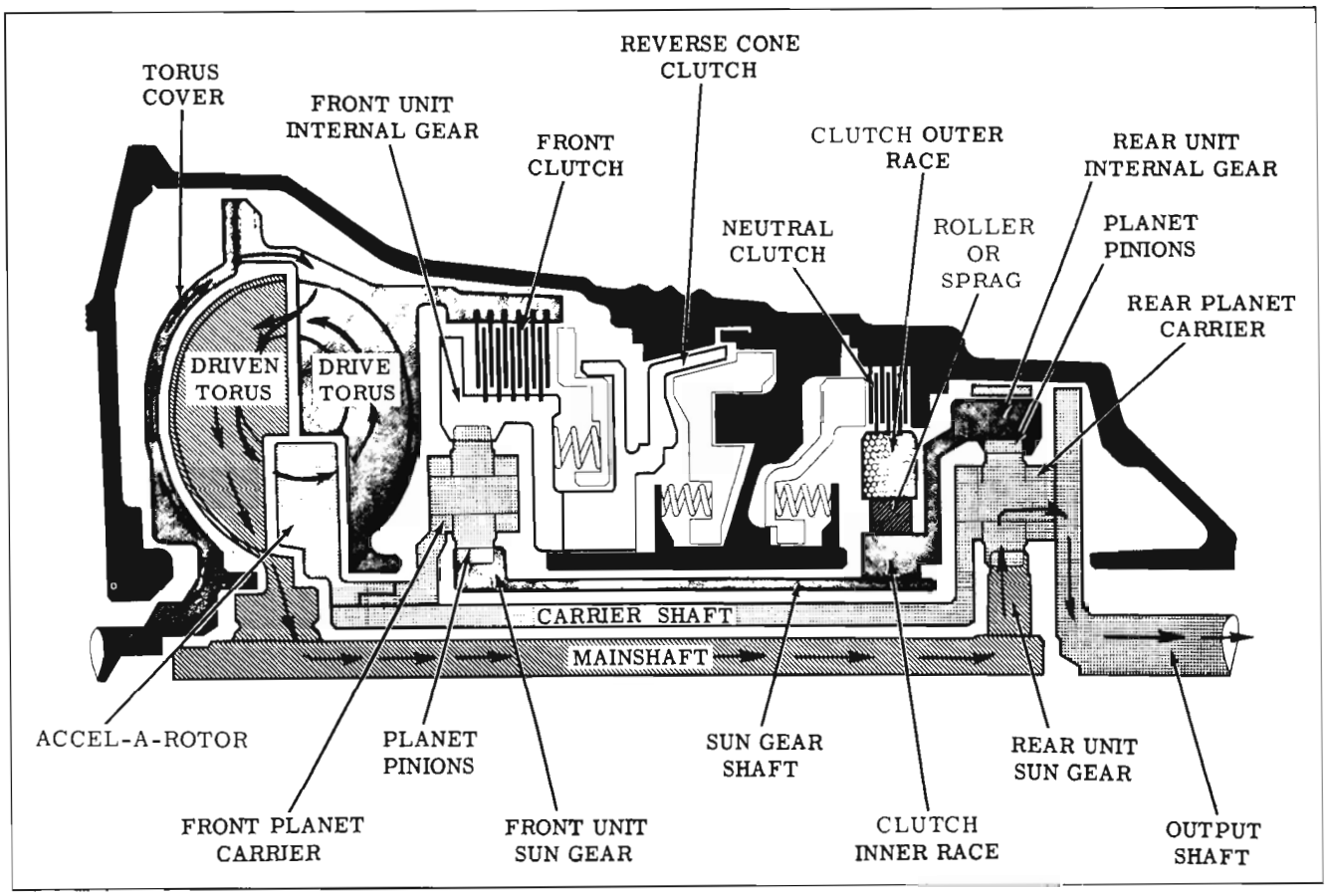


Fig. 3-3 First Stage

FIRST STAGE RATIO 3.51:1

FLUID COUPLING—FILLED **ACCEL-A-ROTOR—EFFECTIVE** **NEUTRAL CLUTCH—APPLIED**

FRONT CLUTCH—RELEASED **REVERSE CLUTCH—RELEASED** **SPRAG OR ROLLER CLUTCH—EFFECTIVE**

Power from the engine is mechanically transmitted to the torus cover and to the drive torus member. Torque is then transmitted through oil to the driven torus member. Oil from the driven torus is then directed against the accel-a-rotor which redirects the force of the oil back to the drive torus in such a way as to assist the engine in turning the drive torus. Torque through the coupling is then applied to the mainshaft and rear unit sun gear.

The neutral clutch is applied locking the sprag outer race to the case, which in turn holds the rear unit internal gear stationary. Torque through the rear sun gear then attempts to drive the pinions and internal gear counterclockwise, however, with the internal gear held stationary, the output shaft through the pinions is compelled to rotate clockwise within the internal gear at a reduced speed.

As the rear carrier and output shaft rotate clockwise at reduced speed the front carrier, which is connected to the rear carrier, also rotates clockwise at a reduced speed. With the sprag or roller clutch assembly holding the front unit sun gear stationary, the carrier and pinions rotate the front unit internal gear at approximately one-half engine speed.

The reduction in first is due to the 2.933 rear unit gear reduction, times the 1.3 coupling torque multiplication, less the .3 engine torque acting on the output shaft through the accel-a-rotor.

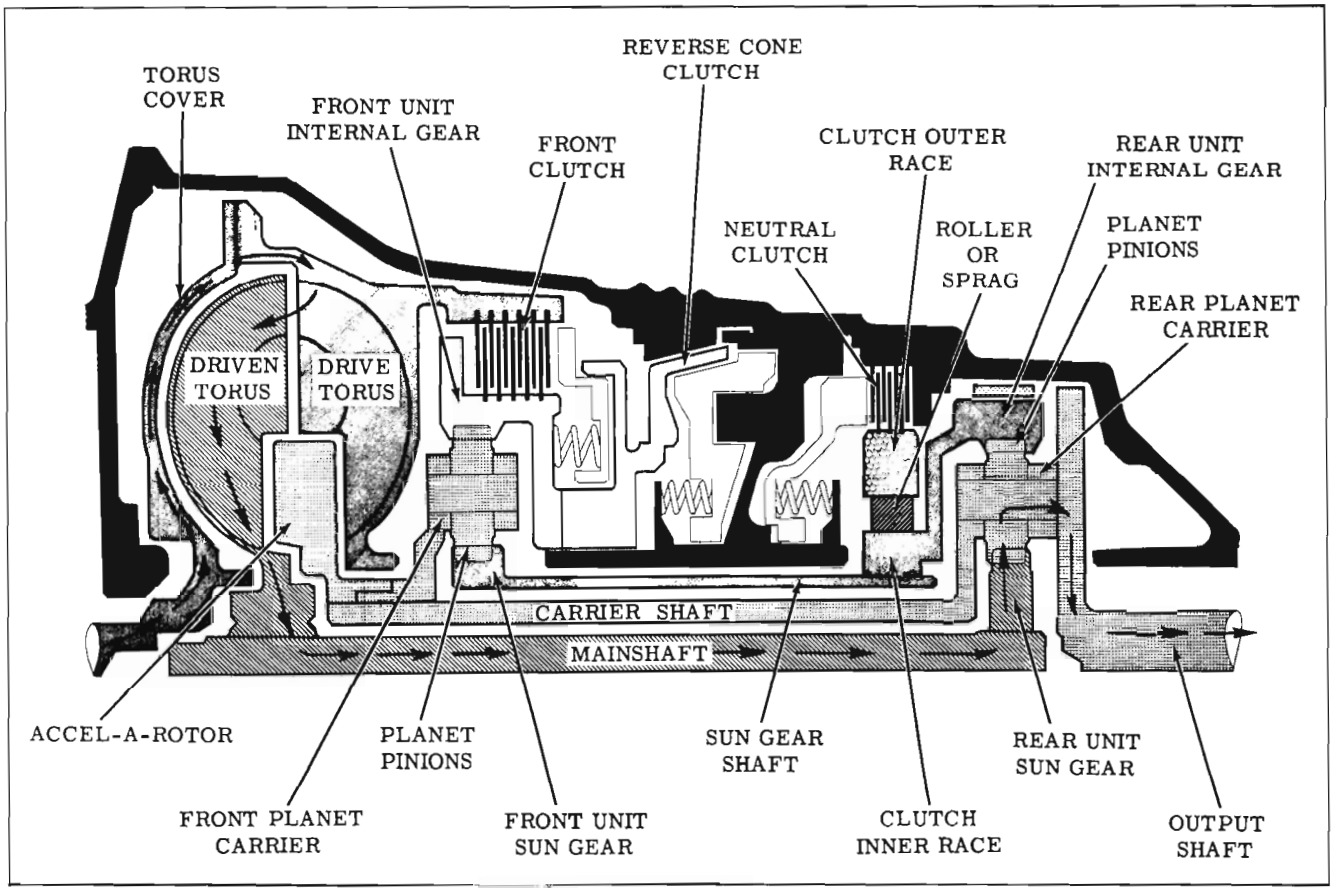


Fig. 3-4 Second Stage

SECOND STAGE RATIO 2.933:1

FLUID COUPLING—FILLED **ACCEL-A-ROTOR—INEFFECTIVE** **NEUTRAL CLUTCH—APPLIED**

FRONT CLUTCH—RELEASED **REVERSE CLUTCH—RELEASED** **SPRAG OR ROLLER CLUTCH—EFFECTIVE**

Power from the engine is mechanically transmitted to the torus cover and to the drive torus member. Torque is then transmitted through oil to the driven torus member. Torque through the coupling is then applied to the mainshaft and rear unit sun gear.

The neutral clutch is applied locking the sprag outer race to the case, which in turn holds the rear unit internal gear stationary. Torque through the rear sun gear then attempts to drive the pinions and internal gear counterclockwise, however, with the internal gear held stationary, the output shaft through the pinions is compelled to rotate clockwise within the internal gear at a reduced speed.

As the rear carrier and output shaft rotate clockwise at reduced speed, the front carrier which is connected to the rear carrier also rotates clockwise at a reduced speed. With the sprag or roller clutch assembly holding the front unit sun gear stationary, the carrier and pinions rotate the front unit internal gear at approximately one-half engine speed.

The reduction in second is due to the 2.933:1 rear unit gear reduction.

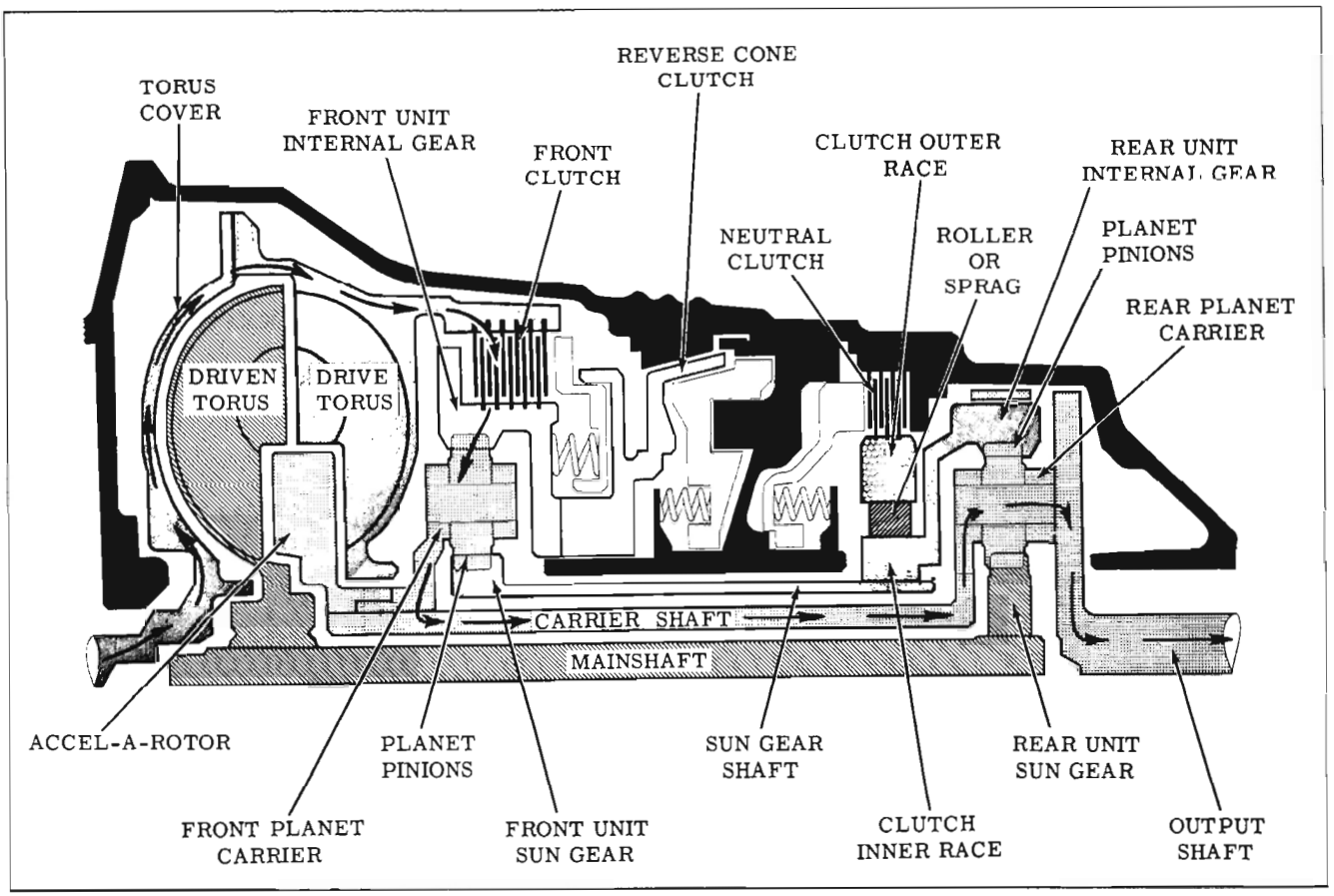


Fig. 3-5 Third Stage

THIRD STAGE RATIO 1.56:1

FLUID COUPLING—EMPTY **ACCEL-A-ROTOR—INEFFECTIVE** **NEUTRAL CLUTCH—APPLIED**

FRONT CLUTCH—APPLIED **REVERSE CLUTCH—RELEASED** **SPRAG OR ROLLER CLUTCH—EFFECTIVE**

Power from the engine is mechanically transmitted to the torus cover and to the drive torus member. The front clutch is applied and the coupling is empty so engine torque is mechanically applied to the front unit internal gear.

The front unit sun gear shaft is splined to the sprag or roller clutch inner race and with the neutral clutch applied, the sprag or roller clutch prevents the sun gear from turning counterclockwise. Engine torque at the front internal gear is then applied to the pinions, and because the sun gear cannot rotate, the planet pinions and carrier are compelled to revolve clockwise around the front unit sun gear in reduction. Torque is then transmitted by the front planet carrier to the rear unit carrier and shaft assembly and to the output shaft.

As the output shaft and rear unit carrier turns clockwise in reduction, the pinions will drive the rear unit sun gear and driven torus in a clockwise direction faster than engine speed. Because the coupling is empty no power is transmitted through the torus members and all torque multiplication in third is due to the 1.56:1 front unit gear ratio.

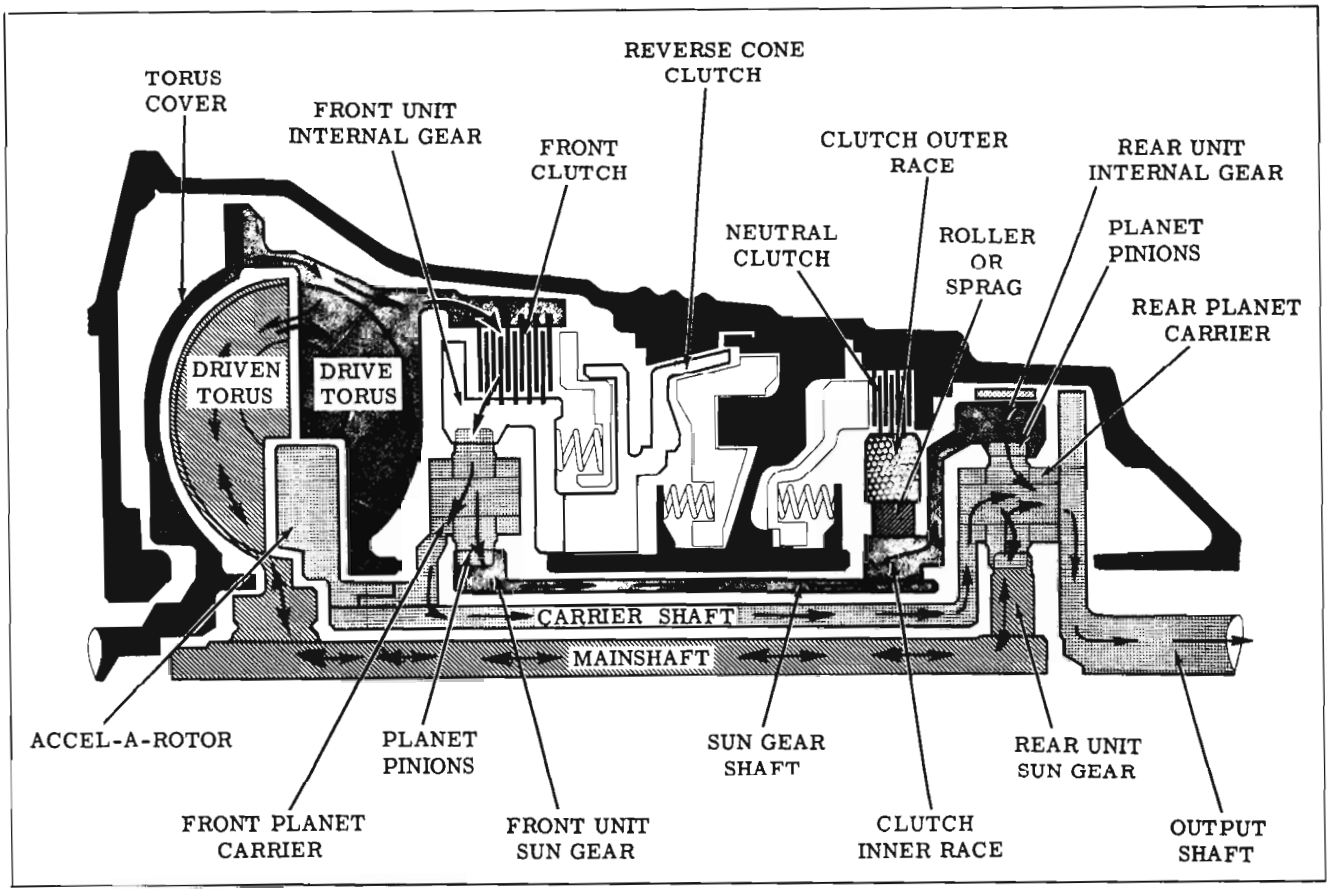


Fig. 3-6 Fourth Stage

FOURTH STAGE RATIO 1:1

FLUID COUPLING—EMPTY **ACCEL-A-ROTOR—INEFFECTIVE** **NEUTRAL CLUTCH—APPLIED**

FRONT CLUTCH—APPLIED **REVERSE CLUTCH—RELEASED** **SPRAG OR ROLLER CLUTCH—INEFFECTIVE**

Power from the engine, mechanically transmitted to the torus cover, is applied through the front clutch to the front unit internal gear. The front internal gear then, through the pinions, TENDS to turn the front sun gear against the sprag or roller clutch. This would cause the front carrier to run clockwise in reduction. The rear carrier then must also attempt to revolve clockwise in reduction. With the rear carrier rotating clockwise in reduction, and the rear internal gear TENDING to be stationary against the sprag or roller clutch, the rear unit pinions attempt to rotate counterclockwise on their pins, thus driving the rear unit sun gear and driven torus clockwise faster than engine speed.

However, because the coupling is filled, the driven torus and rear unit sun gear cannot revolve faster than the drive torus which turns at engine speed. Therefore, the rear sun gear speed is slowed down to approximately engine speed. In so doing, the rear unit pinions are slowed down in their rotation on the pinion pins. The carrier and pinions then change the direction of load against the internal gear causing it to overrun the sprag or roller clutch and revolve with the carrier and sun gear at the same speed. Because the output shaft and carriers are connected to the accel-a-rotor in the coupling, the accel-a-rotor is also turning the same speed as the drive and driven torus so that it has no effect in fourth.

Both planet carriers and the output shaft are connected, the front sun gear and rear internal gear are connected, and the front internal gear and rear unit sun gear are turning at approximately the same speed, thus the entire train must revolve as a unit in direct drive.

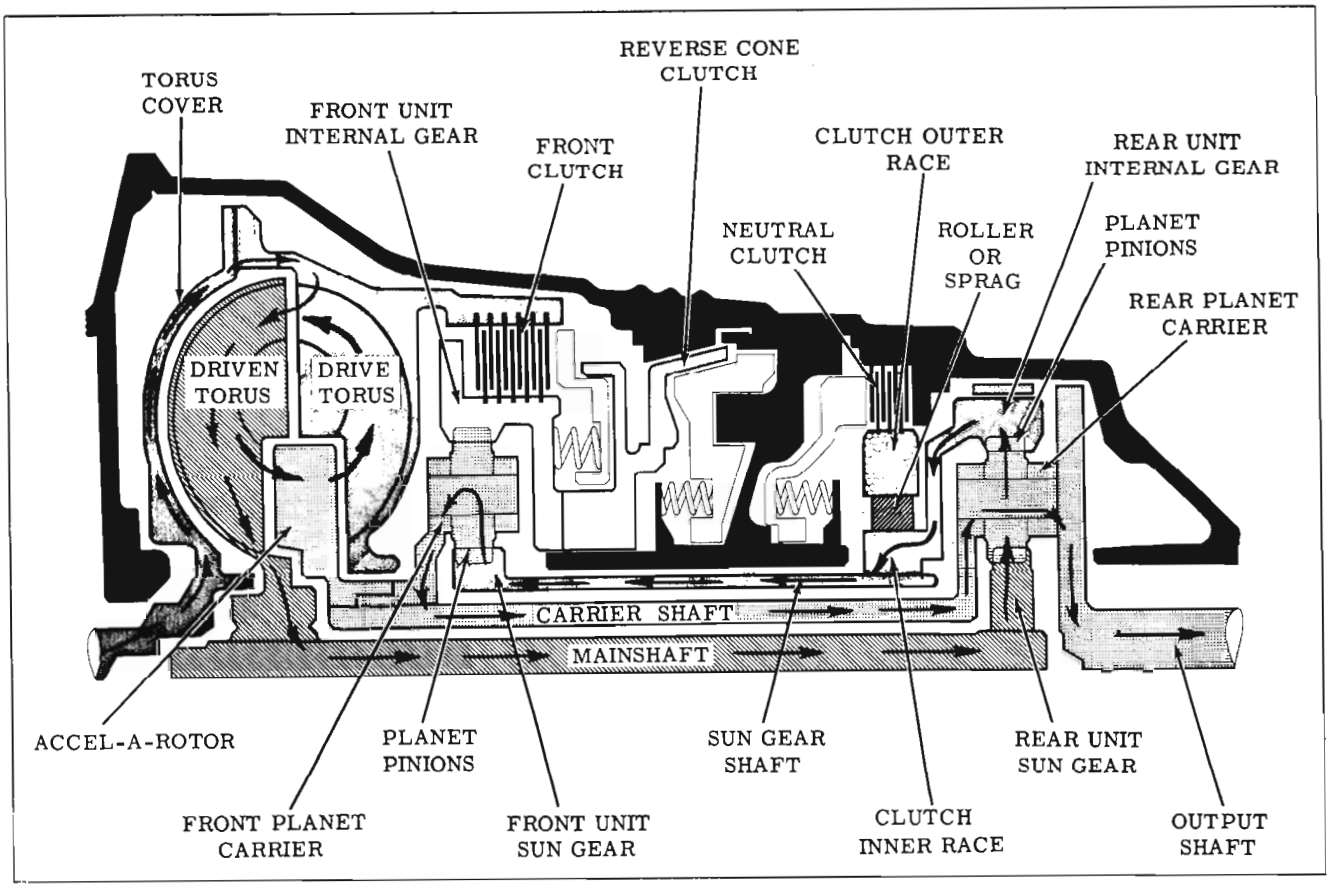


Fig. 3-7 Reverse

REVERSE RATIO 3.53:1

FLUID COUPLING—FILLED **ACCEL-A-ROTOR—EFFECTIVE** **NEUTRAL CLUTCH—RELEASED**

FRONT CLUTCH—RELEASED **REVERSE CONE—APPLIED** **SPRAG OR ROLLER CLUTCH—EFFECTIVE**

Power from the engine is mechanically transmitted to the torus cover and to the drive torus member. Torque is then transmitted through oil to the driven torus member. Oil from the driven torus is then directed against the accel-a-rotor which redirects the force of the oil back to the drive torus in such a way as to assist the engine in turning the drive torus. Torque through the coupling is then applied to the mainshaft and rear unit sun gear.

The rear unit sun gear then drives the rear unit pinions as idlers which in turn drive the rear unit internal gear in a counterclockwise direction. (The neutral clutch is released so that the sprag or roller clutch cannot hold the internal gear).

Because the rear unit internal gear is turning counterclockwise, the front unit sun gear is turning counterclockwise. The reverse cone is holding the front unit internal gear stationary so that the front unit pinions and planet carriers are compelled to walk around the front internal gear in counterclockwise direction in reduction. The output shaft is connected to the front and rear unit carrier so the output shaft turns counterclockwise or in reverse at a reduction.

The effect of the force of the oil in the coupling is such that the accel-a-rotor is imparting and additional .3 times engine torque to the carrier and output shaft in the reverse direction.

The total reduction in reverse is due to the 1.3 coupling torque ratio times the 2.49 gear ratio plus the .3 engine torque acting on the accel-a-rotor which results in a 3.53:1 reduction at the output shaft in the reverse direction.

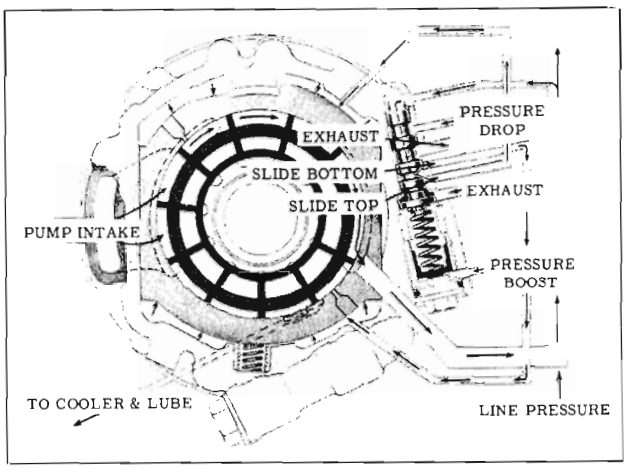


Fig. 3-8 Pressure Regulator Valve and Pump

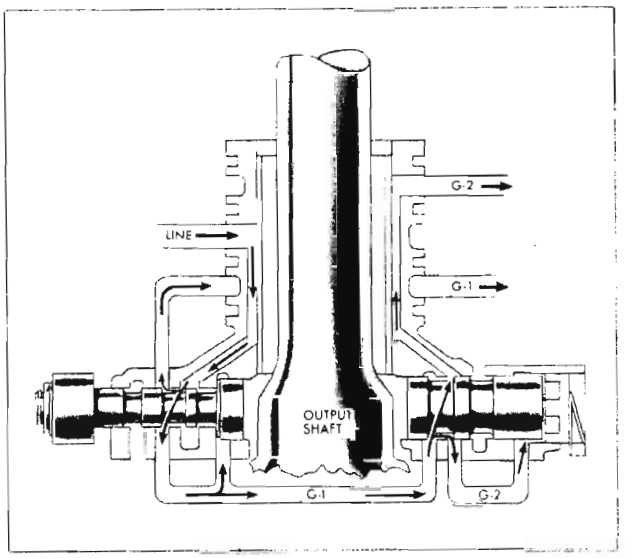


Fig. 3-9 Governor Assembly

VALVES AND THEIR FUNCTION

PRESSURE REGULATOR VALVE

Controls line pressure by regulating the output of the pump. This valve is constructed with two areas where pressures can be applied to overcome regulator spring force which in turn either increases or decreases the line pressure.

THROTTLE VALVE

The throttle valve regulates to obtain a pressure proportional to carburetor opening by the throttle valve spring and T.V. plunger which is operated mechanically by the throttle linkage. The T.V. pressure decreases when the oil temperature goes below approximately 75°F. This is accomplished by a bimetal thermostatic element which contacts the throttle valve at temperatures less than 75°F, and opposes the force of the regulator spring.

GOVERNOR

The governor contains two valves, of different weight, which rotate with the output shaft permitting each valve to produce a different pressure proportional to the vehicle speed. G-1 pressure operates at low speeds and G-2 pressure at the higher speeds. (Fig. 3-9)

MANUAL VALVE

The manual valve distributes pressures to place the transmission in either neutral, drive range, super range, low range, or reverse. It is controlled mechanically, through linkage, by the selector lever.

2-3 SHIFT VALVE

The 2-3 shift valve provides for the 2-3 and 3-2 shifts and is actuated by T.V. and G-1 governor pressures.

3-4 SHIFT VALVE

The 3-4 shift valve provides the 3-4 and 4-3 shifts and is actuated by T.V. and both G-1 and G-2 governor pressures.

COUPLING FEED LIMIT VALVE

This valve is located in the pump body and provides a direct feed to the coupling from the pump in neutral, first, second and reverse. It is controlled by coupling signal pressure but opens only when coupling signal pressure is greater than 70 psi.

COUPLING EXHAUST VALVES

The coupling exhaust valves are located in the torus cover assembly and they seal the coupling exhaust ports whenever coupling signal pressure is directed to close them.

COUPLING TIMING VALVE

The coupling timing valve controls the exhaust and fill of the coupling. It is controlled by front clutch pressure on the 2-3 shift and delays the exhaust of the coupling until clutch capacity is sufficient to carry the torque. On a 3-4 shift it is controlled by 3-4 pressure and shifts immediately after the 3-4 shift valve.

PRESSURE BOOST VALVE

The pressure boost valve controls the flow of oil to the line boost area of the pressure regulator valve. It is shifted by front clutch pressure and is timed to move after the clutch has assumed the torque.

PRESSURE DROP VALVE

The pressure drop valve controls the flow of oil to the line drop area of the pressure regulator valve. It provides a varying pressure inversely proportional to T.V. pressure which results in a modulated line pressure.

3-2 DOWNSHIFT VALVE

The 3-2 downshift valve regulates the exhaust of the front clutch on throttle 3-2 downshifts. It is designed to gradually release the clutch while the coupling is being filled to prevent a sudden increase in engine RPM.

FRONT CLUTCH EXHAUST VALVE

The front clutch exhaust valve controls the release of the front clutch during a throttle 3-2 downshift. It provides a wide open clutch exhaust when coupling pressure is sufficient.

TV PLUNGER

The T.V. plunger provides the part throttle 4-3 and the detent 4-3 and 3-2 shifts, and also provides accelerator pedal assist. It is operated mechanically by the T.V. linkage.

REVERSE BLOCKER VALVE

The reverse blocker valve prevents a shift into reverse at speeds above 13 M.P.H. It is controlled by G-1 pressure and provides a mechanical stop for the manual linkage.

3-2 CUTOFF VALVE

The 3-2 cutoff valve is controlled by T.V. pressure and shifts at about 28 psi. It provides an immediate exhaust of front clutch oil on closed throttle 3-2 downshifts and provides a source for 3-4 boost pressure on light 3-4 upshifts.

3-4 BOOST VALVE

The 3-4 boost valve provides 3-4 boost pressure on light throttle 3-4 upshifts to momentarily increase pump pressure until the coupling reaches sufficient pressure.

NEUTRAL CLUTCH VALVE

The neutral clutch valve regulates neutral clutch apply oil to satisfy various throttle opening conditions. This results in a slow neutral clutch fill with a light throttle and a quick fill for a heavy throttle, insuring a smooth but firm clutch application under all conditions.

OVERRUN BAND AND SERVO

The overrun band and servo are used to obtain engine braking when coasting in first, second or third with the selector lever in super or low speed range position. To prevent the transmission from overrunning, the overrun band assembly is applied to the rear unit internal gear thus holding the rear internal and front unit sun gears stationary for the desired braking.

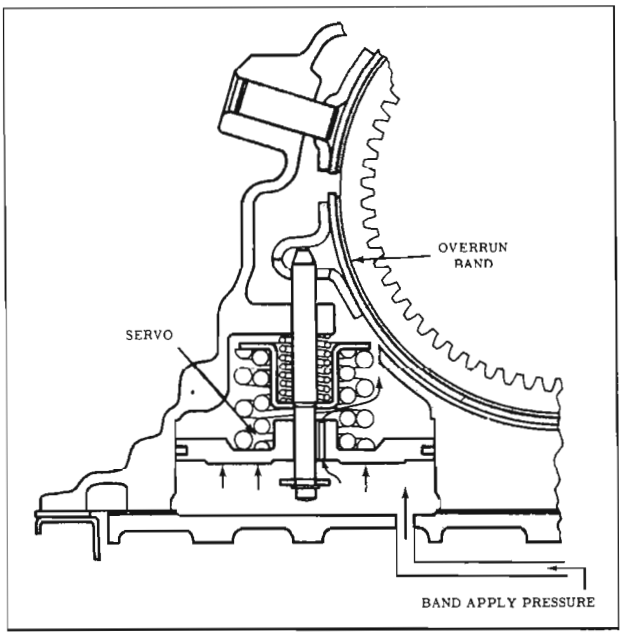


Fig. 3-10 Overrun Band and Servo

An overrun band servo is used to apply and release the overrun band.

FIRST STAGE

Band apply pressure acts against the servo piston moving the piston, servo springs, retainer and piston pin against the release spring to start the application of the band. When the band has been applied to the rear internal gear it begins to offer resistance to the travel of the piston pin.

SECOND STAGE

As band apply pressure continues to build up under the piston, the piston begins to travel up on the piston pin against the force of the servo springs. The piston then moves away from the washer which allows a small portion of the band apply pressure to bleed to exhaust through the bleed hole in the piston. Overrun band apply pressure under the piston then continues to build up at a slower rate and causes a greater force to be applied to the band. (Fig. 3-10)

THIRD STAGE

When the piston travels up far enough to contact the servo spring retainer, the bleed hole is sealed off again. This allows the band apply pressure to build up quickly again and causes the piston to apply its full force directly against the servo.

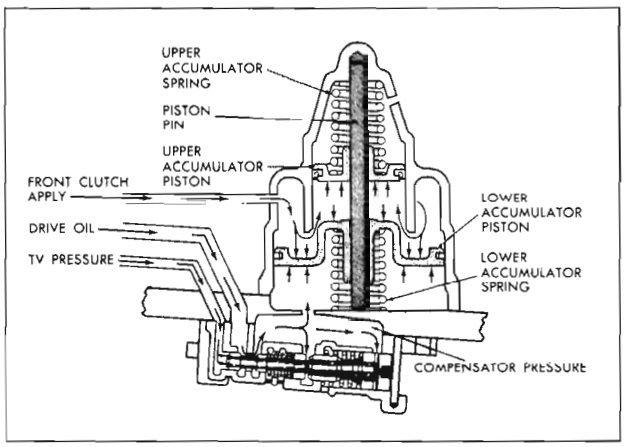


Fig. 3-11 Compensator and Accumulator

spring retainer and piston pin to give the final full apply force.

The design of the servo is such as to provide for a smooth gradual apply of the band under all driving conditions and oil pressures.

COMPENSATOR VALVES (Figs. 3-11 and 3-12)

The compensator valves are regulated by T.V. pressure and supply compensator pressure to control the front clutch accumulator.

3-STAGE COMPENSATOR VALVE ("O" TRANSMISSION)

The primary and secondary compensator valve regulate drive oil to become compensator pressure. To prevent compensator pressure from exceeding the desired maximum value, orifice T.V. pressure acting on the compensator limit valve is allowed to exhaust thus limiting the maximum value of compensator pressure. Compensator pressure is used to control the accumulation rate of the accumulator with different throttle opening for smooth clutch application.

FRONT CLUTCH ACCUMULATOR (Fig. 3-11)

The front clutch accumulator is a cushioning and timing device which enables the front clutch

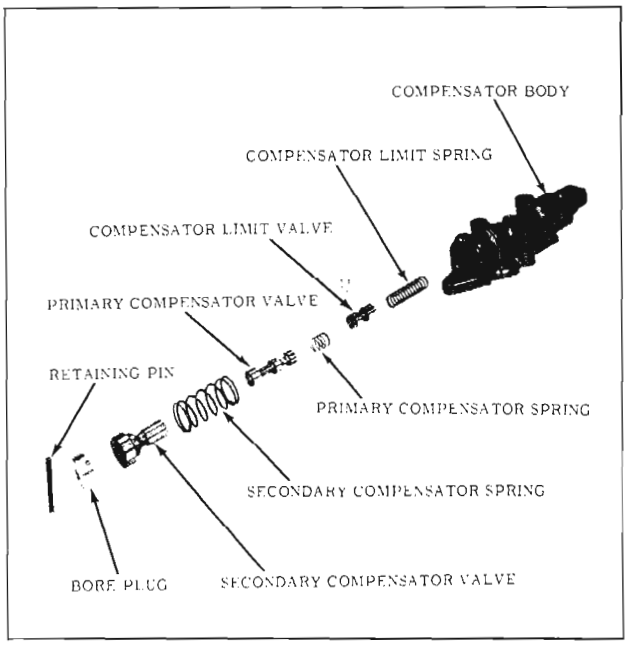


Fig. 3-12 3 Stage Compensator ("O" Model)

to apply smoothly under all throttle and torque conditions.

When the front clutch is engaging, front clutch apply oil is also directed to the front clutch accumulator. Front clutch oil compresses the pistons against spring pressure, causing the accumulator to absorb an amount of clutch apply oil. During the initial application of the front clutch piston, a comparatively small quantity of clutch apply oil is diverted to the accumulator. When the clutch piston is in its apply position, the accumulator pistons move against spring pressure and the amount of oil absorbed by the accumulator will increase, thereby decreasing the flow to the front clutch. Since the pistons moving against their springs meet increasing resistance to their motion, the oil pressure applying the front clutch increases gradually to provide a smooth application.

When the pistons reach the ends of their strokes, the front clutch pressure rises to main line pressure to insure positive and complete engagement following the shift.

NEUTRAL (ENGINE RUNNING)

COUPLING—FILLED **NEUTRAL CLUTCH—OFF** **SPRAG OR ROLLER CLUTCH—INEFFECTIVE**

FRONT CLUTCH—OFF **REVERSE CONE—OFF** **OVERRUN BAND—OFF**

Whenever the engine is running, line pressure is always directed to the:

1. Pressure Regulator
2. Pressure Relief Valve
3. Coupling Feed Limit Valve
4. Throttle Valve
5. Coupling Timing Valve
6. Manual Valve
7. 3-4 Governor Valve
8. Governor Assembly
9. Pressure Boost Valve

BASIC CONTROL

Line pressure through the coupling timing valve is directed into the signal passage. Signal oil closes the coupling exhaust valves and opens the coupling feed limit valve to provide coupling feed oil. Line pressure through the orifice at the coupling timing valve provides an additional source of coupling feed oil to fill the coupling. The neutral clutch is released, therefore the sprag is ineffective.

PRESSURE CONTROL

The pressure relief valve provides for the exhaust of excessive main line pressures at approximately 240 psi. This condition may occur only in the event of a malfunction in the pump or pressure regulator.

Line pressure to the throttle valve is regulated to a variable pressure called T.V. pressure. The throttle valve, which regulates T.V. pressure, is controlled by the T.V. spring and throttle plunger through adjustable linkage from the carburetor throttle. As the throttle is opened, the linkage depresses the throttle plunger to increase the force of the T.V. spring, thus causing the throttle valve to regulate T.V. pressure to a higher value. T.V. pressure is designed to vary in proportion to throttle opening and is used throughout the system to activate or control different valves at various times in relation to throttle opening.

Line pressure through the pressure boost valve enters two passages to become pressure boost and pressure drop signal oil. Pressure boost oil is directed against the boost plug in the pressure regulator to give an increase in line pressure. Pressure drop signal pressure is routed to the pressure drop valve where T.V. pressure acting on the end of the pressure drop valve regulates pressure drop signal oil to a variable decreasing pressure which in turn is applied against the second land of the pressure regulator valve.

At closed throttle, line drop pressure is maximum thus causing the greatest drop in line pressure; at full throttle, line drop pressure is regulated to exhaust resulting in high line pressure. Line pressure is controlled to vary with throttle opening from 132 to 180 psi.

Line pressure directed to the governor will be regulated to become two variable governor pressures; G-1 and G-2.

SUMMARY

The coupling is filled and the neutral clutch is released, thereby causing the transmission to be in neutral.

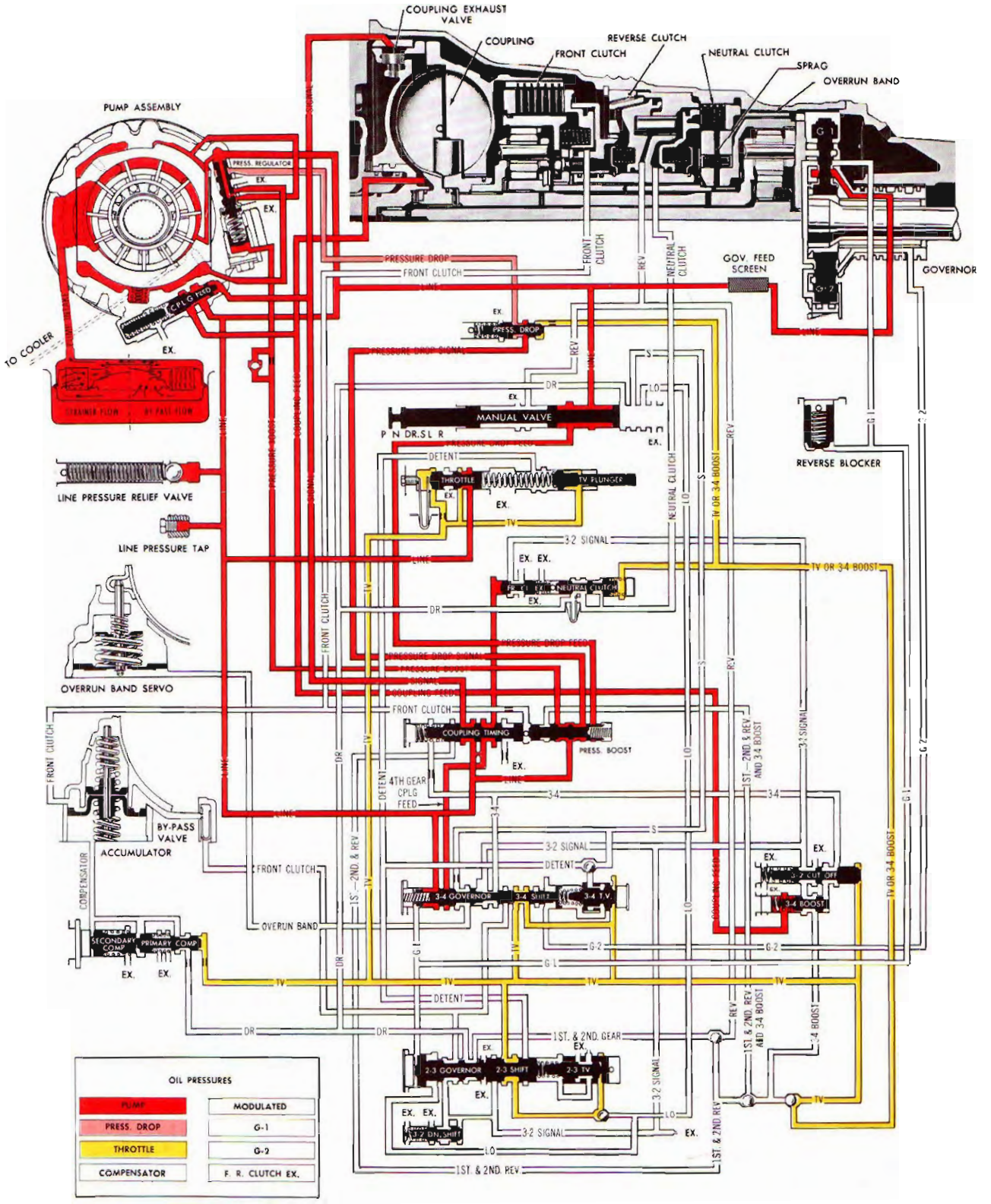


Fig. 3-13 Neutral (Engine Running)

DRIVE RANGE (FIRST STAGE)

COUPLING—FILLED **REVERSE CONE—OFF** **SPRAG OR ROLLER CLUTCH—EFFECTIVE**

FRONT CLUTCH—OFF **NEUTRAL CLUTCH—ON** **OVERRUN BAND—OFF**

When the selector lever is moved to the drive position, the manual valve is repositioned to allow line pressure to enter the drive oil circuit. Drive oil then flows to the following:

1. Neutral Clutch Valve
2. 2-3 Governor Valve
3. Pressure Boost Valve
4. Primary Compensator Valve

BASIC CONTROL

Drive oil to the neutral clutch valve is directed into the neutral clutch apply passage. The neutral clutch valve senses a balance between neutral clutch apply pressure and T.V. plus spring pressure to regulate the flow of neutral clutch apply pressure to insure a smooth but firm clutch application under all throttle conditions. As the neutral clutch applies, the sprag or roller clutch becomes effective for first.

PRESSURE CONTROL

Line pressure will vary from 132 to 180 psi depending on the amount of T.V. pressure or throttle opening.

TIMING CONTROL

Drive oil and T.V. pressure are directed to the primary compensator valve. Drive oil flowing through compensator valves will become regulated to a pressure called compensator. Increasing T.V. pressure (which increases with throttle opening) will cause compensator to regulate to an increasing value. Compensator pressure is then designed to vary with throttle opening but in such a way as to be proportional to engine torque. Compensator pressure is directed to the accumulator for use during the 2-3 shift.

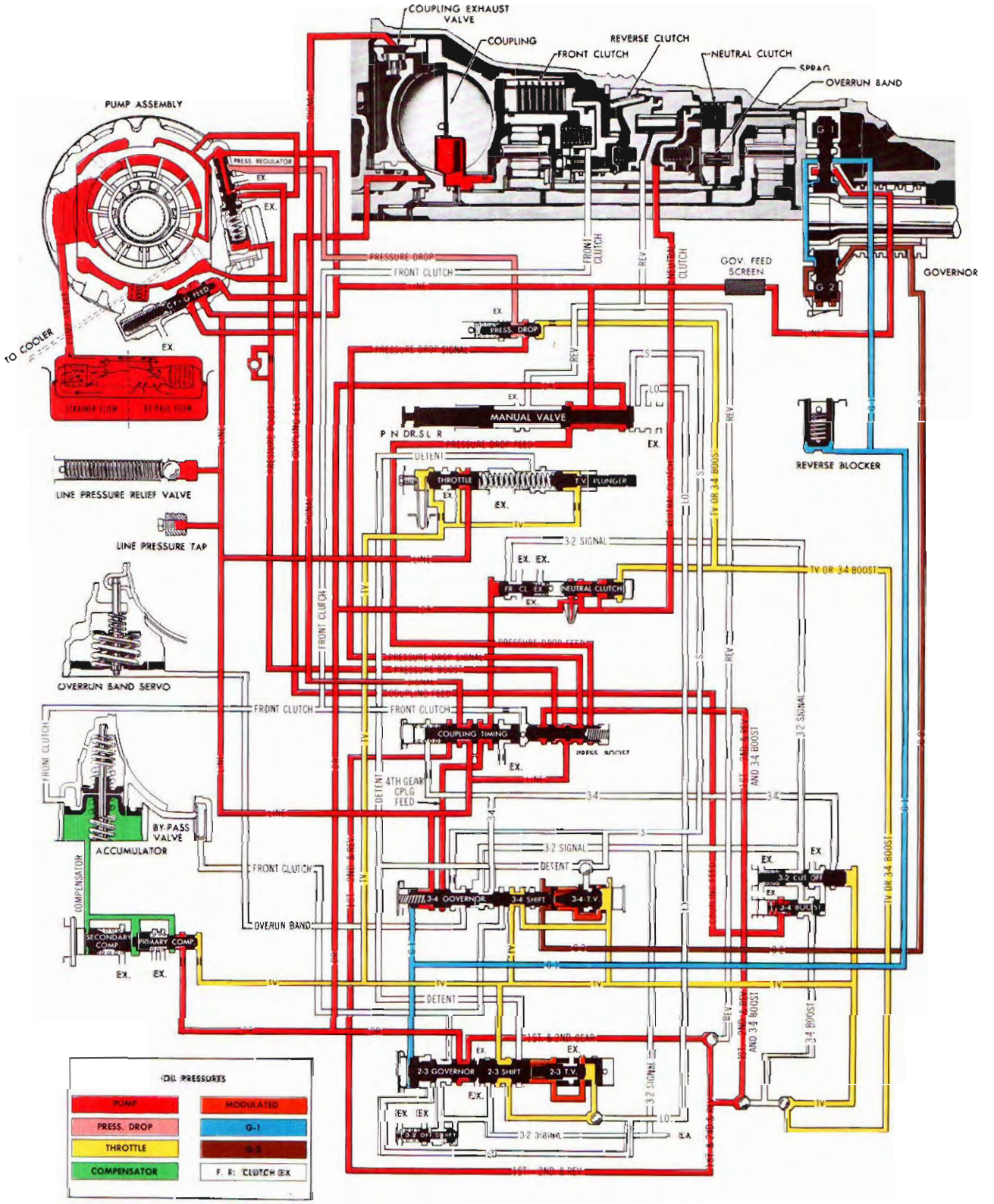
FAIL SAFE FEATURES

To provide a safety feature, drive oil to the 2-3 shift valve is routed into the first stage passage past two ball-check valves to the pressure boost valve. If for any reason the line boost valve has remained in neutral or third stage position, first stage oil will flow past the pressure boost valve to become line boost oil which is necessary in first.

First stage oil flowing past one ball-check is resting on the coupling timing valve. Again, if for any reason the coupling timing valve should remain in the third stage position, first stage oil will flow past the valve to become coupling signal oil. This insures that the coupling can be filled in first regardless of the position of the coupling timing valve.

SUMMARY

The coupling is filled, the neutral clutch is applied and the sprag or roller clutch is effective, placing the transmission in first.



1/3 THROTTLE

Fig. 3-14 Drive Range (First Stage)

DRIVE RANGE (SECOND STAGE)

COUPLING—FILLED **REVERSE CONE—OFF** **SPRAG OR ROLLER CLUTCH—EFFECTIVE**

FRONT CLUTCH—OFF **NEUTRAL CLUTCH—ON** **OVERRUN BAND—OFF**

When the selector lever is moved to the drive position, the manual valve is repositioned to allow line pressure to enter the drive oil circuit. Drive oil then flows to the following:

1. Neutral Clutch Valve
2. 2-3 Governor Valve
3. Pressure Boost Valve
4. Primary Compensator Valve

BASIC CONTROL

Drive oil to the neutral clutch valve is directed into the neutral clutch apply passage. The neutral clutch valve senses a balance between neutral clutch apply pressure and T.V. plus spring pressure to regulate the flow of neutral clutch apply pressure to insure a smooth but firm clutch application under all throttle conditions. As the neutral clutch applies, the sprag or roller clutch becomes effective for first and second.

PRESSURE CONTROL

Pressure control in second is identical to that in first and neutral. Line pressure will vary from 132 to 180 psi depending on the amount of T.V. pressure or throttle opening.

TIMING CONTROL

Drive oil and T.V. pressure are directed to the primary compensator valve. Drive oil flowing through compensator valves will become regulated to a pressure called compensator. Increasing T.V. pressure (which increases with throttle opening) will cause compensator to regulate to an increasing value. Compensator pressure is then designed to vary with throttle opening but in such a way as to be proportional to engine torque. Compensator pressure is directed to the accumulator for use during the 2-3 shift.

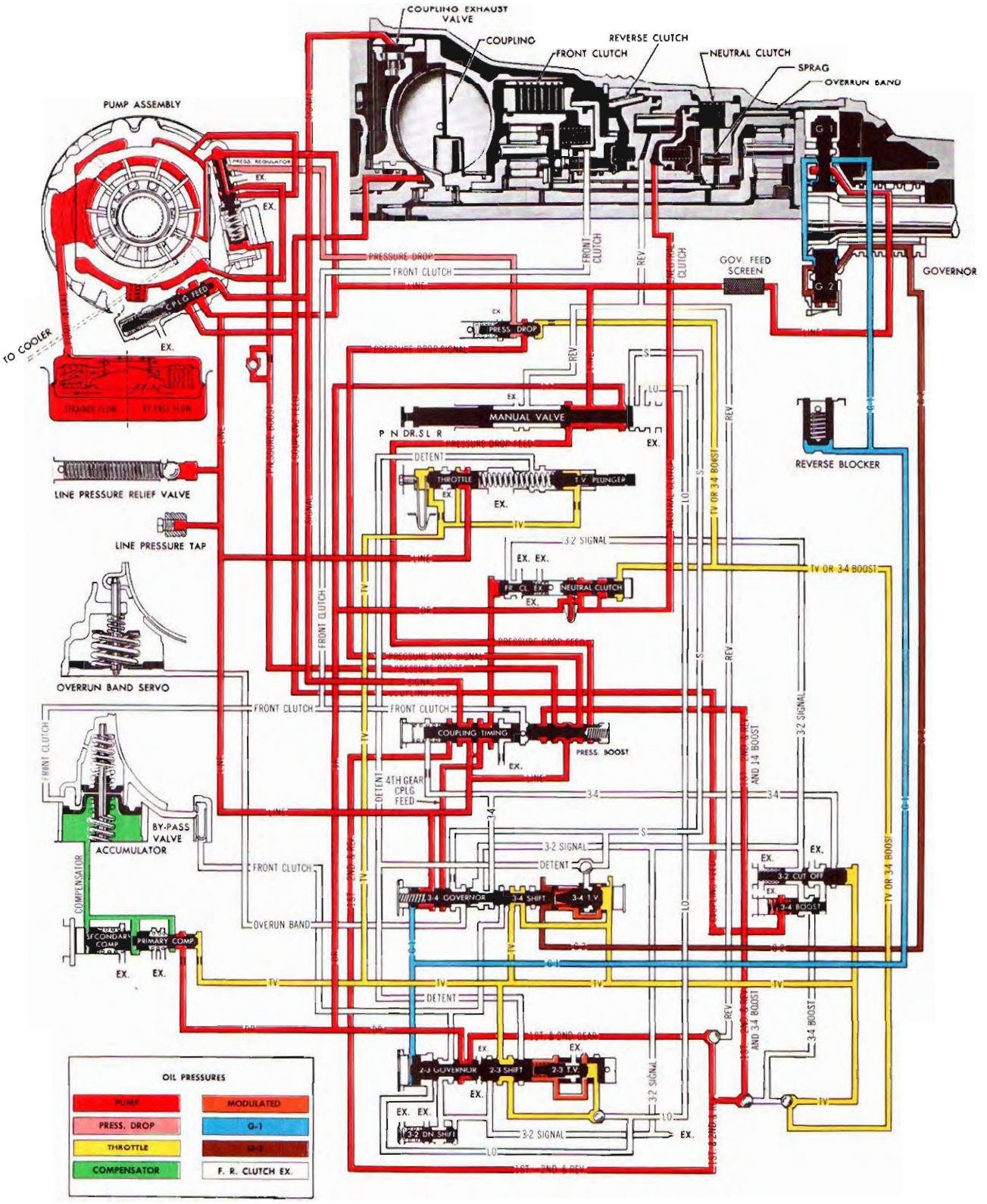
FAIL SAFE FEATURES

To provide a safety feature, drive oil to the 2-3 shift valve is routed into the first stage passage past two ball-check valves to the pressure boost valve. If for any reason the line boost valve has remained in the neutral or third stage position, second stage oil will flow past the pressure boost valve to become line boost oil which is necessary in second.

Second stage oil flowing past one ball-check is resting on the coupling timing valve. Again, if for any reason the coupling timing valve should remain in the third stage position, second stage oil will flow past the valve to become coupling signal oil. This insures that the coupling can be filled in second regardless of the position of the coupling timing valve.

SUMMARY

The coupling is filled, the neutral clutch is applied and the sprag or roller clutch is effective, placing the transmission in second.



1/3 THROTTLE

Fig. 3-15 Drive Range (Second Stage)

DRIVE RANGE (THIRD STAGE)

COUPLING—EMPTY **REVERSE CONE—OFF** **SPRAG OR ROLLER CLUTCH—EFECTIVE**

CLUTCH—ON **NEUTRAL CLUTCH—ON** **OVERRUN BAND—OFF**

As vehicle speed and G-1 pressure increases, the force of G-1 acting on the 2-3 governor valve will overcome the force of the 2-3 shift valve spring, 2-3 T.V. spring, and modulated T.V. pressure. This causes the 2-3 shift valve to open, which allows drive oil to enter the front clutch passage. Simultaneously, T.V. pressure to the 2-3 regulator valve is cut off at the 2-3 shift valve, and second stage oil is exhausted through the 2-3 shift valve.

BASIC CONTROL

Front clutch oil from the 2-3 shift valve then is directed to the following places:

1. 3-4 shift valve for later use and, after passing an orificed one way check valve to the:
2. Front Clutch
3. Front Clutch Accumulator
4. Coupling Timing Valve
5. Pressure Boost Valve

Front clutch oil applies the clutch and moves the coupling timing valve against the spring cutting off line pressure to the signal passage. As signal pressure is cut off, the coupling exhaust valves open, thus allowing the coupling to empty and the coupling feed limit valve to close, cutting off coupling feed pressure to the coupling.

PRESSURE CONTROL

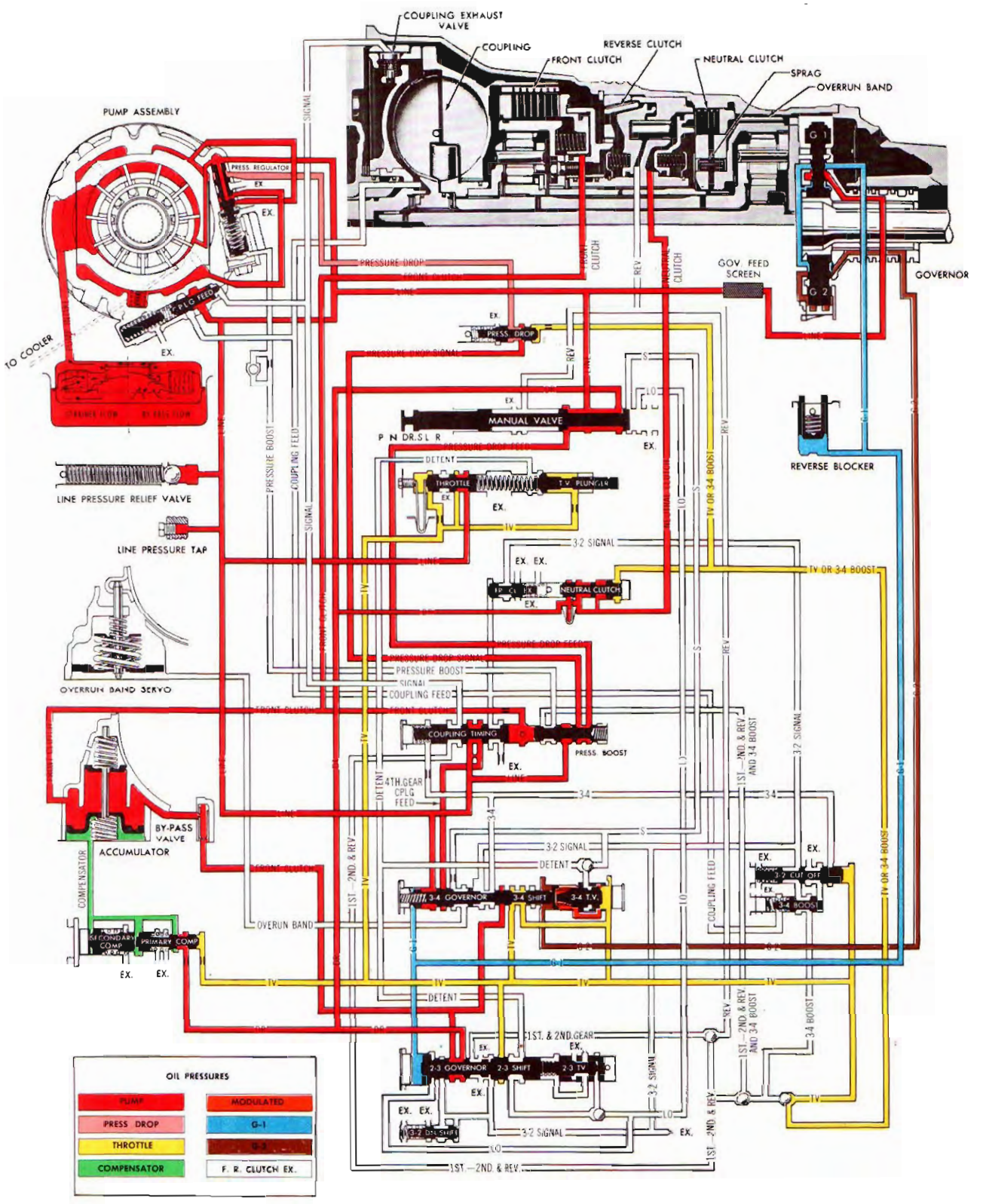
Front clutch oil to the line boost valve overcomes the spring at the opposite end, thus moving the valve to cut off line pressure from entering the pressure boost passage and pressure drop signal passage. Because line drop feed is now directed through the pressure boost valve into the pressure drop signal passage, line pressure will drop to a variable value of 74 to 105 psi. Front clutch oil is used on the pressure boost value since it is a signal oil which notifies the pressure boost valve that the oil pressure in the clutch itself is sufficiently high to allow the clutch to carry third stage torque. Also, if the line pressure were not kept in a boosted condition temporarily, the neutral clutch would not have sufficient pressure to prevent its slipping before the transmission had completed the shift to third.

TIMING CONTROL

Front clutch oil is directed to the accumulator to provide a cushion for clutch apply pressure. Compensator pressure is also fed to the accumulator to control the amount of cushioning the accumulator will provide according to throttle opening. At light throttle, compensator pressure is low, thus allowing the accumulator to absorb a greater amount of clutch oil for greater cushioning. At heavy throttle, compensator assists the lower accumulator spring in acting against clutch pressure to give a firmer but smooth clutch application. Front clutch oil acting on the coupling timing valve times the movement of the valve and the resulting exhaust of the coupling to coincide with the application of the front clutch.

SUMMARY

The front clutch is applied and the coupling is empty, shifting the transmission into third.



1/3 THROTTLE

Fig. 3-16 Drive Range (Third Stage)

DRIVE RANGE (FOURTH STAGE)

COUPLING—FILLED **REVERSE CONE—OFF** **SPRAG OR ROLLER CLUTCH—INEFFECTIVE**

FRONT CLUTCH—ON **NEUTRAL CLUTCH—ON** **OVERRUN BAND—OFF**

As vehicle speed increases, G-1 and G-2 pressure and the 3-4 shift valve spring acting on the 3-4 shift valve train will overcome the force of the T.V. regulator spring and modulated pressure on the 3-4 shift valve. The shift valve will then open allowing front clutch pressure and line pressure to enter the 3-4 and 4th stage coupling fill passage. T.V. pressure is now cut off from entering the shift T.V. passage.

BASIC CONTROL

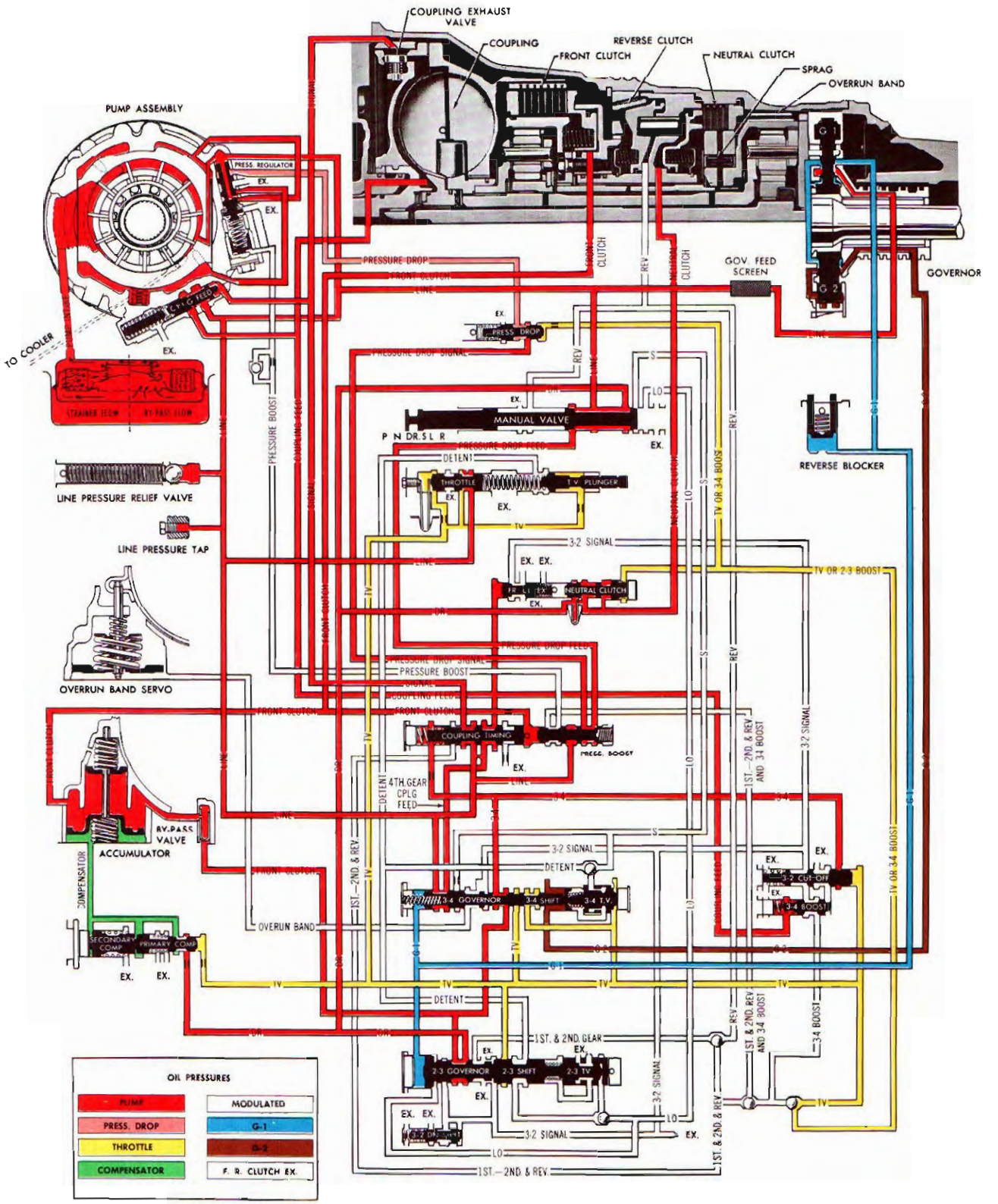
3-4 oil then repositions the coupling timing valve to allow signal pressure to close the coupling exhaust valves and open the coupling feed limit valve to provide coupling fill. Under some throttle conditions signal pressure may not be great enough to open the coupling feed limit valve. In this case all coupling feed pressure comes from the coupling timing valve. Fourth stage coupling feed pressure flows to the coupling timing valve where it provides an additional source for coupling feed pressure.

PRESSURE CONTROL

Under most driving conditions line pressure is not changed between third and fourth. However, below approximately 28 psi T.V. pressure, the 3-2 cutoff valve opens against T.V. pressure to allow 3-4 pressure to enter the 3-4 transfer passage. This will cause a temporary boost in line pressure as described under DRIVE RANGE-LIGHT THROTTLE 3-4 UPSHIFT.

SUMMARY

The front clutch remains applied and the coupling is filled so the transmission is in fourth.



MEDIUM THROTTLE

Fig. 3-17 Drive Range (Fourth Stage)

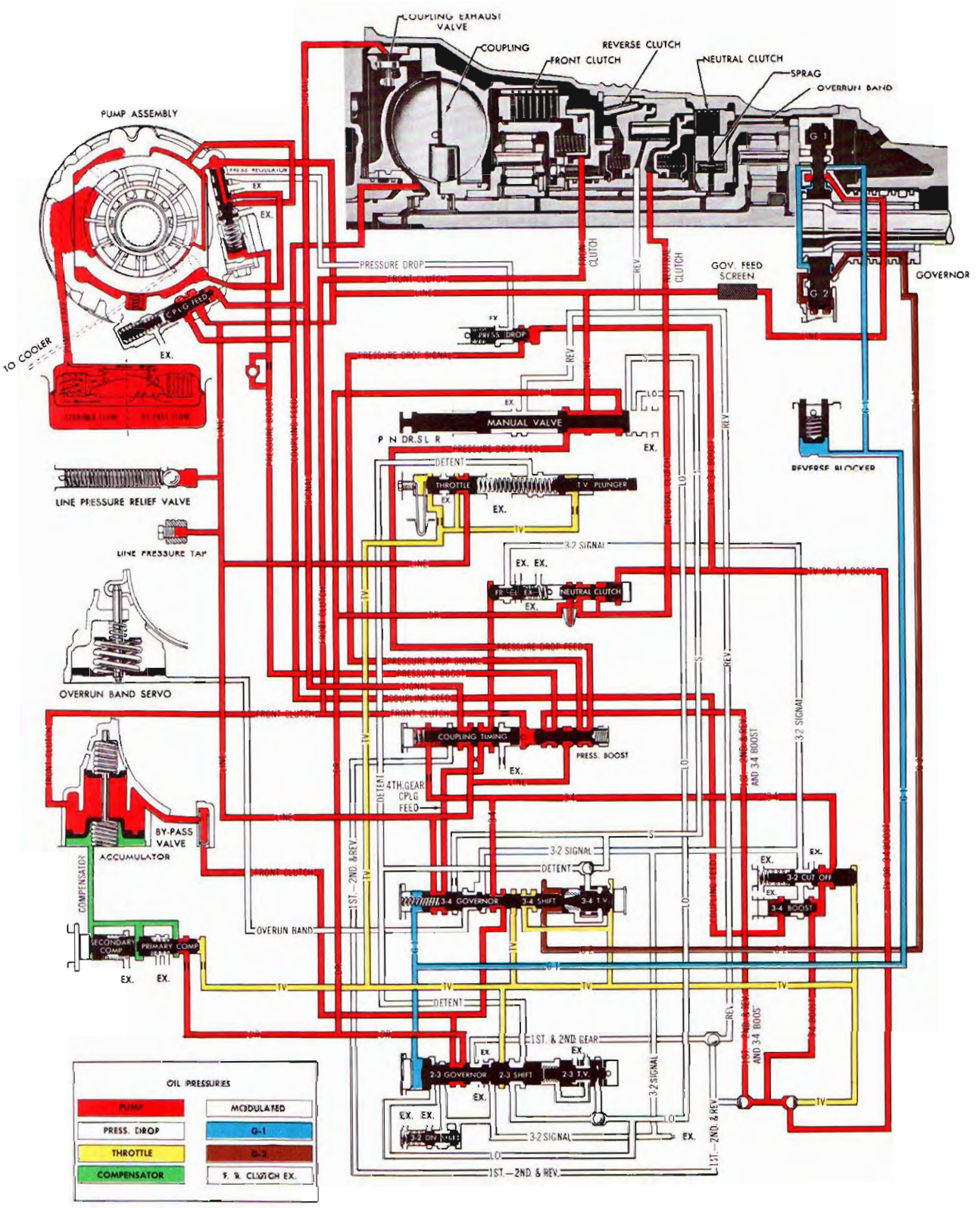
DRIVE RANGE—LIGHT THROTTLE 3-4 UPSHIFT

BASIC CONTROL

The basic control on light throttle 3-4 upshifts is the same as a basic 3-4 upshift.

PRESSURE CONTROL

When a 3-4 upshift is made at throttle positions giving less than approximately 28 psi T.V. pressure the 3-2 cut off valve is positioned against T.V. pressure by the spring. This allows 3-4 oil to flow past the 3-2 cut off valve, thus opening the 3-4 boost valve against the spring. This allows 3-4 oil to flow into the 3-4 boost passage and in turn past a ball check valve to the pressure drop valve. This closes the pressure drop valve cutting off pressure drop. Simultaneously, 3-4 boost oil flows past another ball check into the 1st, 2nd, Reverse and 3-4 boost passage where it supplies an alternate source for pressure boost. Line pressure is then raised to a sufficient value to provide a fast coupling feed. As the coupling fills and reaches operating pressure, coupling feed pressure acts on the end of the 2-3 boost valve to cut off the source of boost pressure. With 3-4 boost cut off, T.V. pressure is again directed through the ball check valve to control the pressure drop valve. Line pressure will then drop to its normal fourth stage value of 74-105 psi.



(VALVES SHOWN PRIOR TO COUPLING REACHING FULL CHARGE PRESSURE)

Fig. 3-18 Drive Range (Light Throttle 3-4 Upshift)

DRIVE RANGE—4-3 PART THROTTLE DOWNSHIFT

COUPLING—EXHAUSTING

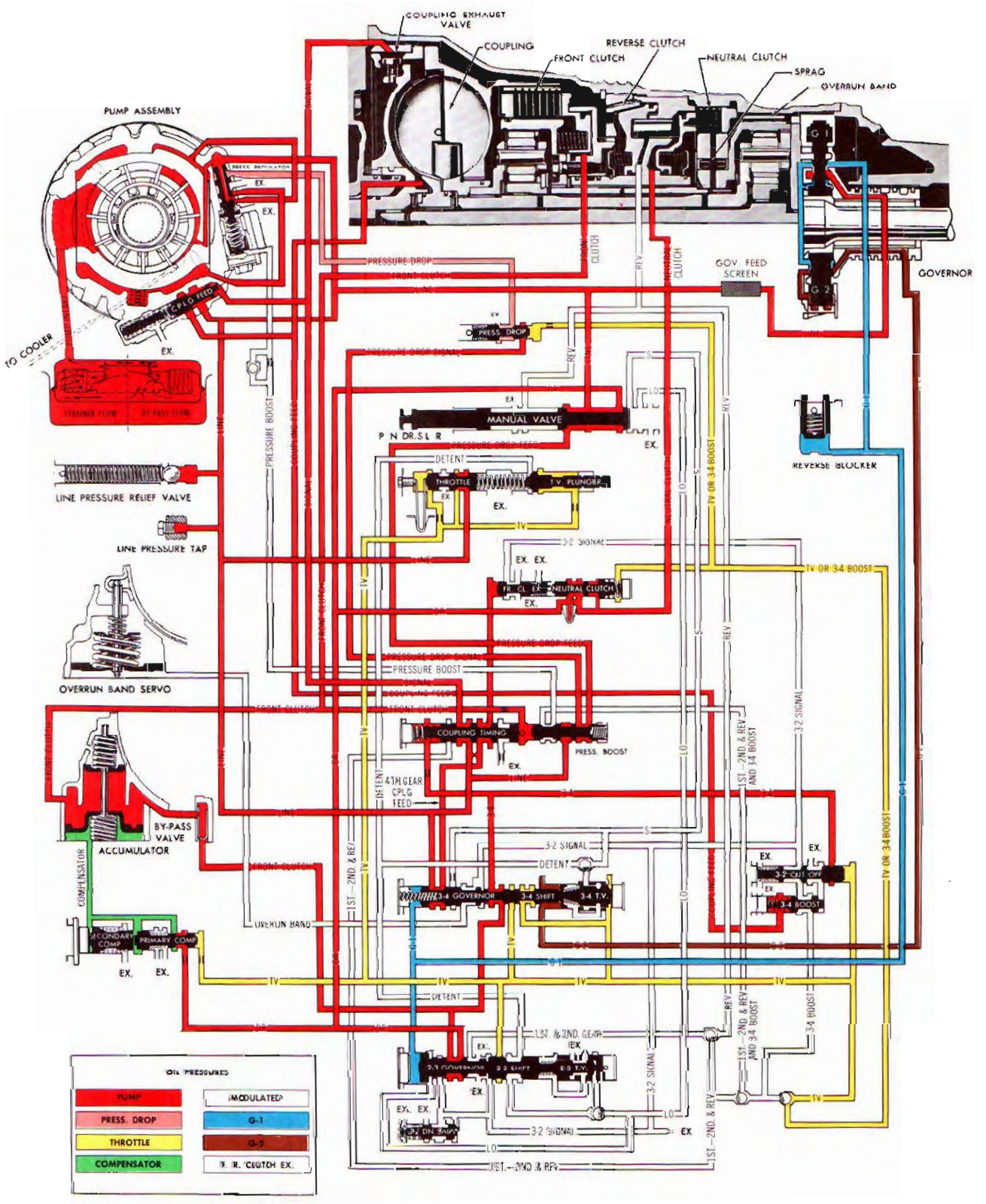
At vehicle speeds below approximately 35 M.P.H. a 4-3 downshift can be obtained by depressing the accelerator a given amount. When the accelerator is depressed sufficiently, T.V. pressure acting behind the large end of the 3-4 T.V. regulator valve is high enough to cause the 3-4 shift valve to close.

BASIC CONTROL

As the 3-4 shift valve closes, 3-4 oil and 4th stage coupling fill oil from the 3-4 shift valve are cut off, thereby causing the coupling to exhaust, shifting the transmission back into third.

PRESSURE CONTROL

The pressure remains the same as in fourth.



(VALVES IN FOURTH PRIOR TO DOWNSHIFT)

Fig. 3-19 Drive Range (4-3 Part Throttle Downshift)

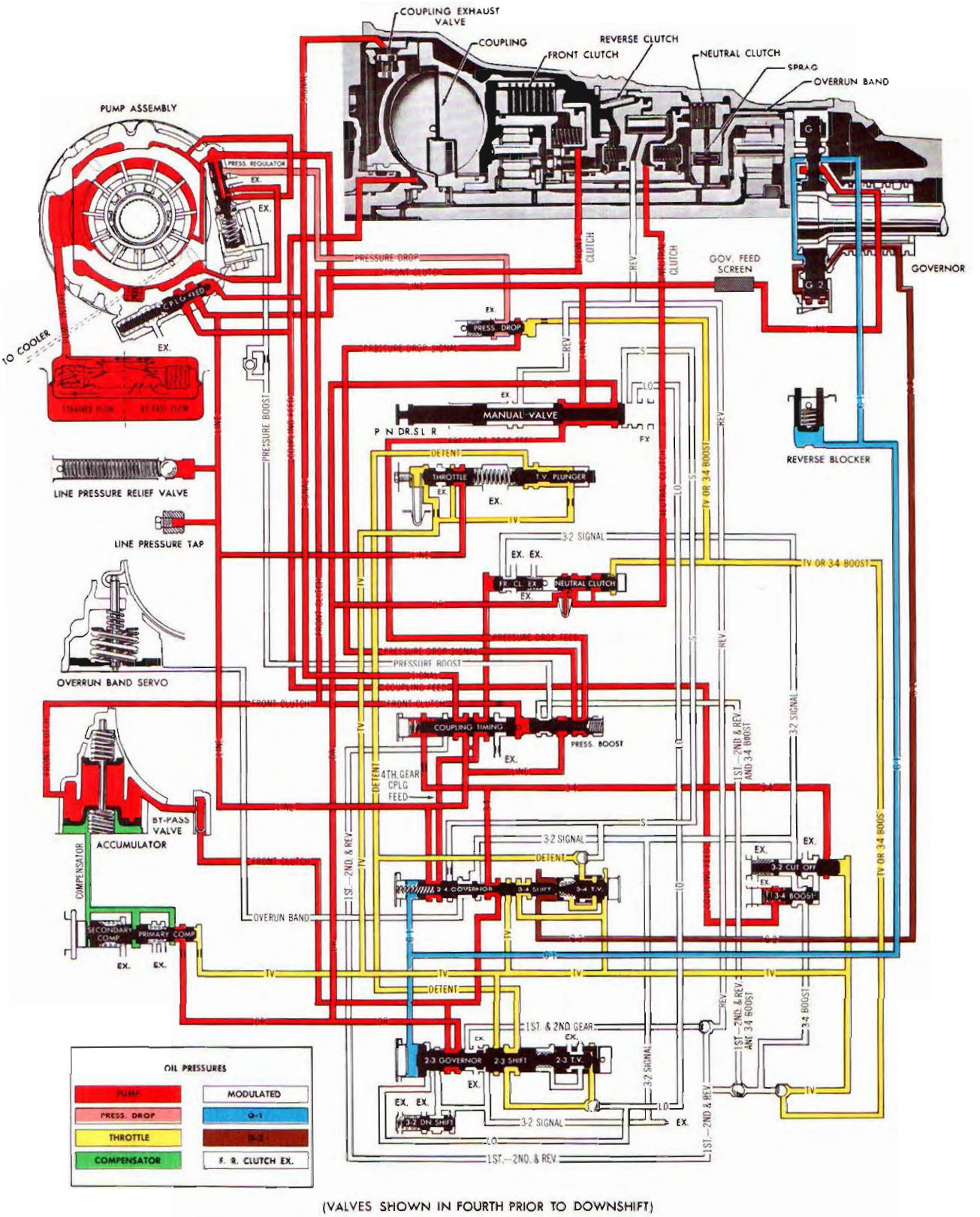
DRIVE RANGE—4-3 DETENT DOWNSHIFT

COUPLING—EXHAUSTING

While operating in fourth at speeds below approximately 65 M.P.H., a forced or detent 4-3 downshift is available. This is accomplished by depressing the accelerator fully past the noticeable stop at full throttle.

As this is done, the T.V. plunger is fully depressed exposing the detent passage to T.V. pressure. Detent pressure which flows past the ball check is directed against the large land of the 3-4 shift valve.

The force, due to pressure detent will overcome the force of G-1 and G-2 pressure and one spring acting in the opposite direction, thereby causing the 3-4 shift valve to close. The transmission will then shift into third.



(VALVES SHOWN IN FOURTH PRIOR TO DOWNSHIFT)

Fig. 3-20 Drive Range (4-3 Detent Downshift)

DRIVE RANGE—3-2 DETENT DOWNSHIFT

COUPLING—FILLING

At vehicle speeds below approximately 22 mph in third, a forced or detent 3-2 downshift can be obtained by depressing the accelerator fully past the detent. This causes the T.V. plunger to open the detent passage to T.V. pressure. Detent pressure then enters the 2-3 shift T.V. passage to act against the 2-3 T.V. value. This causes the 2-3 shift valve to close against the force of G-1 pressure.

BASIC CONTROL

As the 2-3 shift valve closes, drive oil to the front clutch is cut off and all front clutch pressure in the front clutch and accumulator is compelled to exhaust the 3-2 signal passage. The spring and 3-2 signal pressure repositions the coupling timing valve to provide coupling signal pressure and coupling feed pressure.

PRESSURE CONTROL

Drive oil acting on the pressure boost valve repositions the valve against exhausting front clutch oil to provide both boost pressure and line drop signal with line pressure at 180 psi.

TIMING CONTROL

During a heavy throttle 3-2 downshift, the release of the clutch must be timed to coincide with the filling of the coupling. To accomplish this timing, exhausting front clutch oil or 3-2 signal oil is used as follows:

1. It flows through the closed 3-4 shift valve into the 3-4 passage to rapidly reposition the coupling timing valve for coupling fill.
2. It flows to the 3-2 cut off valve where a rapid exhaust is obtained at light throttles only, but no effect is obtained at heavy throttle 3-2 shifts.
3. It regulates to exhaust through the 3-2 downshift valve to a value that will hold the front clutch torque in third but not in second. This feature permits the front clutch to handle the transmission torque in third until such time that second stage torque is predominate.
4. It rests against the front clutch exhaust valve until such time that coupling pressure attains a sufficient value to handle torque capacity in second. Coupling pressure then opens the front clutch exhaust valve to exhaust all remaining 3-2 signal or front clutch oil.

FRONT CLUTCH—EXHAUSTING

FAIL SAFE FEATURES

Drive oil flows past the closed 2-3 shift valve into a passage that supplies an auxiliary feed to the coupling timing valve. This oil provides an additional feed for signal oil in the event that the coupling timing valve should hang up in the closed position or is slow to move to the open position.

Drive oil into the second stage passage also flows through the ball-check valves and supplies a source for line boost pressure to rapidly fill the coupling prior to the time that the line boost valve has had a chance to be repositioned in the first and second stage position.

DRIVE RANGE—3-2 LIGHT THROTTLE DOWNSHIFT

(Illustration Shows Second Stage Just After The Downshift)

During a light or closed throttle 3-2 downshift, as the 2-3 shift valve closes, drive oil to the front clutch passage is cut off; however, all front clutch pressure in the system is exhausted into the 2-1 signal passage. Because T.V. pressure is slight with light throttle, the 3-2 cut off valve is open to exhaust the 3-2 signal oil. This allows an immediate exhaust of front clutch oil.

Drive oil which formerly applied the front clutch when the 2-3 shift valve was open is now directed into the second stage passage which flows through the ball-check valves and supplies a source for pressure boost pressure to rapidly fill the coupling prior to the time that the pressure boost valve has had a change to be repositioned in the first and second stage position.

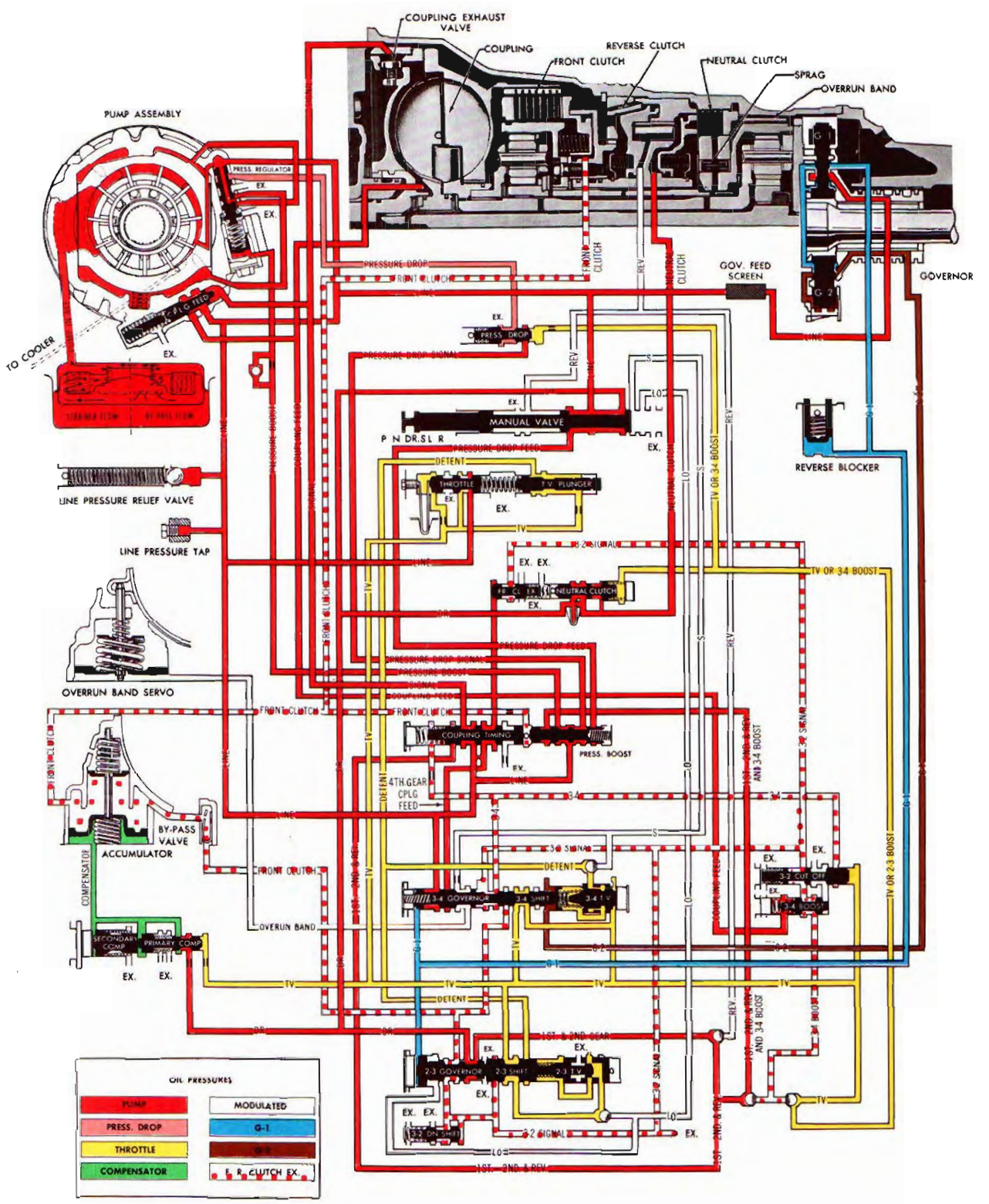


Fig. 3-21 Drive Range (3-2 Detent Downshift)

"S" RANGE—THIRD STAGE

REVERSE CONE—OFF **SPRAG OR ROLLER CHUTCH—EFFECTIVE** **NEUTRAL CLUTCH—APPLIED**

COUPLING—EMPTY **FRONT CLUTCH—APPLIED** **OVERRUN BAND—ON**

Oil flow in "S" range, third, is primarily identical to that in drive range third, with the following exceptions:

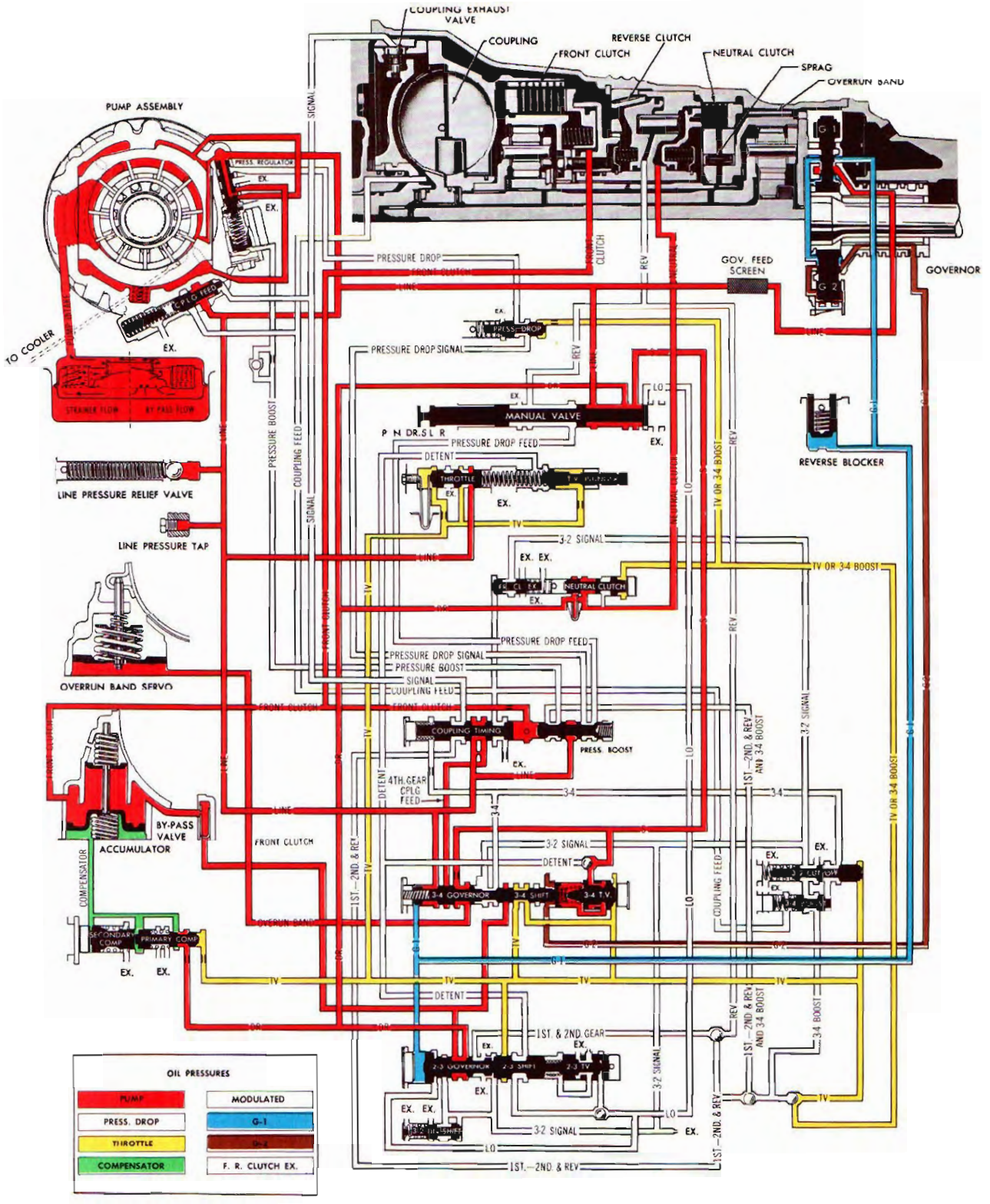
1. Oil Pressure

   When the manual valve is in the "S" position the line drop feed passage is cut off. This stops the source of line drop pressure so that line pressure is constant at approximately 105 psi regardless of throttle opening.

2. "S" Range Pressure

"S" range pressure from the manual valve performs two functions. First, it is directed through the ball-check against the large end of the 3-4 shift valve to prevent a 3-4 shift from normally occurring in "S" range.* Secondly, it is directed through the 3-4 governor valve to apply the overrun servo and band for engine braking in third.

*As a safety feature, it is possible to obtain a 3-4 upshift in "S" range but only above the speed at which the normal drive range through detent 3-4 upshift occurs.



LIGHT THROTTLE

Fig. 3-22 "S" Range (Third Stage)

LOW RANGE—SECOND STAGE

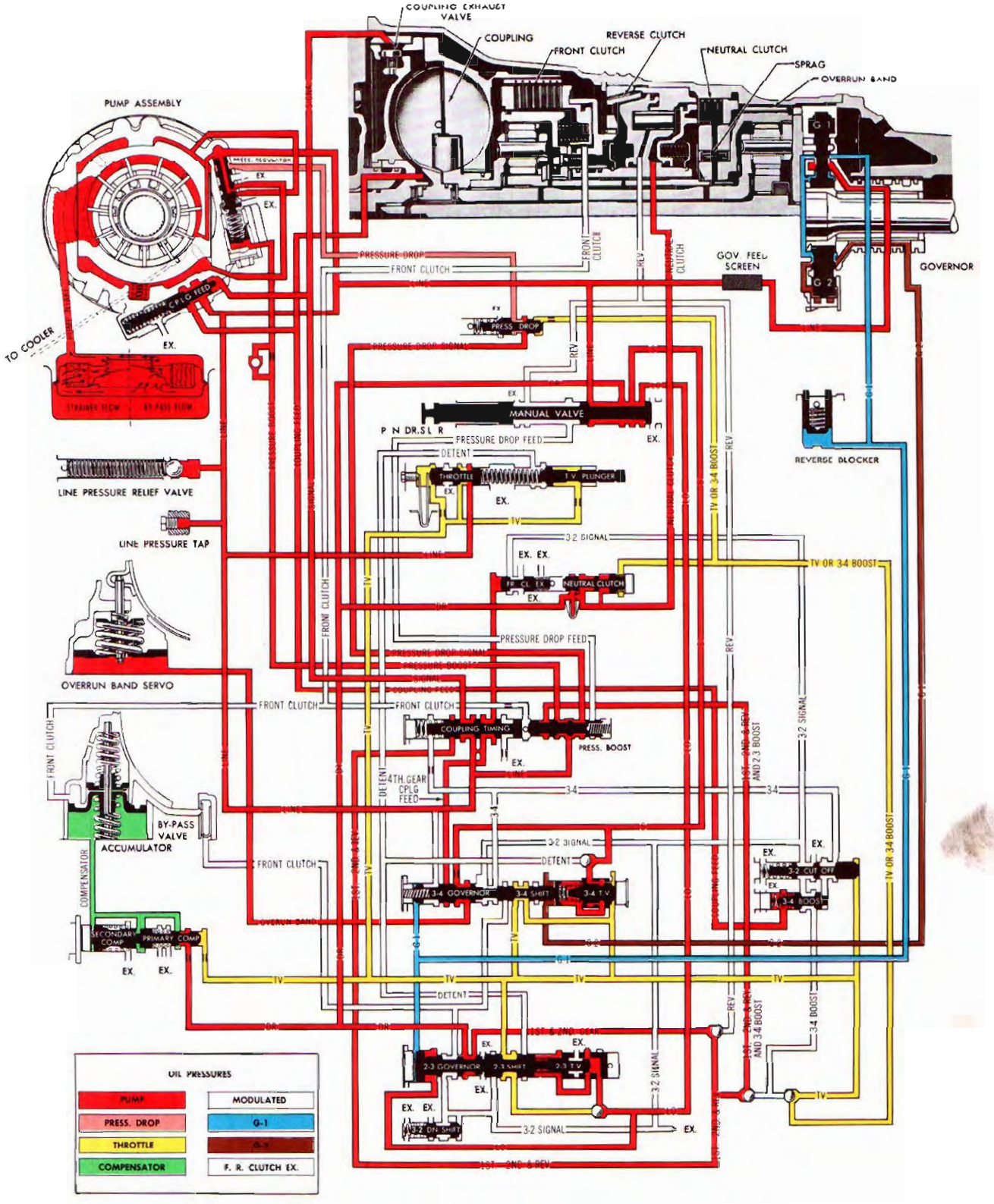
When the selector lever is placed in the "L" position, the Manual Valve is moved to uncover an additional source of pressure, "L" range oil.

"L" range oil is directed in two locations:

1. Against the large end of the 2-3 governor valve to work against the force of G-1 pressure.

2. Through the ball-check valve, past the 2-3 T.V. regulator valve to act against the 2-3 shift valve to further assist in keeping the 2-3 shift valve closed against G-1 pressure.

The primary purpose of "L" range oil is to provide a definite means of preventing a 2-3 upshift from occurring in the "L" range position.



LIGHT THROTTLE

Fig. 3-23 Low Range (Second Stage)

REVERSE

COUPLING—FILLED **REVERSE CONE—ON** **SPRAG OR ROLLER CLUTCH—INFFECTIVE**

FRONT CLUTCH—OFF **NEUTRAL CLUTCH—OFF** **OVERRUN BAND—OFF**

When the selector lever is moved to the "R" position, the manual valve is repositioned to exhaust Drive, "S" Range and "L" Range oil. Reverse oil pressure from the manual valve is allowed to enter the control system.

BASIC CONTROL

Reverse pressure applies the reverse cone.

Line pressure, through the coupling timing valve enters the signal passage to close the coupling exhaust valves and open the coupling feed limit valve for coupling fill.

PRESSURE CONTROL

Pressure control in reverse is identical to that obtained in neutral. Line pressure will vary from 132-180 psi depending on T.V. pressure.

FAIL SAFE FEATURES

Reverse pressure is also directed through a ball-check valve, to the coupling timing valve, to feed the coupling signal passage if the coupling timing valve should remain in the second stage position.

Line drop feed from the manual valve and reverse pressure through the ball-check valves are directed to the pressure boost valve to provide a secondary source for pressure drop and pressure boost if for any reason the pressure boost valve had remained in the third stage position.

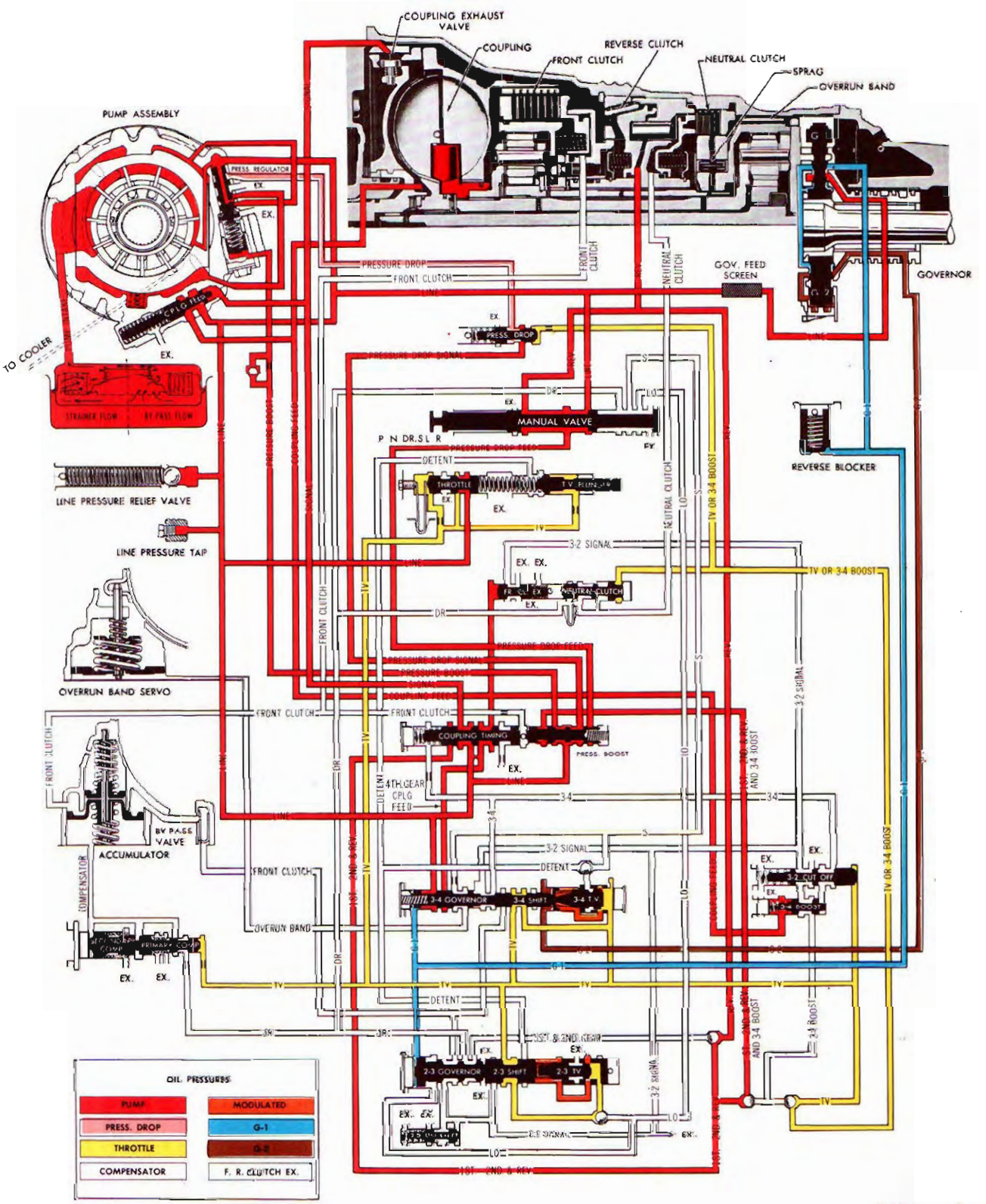


Fig. 3-24 Reverse

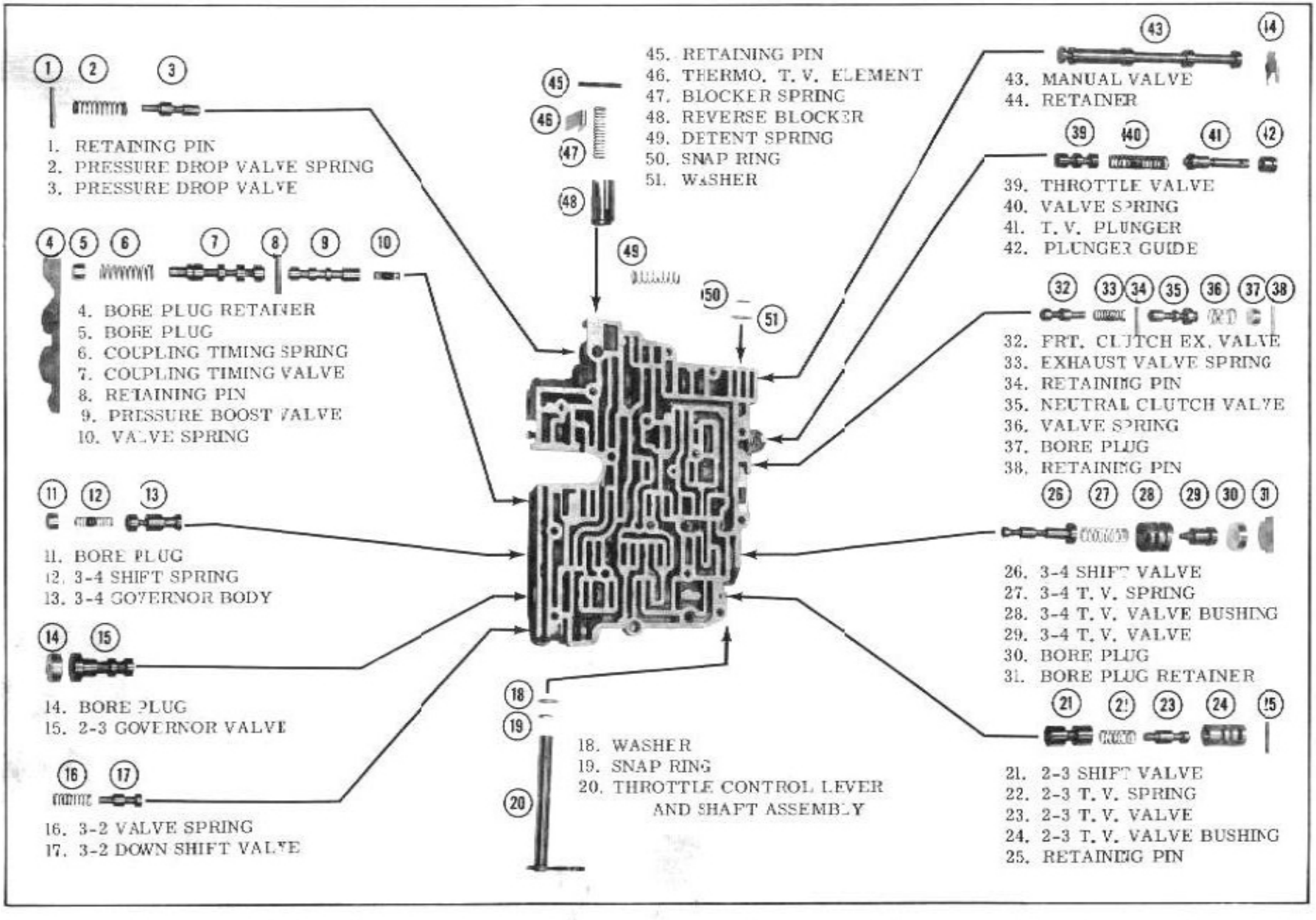


Fig. 3-25 Oil Control Valve Body

STEERING

PERIODIC MAINTENANCE AND THE POWER STEERING GEAR ARE NEW FOR 1962. FOR OTHER RECOMMENDATIONS AND SERVICE PROCEDURES REFER TO THE 1961 88, S88 & 98 SERVICE MANUAL.

CONTENTS OF SECTION 4

PERIODIC MAINTENANCE

MANUAL STEERING GEAR

Check lubricant level in the steering gear at each engine oil change interval. If found to be low, replenish with SAE 80 Multi-Purpose gear lubricant. Regular or seasonal changes are unnecessary.

POWER STEERING PUMP AND GEAR

Check lubricant level in the power steering pump at each engine oil change interval. The oil must be warm when checking oil level and maintained at the "full" mark. Use G.M. Hydra-Matic Transmission Fluid. Power Steering gear lubrication is accomplished by the oil supplied through the gear by the power steering pump. Regular or seasonal changes are unnecessary.

POWER STEERING GEAR REMOVAL AND INSTALLATION

1. Remove the coupling flange hub bolt and lock washer. (Fig. 4-1)
2. Disconnect the hoses from the pump and cap the pump and hose fittings.
3. Hoist the car.
4. Remove the pitman shaft nut, then disconnect the pitman arm from the pitman shaft using Puller J-5504-B or a similar puller.
5. Remove the three bolts attaching the gear to the frame side rail, permit the lower shaft to slide free of the coupling flange then remove the gear with the hoses attached.

Before installing the steering gear, apply a sodium soap fine fiber grease to the gear mounting pads to prevent squeaks between the gear housing and the frame. Make sure the alignment pin on the gear housing enters the hole provided in the frame side rail. Install the coupling flange hub bolt and torque 20 to 25 ft. lbs. Before tightening the steering gear to frame bolts, shift the steering gear as necessary to place it in the same plane as the steering shaft so that the flexible coupling is not distorted. Tighten the steering gear to frame bolts 60 to 80 ft. lbs. and the pitman shaft nut 90 to 120 ft. lbs.

After the hoses are connected to the pump, add Hydra-Matic oil as necessary to bring the fluid level to the full mark. With the engine running, turn the steering wheel through its full travel two or three times to bleed air from the system. Recheck the oil level and add oil if necessary.

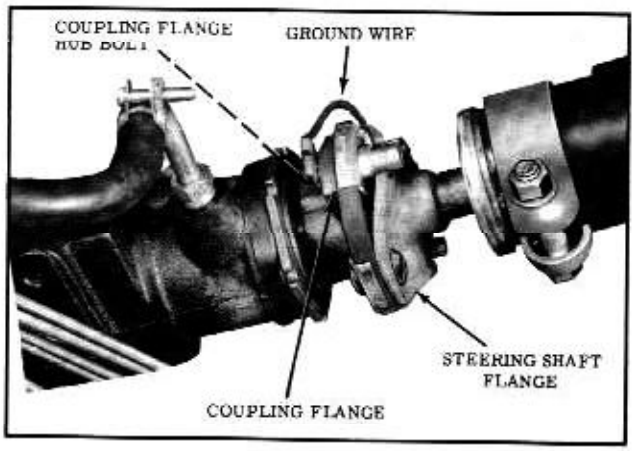


Fig. 4-1 Flexible Coupling

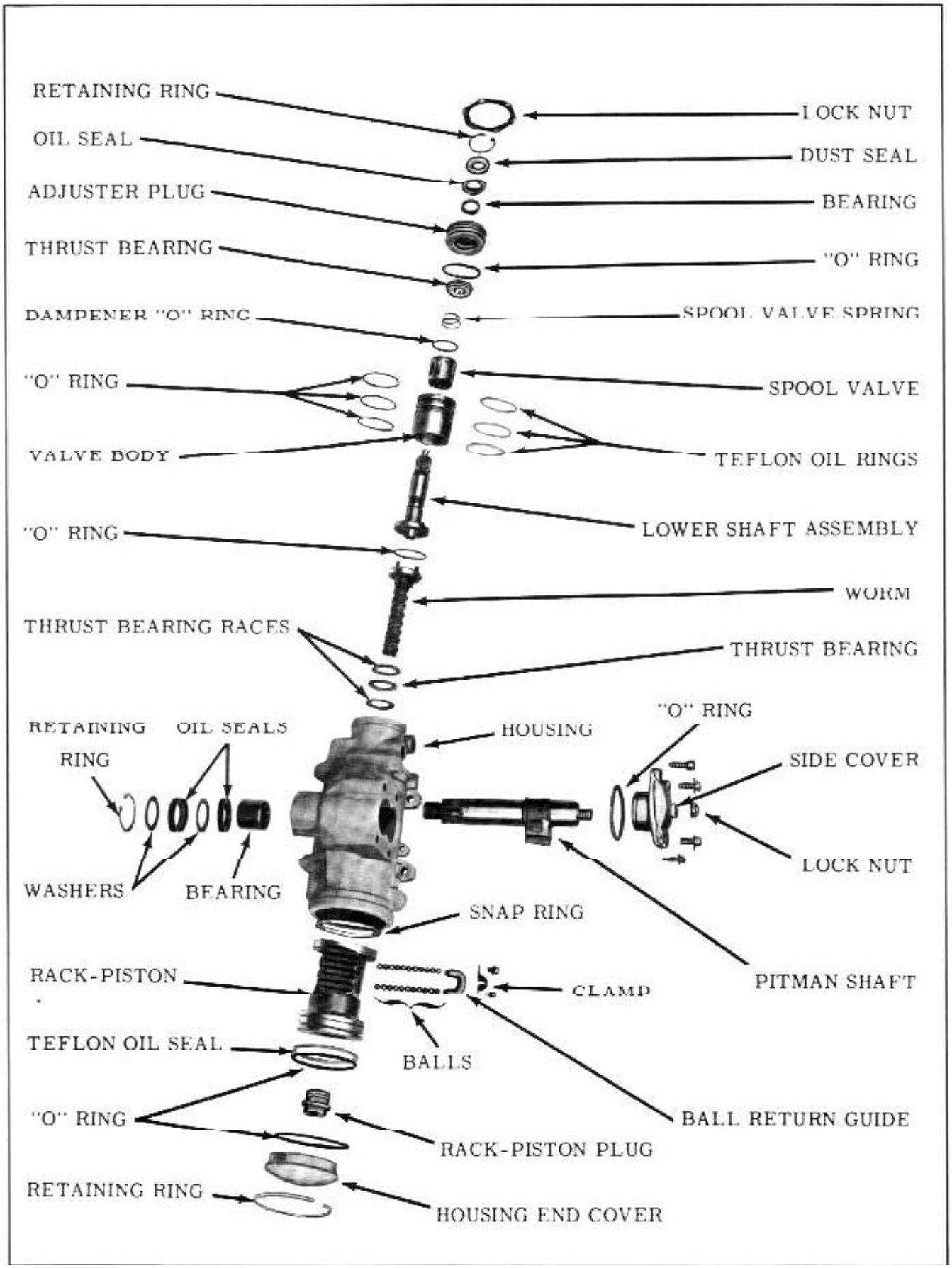


Fig. 4-2 Power Steering Gear

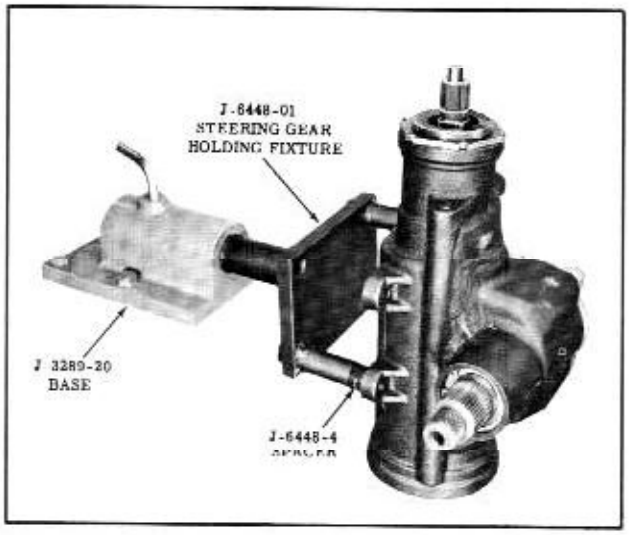


Fig. 4-3 Holding Fixture J-6448-01

STEERING GEAR DISASSEMBLY

NOTE: In many cases, complete disassembly of the gear will not be necessary since most of the component parts can be removed without complete disassembly of the gear. The procedure for such operations are not specifically outlined: however, the following basic procedure and specifications will apply.

To facilitate servicing of the gear, the gear should be mounted in Holding Fixture J-6448-01 (Fig. 4-3) or Holding Fixture J-5205. Holding Fixture J-5205 is designed to be used with Modified Differential Holding Fixture J-3289-B. (Fig. 4-4)

1. Rotate end cover retainer ring so that one end of the ring is over hole in side of housing then force end of ring from its groove and remove ring. (Fig. 4-5)

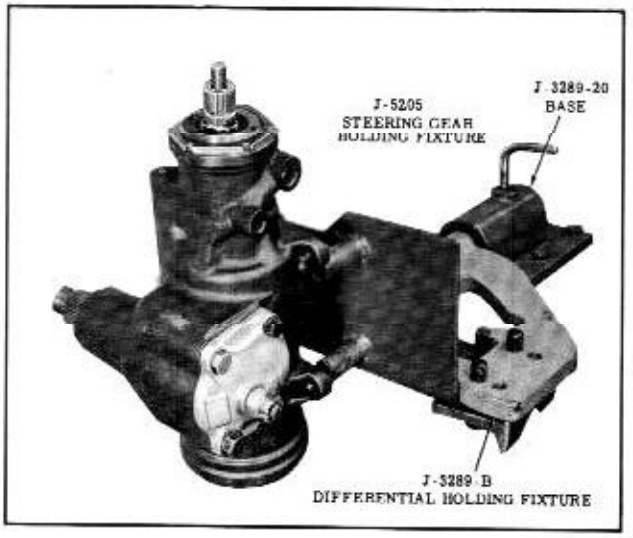


Fig. 4-4 Holding Fixture J-5205

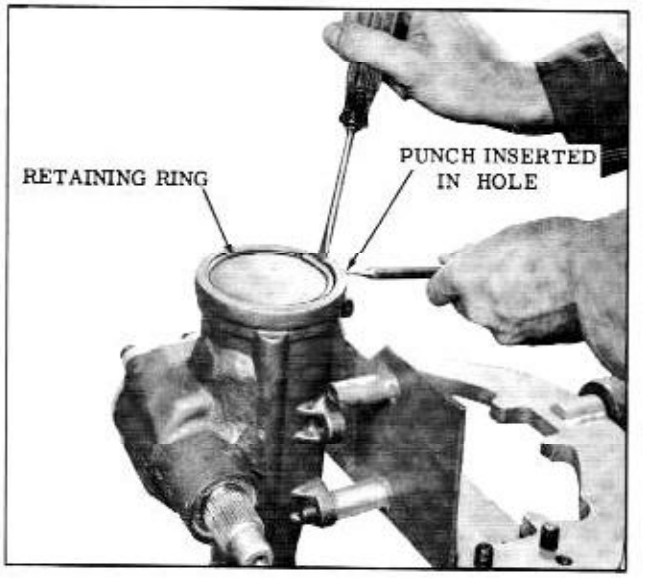


Fig. 4-5 Removing End Cover Ring

2. Turn the lower shaft, using 3/4" 12 point socket, counterclockwise until rack-piston just forces end cover out of housing, otherwise the worm may thread out of the rack-piston and the balls will fall out of their circuit. Remove cover and discard "O" ring.

3. Remove the rack-piston plug from rack-piston as shown in Fig. 4-6.

4. Remove the pitman shaft and side cover as follows:

   a. Loosen the over-center adjusting screw lock nut and remove the 4 side cover attaching cap screws and 3 lock washers.

   b. Rotate side cover until the rack-piston and pitman shaft teeth are visible, then turn the lower shaft using a replacement coupling flange or a 3/4" 12 point socket until the

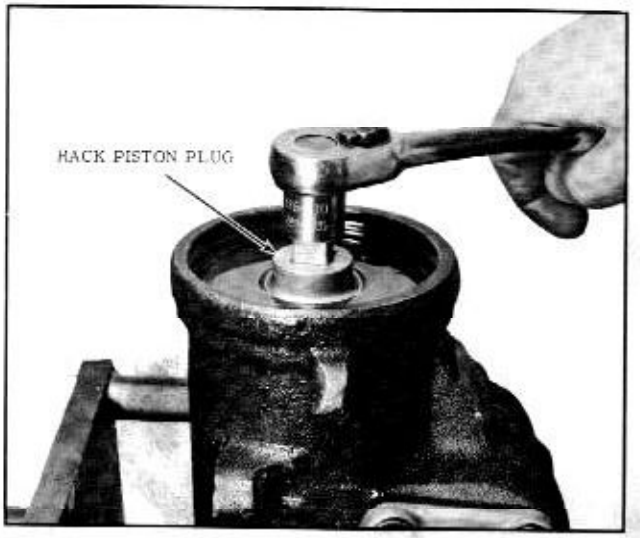


Fig. 4-6 Removing Rack-Piston Plug

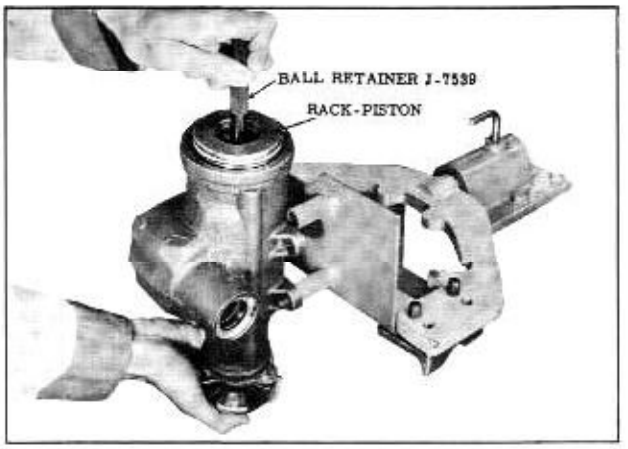


Fig. 4-7 Removing Rack Piston

pitman shaft teeth are centered in the housing opening. Tap pitman shaft with a soft hammer and remove the pitman shaft and side cover from the housing. Remove the side cover "O" ring and discard.

5. Remove the rack-piston as follows:

   a. Insert Ball Retainer Tool J-7539 into the rack-piston bore with pilot of tool seated in the end of the worm. (Fig. 4-7) Turn lower shaft counterclockwise while holding tool tightly against worm. The rack-piston will be forced onto the tool.

   b. Remove the rack-piston with Ball Retainer Tool J-7539 from gear housing.

6. Remove the adjuster plug as follows:

   a. Loosen the adjuster plug lock nut with a punch. (Fig. 4-8) Remove lock nut.

   b. Remove adjuster plug assembly with Spanner Wrench J-7624. (Fig. 4-9) Remove and discard the plug "O" ring.

7. Grasp the lower shaft and pull the upper thrust bearing, valve and shaft assembly from

Fig. 4-8 Loosening Lock Nut

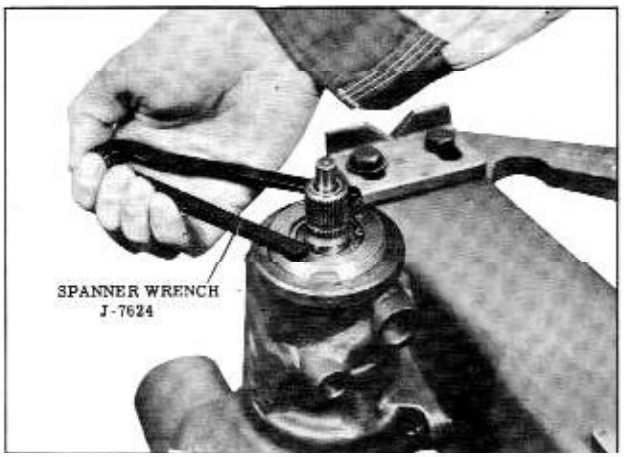


Fig. 4-9 Removing Adjuster Plug

the housing bore. Separate thrust bearing, worm and shaft and remove the lower shaft cap "O" ring and discard.

8. If the worm or lower thrust bearing and race(s) remained in the gear housing, remove at this time.

SERVICING INDIVIDUAL UNITS

ADJUSTER PLUG ASSEMBLY (Fig. 4-10)

Disassembly

1. If the seal ONLY is to be replaced and not the bearing, remove the retaining ring with internal pliers, then remove the dust seal. Pry the seal from the bore of the adjuster plug. Discard seal.

2. If the needle bearing is to be replaced, remove the retaining ring using internal pliers, then drive the dust seal, seal and bearing from the adjuster plug with Tool J-5254. (Fig. 4-11) Discard seal and bearing.

3. Wash all parts in clean solvent and dry parts with compressed air.

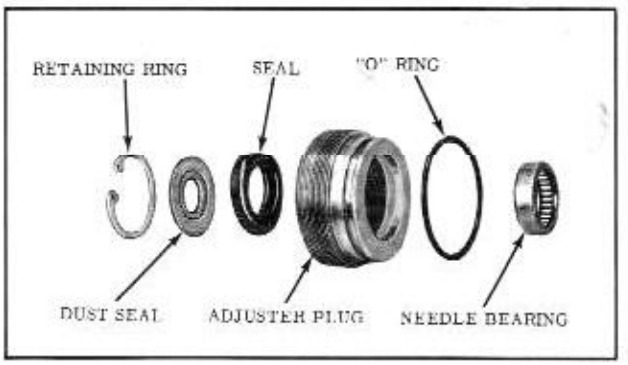


Fig. 4-10 Adjuster Plug Assembly

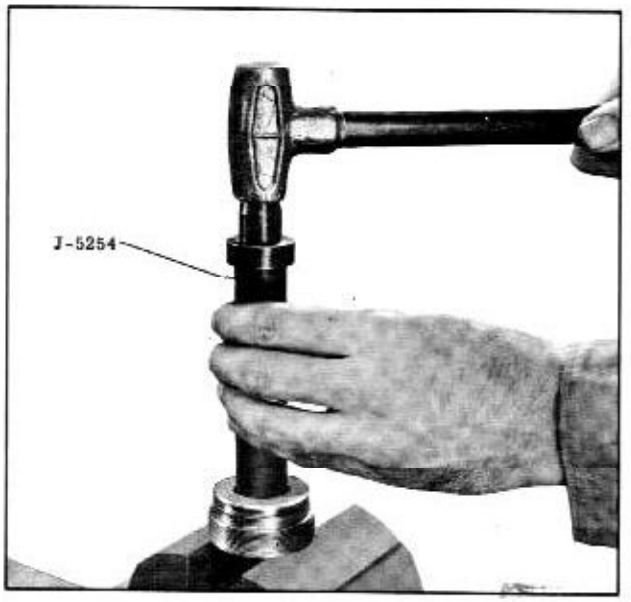


Fig. 4-11 Seal and Bearing Removal

Assembly

1. If the needle bearing was removed, place new needle bearing over Tool J-5254 with the manufacturer's identification against the tool and drive or press bearing until it is flush with the surface of the seal bore. (Fig. 4-12)

2. If seal was removed, temporarily install the adjuster plug in the gear housing and place new dust seal and a new oil seal on Tool J-5254 (lip of dust seal facing tool and lip of oil seal away from tool). Lubricate seals with Hydra-Matic oil and drive or press seals into adjuster plug just far enough to provide clearance for the retaining ring. (Fig. 4-13) Tool J-5254 must be free of burrs that could scratch the seal.

3. Install retaining ring with internal pliers, then remove the adjuster plug from the housing.

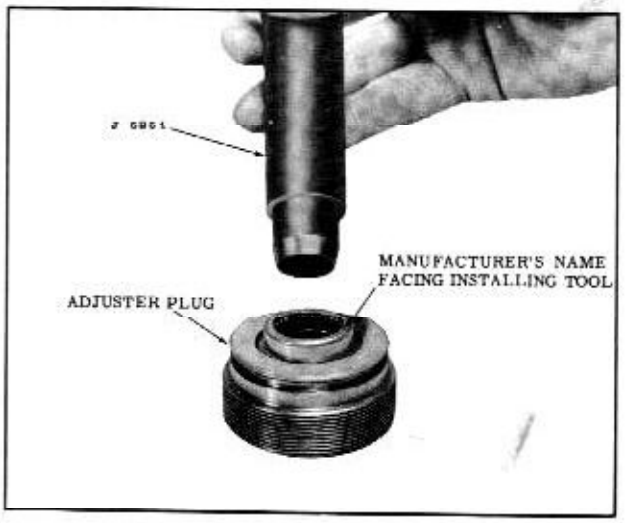


Fig. 4-12 Installing Bearing

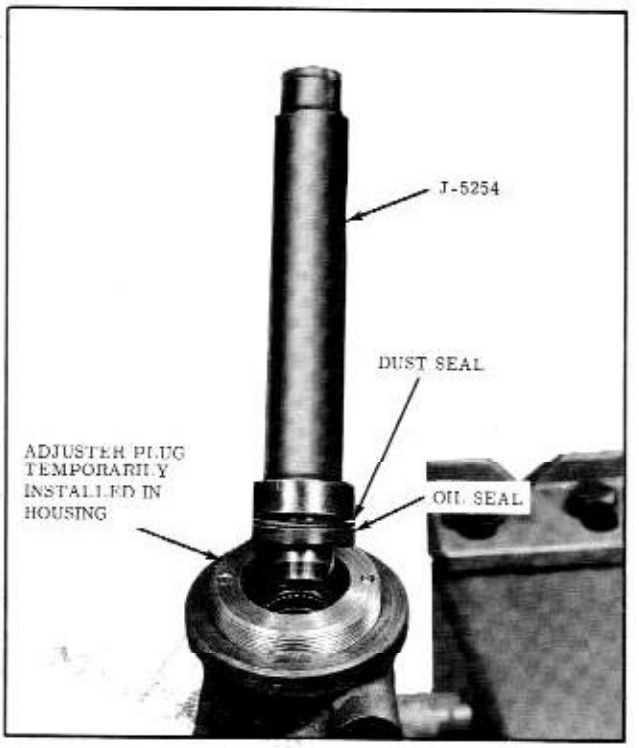


Fig. 4-13 Installing Seals

VALVE AND LOWER SHAFT ASSEMBLY (Fig. 4-14)

Disassembly

1. Remove the spool valve spring by carefully prying top coil out of groove in the lower shaft, then slide the spring from the shaft.

2. To remove the lower shaft assembly from the valve body, proceed as follows:

   a. While holding the assembly (lower shaft down), lightly tap the lower shaft against the bench until the shaft cap is free from the valve body. (Fig. 4-15) The spool valve

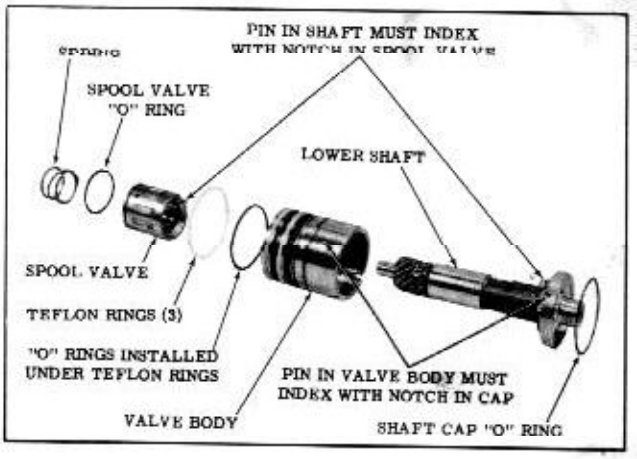


Fig. 4-14 Valve and Lower Shaft Assembly

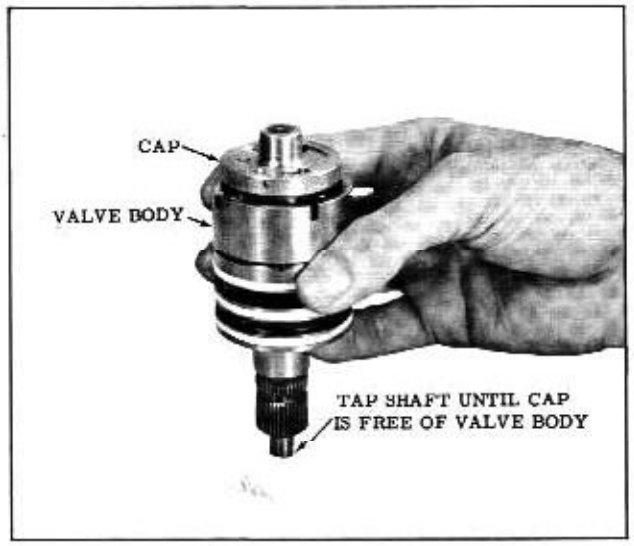


Fig. 4-15 Freeing Shaft Cap

should be held in the valve body while tapping the shaft.

b. Carefully remove the lower shaft assembly so as not to cock the spool valve in the valve body.

3. Push the spool valve out of the flush end of the valve body until the dampener "O" ring is exposed, then carefully pull the spool from the valve body while rotating the valve. (Fig. 4-16) If the spool valve becomes cocked, reverse the withdrawal procedure, then again attempt to remove the valve.

IMPORTANT. Do not attempt to force the spool valve in or out of the valve body. If the spool is cocked in the valve body, straighten the spool by tapping with a plastic or rawhide mallet, then push the spool back into the body and repeat the removal procedure.

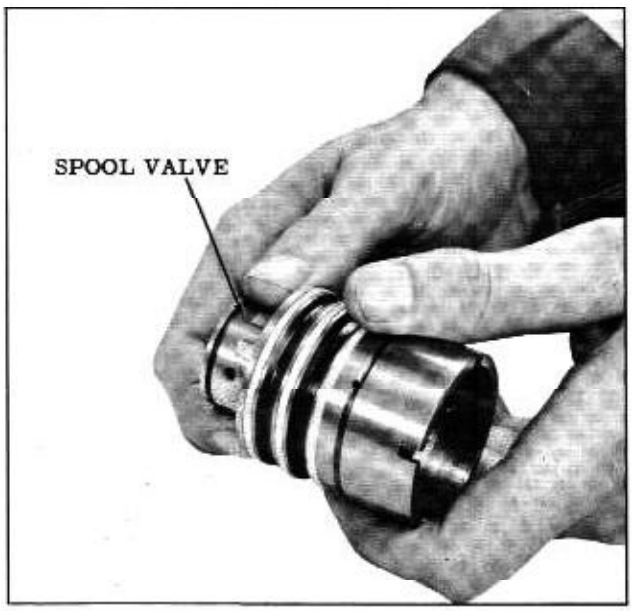


Fig. 4-16 Removing Spool Valve

4. Remove the dampener "O" ring from the spool valve and discard.

5. If the teflon oil rings are to be replaced, cut the 3 teflon oil rings and "O" rings from the valve body and discard.

Cleaning and Inspection

1. Wash all parts in clean solvent and blow out all oil holes with compressed air.

2. If the drive pin in the lower shaft or valve body is cracked, excessively worn or broken, replace the complete valve and shaft assembly.

3. If there is evidence of leakage between the torsion bar and the lower shaft, or scores, nicks, or burrs on the ground surface of the lower shaft that cannot be cleaned up with crocus cloth, the entire valve and shaft assembly must be replaced.

4. Check the O.D. of the spool valve and the I.D. of the valve body for nicks, burrs, or bad wear spots. If the irregularities cannot be cleaned up by the use of crocus cloth, the complete valve and shaft assembly will have to be replaced.

5. If the small notch in the skirt of the valve body is excessively worn, the complete valve and shaft assembly will have to be replaced.

6. Lubricate the spool valve with Hydra-Matic fluid and check the fit of the spool valve in the valve body (with the spool valve dampener "O" ring removed). If the valve does not rotate freely without binding, the complete valve and shaft assembly will have to be replaced.

7. Check the overall length of the spool valve spring. The spring should be approximately 3/4". If it is less than 11/16", replace the spring.

8. Inspect adjuster plug thrust bearing rollers and washers for wear, pitting or scores. If any of these conditions exist, replace the bearing.

Assembly (Fig. 4-17)

1. Install the 3 valve body "O" rings in the oil ring grooves and lubricate with Hydra-Matic oil.

2. Lubricate the 3 teflon oil rings with petrolatum and install in grooves over "O" rings.

NOTE: The oil rings may appear to be distorted, but the heat of the oil during operation of the gear will straighten them out.

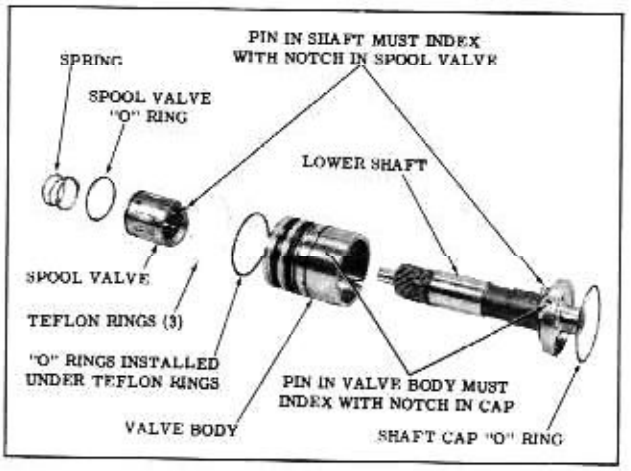


Fig. 4-17 Valve and Lower Shaft Assembly

3. Assemble the lower shaft assembly in the valve body so the notch in the lower shaft cap engages with the pin in the valve body. (Fig. 4-17) If necessary, tap the shaft cap with a plastic hammer until cap is seated in the valve body.

4. Install the spool valve as follows.

   a. Lubricate the spool valve dampener "O" ring with petrolatum and install over spool valve.

   b. Lubricate the spool valve with Hydra-Matic oil and slide the valve over the lower shaft (notch in spool towards the valve body). Rotate the spool valve while pushing the valve into the valve body until the notch in spool engages the pin in the lower shaft.

   c. Carefully crowd the dampener "O" ring into its groove until the spool valve can be pushed all the way in the valve body. The spool valve is properly seated when it is flush with the top of valve body.

   NOTE: Exercise extreme caution during this operation so the "O" ring will not be cut.

5. Slide the valve spring over the lower shaft and down into the spool valve until the top coil of the spring is in the shaft groove.

PITMAN SHAFT AND SIDE COVER (Fig. 4-18)

Disassembly

Remove the lock nut and side cover from the adjusting screw. Do not attempt to disassemble pitman shaft. Discard lock nut.

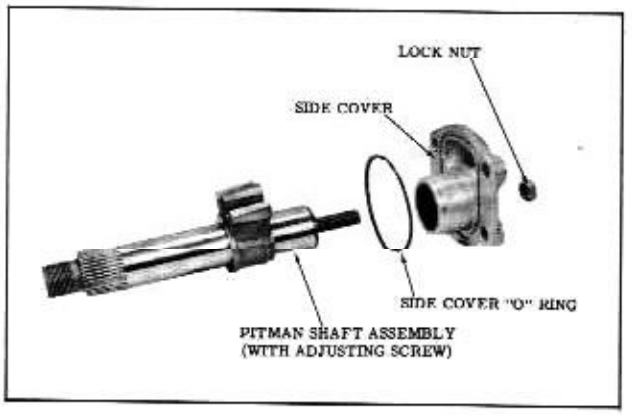


Fig. 4-18 Pitman Shaft and Side Cover

NOTE: The power steering gear is equipped with a self-adjusting type of pitman shaft which automatically keeps the over-center adjustment within specifications for a limited mileage (up to approximately 10,000 miles), regardless of the wear of the rack-piston and related parts. This is accomplished by the use of a wear washer and a heavy spring in the pitman shaft assembly. The wear washer is calibrated to wear at the same rate as the other components of the gear.

In cases where gear chucking or "clunk" cannot be corrected by performing the over-center adjustment (See POWER STEERING GEAR ADJUSTMENT-ON CAR), the trouble may be due to excessive wear in the pitman shaft or a broken spring in the pitman shaft.

To check the pitman shaft for excessive wear or a broken spring:

1. With the side cover removed from the pitman shaft, clamp the shaft in a vise and thread two 7/16" S.A.E. nuts on the adjusting screw. Tighten nuts so they are locked on the shaft.

2. Using a 5/8" socket and a inch-pound torque wrench, measure the torque required to turn the adjusting screw. (Fig. 4-19) Torque reading should be 1 to 15 inch lbs.

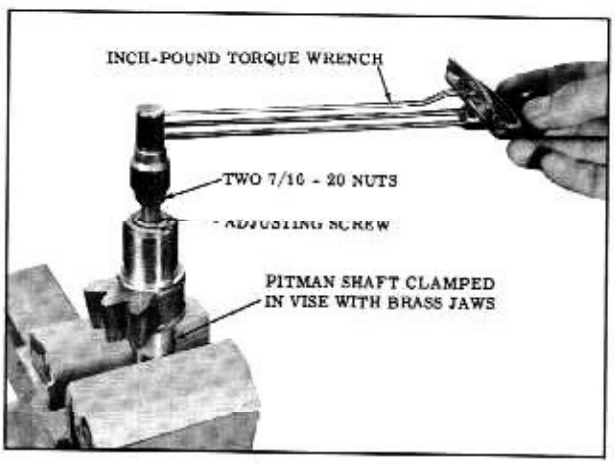


Fig. 4-19 Checking Adjusting Screw Torque

3. If the reading is not within this range, the complete pitman shaft assembly must be replaced. DO NOT ATTEMPT TO CORRECT READING BY DISASSEMBLING THE PITMAN SHAFT.

4. Remove the torque wrench and the two 7/16" nuts from the adjusting screw.

Cleaning and Inspection

1. Wash all parts in clean solvent and dry parts with compressed air.

2. Check pitman shaft bearing surface in the side cover for scoring. If badly worn or scored, replace the side cover.

3. Check the sealing and bearing surfaces of the pitman shaft for roughness, nicks, etc. If minor irregularities in surface cannot be cleaned by use of crocus cloth, replace the pitman shaft.

4. Replace pitman shaft assembly if teeth are damaged or if the bearing surfaces are pitted or scored.

Assembly

Thread the side cover onto the pitman shaft adjusting screw until it bottoms. Install, but do not tighten, a new adjusting screw lock nut.

RACK PISTON

Disassembly

1. Check the ball preload as follows:

   a. Lightly clamp the rack-piston assembly in a brass jawed vice with Tool J 7539 still in place.

   b. Thread worm into rack-piston while holding Tool J-7539 tightly against worm so the balls will not fall out of the rack-piston. When the worm is in place, remove Tool J-7539.

   c. Clamp rack-piston (flanged end of worm up) in vise, then install the valve and lower shaft assembly so that the small notch in the valve body engages the drive pin in the worm. Locate the over-center position of the worm by slowly turning the worm and noting the area where the turning effort is highest. DO NOT THREAD THE WORM OUT TOO FAR SINCE THIS MAY CAUSE SOME OF THE BALLS TO DROP OUT OF THE RACK-PISTON.

   d. Using a torque wrench and a 3/4" 12 point socket, check the preload while rotating the torque wrench in a 120° arc. The reading should be 1/16 to 5 in. lbs. (Fig. 4-20)

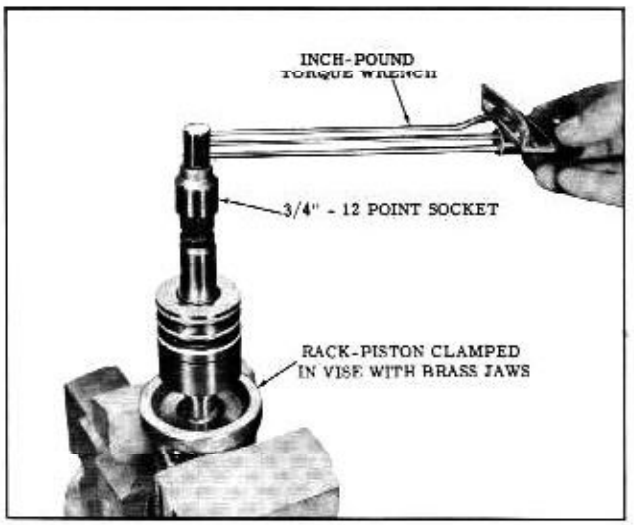


Fig. 4-20 Checking Preload

   e. If the preload is not within limits, a new set of balls must be installed upon reassembly. Note the ball size stamped on the rack-piston and install the next size larger balls to increase the preload or the next size smaller balls to decrease the preload. Black balls need not be replaced unless they are defective. A change of one ball size will change the preload approximately 1 in. lb.

   NOTE: If a number is not apparent, the ball size is number 7.

   f. Remove the torque wrench and valve and shaft assembly.

2. Thread the worm out of the rack-piston, remove ball return guide clamp, guide halves and balls.

3. If necessary to replace the teflon oil seal and "O" ring remove at this time.

Cleaning and Inspection

1. Wash all parts in clean solvent and dry with compressed air.

2. Inspect the worm and rack-piston grooves and all the balls for scoring. If either the worm or rack-piston needs replacing, both must be replaced as a matched assembly.

3. Inspect ball return guide halves, making sure that the ends where the balls enter and leave the guides are not damaged.

4. Inspect lower thrust bearing and washers for scores or excessive wear. If any of these conditions are found, replace the thrust bearing and washers.

5. Inspect rack-piston teeth for scores or excessive wear. Inspect the external ground surfaces for wear, scoring or burrs.

6. Inspect the rack-piston stop ring (inside of housing) and replace if damaged.

Assembly

1. If the teflon oil seal and "O" ring were removed, install a new "O" ring and seal, lubricated with Hydra-Matic oil, in the groove of the rack-piston.

2. Slide the worm all the way into the rack-piston. It is not necessary to have the thrust bearing assembly on the worm at this time.

3. Turn the worm until the worm groove is aligned with the lower ball return guide hole. (Fig. 4-21)

4. Lubricate the balls with Hydra-Matic oil, then feed 16 balls into the rack-piston while slowly rotating the worm counterclockwise.

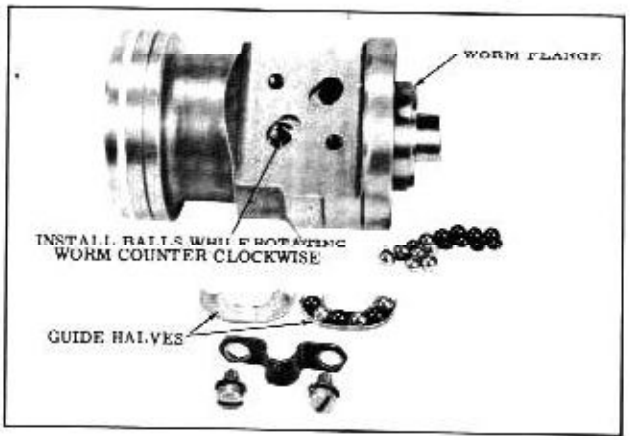


Fig. 4-21 Installing Balls

IMPORTANT: The black balls are .0005" smaller than the silver balls. The black and silver balls must be installed alternately into the rack-piston and return guide.

5. Alternately install 6 balls into the return guide and retain with petrolatum. Install the return guide assembly onto the rack-piston. Install the return guide clamp and tighten the 2 clamp screws 8 to 12 ft. lbs.

6. Check the ball preload if it was necessary to install a new set of balls to correct the preload. Refer to RACK-PISTON DISASSEMBLY (Step 1).

7. Insert Bearing Retainer Tool J-7539 into the the rack-piston, then while holding tool tightly against end of worm, thread worm out of the rack-piston.

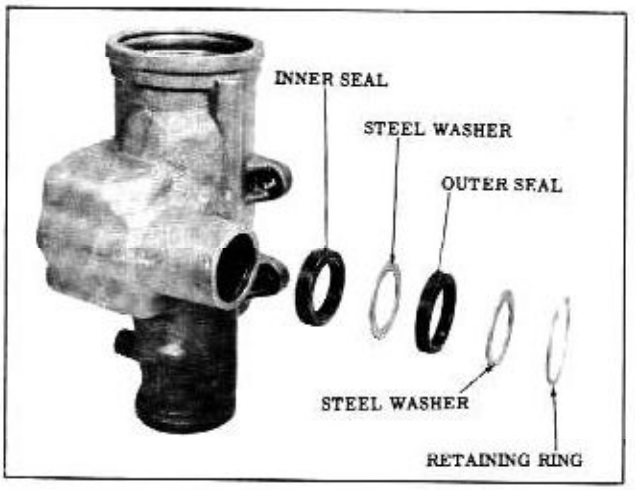


Fig. 4-22 Pitman Shaft Seals

PITMAN SHAFT NEEDLE BEARING AND SEALS (Fig. 4-22)

Remove

1. If pitman shaft seals ONLY are to be replaced, remove the seal retaining ring and outer steel washer, then pry out the outer seal. Remove the inner steel washer, then drive out the inner seal.

2. If pitman shaft needle bearing replacement is necessary, remove the seal retaining ring and outer seal washer, then drive needle bearing, seals and inner washer out with Tool J-6278-1. (Fig. 4-23)

Install

1. If the pitman shaft needle bearing was removed, place Adapter J 6278 2 over Tool J-6278-1; slide the new needle bearing on the tool with the manufacturer's identification

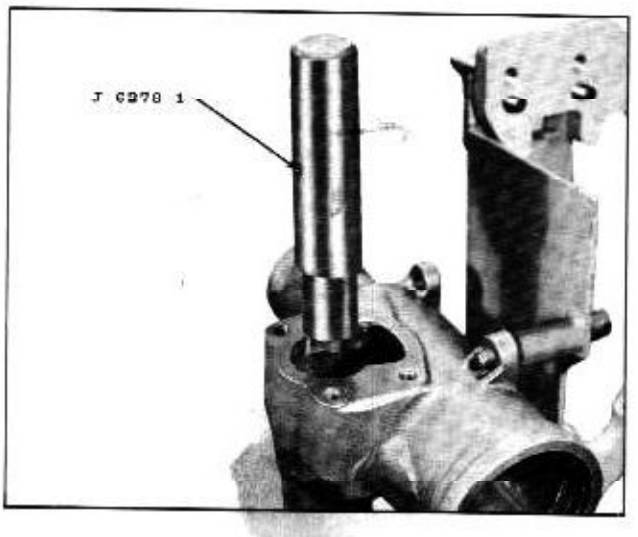


Fig. 4-23 Needle Bearing and Seal Removal

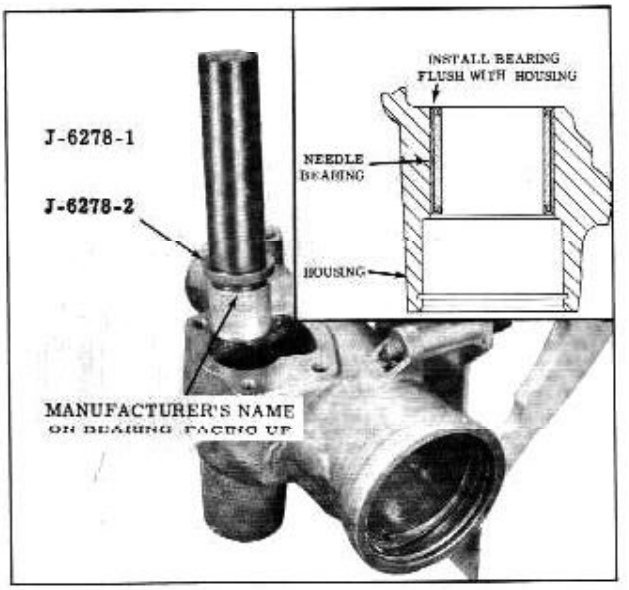


Fig. 4-24 Installing Needle Bearing

against the adaptor and drive the bearing into the housing until adaptor bottoms in housing. (Fig. 4-24)

2. Coat the lips of the oil seals with special lubricant (Part No. 567196).

3. Install the pitman shaft oil seals as follows:

   a. Place Adaptor J-6278-2 over Tool J-6278-1; then install the outer seal, inner steel washer, and inner seal with the lips of the seals facing away from the adaptor.

   b. Drive the seals into the housing until the top of Adaptor J-6278-2 is flush with the housing. (Fig. 4-25)

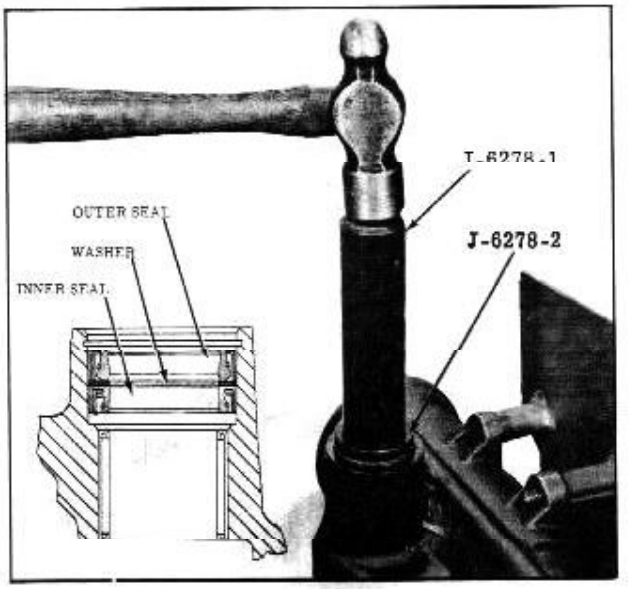


Fig. 4-25 Installing Oil Seals

   c. Remove the tool and adaptor, then install the outer steel washer and seal retaining ring. The retaining ring will not seat in the groove at this time.

   d. Reinsert Tool J-6278-1 with Adaptor J-6278-2 and continue driving the seals until the retaining ring seats in its groove (Inset, Fig. 4-25), then remove the tool and adaptor.

HOSE CONNECTORS

Removal

If the hose connections were leaking at the connector seats in the housing, remove one or both connector seats as follows:

1. Thread a nut and place a washer on a 5/16"-18 tap.

2. If the connector seat is being removed from an assembled gear, coat the end of the tap with petrolatum to prevent chips from entering the passage while tapping the seat.

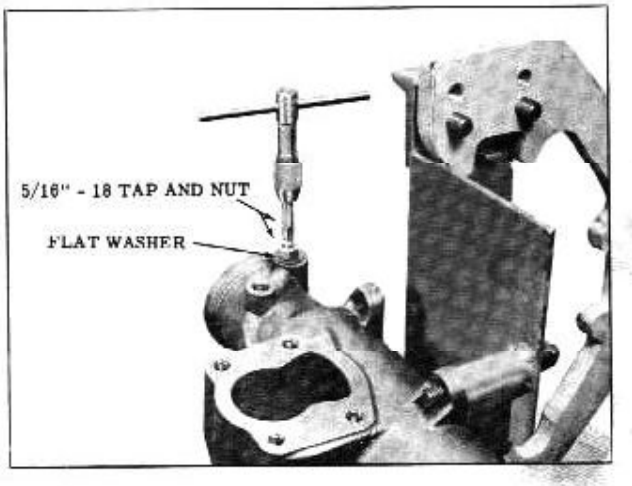


Fig. 4-26 Removing Connector Seat

3. With the steering gear in a vertical position, thread the tap into the connector seat, not more than 3 turns. (Fig. 4-26)

4. Tighten the nut to remove the seat.

NOTE: A check valve and spring is located below the high pressure connector seat and can be replaced when seat is removed.

Install

To install a new connector seat, use Tool J-6217 to seat it in the housing. (Fig. 4-27)

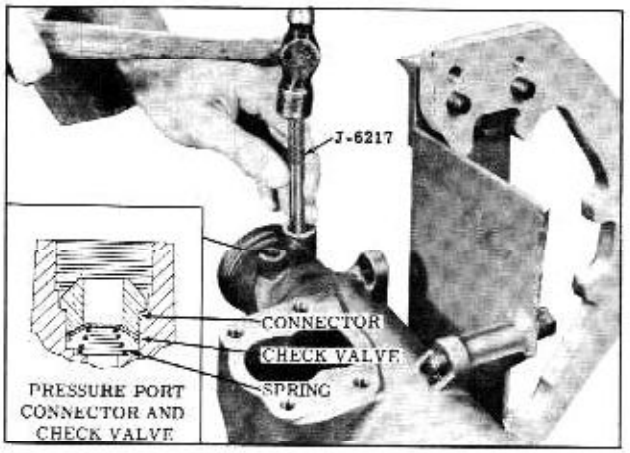


Fig. 4-27 Installing Connector Seat

STEERING GEAR ASSEMBLY

1. Install the worm as follows:

   a. Lubricate the worm, lower thrust bearing and the two thrust washers with Hydra-Matic oil, then install one thrust washer, the bearing, and the other thrust washer over the end of the worm.

   b. With the valve bore end of gear housing down, insert the worm and thrust bearing assembly into the housing. While holding the worm in place, turn the gear housing so the valve bore end of the housing is up.

2. Install the valve and lower shaft assembly as follows:

   a. Lubricate the valve body teflon rings and a new lower shaft cap "O" ring with petrolatum. Install the lower shaft cap "O" ring in the valve body so it is seated against the lower shaft cap. Align the NARROW NOTCH in the valve body with the pin in the worm, then install the valve and shaft assembly in the gear housing. (Fig. 4-28)

Fig. 4-28 Installing Valve and Lower Shaft

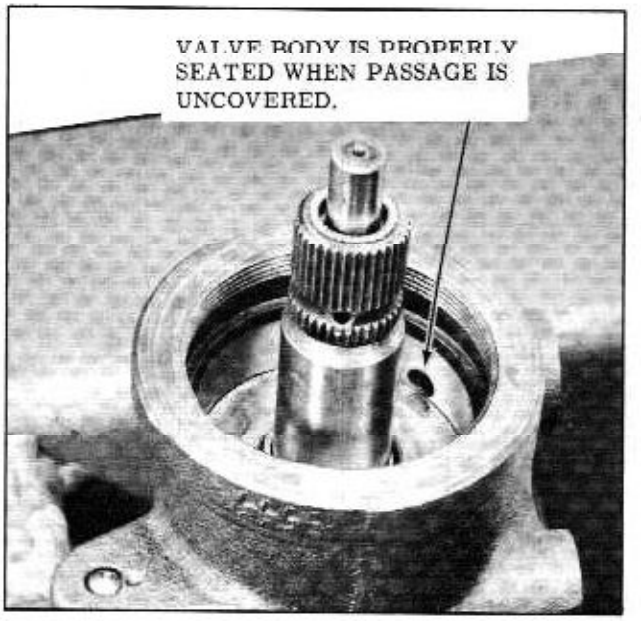


Fig. 4-29 Valve Body Properly Seated

Apply pressure to the VALVE BODY when installing. If pressure is applied to the lower shaft during installation, the shaft may be forced out of the valve body.

IMPORTANT: The valve body is properly seated when the oil return hole in the housing is entirely uncovered. (Fig. 4-29)

3. Install thrust bearing assembly (tangs up) over lower shaft and seat against valve body. (Fig. 4-30)

4. Lubricate a new adjuster plug "O" ring with petrolatum and install in groove on adjuster plug. Place Seal Protector J-6222 over lower

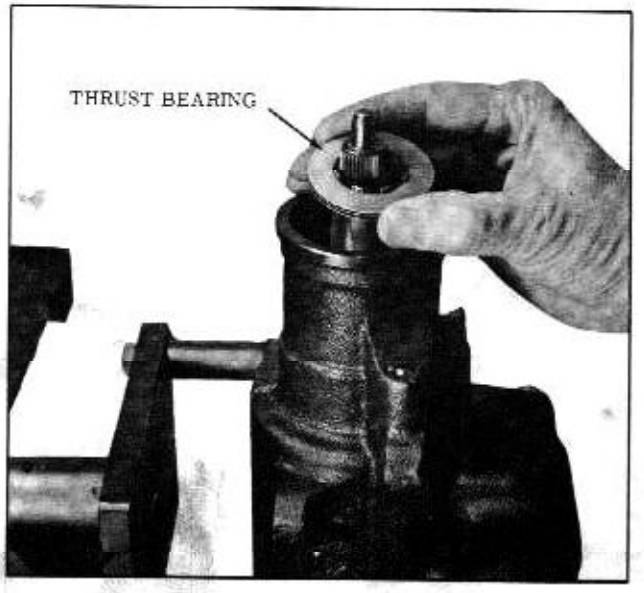


Fig. 4-30 Installing Thrust Bearing

Fig. 4-31 Installing Adjuster Plug

shaft, then install the adjuster plug assembly in the housing until it seats against the thrust bearing. (Fig. 4-31) Remove Seal Protector. Do not adjust the thrust bearing preload at this time.

5. Install the rack-piston as follows:

   a. Lubricate the rack-piston teflon seals with petrolatum.

   b. With the rack-piston bore of the housing facing up, position Seal Compressor J-7576 against the shoulder in the housing.

   c. With Ball Retainer J-7539 in place in the rack-piston, push the rack-piston into the housing until Tool J-7539 contacts the worm. (Fig. 4-32)

   d. Turn the lower shaft clockwise with a 3/4" twelve point socket, or a replacement coupling flange, to thread the rack-piston onto the worm while holding Tool J-7539 against the end of the worm.

   e. When the rack-piston is completely threaded on the worm, remove Ball Retainer J-7539 and Seal Compressor J-7576.

6. Install the rack-piston plug in the rack-piston and torque 35 to 65 ft. lbs.

7. Install a new housing end cover "O" ring and lubricate it with petrolatum.

8. Install the end cover and retaining ring.

9. Install the pitman shaft and side cover as follows:

   a. Install a new "O" ring in the pitman shaft side cover and retain with petrolatum.

   b. Turn the lower shaft until the rack-piston teeth are centered in the pitman shaft opening, then install the pitman shaft and side cover so that the center tooth of the pitman shaft engages the center groove of the rack-piston.

   c. Install the 4 side cover bolts and 3 lock washers and tighten 25 to 30 ft. lbs. Refer to Fig. 4-33 for washer location.

10. Adjust the thrust bearing preload as follows:

    a. Turn the adjusting plug clockwise with Spanner Wrench J-7624 until it is tight, then loosen it 1/8 turn.

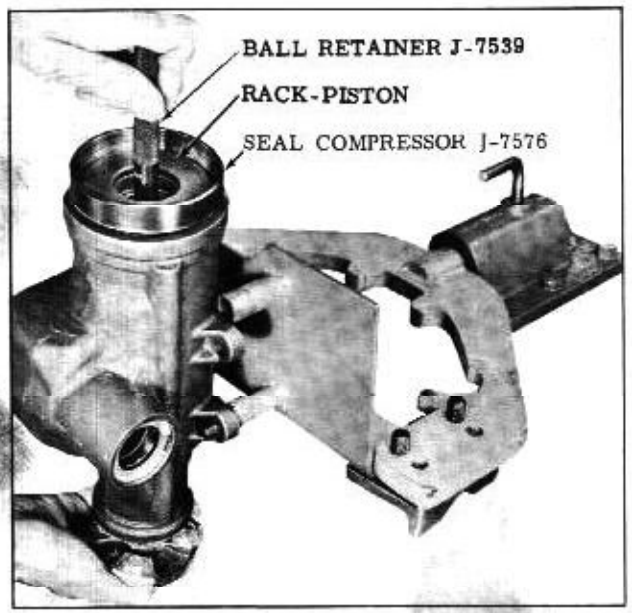


Fig. 4-32 Installing Rack-Piston

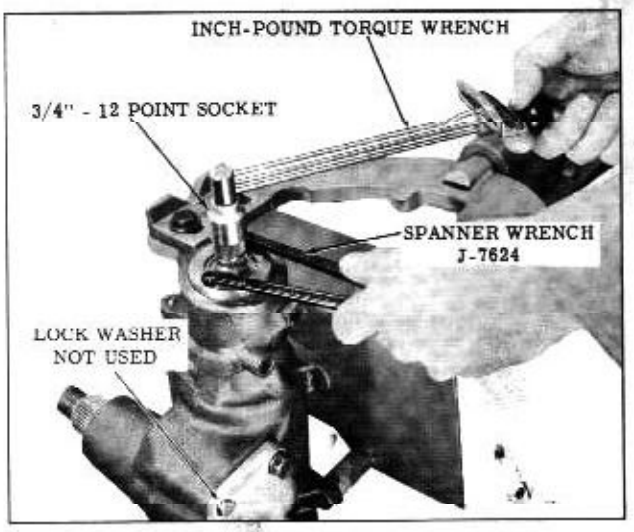


Fig. 4-33 Adjusting Thrust Bearing Preload

b. Turn the lower shaft all the way clockwise, then turn it counterclockwise 1/2 turn.

c. Install an inch-pound torque wrench with a 3/4" 12 point socket on the lower shaft splines. (Fig. 4-33)

d. Rotate the torque wrench in a 45^{O} arc and note the highest reading.

e. Tighten the adjuster plug with Spanner Wrench J-7624 until the torque wrench reads 1 to 3 in. lbs. higher than the initial load reading.

f. Install the adjuster plug lock nut and tighten with Spanner Wrench J-972-A.

g. Recheck the adjustment to be sure it is still only 1 to 3 in. lbs. higher than the initial load reading. If the adjustment changed when tightening the lock nut, re-adjust the adjuster plug.

11. Adjust the over-center preload as follows;

a. Make sure the over-center adjusting screw is backed all the way out.

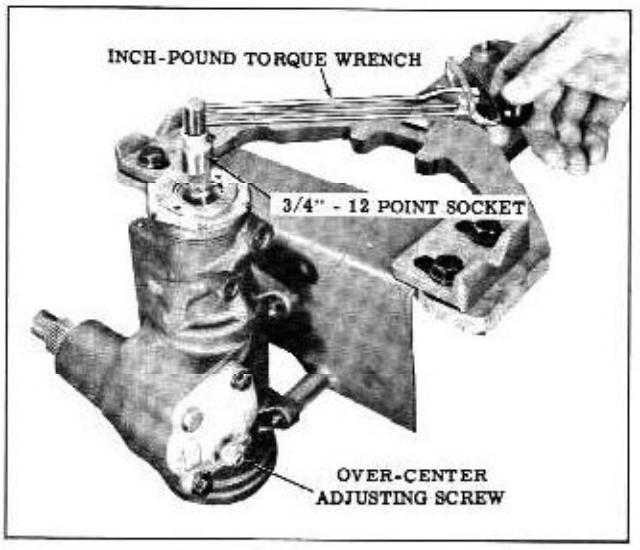


Fig. 4-34 Checking Over-Center Preload

b. Install an inch-pound torque wrench with a 3/4" 12 point socket on the lower shaft splines.

c. Rotate the lower shaft from one stop to the other to count the number of turns and locate the center of travel, then check the combined ball and thrust bearing preload by rotating the torque wrench through the center of travel. (Fig. 4-34) Note the highest reading.

d. Tighten the pitman shaft adjusting screw until the torque wrench reads 4 to 8 in. lbs. higher than the previous reading. The total reading should not exceed 16 in. lbs.

e. While holding the adjusting screw, tighten the lock nut and recheck the adjustment.

FLEXIBLE COUPLING AND STEERING SHAFT

The flexible coupling is riveted to the upper steering shaft flange. If flexible coupling parts replacement becomes necessary the upper steering shaft assembly should be removed as follows:

1. Remove steering wheel and disconnect battery.

2. Hoist car and remove bolt from hub of flexible coupling flange.

3. Remove steering gear to frame bolts and position gear assembly to permit withdrawal of steering shaft from the column assembly.

4. To install upper steering shaft assembly, reverse removal procedure.

FLEXIBLE COUPLING

To service the flexible coupling, it is necessary to drill pilot holes part way through the coupling to steering shaft flange rivets, then drill off the rivet heads so that the rivets can be driven out of the steering shaft flange. Special bolts are available for reassembly.

Upon installation, the large flexible coupling stud should be installed after the coupling flange has been assembled to the lower shaft to permit tightening of the coupling flange hub bolt.

TORQUE SPECIFICATIONS

NOTE: Specified torque is for installation of parts only. Checking of torque during inspection may be 15% below the specifications.

APPLICATION	FT. LBS.
STEERING LINKAGE	
1. Idler Arm Support to Frame Bolt	25 to 35
2. Tie Rod Clamp Bolts	20 to 25
3. Tie Rod to Plain Arm and Relay Rod Nuts	50 to 60
4. Steering Wheel Nut	25 Min. and Stake
MANUAL STEERING GEAR	
5. Gear to Frame Bolts	60 to 80
6. Pitman Shaft Nut	90 to 120
7. Side Cover Bolts	20 to 22
POWER STEERING PUMP	
8. Pulley Nut	35 to 45
9. Pump Bracket to Cylinder Head	20 to 40
10. Pump Bracket to Intake Manifold and to Pump	20 to 28
11. Pump Mounting Stud	25 to 35
12. Union	25 to 35
13. Flow Control Valve Plug	4
POWER STEERING GEAR	
14. Gear to Frame Bolts	60 to 80
15. High Pressure Line Fitting (At Gear)	20 to 30
16. Oil Return Line Fitting (At Gear)	20 to 30
17. Pitman Shaft Adjusting Screw Lock Nut	25 to 35
18. Side Cover Bolts	30 to 35
19. Adjuster Plug Lock Nut	50 (Approx.)
20. Coupling Flange Bolt(s)	20 to 25
21. Return Guide Clamp Screws	8 to 10
22. Rack-Piston Plug	35 to 65

GENERAL SPECIFICATIONS

MANUAL STEERING	
RATIO	24 to 1
LUBRICANT	SAE 80 Multi-Purpose Gear Lubricant
ADJUSTMENTS	
1. Worm Bearing Preload	1/2 to 7/8 lbs.
2. Over-Center Adjustment	1-1/2 to 2 lbs.
3. Pitman Shaft Adjusting Screw End Clearance	.002" Max.
POWER STEERING	
RATIO	17.5 to 1
LUBRICATION	
4. Lubricant	G.M. Hydra-Matic Fluid
5. Capacity - Complete System	1-3/4 Qts.
6. Capacity - Pump Only	1 Qt.
ADJUSTMENTS	
7. Ball Preload	1/2 to 5 in. lbs.
8. Thrust Bearing Preload	1 to 3 in. lbs. in excess of initial load
9. Over-Center Adjustment	4 to 8 in. lbs. in excess of combined ball and thrust bearing preload

SUSPENSION

PERIODIC MAINTENANCE, FRONT WHEEL BEARING ADJUSTMENT, FRONT SUSPENSION BALL JOINTS, REAR SPRING INSTALLATION AND TORQUE SPECIFICATIONS ARE NEW FOR 1962. FOR OTHER RECOMMENDATIONS AND SERVICE PROCEDURES, REFER TO THE 1961 88, 588 & 98 SERVICE MANUAL.

CONTENTS OF SECTION 5

PERIODIC MAINTENANCE

All front and rear suspension pivots and joints are lubricated at the time of manufacture and do not require periodic lubrication.

At every other engine oil change interval, observe front suspension ball joint seals for damage or cracks due to stone abrasions or other road hazards. If a seal should be damaged, refer to FRONT SUSPENSION BALL JOINTS for service correction. If ball joints should become noisy, they can be lubricated only as outlined under BALL JOINT LUBRICATION.

A periodic front wheel bearing repack is no longer required. However, when major brake service is being performed, it is recommended that the front wheel bearings be cleaned and repacked with a sodium soap, fine fiber grease such as Marfax Heavy Duty No. 2.

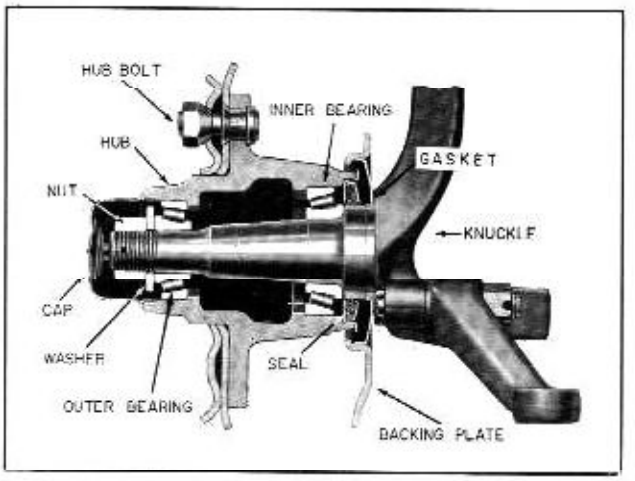


Fig. 5-1 Steering Knuckle, Bearings and Hub

WHEEL BEARINGS (Fig. 5-1)

Replacement

The procedure for bearing replacement is the same as outlined in the 1961 Service Manual, however, new bearing race installers are required. The inner race installer is Tool BT 6201 and the outer race installer is Tool BT 6202.

Adjustment

The proper functioning of the front suspension cannot be maintained unless the front wheel TAPER ROLLER BEARINGS are correctly adjusted. Cones must be a slip fit on the spindle and the inside diameter of cones should be lubricated to insure that the cones will creep. Spindle nut must be a free-running fit on threads.

The adjustment of front wheel bearings should be made WHILE REVOLVING THE WHEEL AT LEAST 3 TIMES THE SPEED OF NUT ROTATION when taking the torque readings as follows:

1. Tighten adjusting nut with a torque wrench 23 to 25 ft. lbs., to insure that all parts are properly seated and threads are free.
2. Back off nut 1/2 turn and retighten 15 to 17 ft. lbs.
3. Back off nut a minimum of 1/6 to a maximum of 1/4 turn so that cotter pin hole in spindle and slot in nut line up, then insert cotter pin.

FRONT SUSPENSION BALL JOINTS

The front suspension ball joints are lubricated and sealed at time of assembly and require no

additional lubrication under normal operating conditions. The lower ball joints or seals can be replaced in the event of damage, however, the upper ball joints and seals cannot be replaced which necessitates the replacement of the upper control arm assembly in the event of seal or ball joint failure.

For procedure on checking ball joints for wear, refer to F-85 SUSPENSION SECTION.

BALL JOINT LUBRICATION (Only In the Event of Noisy Joints)

1. Place car on hoist that provides free access under ball joints.
2. Visually examine seals for breaks, cuts, or grease leakage. (If defects are found, follow procedure for replacing seal.)
3. Thoroughly clean top of upper ball joint and bottom of lower ball joint to remove all foreign matter away from lubrication hole.
4. Remove rubber plug from lubrication hole and discard it.

   CAUTION: Prevent dirt or foreign material from getting into the lubrication hole.

5. Use a hand operated, ball type nozzle grease gun filled with Ball Joint Grease Part No. 585617. DO NOT SUBSTITUTE. Operate grease gun until grease begins to flow from tip.

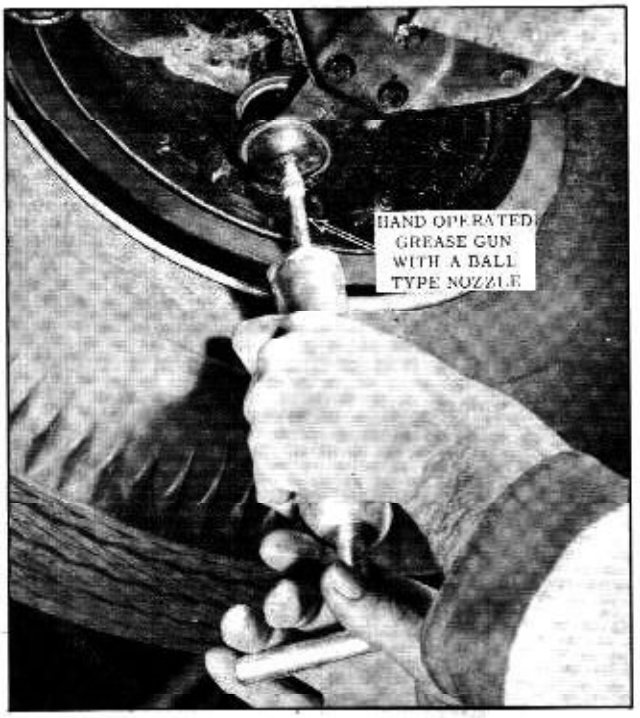


Fig. 5-2 Adding Lubricant to Ball Joint

NOTE: Before using a new gun, first count the number of "turns" or "pumps" required to obtain .01 of a lb. of grease (approximately one teaspoonfull).

6. Hold tip of grease gun firmly into lubrication hole and install correct amount of grease by counting the number of "turns" or "pumps". (Fig. 5-2)

   IMPORTANT: DO NOT OVERFILL BALL JOINT WITH GREASE. Excess grease will cause improper action of the seal and could result in early failure. .01 of a lb. of grease will adequately relubricate joint without overfilling it.

   NOTE: DO NOT INSTALL GREASE ZERK OR ATTEMPT TO FILL WITH PRESSURE GUN. Either method will result in overfill or mixing of greases which may harm the part.

7. Wipe away excess grease and install new rubber plug, colored gray, to indicate the joint has been regreased.

LOWER CONTROL ARM BALL JOINT SEAL REPLACEMENT

1. Support lower control arm and disconnect ball joint from steering knuckle.
2. Clean exterior of ball joint.
3. For Thompson joints, drive seal retaining ring from ball joint and discard seal assembly.

   For Saginaw joints, pry garter spring from bottom of seal, then remove and discard seal and garter spring.

CAUTION: Exercise care while performing the following operations to prevent entry of dirt into the ball joints.

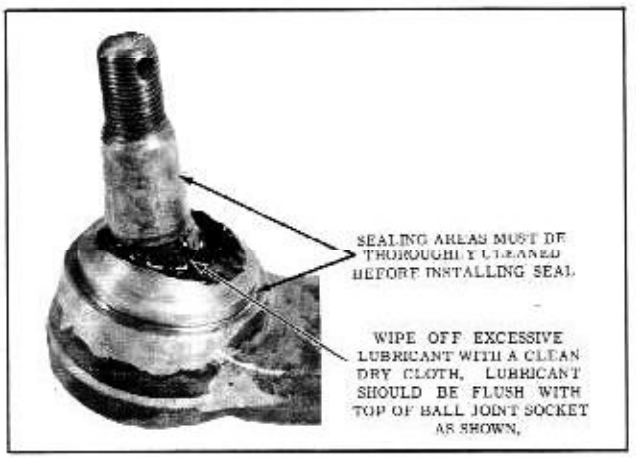


Fig. 5-3 Ball Joint Prior to Installing Seal

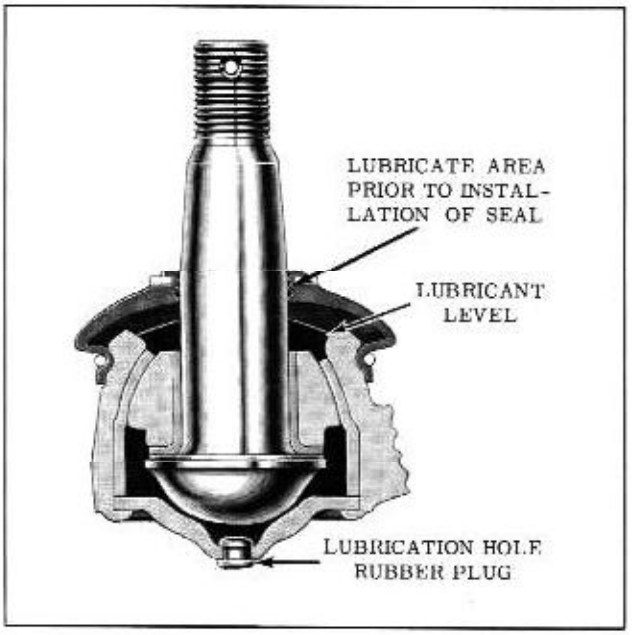


Fig. 5-4 Ball Joint Assembly

4. Clean joint pivot and stud thoroughly and wipe out as much old grease as possible.

5. Pry out service plug from ball joint cover and discard plug.

6. Using a hand operated, ball type nozzle grease gun filled with Ball Joint Grease, Part No. 585617, lubricate ball joint until clean grease completely fills the ball joint reservoir. (Figs. 5-3 and 5-4)

7. Install new service plug in ball joint cover, then clean grease from ball joint stud and sealing area of joint with a clean dry cloth. (Figs. 5-3 and 5-4)

8. Apply a thin film of Ball Joint Grease to outside area of new seal to aid installation of Seal Installer J-9516 (Thompson) or Garter Spring Installer J-9517 (Saginaw).

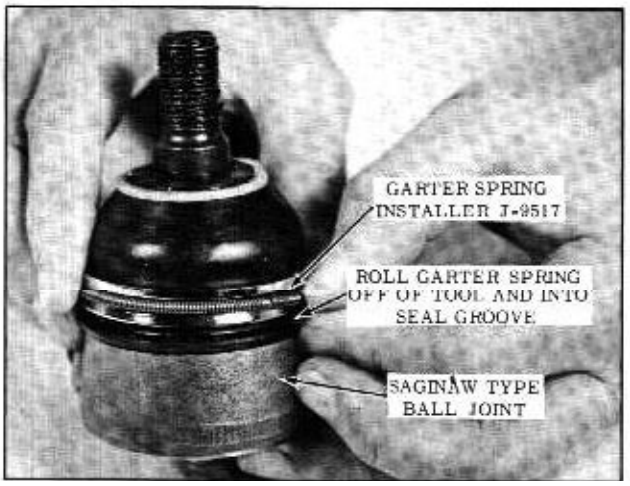


Fig. 5-5 Installation of Saginaw Type Seal

Fig. 5-6 Installation of Thompson Type Seal

9. The saw tooth area of the seal that fits around the ball stud should be coated with Ball Joint Grease. (Fig. 5-4)

10. For Saginaw type, stretch garter spring around Tool J-9517. Do not stretch garter spring any more than necessary when installing on tool. Place seal on ball joint and install garter spring as shown in Fig. 5-5.

    For Thompson type, place seal inside of Seal Installing Tool J-9516, then drive seal onto ball joint as shown in Fig. 5-6. Make sure that seal is driven on squarely without cocking.

11. Reassemble ball joint stud to steering knuckle.

REAR SPRINGS

Remove (Fig. 5-7)

1. Hoist rear of car and disconnect shock absorbers from rear axle housing.
2. Mark position of parking brake cable at cable clamps, then loosen parking brake cable clamps at frame and loosen suspension arm bolts at frame and axle.
3. Support frame to relieve weight from springs.
4. Remove the upper and lower spring mounting bolts and clamps.
5. Remove the coil spring and insulators by dislodging spring from lower seat. (The coil spring will be under slight compression.)

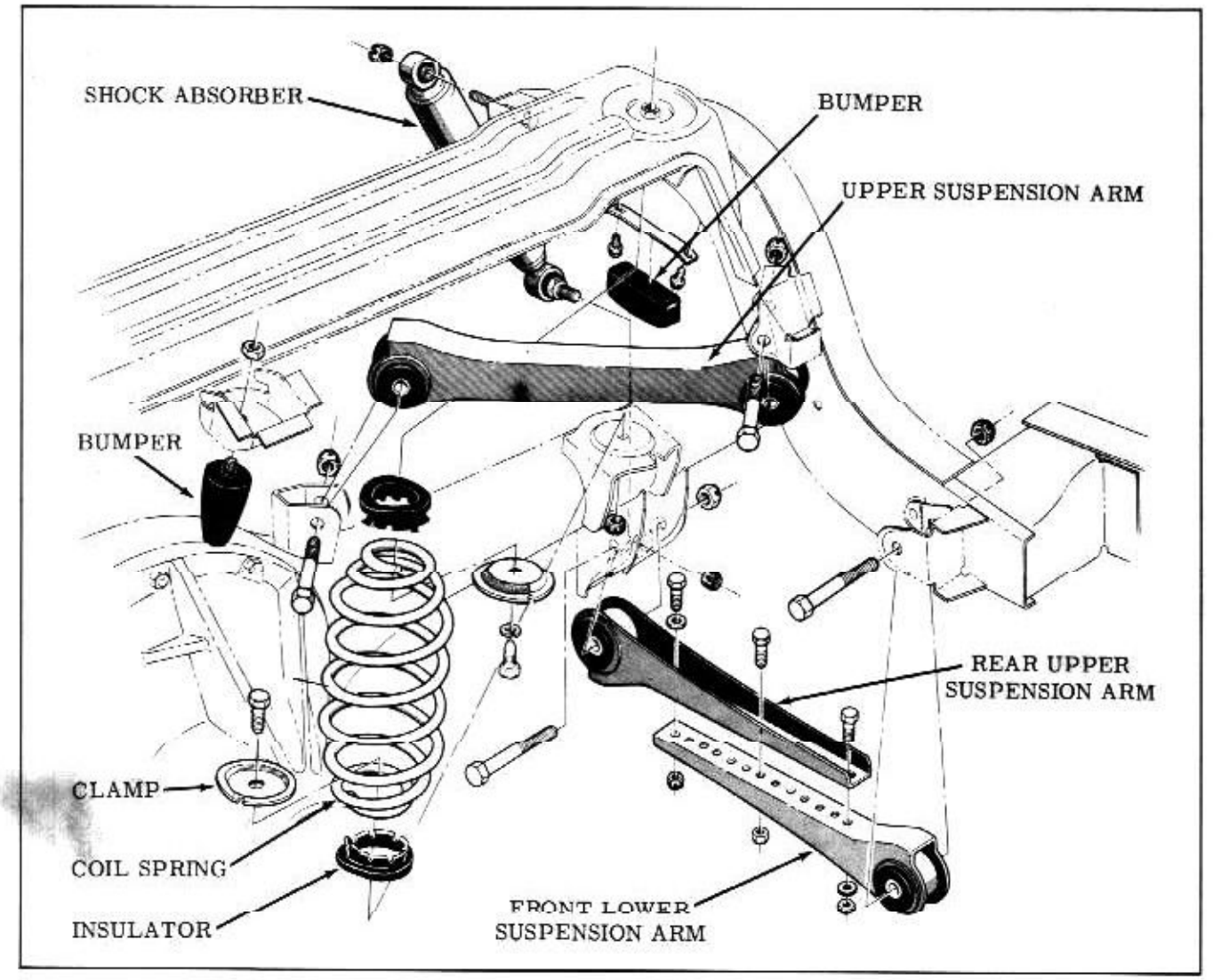


Fig. 5-7 Rear Suspension

Fig. 5-8 Insulator Installation

Install

1. Place upper insulator in coil spring and rotate insulator lightly so that insulator fits snugly in end of spring coil. (Fig. 5-8)

2. Position coil spring with insulator against upper seat and install clamp but do not tighten upper attaching bolt. (Fig. 5-7 illustrates stack-up of parts.)

   IMPORTANT: Locate the clamp so that it nests in the insulator, (tang in notch) then torque the mounting bolt 35 to 45 ft. lbs.

3. Position lower end of coil spring on axle housing pad and raise axle housing to compress spring to normal carrying height.

4. Install Spring Holding Tool BT 6102 at front of spring. (Fig. 5-9)

5. Lower axle housing and position other spring

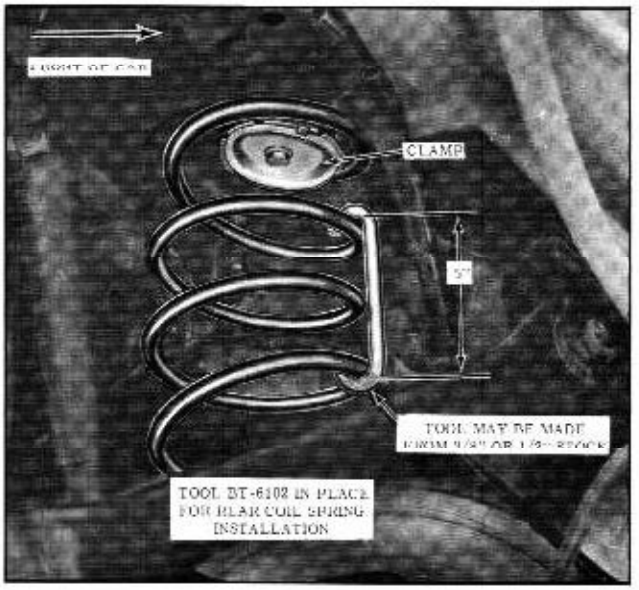


Fig. 5-9 Coil Spring Installation

insulator as in Step 1; then raise axle and install lower clamp.

6. Position lower clamp so that it nests in the insulator, then tighten the lower mounting bolt 35 to 45 ft. lbs.

7. Raise axle if necessary for the removal of Tool BT 6102.

8. Connect shock absorbers and torque suspension arm bolts 70 to 90 ft. lbs. with the weight of the car resting on the rear springs.

9. Position parking brake cable to location marks and tighten parking brake cable clamps.

TORQUE TIGHTNESS CHART

NOTE: Specified torque is for installation of parts only. Checking of torque during inspection may be 15% below the specifications.

APPLICATION	FT. LBS.
FRONT SUSPENSION	
Stabilizer	
Stabilizer Link Nut	13 to 17
Stabilizer Bar Bracket to Frame Bolt & Nut	25 to 45
Shock Absorber	
Shock Absorber Upper Pivot Bolt & Nut	65 to 75
Shock Absorber to Control Arm Bolts	15 to 25
Control Arms	
Upper Control Arm Pivot Shaft to Frame Bolts & Nuts	85 to 110
Lower Control Arm Pivot Shaft to Frame Bolts & Nuts	
Allen Head Bolts	90 to 110
Standard Bolts	65 to 80
Upper Arm to Pivot Shaft Bolt	35 to 45
Lower Arm to Pivot Shaft Bolt	50 to 60
Ball Joints	
Ball Joints to Steering Knuckle Nuts	40 Min.
Steering Knuckle	
Backing Plate to Steering Knuckle (Anchor Bolt)	80 to 130
Plain Arm to Steering Knuckle to Backing Plate Bolts (1/2")	120 to 145
Wheel Bearing Adjustment Nut	(Refer to Wheel Bearing Adj.)
REAR SUSPENSION	
Shock Absorber	
Upper Pivot Bolt & Nut	45 to 55
Lower Stud Nut	30 to 46
Suspension Arms	
Pivot Bolts & Nuts	70 to 90
Lower Arm Front & Rear Section Bolts & Nuts	45 to 60
Rear Spring	
Upper & Lower Bolt	35 to 45
Backing Plate	
Backing Plate Attaching Bolts	45 to 60
MISCELLANEOUS	
Wheel Nuts	70 to 85

PROPELLER SHAFT AND DIFFERENTIAL

PERIODIC MAINTENANCE, AXLE AND SPEEDOMETER RATIOS AND SPECIFICATIONS ARE NEW FOR 1962. FOR OTHER RECOMMENDATIONS AND SERVICE PROCEDURES REFER TO THE 1961 88, S88 AND 98 SERVICE MANUAL.

CONTENTS OF SECTION 6

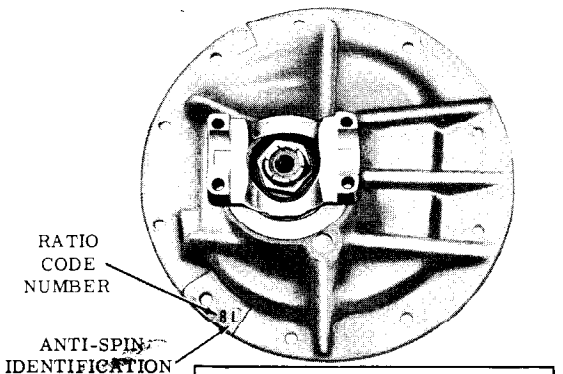
PERIODIC MAINTENANCE

Propeller Shaft

The propeller shaft slip yoke does not require a scheduled lubrication interval. However, if at high mileage a tendency for stickiness should develop at the slip yoke it should be lubricated with Seal Lubricant (Part No. 567196) until lubricant appears at the vent hole. Universal joints, under both hot and cold weather conditions, no longer require a scheduled lubrication interval.

Differential

The lubricant level should be checked at each engine oil change interval and if necessary, add Special Lubricant (Part No. 531536). Small amounts of S.A.E. 90 Multi-Purpose Gear Lubricant may be used to bring the fluid up to the filler plug level. Periodic or seasonal lubricant changes are not recommended.



AXLE RATIO CHART

CODE	RATIO
2	43:16 (2.69:1)
3	41:16 (2.56:1)
7	43:15 (2.87:1)
8	41:12 (3.42:1)
9	42:13 (3.23:1)
0	40:13 (3.08:1)

Fig. 6-1 Axle Ratio Code

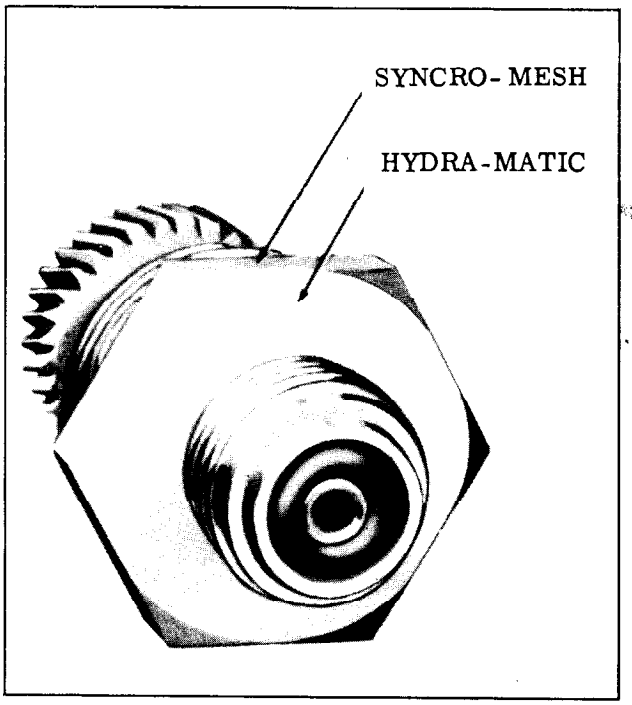


Fig. 6-2 Speedometer Driven Gear Identification

AXLE AND SPEEDOMETER RATIOS

Series	Trans.	Body Style	Axle Ratio Code (Fig. 6-1)	Tire Size	Speedometer Gear Identification No. (Fig. 6-2)	
					Drive	Driven
32 & 35	S-M	ALL	9 Std.	8.00 x 14 Std.	8	19
32 & 35	S-M	ALL	9 Std.	8.50 x 14 Over	8	18
32 & 35	S-M	ALL	9 Air Conditioning	8.50 x 14 Std.	8	18
32	H-M	39,47,67,69	3 Std.	8.00 x 14 Std.	14	26
32	H-M	39,47,67,69	3 Std.	8.50 x 14 Over	14	26
32	H-M	35,45	2 Std.	8.00 x 14 Std.	14	27
32	H-M	35,45	2 Std.	8.50 x 14 Over	14	27
32	H-M	ALL	7 W3 Engine	8.00 x 14 Std.	14	29
32	H-M	ALL	7 W3 Engine	8.50 x 14 Over	14	29
32	H-M	ALL	2 W3 Engine Plains	8.00 x 14 Std.	14	27
32	H-M	ALL	2 W3 Engine Plains	8.50 x 14 Over	14	27
32	H-M	35,45	3 Plains	8.00 x 14 Std.	14	26
32	H-M	35,45	3 Plains	8.50 x 14 Over	14	26
32	H-M	39,47,67,69	2 Mountain	8.00 x 14 Std.	14	27
32	H-M	39,47,67,69	2 Mountain	8.50 x 14 Over	14	27
32	H-M	39,47,67,69	2 Air Conditioning	8.50 x 14 Std.	14	27
32	H-M	39,47,67,69	3 Air Cond. Plains	8.50 x 14 Std.	14	26
32	H-M	39,47,67,69	2 W4 Engine	8.00 x 14 Std.	14	27
32	H-M	39,47,67,69	2 W4 Engine	8.50 x 14 Over	14	27
32	H-M	39,47,67,69	3 W4 Engine Plains	8.00 x 14 Std.	14	26
32	H-M	39,47,67,69	3 W4 Engine Plains	8.50 x 14 Over	14	26
32	H-M	ALL	0 Export Opt. Mountain	8.00 x 14 Std.	14	31
32	H-M	ALL	0 Export Opt. Mountain	8.50 x 14 Over	14	31
35	H-M	39,47,69	7 Std.	8.00 x 14 Std.	14	29
35	H-M	39,47,69	7 Std.	8.50 x 14 Over	14	29
35	H-M	35	0 Std.	8.00 x 14 Std.	14	31
35	H-M	35	0 Std.	8.00 x 14 Over	14	31
35	H-M	ALL	2 Plains	8.00 x 14 Std.	14	27
35	H-M	ALL	2 Plains	8.50 x 14 Over	14	27
35	H-M	ALL	0 Air Conditioning	8.50 x 14 Std.	14	31
35	H-M	ALL	2 Air Cond. Plains	8.50 x 14 Std.	14	27
36	H-M	47	8 Std.	8.00 x 14 Std.	13	33
36	H-M	47	8 Std.	8.50 x 14 Over	13	32
36	H-M	67	8 Std.	8.50 x 14 Std.	13	32
36	H-M	67	8 Std.	9.00 x 14 Over	13	31
36	H-M	47	8 Air Conditioning	8.50 x 14 Std.	13	32
36	H-M	67	8 Air Conditioning	9.00 x 14 Std.	13	31
38	H-M	ALL	0 Std.	8.50 x 14 Std.	14	31
38	H-M	ALL	0 Std.	9.00 x 14 Over	14	30
38	H-M	ALL	2 Plains	8.50 x 14 Std.	14	27
38	H-M	ALL	2 Plains	9.00 x 14 Over	14	26
38	H-M	ALL	9 Air Conditioning	9.00 x 14 Std.	14	31
38	H-M	ALL	2 Air Cond. Plains	9.00 x 14 Std.	14	26

SPECIFICATIONS

PROPELLER SHAFT

1. Length (From Center Line of Front U-Joint to Center Line of Rear U-Joint)

   a. 32,35 & 36 Series (Except 35 & 45 Styles) . . . . . 55-9/16"
   b. 32 & 35 Series (35 & 45 Styles) . . . . . 54-9/16"
   c. 38 Series . . . . . 58-9/16"

DIFFERENTIAL

LUBRICATION

1. Capacity . . . . . 5 Pts. (Approx.)
2. Drain and Refill . . . . . Special Lubricant Part No. 531536
3. Replenish . . . . . Special Lubricant Part No. 531536 or S.A.E. 90 Multi-Purpose Gear Lubricant

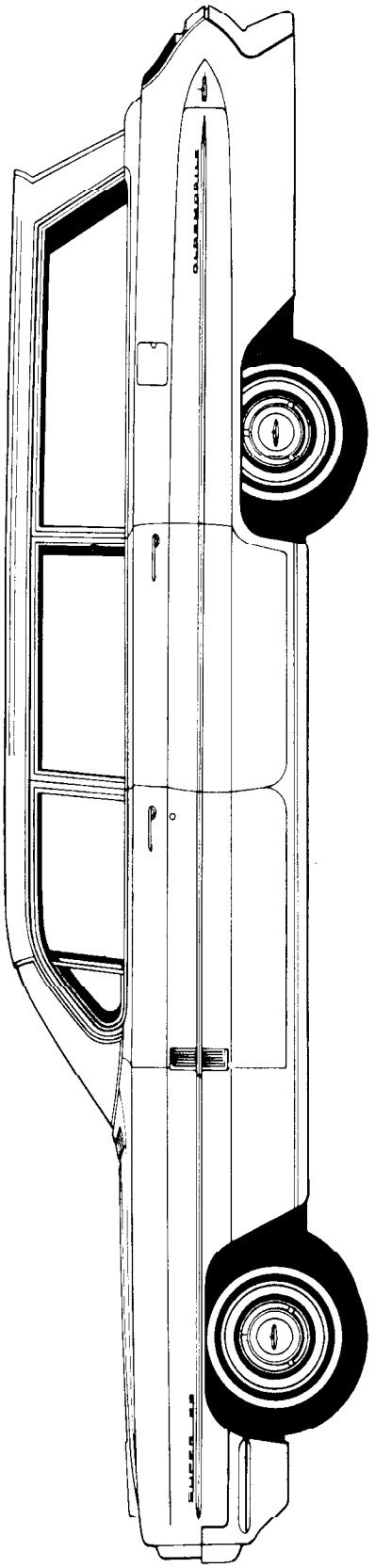
ADJUSTMENTS

4. Backlash (.005" to .009") . . . . . Adjust to .007" to .008"
5. Drive Pinion Bearing Preload
   a. New Bearings . . . . . 24 to 32 in. lbs.
   b. Old Bearings . . . . . 10 to 15 in. lbs.
6. Side Bearing Preload . . . . . 2 to 3 notches

TORQUE SPECIFICATIONS

NOTE: Specified torque is for installation of parts only. Checking torque during inspection may be 15% below specified minimum.

APPLICATION	FT. LBS.
PROPELLER SHAFT	
Companion Flange "U" Bolts	14 to 18
DIFFERENTIAL	
Carrier to Axle Housing Nuts	45 to 60
Bearing Cap Bolts	65 to 85
Ring Gear Cap Screws	55 to 65
Cover to Case Cap Screws (Anti-Spin)	35 to 45



BRAKES

ITEMS LISTED IN THE TABLE OF CONTENTS ARE NEW FOR 1962. FOR SERVICE PROCEDURES AND RECOMMENDATIONS NOT LISTED, REFER TO THE 1961 88, S88 & 98 SERVICE MANUAL.

CONTENTS OF SECTION 7

PERIODIC MAINTENANCE

STANDARD BRAKES

Each time the car is in the service department the brake pedal movement should be observed. Brake shoes should be adjusted whenever the brake pedal travel from the released to the fully applied position exceeds 4 inches.

POWER BRAKES

Each time the car is in the service department, the brake pedal height should be observed. If the brake pedal travel from the released to the fully applied position (engine running) exceeds 1-7/8 inches the car should be driven alternately forward and backward, and the brakes applied moderately each time to operate the self-adjuster, until proper pedal height is obtained. If brake pedal travel cannot be reduced in this manner, the drums should be removed and the self-adjusting mechanism inspected for the cause of inoperation.

STANDARD AND POWER BRAKES

The fluid in the master cylinder reservoir should be checked at every oil change interval. Fluid level should be 1/4 inch below the reservoir opening. Replenish as necessary with G.M. Brake Fluid No. 11.

Brake hoses and lines should be inspected for chafing, deterioration or other damage.

SELF ADJUSTING BRAKE

General Description

All power brake equipped cars have self-adjusting brakes. The self-adjusting brake mechanism consists of an actuating link, adjuster lever, adjuster lever return spring, override spring and override pivot.

Operation (Fig. 7-1)

The self-adjusting brake mechanism operates only when the brakes are applied while the car is moving rearward and only when the secondary shoe moves a pre-determined distance toward the brake drum.

As the car moves rearward and the brakes are applied, friction between the primary shoe and the drum forces the primary shoe against the anchor pin. Hydraulic pressure in the wheel cylinder forces the upper end of the secondary shoe away from the anchor pin. As the secondary shoe moves away from the anchor pin, the upper end of the adjuster lever is prevented from moving by the actuating link. This causes the adjuster lever to pivot on the secondary shoe forcing the adjuster lever against the adjusting screw sprocket. If the brake linings are worn enough to allow the secondary shoe to move the pre-determined distance, the adjuster lever will turn the adjusting screw sprocket one or two teeth, depending on lining wear. If the secondary shoe does not move the pre-determined distance, movement of the adjuster lever will not be great enough to rotate the adjusting screw sprocket.

When the brakes are released, the actuating lever return spring will move the actuating lever into the adjusting position on the sprocket.

An override feature is built into the self-adjusting brake which allows the secondary shoe to be applied in reverse in the event the adjusting screw becomes "frozen" preventing the self-adjuster from operating.

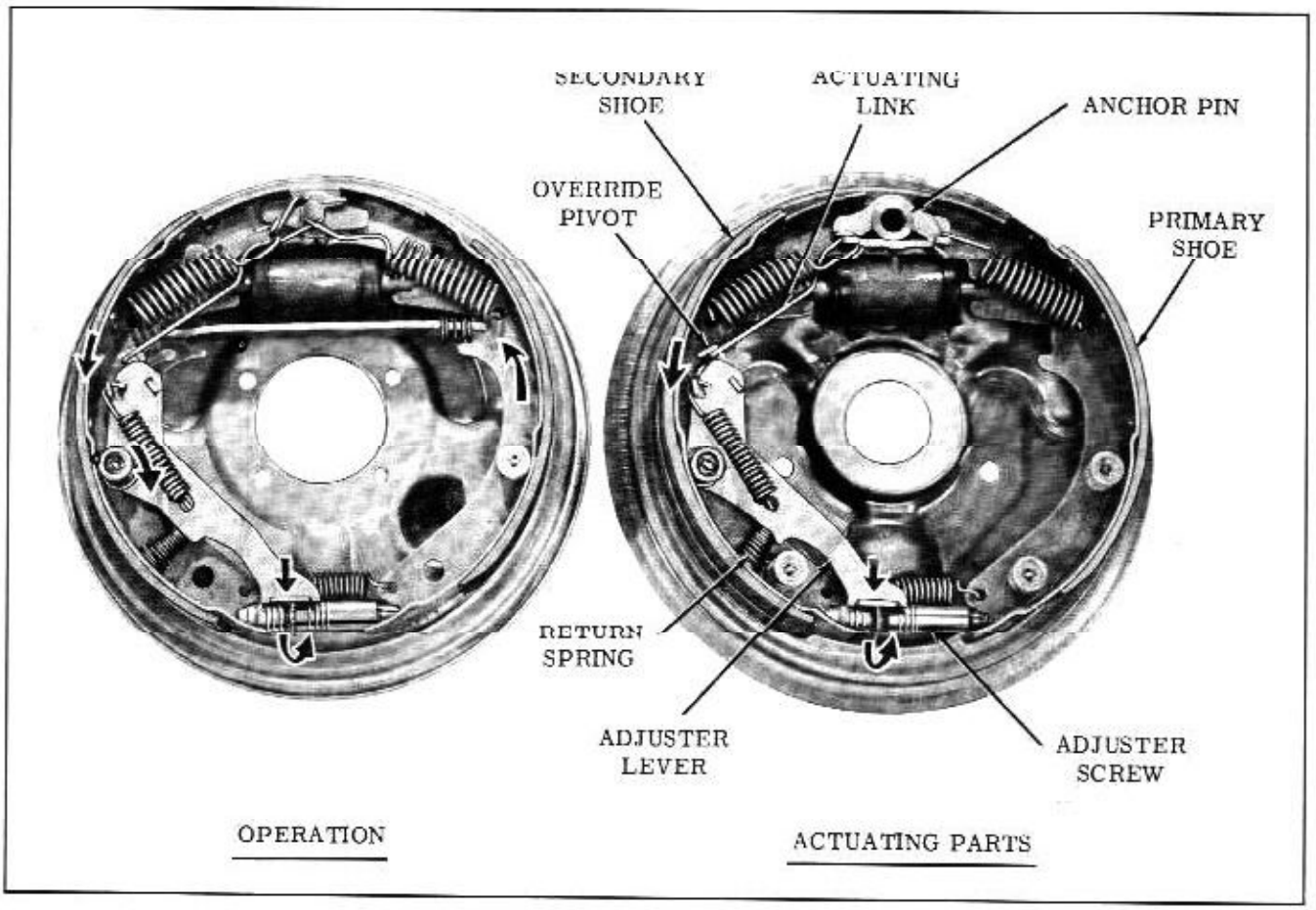


Fig. 7-1 Self-Adjusting Brakes

When the car is moving forward and the brakes are applied, the upper end of the secondary shoe is forced against the anchor pin due to the self-energizing action of the brakes, and the self-adjuster does not operate.

BRAKE ASSEMBLIES (Self-Adjusting) (Fig. 7-3)

REMOVE

1. Hoist car.
2. Remove parking brake cable equalizer, then disconnect cables from equalizer.
3. Remove the rear brake drums and the front hub and drum assemblies.

   NOTE: It may be necessary to back off the brake shoe adjustment before the brake drums can be removed. To back off shoe adjustment, rotate adjusting screw upward. (Fig. 7-2)

4. Remove the primary and secondary shoe return springs.
5. Remove the actuating lever.
6. On rear brakes, spread shoes slightly and remove the parking brake lever strut and spring, then disconnect the parking brake cable from the operating lever.
7. Remove the brake shoe hold down springs, pins and washers, and the adjuster lever and return spring.

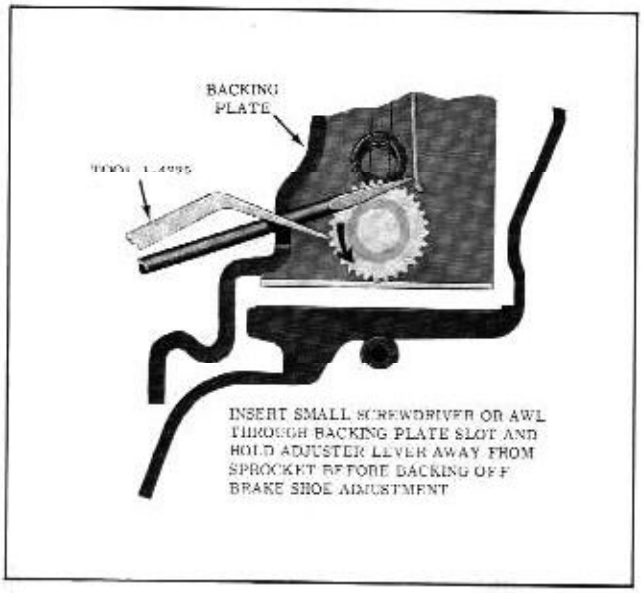


Fig. 7-2 Backing Off Adjusting Screw

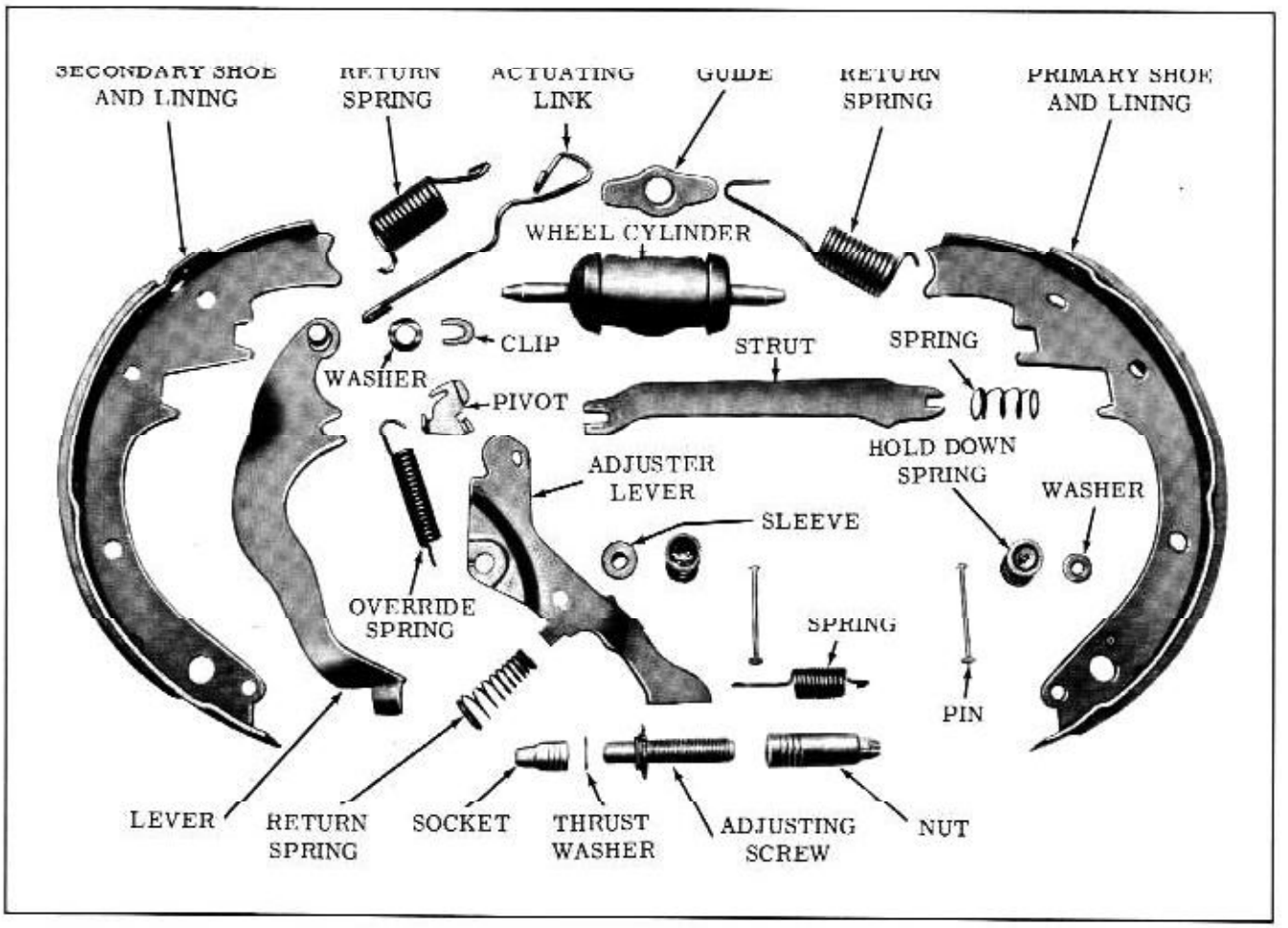


Fig. 7-3 Self Adjusting Brake Components

8. Spread shoes to clear wheel cylinder links, then remove the primary and secondary shoes as an assembly.

9. Remove the primary to secondary shoe spring and the adjusting screw.

10. On rear brakes, remove the parking brake lever from the secondary shoe.

CLEANING AND INSPECTION

1. Inspect linings for wear. If linings are worn nearly flush with rivets, new linings should be installed.

2. Loosen wheel cylinder boot and inspect wheel cylinder for brake fluid leakage. If leak exists, remove wheel cylinder for service or replacement.

3. Clean inner surfaces of brake backing plates and all shoe contacting points.

4. Clean exposed portions of parking brake cables.

5. Disassemble the adjusting screw assembly. Clean and inspect as follows:

   a. Check thrust washer and mating surfaces for burrs or excessive wear.

   b. Inspect teeth on sprocket for wear.

   c. Remove all foreign material from adjusting screw and nut. Nut must rotate freely on threads.

6. Check the foot of the adjuster lever for wear. Replace if necessary.

7. Check the override pivot for wear or deformed parts.

8. Check brake drum for build-up of rust and dirt at outer circumference. Remove build-up so that drums can be installed over pre-adjusted linings.

INSTALL

1. Lubricate the adjusting screw threads, thrust washer mating surfaces, backing plate ledges and all other contacting surfaces with a compound mixture containing 4 parts (volume) of Special Seal Lubricant, Part No. 567196 and 1 part (volume) of powdered graphite.

2. Pull parking brake cables forward and rearward through conduits, lubricate freely with Lithium Soap Grease and return cable to normal position. Remove any excess lubricant.

3. Check torque on all brake backing plate mounting nuts as follows: Plain Arm to Steering Knuckle to Front Backing Plate -- 80 to 130 ft. lbs., Anchor Pin to Steering Knuckle -- 55 to 80 ft. lbs., Rear Backing Plate to Axle Housing -- 45 to 60 ft. lbs.

4. On rear brake assemblies, install the parking brake lever to the secondary shoe.

5. Assemble the adjusting screw.

6. Attach the primary to secondary shoe spring to the shoes, and install the adjusting screw. The primary to secondary shoe must not contact the adjusting screw sprocket.

   IMPORTANT: THE RIGHT FRONT AND RIGHT REAR ADJUSTING SCREWS HAVE LEFT HAND THREADS AND CAN BE IDENTIFIED BY 4 GROOVES. ALL ADJUSTING SCREWS MUST BE INSTALLED WITH THE SPROCKET END OF THE SCREW TOWARD THE REAR OF THE CAR.

7. Position shoe assembly on the backing plate. Be sure wheel cylinder links are properly positioned in the shoe notches. On the rear brake assembly, install the parking brake strut and spring.

8. Position the upper end of actuating link over the anchor pin on rear brakes or onto the brake shoe guide on front brakes.

9. Engage the actuating lever with the override pivot then position the adjuster lever and return spring on the secondary shoe. Fasten with the red hold down spring assembly.

   NOTE: The front brake uses 4 hold down springs. The spring retaining pins are identified with the numeral 1 stamped on the outer face. The rear brake uses 2 hold down springs, with the retaining pins being identified with the numeral 8 stamped on the outer face.

10. Install the remaining hold down springs.

11. On rear brakes, install the parking brake cable on the parking brake lever.

12. Install the primary and secondary brake shoe return springs.

13. Adjust brake shoes as outlined under "Brake Shoe Adjustment".

14. Install the rear brake drums and the front hub and drum assembly. Adjust front wheel bearings. (Refer to WHEEL BEARING ADJUSTMENT, Section 5)

15. Install wheels and tires.

16. Connect the parking brake equalizer.

17. Adjust the parking brake.

18. Check fluid level in master cylinder. Fluid level should be 1/4" below the reservoir opening.

19. Check brake pedal travel to be sure it is within specifications, then road test car for proper operation of the brake system.

BRAKE SHOE ADJUSTMENT

A manual brake shoe adjustment is required only when new linings are installed or whenever the length of the brake shoe adjusting screw has been changed.

1. With the brake drums removed, position Gauge BT-6211 over the brake linings as shown in 7-4. (Gauge is offsed for oversize linings.)

   NOTE: To determine if linings are oversize or standard, position Gauge BT-6211 over open side of brake drum. Diameter of brake drum will be an indication as to the size of the linings.

2. Adjust brake shoes until gauge is a snug fit on linings. Rotate gauge slightly to insure that gauge is contacting the linings at the largest diameter.

   NOTE: If it is necessary to back off the brake shoe adjustment, it will be necessary

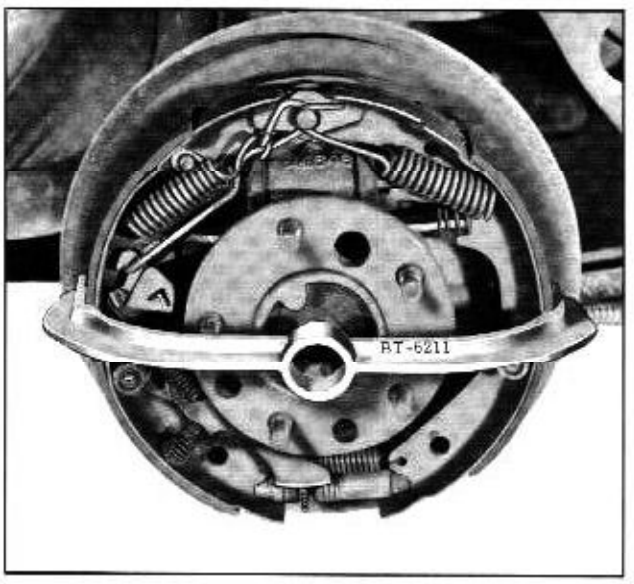


Fig. 7-4 Brake Shoe Gauge

to hold the adjuster lever away from the sprocket.

3. Remove the gauge.

HYDRAULIC PISTON HEIGHT ADJUSTMENT (MORAINE)

This adjustment is necessary to allow the primary cup, in the master cylinder, to return past the compensating port when the brake is in the released position. This prevents hydraulic lock-up in the brake system.

The dimension is 1.833" minimum to 1.844" maximum. It is measured with Gauge J-8531-01 from the end of the hydraulic piston to the master cylinder mounting surface on the vacuum cylinder.

The adjustment is accomplished by adding or removing shims between the master cylinder and the vacuum cylinder as determined by Gauge J-8531-01 in the following steps:

1. Separate the master cylinder from the vacuum cylinder.

2. Place the gauge over the hydraulic piston with the legs of the gauge toward the mounting surface next to the stud on either side of the piston. (Fig. 7-5).

3. Add or remove .010" thick shims until the gauge just contacts the end of the piston. If more than five shims are required for correct adjustment, recheck assembly of vacuum piston.

NOTE: It is desirable that there be clearance at the piston rather than at the mounting surface if equal contact cannot be obtained at all three points.

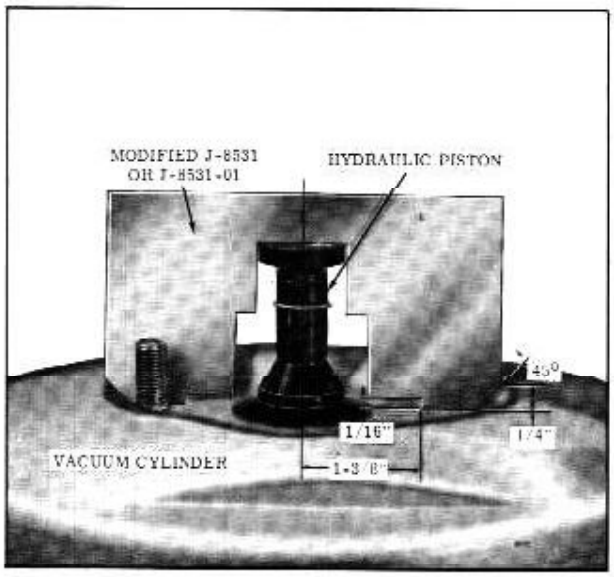


Fig. 7-5 Checking Piston Height

4. Reassemble master cylinder to vacuum cylinder.

BRAKE DIAGNOSIS

The following diagnosis applies to both power brakes and standard brakes unless otherwise specified.

1. Hard Pedal Feel May Be Caused By:

a. Power brake vacuum failure due to:

(1) Faulty vacuum check valve.

(2) Collapsed vacuum hose.

(3) Plugged or loose vacuum hose or fittings.

(4) Leaking vacuum reserve tank.

b. Bound up pedal mechanism.

c. Glazed linings.

d. Grease on brake drum or linings.

e. Power brake unit trouble due to:

(1) Internal vacuum hose loose or restricted.

(2) Vacuum leak in vacuum piston assembly or past the leather packing (Bendix) or vacuum diaphragm (Moraine).

(3) Leak at vacuum cylinder to master cylinder "O" ring.

(4) Restricted air filter.

(5) Malfunctioning air valve.

(6) Leaking past floating valve or air valve.

2. "Grabby" or Severe Brakes Caused By:

a. Grease or brake fluid on linings.

b. Scored drums.

c. Burned linings.

d. Power brake unit trouble due to:

(1) Sticking air valve.

(2) Master cylinder piston binding on air valve (Moraine).

(3) Binding master cylinder piston.

3. Pedal Goes to Floor (or almost to floor) Caused By:

a. Brakes require adjustment (Standard).

b. Self-Adjuster not operating (Power).

c. Air in hydraulic system.

d. Hydraulic leak in line or at wheel cylinders.

e. Low fluid level in master cylinder reservoir.

f. Leak at primary cup.

g. Sand hole or crack in master cylinder.

4. BrakeLock Up Caused By:

a. Restricted compensator port.

b. Incorrect hydraulic piston height (Moraine).

c. Incorrect push rod adjustment (Bendix).

d. Incorrect pedal free travel (Standard).

GENERAL SPECIFICATIONS

BRAKE ASSEMBLIES AND DRUMS

1. BRAKING AREA	191.7 sq. in.
2. RATIO (Percentage of Braking Effect)	
a. Front Brakes	56%
b. Rear Brakes	44%
3. DRUMS	
a. Inside Diameter	11"
b. Out of Round (Total Indicator Reading)	.010" (Max.)
4. LININGS	
a. Length - Primary Shoes	9-3/8"
b. Length - Secondary Shoes	12-1/32"
c. Width - Front Brake	2-1/2"
d. Width - Rear Brake	2"
e. Thickness	7/32"

HYDRAULIC SYSTEM

1. FLUID TYPE	G.M. No. 11
2. FLUID LEVEL	
a. Standard and Power Brakes	1/4" Below Reservoir Opening
3. MASTER CYLINDER BORE	1"
4. WHEEL CYLINDER BORE	
a. Front	1-1/8"
b. Rear	1"

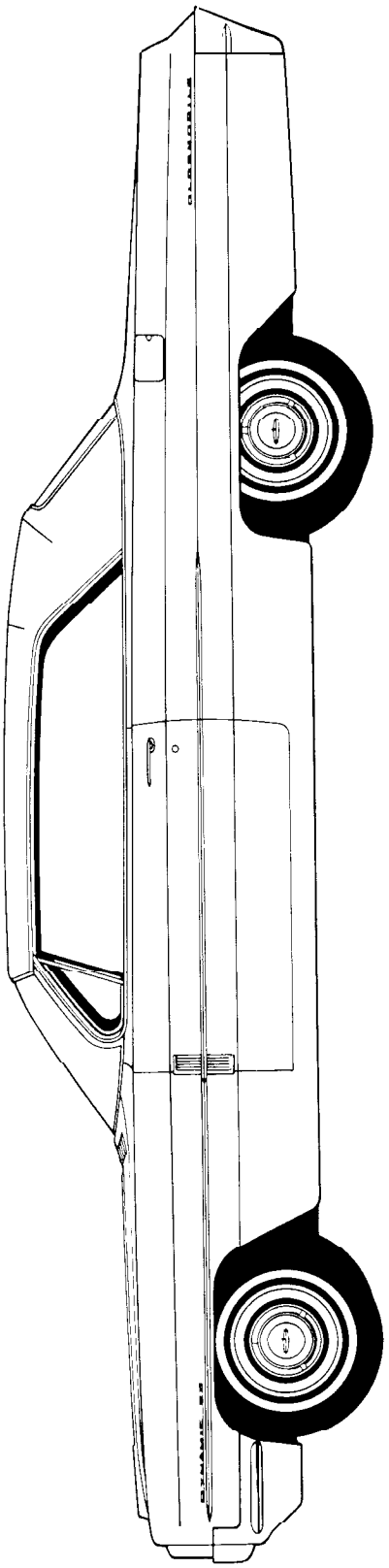
ADJUSTMENTS

1. BRAKE SHOE (Standard)	Tighten adjusting screw until heavy resistance is felt on brake drum, then back off approximately 16 notches.
2. PEDAL HEIGHT - Standard Brake (from floor pan to pedal pad)	8" ± 1/8"
3. FREE TRAVEL - -Standard Brakes	Refer to Brake Pedal Adjustments - 1961 Service Manual
4. MAXIMUM BRAKE PEDAL TRAVEL BEFORE ADJUSTMENT IS REQUIRED	
a. Standard	4"
b. Power	1-7/8"
5. PARKING BRAKE (Adjust with parking brake pedal released)	
a. Equalizer	Tighten equalizer adjusting nut until heavy drag is felt at rear wheels, then loosen nut 10 turns.

TORQUE SPECIFICATIONS

NOTE: Specified torque is for installation of parts only. Checking of torque during inspection may be 15% below the specified.

Application	Ft. Lbs.
General	
1. Brake Line Fittings	8 to 12
2. Anchor Pin To Steering Knuckle Bolt	120 to 145
3. Plain Arm To Steering To Backing Plate Bolts and Nuts	80 to 130
4. Rear Brake Backing Plate to Axle Housing Nuts	45 to 60
5. Wheel Cylinder to Backing Plate Cap Screws	10 to 18
6. Wheel Nuts	70 to 85
Parking Brake	
7. Brake Lever Assembly to Cowl Cap Bolts	8 Max.
8. Brake Lever Assembly to Instrument Panel Cap Screws	8 Max.
Standard Brakes	
9. Pedal Mounting Bracket to Instrument Panel Cap Screws	8 Max.
10. Pedal Mounting Bracket and Master Cylinder Bolts to Cowl	20 to 28
11. Pedal Pivot Bolt Nut (Synchromesh)	10 to 18
12. Master Cylinder Reservoir Cap	Finger Tight
Power Brakes	
13. Master Cylinder Reservoir Cap	Finger Tight
14. Master Cylinder to Vacuum Cylinder	20 to 27
15. Vacuum Cylinder to Cowl	20 to 27
16. Support Plate to Vacuum Piston (Moraine)	5 to 7
17. Front to Rear Piston Plate (Bendix)	4 to 6



ENGINE

ITEMS LISTED IN THE TABLE OF CONTENTS ARE NEW FOR 1962. FOR SERVICE PROCEDURES AND RECOMMENDATIONS NOT LISTED, REFER TO THE 1961 88, S88 & 98 SERVICE MANUAL AND STARFIRE SUPPLEMENT.

CONTENTS OF SECTION 8

GENERAL DESCRIPTION

Engines used in the 88, S88, 98 and Starfire Series have a 4-1/8" bore, 3-11/16" stroke and a displacement of 394.1 cubic inches.

All engines use a dished piston. The depth of the dish determines the compression ratio. The 88 engine, using regular fuel, uses a piston with a dish approximately 9/32" deep. Premium fuel engines, except Starfires use a piston with a dish approximately 1/16 deep. The Starfire uses a piston with a dish approximately 1/32" deep.

Regular fuel engines have a compression ratio of 8.75:1 premium fuel engines except Starfire, have a compression ratio of 10.25:1. Starfire engines have a compression ratio of 10.50:1.

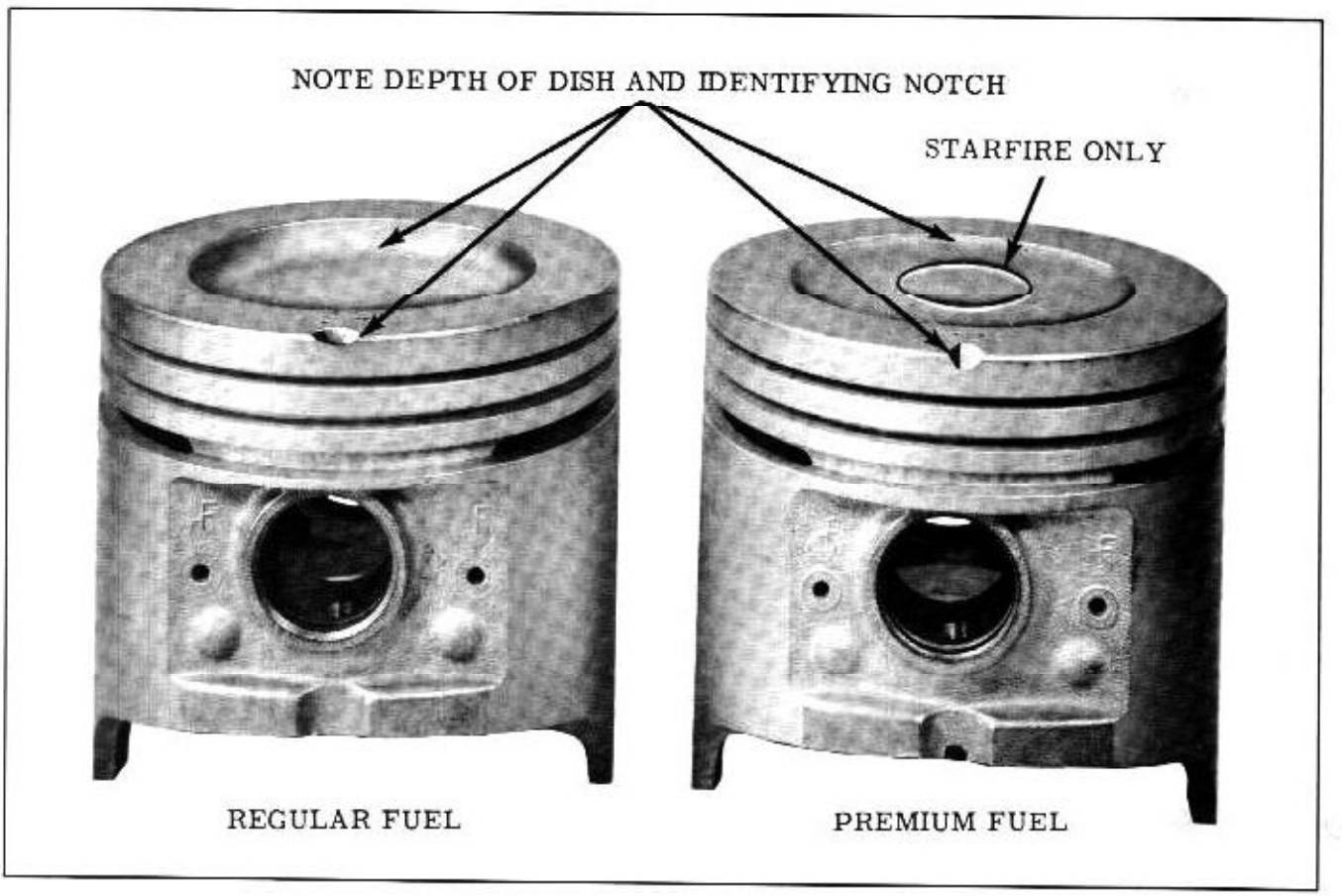


Fig. 8-1 Piston Identification

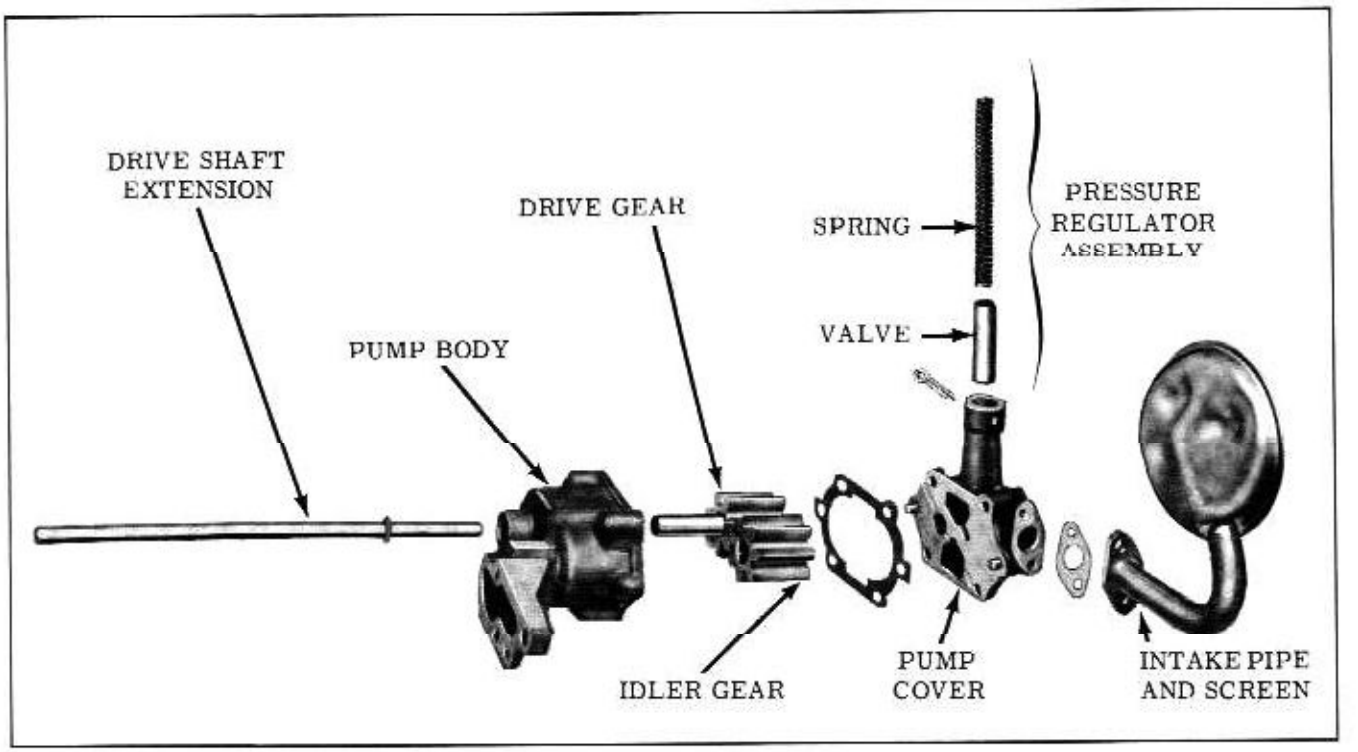


Fig. 8-2 Oil Pump Assembly

OIL PUMP

Disassembly (Fig. 8-2)

1. Remove the oil pump drive shaft extension.

   NOTE: Do not attempt to remove the special washers from the drive shaft extension. The drive shaft extension and special washers must be serviced as an assembly.

2. Remove the intake pipe and screen assembly and gasket.

3. Remove the retaining pin and the pressure regulator, spring and valve.

   CAUTION: Position thumb over pressure regulator bore before removing retaining pin as the spring is under tension.

4. Remove the 4 oil pump cover attaching screws and remove the oil pump cover and gasket.

5. Remove the drive gear and idler gear from the pump body.

CLEANING AND INSPECTION

1. Wash all parts in clean solvent and blow out passages with compressed air.

2. Inspect all moving parts for scoring. Small imperfections can be cleaned up with a fine hone.

3. Check pressure relief valve clearance in bore. Clearance should be .0025" to .005". Too much clearance can affect oil pressure at idle.

   (The oil pressure warning light on the instrument panel is calibrated to light when oil pressure is less than 9 lbs.)

4. Check end clearance of gears. End clearance of gears should be .0025" to .008".

Assembly

1. Install the drive gear into the pump body with the hex I.D. of the drive shaft toward the oil pump mounting pad, then install the idler gear.

2. Position a new gasket on the pump body and install the oil pump cover. Tighten the cover screws 5 to 8 ft. lbs.

3. Position the pressure regulator valve into the pump cover, closed end first, then install the spring and retaining pin.

4. Position a new gasket on the pump cover and install the intake pipe and screen with screen facing away from the pump mounting pad. Tighten screws 4 to 7 ft. lbs.

   IMPORTANT: When assembling the drive shaft extension to the drive shaft, the END OF THE EXTENSION NEAREST THE SPECIAL WASHERS MUST BE INSERTED INTO THE DRIVE SHAFT.

MAIN BEARINGS

The No. 2, 3 & 4 main bearings are 5/32" wider than those used in 1961. Both the upper and lower 2, 3 & 4 main bearing shells have a center oil groove and are now interchangeable.

FAN CLUTCH

A torque limited thermostatically controlled fan assembly is used on all air-conditioned cars. Through pulley ratio changes, the fan rotates faster than a conventional fan at low engine speeds. This improves low-speed cooling at idle.

The fan clutch engages when the radiator discharge air reaches 160°F. Engagement of the clutch allows the fan to rotate up to a maximum of 2000 R.P.M. When the radiator discharge air drops to 135°F. or below, the clutch disengages, which allows the fan to run a maximum of approximately 1000 R.P.M.

The thermostatically controlled fan clutch is serviced only as an assembly.

EXHAUST SYSTEM

The exhaust system is basically carry-over with the exception that the location of the muffler and resonator are reversed which places the resonator under the rear quarter panel.

GENERAL SPECIFICATIONS

Subject and Remarks	
1. CYLINDER BLOCK	
a. Engine Type	90° V-Type
b. Number of Cylinders	8
c. Bore and Stroke	4.125" x 3.6875"
d. Piston Displacement	394.1 cu. in.
e. Compression Ratio	
Regular Fuel	8.75:1
Premium Fuel (Except Starfire)	10.25:1
Premium Fuel (Starfire)	10.50:1
f. Firing Order	1-8-7-3-6-5-4-2
g. Cylinder Identification	
Left Bank (Front to Rear)	1-3-5-7
Right Bank (Front to Rear)	2-4-6-8
2. CRANKSHAFT	
a. Diameter - Main Bearing Journal	
Nos. 1, 2, 3 & 4	2.9993" to 3.0003"
No. 5	2.9990" to 3.000"
b. Width - Main Bearing Journal, Including Fillets	
No. 1	1.340"
Nos. 2, 3 and 4	1.156"
No. 5	1.880"
c. Diameter - Connecting Rod Bearing Journal	2.4992" to 2.5002"
d. Width - Connecting Rod Bearing, Including Fillets	1.877" to 1.880"
e. Length - Overall Crankshaft	26.066"
f. Diameter - Of Oil Holes in Crankshaft	.201" to .209"
g. Number of Counterweights	6
h. Clearance - Crankshaft End Thrust	.004" to .008"
3. CRANKSHAFT SPROCKETS	
a. Width	.520" to .530"
b. Pitch	.500"
c. Number of Teeth	18
4. FLYWHEEL	
a. No. of Teeth on Starter Gear	176
b. No. of Teeth on Starter Pinion	9
5. MAIN BEARINGS	
a. Clearance - Crankshaft Vertical	
Nos. 1, 2, 3 & 4	.0005" to .0021"
No. 5	.0020" to .0034"
b. Width - Bearing Shaft	
No. 1	1.068"
Nos. 2, 3 and 4	.974"
No. 5	1.875"
6. PISTONS	
a. Length Overall	4.050"
b. Length from Top of Piston to Pin Center	1.770" to 1.773"
c. Clearance (At Thrust Surface) Selective	.0075" to .00125"
d. Diameter - Nominal Outside	4.125"
e. Weight - Less Pins and Rings	26.349 oz.

GENERAL SPECIFICATIONS—Continued

Subject and Remarks	
7. PISTON PINS	
a. Diameter (Selective)	.9807" to .9803"
b. Length Overall	3.126"
c. Diametrical Clearance (Selective) Plain Boss	.0003" to .0005" Loose
8. PISTON RINGS	
a. Number Compression Rings	2
b. Width, Compression Ring Top	.0775" to .0780"
c. Width, Compression Ring, Bottom	.0925" to .0935"
d. Gap Clearance Compression Rings	.013" to .023"
e. Clearance in Groove, Compression Rings	.001" to .004"
f. Number, Oil Rings	1
g. Width, Oil Ring Assembly	
Perfect Circle	.1831" to .1889"
Sealed Power	.1840" to .1890"
h. Gap Clearance, Oil Ring	.015" to .055"
i. Clearance - Oil Ring to Piston Groove	.0005" to .007"
9. CONNECTING RODS	
a. Length - Center to Center	6.996" to 7.000"
b. Diameter - Connecting Rod Bore	2.6245" to 2.6250"
c. Diameter - Pin Bore	.9807" to .9811"
d. Clearance - Crankshaft (Vertical)	.0005" to .0026"
e. Clearance - Crankshaft (Horizontal)	.0013" to .0034"
f. Clearance - Pin to Rod	.0003" to .0005" Loose
g. Clearance - End to Crankshaft	.002" to .011"
10. CAMSHAFT	
a. Bearing Journal Diameters	
All	1.9977" to 1.9985"
b. Width (Including Chamfers)	
Nos. 1 and 5	.781"
Nos. 2, 3 and 4	.699"
c. Journal Clearance in Bushing	.0010" to .0033"
d. Diameter - Reamed Bushing	
All	1.9995" to 2.001"
e. Length - Bushing	
All	.688"
f. End Thrust	Block and Spring Loaded Plunger
11. CAMSHAFT SPROCKET	
a. Width	.520" to .530"
b. Pitch	.500"
c. Number of Teeth	36
12. TIMING CHAIN	
a. Width	27/32"
b. Length	24"
c. Number of Links	48
d. Pitch	.500"
13. VALVES - INTAKE	
a. Diameter - Head	1.870" to 1.880"
b. Diameter - Stem	.3427" to .3432"

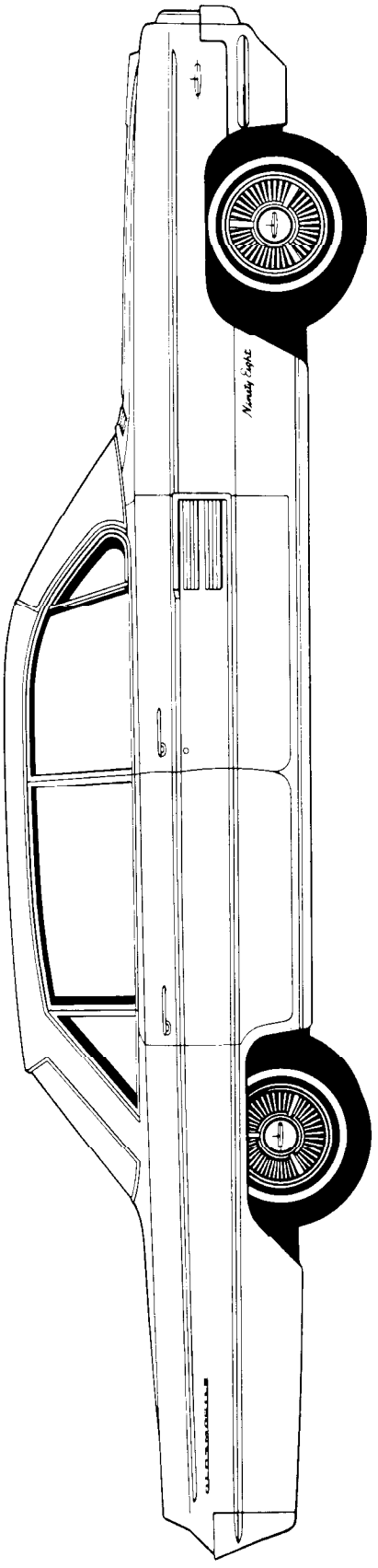
GENERAL SPECIFICATIONS—Continued

Subject and Remarks	
13. VALVES - INTAKE - (Continued)	
c. Angle - Valve Seat	45°
d. Width - Valve Seat	.037" to .075"
e. Lift - Premium Fuel	.427"
Regular Fuel	.427"
f. Clearance in Guide	.0010" to .0025"
g. Lash	Hydraulic
14. VALVES - EXHAUST	
a. Diameter - Head	1.557" to 1.567"
b. Diameter - Stem	.3427" to .3422"
c. Angle - Valve Seat	45°
d. Width - Valve Seat	.037" to .075"
e. Lift	.435"
f. Clearance in Guide	.0015" to .0030"
g. Lash	Hydraulic
15. VALVE SPRINGS	
a. Number of Coils	6.40 to 6.60
b. Length - Free	2.25"
c. Diameter - Wire	.190" to .194"
d. Diameter - Inside Top	.760"
e. Diameter - Outside Bottom	1.472" to 1.496"
f. Pressure and Length	
Valve Open	175 to 189 lbs. @ 1.437"
Valve Closed	85 to 95 lbs. @ 1.837"
16. VALVE LIFTERS	
a. Diameter - Body	
Standard	.9210" to .9215"
.001" Oversize	.9220" to .9225"
.010" Oversize	.9310" to .9315"
b. Length - Overall	2.125"
c. Clearance in Boss Selective	.0005" to .0020"
17. VALVE GUIDES	
a. Height from top of Head	.787"
b. Diameter - Inside Intake	.3442" to .3452"
c. Diameter - Inside Exhaust	.3442" to .3452"
d. Length - Overall	2.390"
18. LUBRICATION SYSTEM	
a. Capacity - Engine	
Crankcase Only, Drain and Refill	4 Qts.
Drain and Refill with Filter Change	5 Qts.
b. Oil Pump	
Clearance - Pressure Relief Valve in Bore	.0025" to .005"
Clearance - End Gears	.0025" to .008"
Width - Pump Gears	1.509"
19. COOLING SYSTEM	
a. Radiator - Make	Harrison
b. Capacity	20-1/4 Qts.
For Air Conditioning, Add	1-3/4 Qts.
c. Pressure Cap	15 Lb.
d. Thermostat	170°

TORQUE SPECIFICATIONS

NOTE: Specified torque is for installation of parts only. Checking of torque during inspection may be 15% below the specified minimum.

Application	Ft. Lbs.
CRANKSHAFT AND CONNECTING RODS	
Connecting Rod Bearing Cap Bolts	32 to 42
Crankshaft Bearing Cap Bolts (Nos. 1, 2, 3 & 4)	90 to 120
Crankshaft Bearing Cap Bolts (Rear)	130 to 160
Crankshaft Pulley Bolt	100 Min.
ENGINE MOUNTS	
Front Mount Bracket to Front Cover Bolts	28 to 38
Front Mount to Bracket Nuts	35 to 50
Front Mount to Frame Nuts	45 to 50
Rear Mount to Flywheel Housing Bolts	50 to 60
Rear Mount to Cross Member	40 to 56
HEAD AND VALVE MECHANISM	
Rocker Arm Cover Bolts	4 to 7
Cylinder Head to Block Bolts	60 to 80
Rocker Shaft Bracket to Head	14 to 22
Spark Plugs	18 to 34
FLYWHEEL AND DAMPER PLATE	
Flywheel to Crankshaft Bolts	85 to 95
Clutch Pressure Plate to Flywheel Bolts	14 to 17
Damper Plate to Flywheel Bolts	55 to 65
FLYWHEEL AND CLUTCH HOUSING	
Flywheel Lower Housing Cover Bolts	4 to 7
Flywheel Lower Housing to Block Bolts	50 to 55
Flywheel Cover Housing to Block and Flywheel Housing	50 to 55
Clutch Housing to Block and Flywheel Housing Bolts	50 to 55
FRONT COVER AND WATER PUMP	
Cover to Block Bolts (3/8")	24 to 40
Cover to Block Bolts (7/16")	24 to 40
Water Pump to Front Cover	14 to 22
Water Outlet to Manifold	22 to 26
FUEL AND VACUUM PUMP	
Pump to Front Cover Bolts	35 to 40
Fuel Pump Eccentric	14 to 22
MANIFOLD	
Intake Manifold to Head Bolts	22 to 34
Exhaust Manifold to Head Bolts and Nuts	19 to 25
OIL PAN, PUMP AND FILTER	
Oil Pan Bolts	10 to 18
Oil Pan Drain Plug	35 to 45
Pump to Bearing Cap	22 to 26
Pump Cover Bolts	5 to 8
Pump Screen Bolts	4 to 7
Filter Assembly to Cylinder Block Bolts	28 to 38
Filter Housing	10 to 20



CARBURETION

ITEMS LISTED IN THE TABLE OF CONTENTS ARE NEW FOR 1962. FOR SERVICE PROCEDURES AND RECOMMENDATIONS NOT LISTED, REFER TO THE 1961 88, 588 AND 98 SERVICE MANUAL.

CONTENTS OF SECTION

ROCHESTER CARBURETOR MODEL 4GC

THEORY OF OPERATION

IDLE SYSTEM

The idle system is basically the same in operation as previous models. A fourth off-idle discharge hole has been added in the throttle body for improved fuel distribution and economy during off-idle and early part throttle operation. The fourth hole is located just above the third off-idle discharge hole.

PART THROTTLE SYSTEM

The part throttle system operates basically the same as previous models except that main well inserts have been added to the primary main well and work in conjunction with the main well tubes.

The purpose of the main well inserts is to help break up any vapor bubbles which may form in the main well area so that efficient carburetor metering can be maintained during hot engine operation. The addition of the main well inserts help to maintain a more stable engine idle and greatly improve hot engine starting caused by fuel percolation.

The main well inserts are removable. The bottom tip of the insert is indented to allow an even flow of fuel from the main metering jets.

CARBURETOR DISASSEMBLY

The carburetor disassembly procedure is the same as 1961, with the exception that the main well inserts can be removed after the removal of the primary venturi cluster.

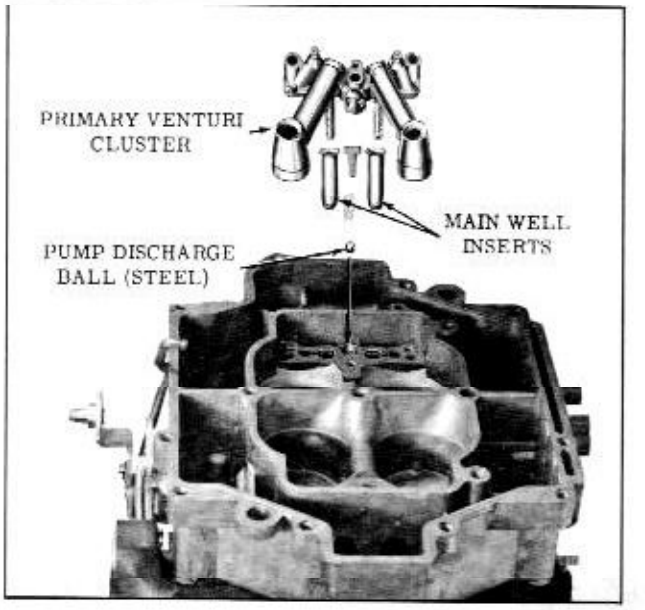


Fig. 8-101 Main Well Inserts

On reassembly, position the main well inserts so that the flat side on lip of the insert indexes with the flat side at the top of the main well. Lip of insert must be seated in recess. (Fig. 8-101)

ROCHESTER CARBURETOR MODEL 2GC

THEORY OF OPERATION

IDLE SYSTEM (Fig. 8-102)

The idle system consists of the idle tubes (5), idle passages (3), idle air bleeds (1), idle channel restrictions (2, 6), idle mixture adjustment needles (8), and idle discharge holes (7).

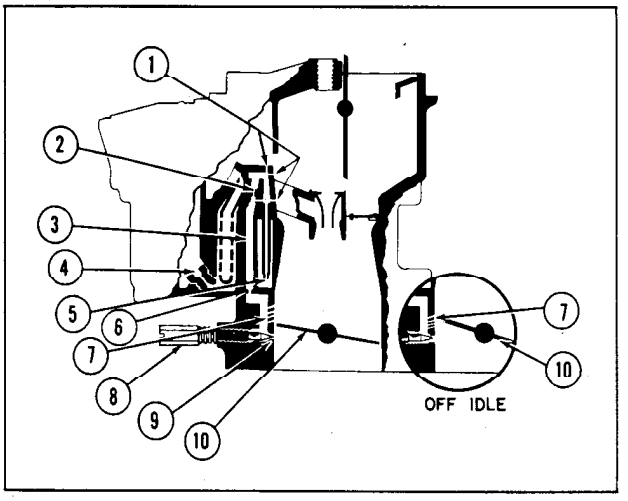


Fig. 8-102 Idle System

In curb idle position, the throttle valves are slightly open, allowing a small amount of air to pass between the wall of the carburetor bore and the edges of the throttle valves.

The idle needle hole (9) is in the high vacuum area below the throttle valves and the fuel bowl is vented to atmospheric pressure.

The fuel is drawn from the fuel bowl through the main metering jets (4) into the main well. The fuel is metered by the calibrated orifice at the lower tip of the idle tube (5) and travels up the idle tube.

When the fuel reaches the top of the idle tube, it is mixed with air through two idle air bleed holes (1). The idle mixture then moves on through the horizontal idle passage and down through a calibrated restriction (2). Just below the channel restriction, the idle mixture is again bled with air through a third air bleed (1). The idle mixture continues down the vertical idle passage and through another calibrated restriction (6) at the base of the float bowl.

NOTE: The lower idle channel restriction is not used on factory installed air conditioned models. The mixture continues down past the four off-idle discharge holes (7), located just above the throttle valves, where more air is added to the mixture. The mixture then passes through the idle needle holes (9) and into the bore of the carburetor.

In addition to this mixture of fuel and air, air enters the bore of the carburetor through the slightly opened throttle valve. For smooth operation, the air from the bore and the air-fuel mixture from the idle needle hole must combine to form the correct final mixture for curb idle engine speed.

The position of the idle adjusting needle (8) regulates the amount for air-fuel mixture admitted to the carburetor bore. Except for this variable at the idle adjustment needle, the idle system is specifically calibrated for low engine speeds.

OFF-IDLE

As the throttle valves are opened, a pressure differential change occurs. Openings of the valves progressively exposes the idle discharge holes (7) to manifold vacuum and the air flow, with the result that they deliver additional air-fuel mixture for off-idle engine requirements.

On factory installed air conditioned cars, an idle compensator is used as an additional aid to prevent stalling during prolonged hot idle. The compensator mounted between the large venturi, consists of a bi-metal strip which, when heated, opens a valve allowing additional idle air to enter the system.

CHOKE SYSTEM (Fig. 8-103)

The choke system is basically the same in operation as the 1961 model except for the following additional design features.

A vacuum relief hole has been added in the vacuum supply channel to the choke housing. The vacuum relief hole is located inside the throttle bore just below the throttle valves and connects directly to the choke vacuum passage.

The purpose of the choke vacuum relief hole is to immediately bleed off choke vacuum during quick acceleration.

In operation, during normal engine cold starting and driveaway, manifold vacuum is normally high. The high manifold vacuum transmitted to the choke housing and choke piston helps pull the choke valve open. During quick acceleration it is desirable to allow the choke valve to close slightly to obtain a richer mixture. The vacuum relief hole allows this action to happen immediately by "dumping" choke vacuum directly into the air stream in the throttle body bore.

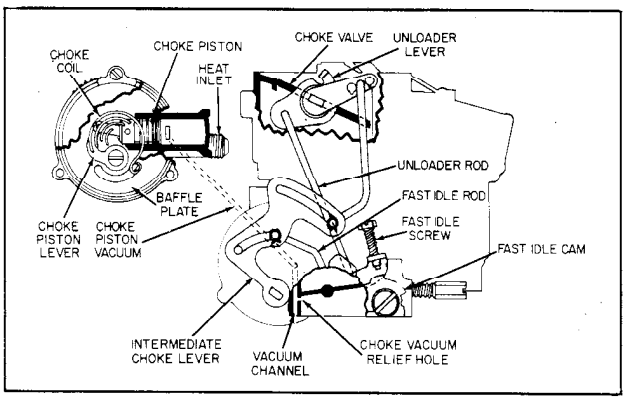


Fig. 8-103 Choke System

The choke housing heat inlet has been moved from the center of the choke cover to the side of the choke housing.

The inside choke baffle plate has a deflector added which is located adjacent to the heat inlet hole. The deflector is used to deflect the incoming heat away from the coil so that the thermostatic coil will receive an even flow of heat completely around it.

The choke unloader mechanism has been moved from the throttle lever side to the choke housing side of the carburetor due to the redesigned throttle lever. The basic operation of the unloader is identical to previous models.

Choke unloading is accomplished by depressing the accelerator pedal to the floor. The unloader rod, which is connected directly to the fast idle lever on the throttle shaft, moves upward forcing a tang on the unloader lever, located on the choke shaft, against the upper choke lever which, in turn, partially opens the choke valve.

CARBURETOR REMOVE AND INSTALL

1. Remove air cleaner.
2. Remove retaining clip from bellcrank rod and remove rod from carburetor.
3. Disconnect fuel line from front of carburetor.
4. Disconnect choke pipe from choke housing.
5. Disconnect vacuum lines.
6. Remove four throttle body to intake manifold nuts.
7. Remove carburetor.

To install reverse removal procedure and make adjustments outlined under ADJUSTMENTS (ON THE CAR).

Torque carburetor to intake manifold nuts 11 to 14 ft. lbs.

CARBURETOR DISASSEMBLY

AIR HORN

1. Mount carburetor on Holding Fixture BT-30-14 or J-5923-B. (Fig. 8-104)
2. Remove fuel inlet fitting and gasket, then remove the filter screen.
3. Remove the idle vent valve retaining screw, shield and vent.

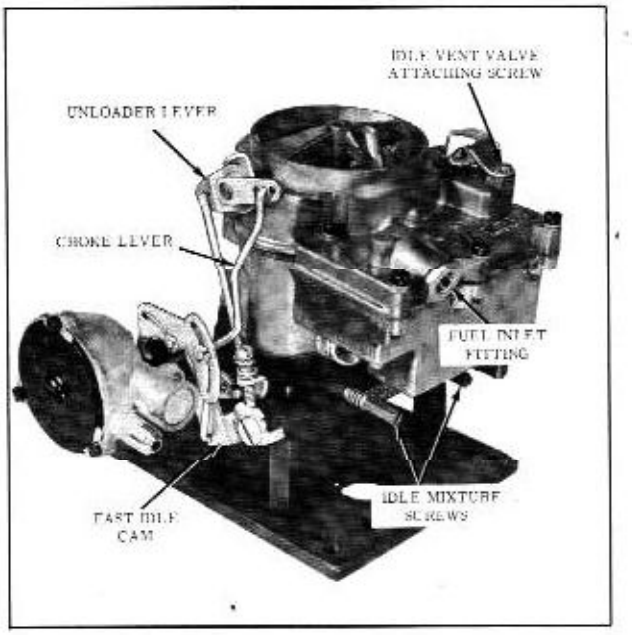


Fig. 8-104 2GC Carburetor

4. Remove retainer clip from the intermediate choke rod and unloader rod and remove the intermediate choke and unloader rods.
5. Remove retainer spring clip from the upper end of the pump rod at the pump lever and disconnect the upper end of the pump rod.
6. Remove the eight air horn attaching screws, then lift the air horn straight up to remove.
7. Invert the air horn and place on a flat surface, then remove the float hinge pin, float and needle assembly. (Fig. 8-105)
8. Remove the float needle and seat and gasket using Tool BT-52, then remove fuel filter from the needle seat bore.

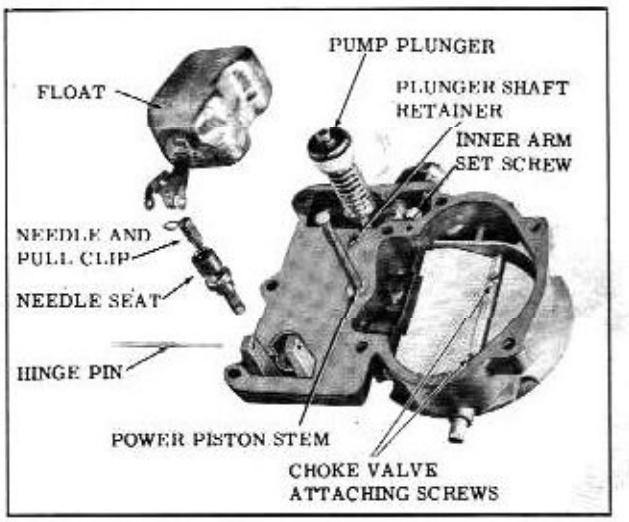


Fig. 8-105 Air Horn

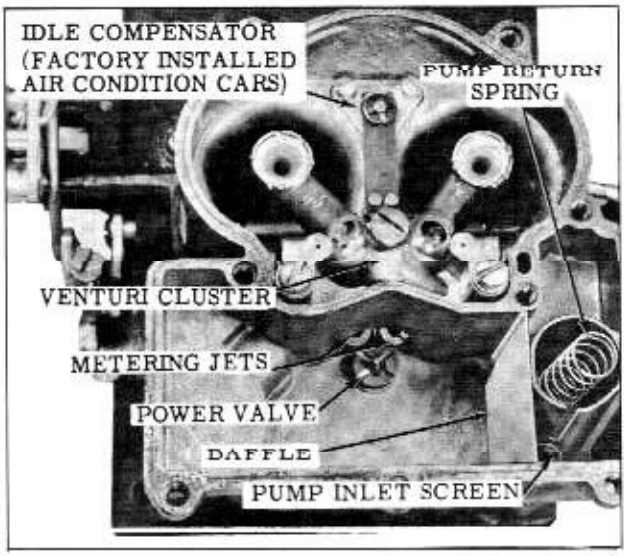


Fig. 8-106 Float Bowl Assembly

9. Remove the power piston by depressing piston stem and allowing it to snap free.

10. Remove the retainer from the pump plunger shaft and remove pump plunger.

11. If the pump lever and shaft or inner arm is to be replaced, loosen the set screw on the inner arm.

12. Remove the air horn gasket.

13. If the choke valve or shaft is to be replaced, remove the two choke valve attaching screws, then remove the choke valve, choke valve shaft and unloader from the air horn.

FLOAT BOWL (Fig. 8-106)

1. Remove baffle, pump inlet filter screen and pump plunger return spring, then remove aluminum ball check from bottom of pump well.

2. Remove main metering jets and power valve.

3. If equipped with an idle compensator, factory installed air conditioned cars only, remove attaching screws and remove idle compensator and gasket.

4. Remove venturi cluster attaching screws and remove cluster and gasket.

   NOTE: The cluster center screw is larger and has a gasket since it is located in the pump discharge passage.

5. Using a pair of needle nosed pliers, remove the pump discharge spring guide, then remove the spring and steel ball. (Fig. 8-107)

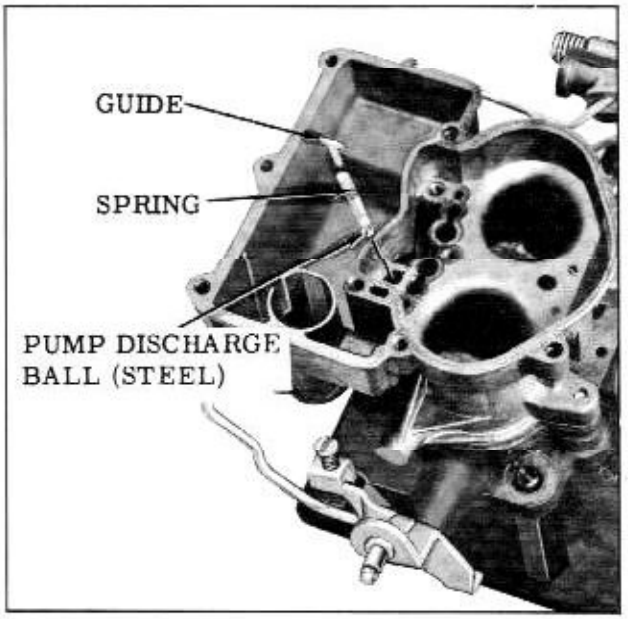


Fig. 8-107 Pump Discharge Guide

6. Invert float bowl and remove the three throttle body attaching screws, then remove the throttle body and gasket.

THROTTLE BODY AND CHOKE LINKAGE (Fig. 8-108)

1. Remove the fast idle cam attaching screw.

2. Remove the three choke cover attaching screws and retainers, then remove the cover and gasket.

3. Remove baffle plate from choke housing.

4. Remove the choke piston attaching screw, then remove piston link and lever assembly. The piston can be removed from the link by removing the piston pin.

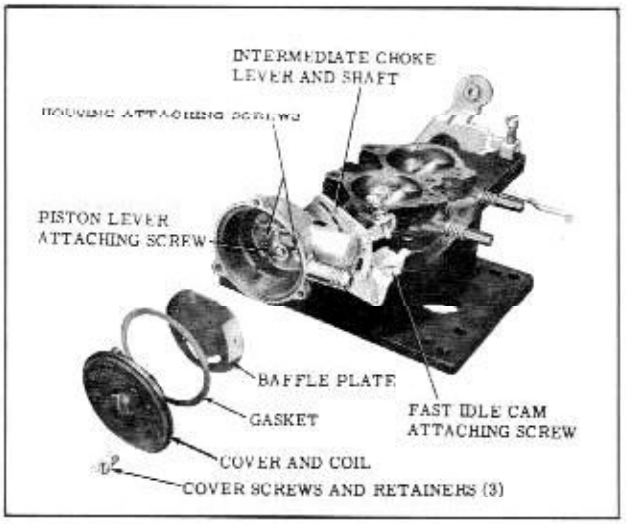


Fig. 8-108 Throttle Body and Choke Linkage

5. Remove the two choke housing attaching screws, then remove the choke housing with linkage and gasket.

6. Remove the choke housing gasket, then remove the choke lever and shaft with linkage from the choke housing.

7. The idle mixture needle screws may be removed for cleaning or replacement.

NOTE: No attempt should be made to remove the throttle valves or shaft as it may be impossible to assemble the throttle valve correctly in relation to the idle discharge orifices.

CLEANING OF PARTS

The carburetor should not be cleaned in any solution other than a cold immersion type cleaner.

1. Thoroughly clean carburetor castings and metal parts in carburetor solvent.

CAUTION: The choke coil, housing and pump plunger should not be immersed in solvent. Clean pump in clean gasoline only.

2. Clean and dry all passages in castings with compressed air. Do not pass drills through jets or passages.

3. Clean filter screens of dirt or lint. If filter screens are distorted or plugged, they should be replaced.

INSPECTION OF PARTS

1. Check floats for dents or excessive wear at hinge pin holes.

2. Shake floats to check for leaks.

3. Examine float needle and seat. If grooved, replace with a new matched float needle, seat and gasket assembly.

4. Inspect the idle mixture adjusting needles for burrs or ridges. Replace if necessary.

5. Inspect the upper and lower surfaces of the float bowl to see that the small sealing beads are not damaged. Damaged beading may result in air or fuel leaks at that point.

6. Inspect holes in pump rocker arm, fast idle cam and throttle shaft lever. If holes are worn excessively or out of round to the extent of improper operation of the carburetor, the worn parts should be replaced.

7. Inspect the steps on the fast idle cam for excessive wear. If worn, replace cam to assure proper engine operation during the warm-up and choking periods.

8. Inspect the pump plunger leather or rubber for cracks or creases. If damaged, replace the pump plunger as an assembly.

9. Inspect the throttle body to make sure idle passages and vacuum channels are open.

CARBURETOR ASSEMBLY

THROTTLE BODY ASSEMBLY (Fig. 8-108)

1. If removed, install the slow idle speed screw.

2. If removed, install the fast idle lever on the end of the throttle shaft with attaching screw. Install the fast idle speed screw and spring in the lever.

3. If removed, install the idle mixture needles and springs in the throttle body. Tighten finger tight, then back out 1-1/2 turns as a preliminary idle adjustment.

4. Install the intermediate choke lever and shaft, with linkage attached, in the choke housing. The lever should extend upward between the attaching screw bosses.

5. Install the choke housing gasket, then position the choke housing on the throttle body and install the two attaching screws.

6. If removed, install the choke piston on the link so that the piston pin hole is facing outward.

7. Install the choke piston lever and link assembly in the choke housing, then install the attaching screw.

8. Position the fast idle cam on the throttle body and install attaching screw.

9. Place a new gasket on the bottom of the float bowl with holes aligned, then position the throttle body on the gasket and install the three attaching screws. Tighten screws evenly and securely.

FLOAT BOWL ASSEMBLY

1. Install the pump discharge (steel) ball, spring and guide in the passage in the venturi cluster mounting surface. (Fig. 8-107)

2. Install the venturi cluster, gasket, and attaching screws. Screw with gasket must be inserted in center hole.

3. If equipped with idle compensator, install compensator and gasket between the two large

venturi, using two self-tapping screws. Do not over-tighten.

4. Install the main metering jets and power valve.

5. Install the pump inlet (aluminum) ball and the pump return spring in the pump well. Install the pump inlet screen and the baffle in the float bowl.

AIR HORN ASSEMBLY

1. If removed, install choke unloader lever on choke shaft. Tang on unloader lever faces outward. Install the choke shaft in air horn by inserting it from the choke side, then install choke valve in the choke shaft with the letters RP facing upward.

   a. Install the choke valve screws. Center the choke valve before tightening choke valve screws. .020" clearance should be maintained between choke unloader lever and the air horn casting. Tighten choke valve screws and stake lightly in place.

2. If removed, position the pump inner lever in the air horn, install the pump lever and shaft and tighten retaining screw.

   NOTE: Lubricate shaft with "Lubriplate" or light grease.

3. Install the pump plunger shaft in the pump lever so that the end is pointing inward, then install the retainer.

4. Position the float needle seat gasket and small filter screen on the seat. Install seat in air horn with BT-52.

5. Install the power piston and lightly stake the casting. Make sure piston travels freely.

6. Install the air horn gasket, float and needle assembly and float hinge pin.

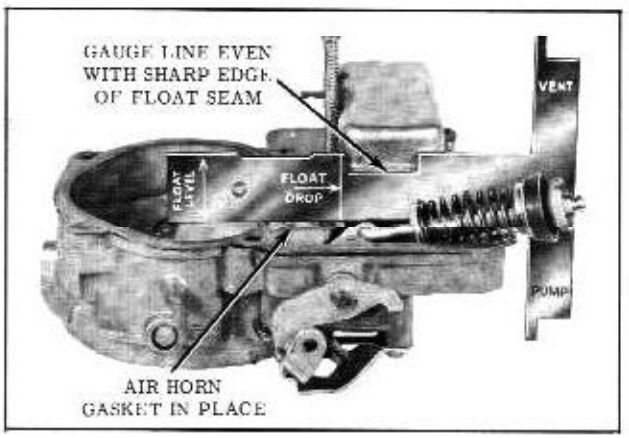


Fig. 8-109 Float Level Adjustment

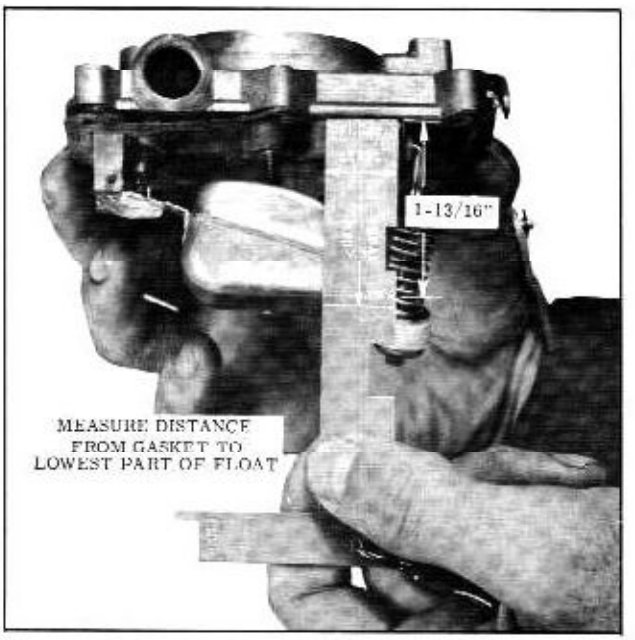


Fig. 8-110 Float Drop Adjustment

FLOAT LEVEL ADJUSTMENT

Make sure the float is properly aligned on the air horn. If it is necessary to bend the float arm for alignment purposes, recheck the float level setting. (Fig. 8-109)

FLOAT DROP ADJUSTMENT (Fig. 8-110)

If necessary to adjust, bend the float tang which contacts the needle seat. Bend the tang toward the seat to decrease the float drop and away from the seat to increase the drop.

COMPLETION OF CARBURETOR ASSEMBLY (Fig. 8-111)

1. Install the air horn on the float bowl while guiding accelerator pump in place. Install and tighten the eight air horn screws evenly and securely.

2. Position the upper end of the pump rod on the pump lever and retain with spring clip.

3. Position idle vent valve and shield on air horn and retain with attaching screw.

4. Install the fuel inlet filter screen with the closed end inward, then install the inlet fitting and gasket.

5. Install choke unloader rod into unloader lever (end of rod facing inward). Then connect lower end of rod to fast idle lever, retaining with clip.

6. Install intermediate choke rod into upper choke

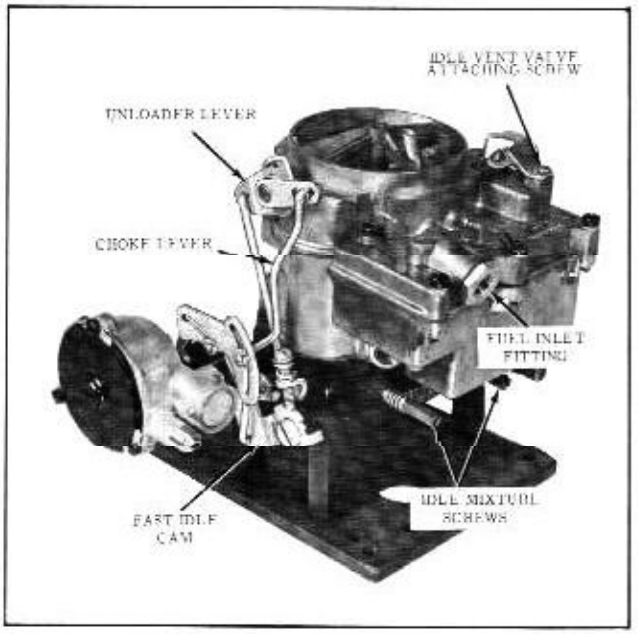


Fig. 8-111 Carburetor Assembly

lever (end of rod facing inward). Then connect lower end of rod to intermediate lever retaining with horseshoe clip.

7. Install rubber tee on the vacuum fitting in the throttle body.

8. Adjust fast idle cam rod, pump rod, and unloader as outlined under ADJUSTMENTS (ON OR OFF CAR).

ADJUSTMENTS
(On or Off the Car)

INTERMEDIATE CHOKE ROD AND CHOKE COIL ADJUSTMENT

1. Adjust the intermediate choke rod as outlined in Fig. 8-112.
2. After choke rod adjustment is made, position the baffle plate, coil cover and gasket and the three screws with retainers in the choke housing. Do not tighten screws.
3. Rotate the choke cover counterclockwise until the coil picks up the choke shaft tang, and the mark on the choke cover is one notch lean. (Fig. 8-113)
4. Tighten the three cover screws evenly and securely.

FAST IDLE CAM ROD ADJUSTMENT

1. Turn in fast idle speed screw until it just contacts the second step of the fast idle cam.
2. While holding up on the intermediate choke lever so that the shoulder of the highest step of the fast idle cam is against the fast idle speed screw. Check the clearance between top edge of the choke valve and the air horn at the rear edge, using Gauge Set 100-31 (.150"). Make sure the intermediate choke rod is at the bottom of its slot in the intermediate lever. (Fig. 8-114)

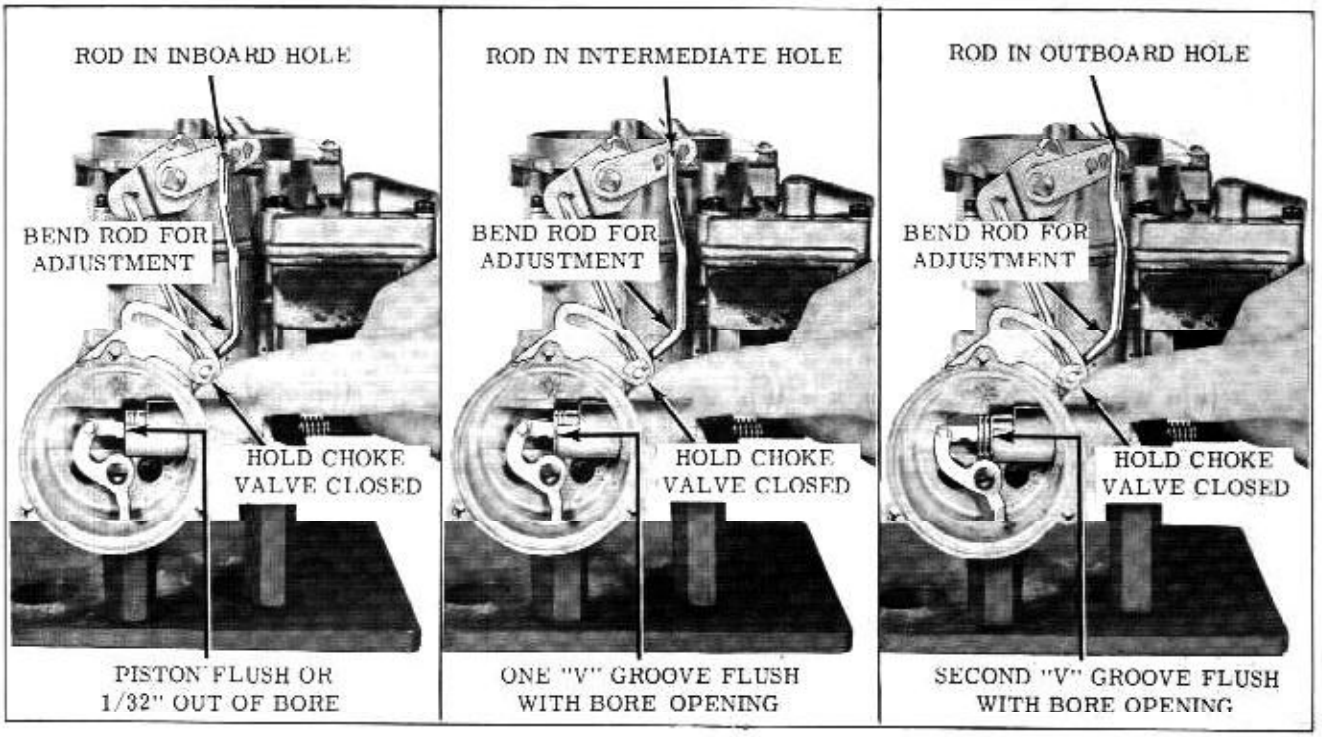


Fig. 8-112 Intermediate Choke Adjustment

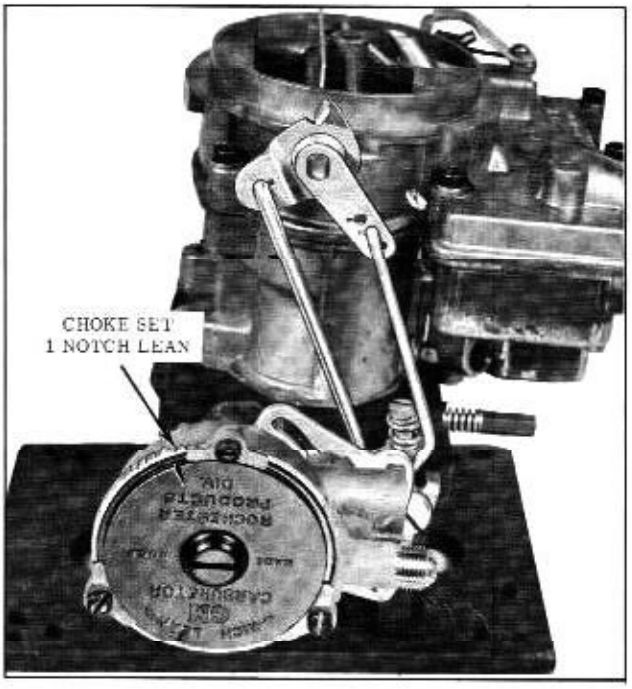


Fig. 8-113 Choke Coil Setting

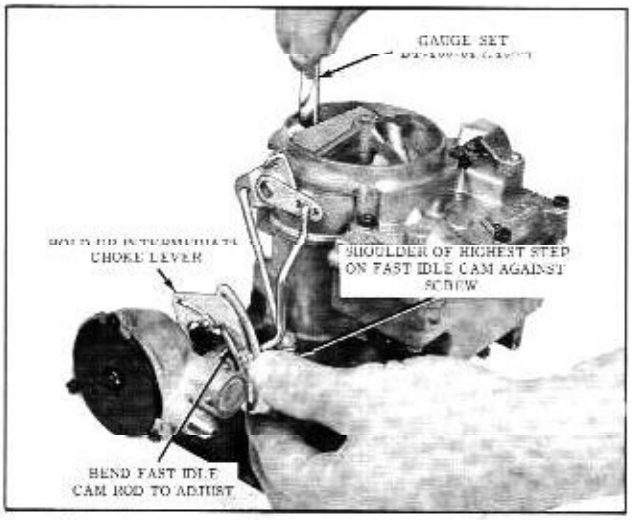


Fig. 8-114 Fast Idle Cam Rod Adjustment

3. If necessary to adjust, bend the fast idle cam rod.

PUMP ROD ADJUSTMENT

1. Using Gauge Set 100-31 (1-7/16") check the distance from the top of the air cleaner mounting ring to the top of the pump rod. The leg of the gauge marked "Pump" should just touch the top of the pump rod. (Fig. 8-115)

2. If necessary to adjust, bend the pump rod in the location shown.

UNLOADER ADJUSTMENT

1. With throttle valves held wide open, check

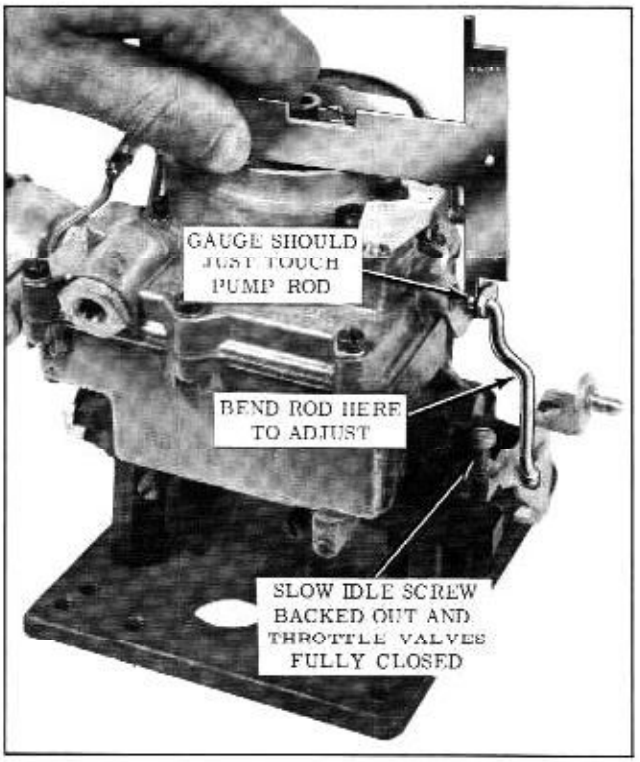


Fig. 8-115 Pump Rod Adjustment

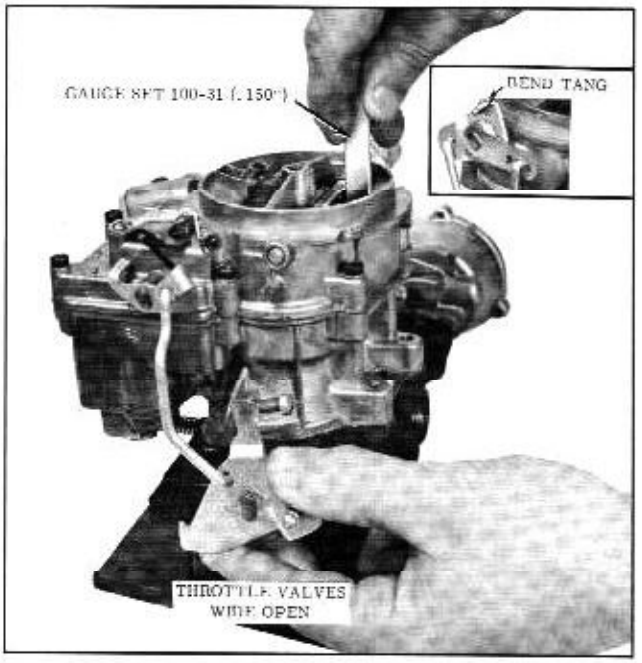


Fig. 8-116 Unloader Adjustment

clearance between the top edge of the choke valve and the air horn. (Fig. 8-116)

2. If necessary to adjust, bend the tang on the unloader lever which contacts the choke lever.

NOTE: If the unloader adjustment is made with the carburetor off the car, recheck the adjustment after the carburetor is installed while the accelerator pedal is completely depressed.

ADJUSTMENTS (ON CAR)

There are three adjustments that must be made with the carburetor mounted on the engine. They are: Slow Idle, Fast Idle and Throttle Return Check.

SLOW IDLE SPEED

TRANSMISSION	GEAR	R.P.M.
Hydra-Matic	Drive	500
Synchromesh	Neutral	550
Factory Installed Air Conditioning - Air Conditioning turned "OFF", Idle Compensator held closed.		
Dealer Installed Air Conditioning (Without Idle Compensator) - Air Conditioning turned "ON".		

SLOW IDLE ADJUSTMENT

With the engine at normal operating temperature, throttle return check Holding Fixture J-6342-01 in place, and air cleaner removed, adjust slow idle as outlined in chart. Tool BT-1501 can be used to turn adjusting screws.

After the idle r.p.m. is stabilized, turn in or out each idle adjusting screw until the smoothest possible idle is obtained. This is normally accompanied by a higher manifold vacuum reading and/or an increase in the idle r.p.m. Then turn out each needle 1/4 turn, at which time both vacuum and idle r.p.m. will drop off slightly.

NOTE: It may be necessary to readjust idle speed and mixture after air cleaner is installed on car.

When setting idle speed and mixture on carburetors with an idle compensator (factory installed air conditioning only) make sure the idle compensator is closed by holding it down. If the idle speed increases when the air cleaner is installed, do not reduce idle speed setting since the idle compensator is open. If idle speed decreases, readjust to correct r.p.m.

FAST IDLE ADJUSTMENT

The fast idle adjustment can be made as follows:

1. Rotate fast idle cam, so that the fast idle screw is resting on the high step of the cam.
2. With engine running at operating temperature and transmission in neutral, adjust the fast idle screw to obtain an engine speed of 1900 r.p.m.

   NOTE: Set fast idle at 2200 r.p.m. in sub-zero temperatures.

   Any time the fast idle is changed it will be necessary to adjust the throttle return check.

THROTTLE RETURN CHECK ADJUSTMENT

The throttle return check adjustment can be made as follows:

1. Be sure fast idle adjustment has been made, then shut off engine.
2. Rotate fast idle cam so that the fast idle screw rests on top of the highest step of the fast idle cam.
3. Measure clearance between the contact screw and the throttle lever contact. Clearance should be .050".
4. If adjustment is necessary, adjust the contact screw using two wrenches.

   NOTE: Any time the fast idle is changed it will be necessary to readjust the throttle return check. For throttle linkage adjustment, refer to the Hydra-Matic Section (3) or Synchromesh Section (11).

ATMOSPHERIC IDLE VENT ADJUSTMENT

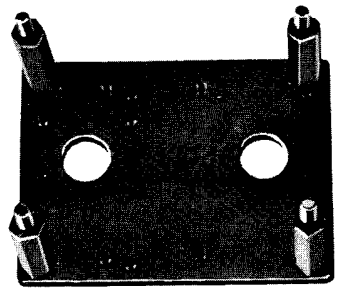
The atmospheric idle vent is designed to vent any vapor formed in the float bowl during slow idle operation. It is opened by a tang on the pump lever whenever the throttle valves are in the slow idle position.

1. Rotate fast idle cam until the fast idle screw is resting on the highest step of the fast idle cam. (1900 r.p.m.) The idle vent valve should just be closed.
2. If necessary to adjust, bend the idle vent tang on the pump lever, using Tool BT-69.
3. Run the engine on slow idle. The idle vent must be open.

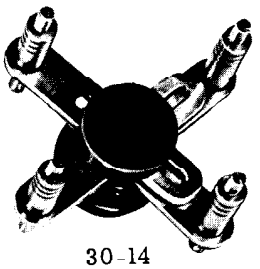
SPECIFICATIONS

Carb.	Float Level			Float Drop		Assist Spring	Choke Rod	Choke Coil	Fast Idle Cam Rod	Lock-Out	Sec. Throt. Clearance	Pump Rod	Unloader	Sec. Act. Lever	Slow Idle	Fast Idle	Return Check	Idle Vent
	Prim.	Sec.		Prim.	Sec.													
		Toe	Heel															
2-GC	1/2"	-	-	1-13/16"	-	-	Flush to 1/32" Out	One Notch Lean	.150"	-	-	1-7/16"	.150"	-	500 & 550	1900 & 2200	.050"	Just Closed at 1900
4-GC	9/32	3/8"	1-3/8"	1-1/2"	1-5/16"	1-3/64"	Flush to 1/32" Out	Index	.053"	.015"	.030"	1-1/64"	.115"	.005" to .025"	500 & 550	1600	.020"	Just Closed at 1600

* For detailed information as to adjustment procedures for the above specifications refer to their respective sections.

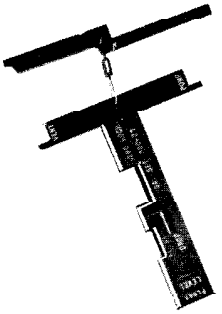


J-5923-B

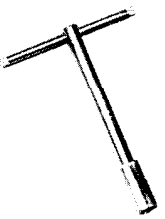


30-14

J-7182-1



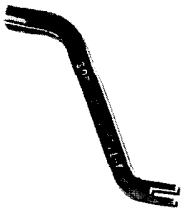
100-31



BT-52

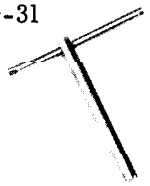
BT-68

BT-90



J-7182-2

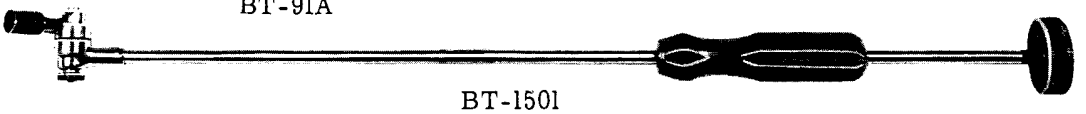
BT-91A



BT-69

BT-18

J-6342-01



BT-1501

BT-18 - Bending Tool - Pump Rod

BT-52 - Needle Seat Remover and Installer

BT-68 - Fast Idle Cam Rod Checking Gauge (.053")

BT-69 - Bending Tool - Idle Vent

BT-90 - Unloader Checking Gauge (.115")

BT-91A - Bending Tool - Tang of the Fast Idle Cam

BT-1501 - Idle Adjusting Tool

30-14 - Universal Carburetor Holding Fixture

100-31 - Tool Set for 2GC Adjustments

J-5923-B - Carburetor Holding Stand

J-6342-01 - Throttle Return Check Holding Tool

J-7182-1 - Float Level and Alignment Gauge 4GC

J-7182-2 - Bending Tool - Float and Vacuum Assist Tang 4GC

Fig. 8-117 Carburetor Tools

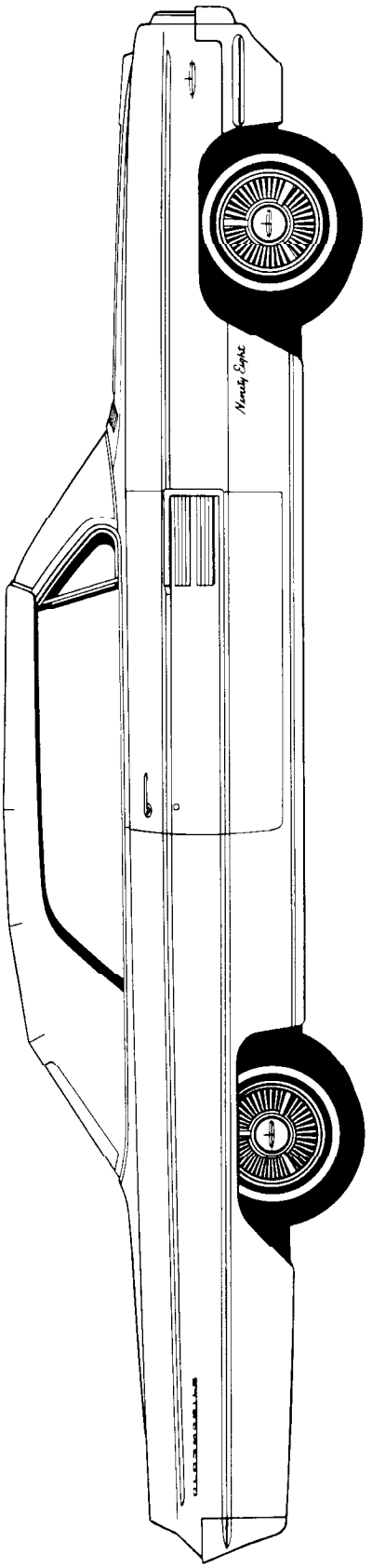
TUNE-UP

TUNE-UP GENERAL SPECIFICATIONS ARE NEW FOR 1962. FOR TUNE-UP PROCEDURES AND DIAGNOSIS, REFER TO THE 1961 88, S88 & 98 SERVICE MANUAL.

GENERAL SPECIFICATIONS

FAST IDLE	
2 Barrel Carburetor	1900 R.P.M.
4 Barrel Carburetor	1600 R.P.M.
CHOKE SETTING	
2 GC	1 Notch Lean
4 GC	Index
DISTRIBUTOR	
a. Cam Angle Range	28° to 32° (Adjust to 30°)
b. Contact Point Opening	.016"
c. Contact Arm Spring Tension	19 to 23 oz.
d. Condenser Capacity	.18 to .23 Mfd.
e. Vacuum Advance per inch of Vacuum	
7" to 9"	Start
*18"	11-1/2° to 13-1/2°
f. Mechanical Advance per Distributor r.p.m.	
400	0° to 2°
1200	9° to 11°
2000	12° to 14°
IGNITION TIMING	
Normal Setting (Hydra-Matic)	5° B.T.D.C.
Normal Setting (Synchromesh)	2-1/2° B.T.D.C.
With Low Octane or Carbon Build-Up (Retard from Normal Setting)	2-1/2°
SPARK PLUGS	
Air Gap	.030"
Heat Range	
Regular Fuel Engine	A.C. 45
Premium Fuel Engine	A.C. 44
Export	A.C. 46
COMPRESSION TEST	**Minimum 100 lbs.

* 88 Low Compression Option 17" @ 12° to 14°.
** Lowest Cylinder not less than 80% of highest Cylinder.



CLUTCH

PERIODIC MAINTENANCE AND SPECIFICATIONS ARE NEW FOR 1962. FOR OTHER RECOMMENDATIONS AND SERVICE PROCEDURES, REFER TO THE 1961 88, S88 & 98 SERVICE MANUAL.

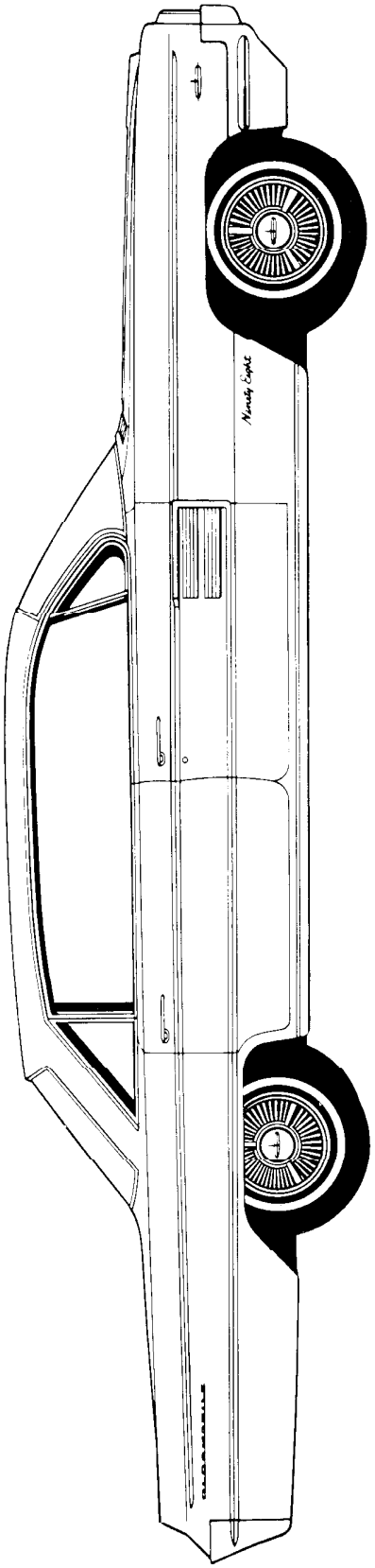
PERIODIC MAINTENANCE

The clutch linkage should be lubricated with SAE 20 engine oil at each engine oil change interval. The clutch pedal free travel should also be checked at this time.

The clutch release bearing should be lubricated sparingly with a sodium soap, fine fiber grease such as Marfax Heavy Duty No. 2 whenever the transmission is removed or major clutch service is required.

CLUTCH SPECIFICATIONS

1. CLEARANCE	
Hub and Splines on Clutch Shaft	.00175" to .005"
2. DISC FACINGS	
a. Area - Total Square Inches	56.5
b. Diameter - Inside	7"
c. Diameter - Outside	11"
d. Number Used	2
e. Thickness	.136"
3. DRIVEN DISC ASSEMBLY	
a. Number Used	1
b. Overall Thickness (Clutch Engaged)	.315"
4. PEDAL FREE TRAVEL	1" to 1-1/4"
5. PEDAL HEIGHT	8-1/4"
6. PRESSURE SPRINGS	
a. Number Used	9
b. Compression Pressure - lbs.	209 at 1-3/4"
1. Color	Aluminum
7. RELEASE BEARING	
a. Thickness	.665"
b. Type	Ball

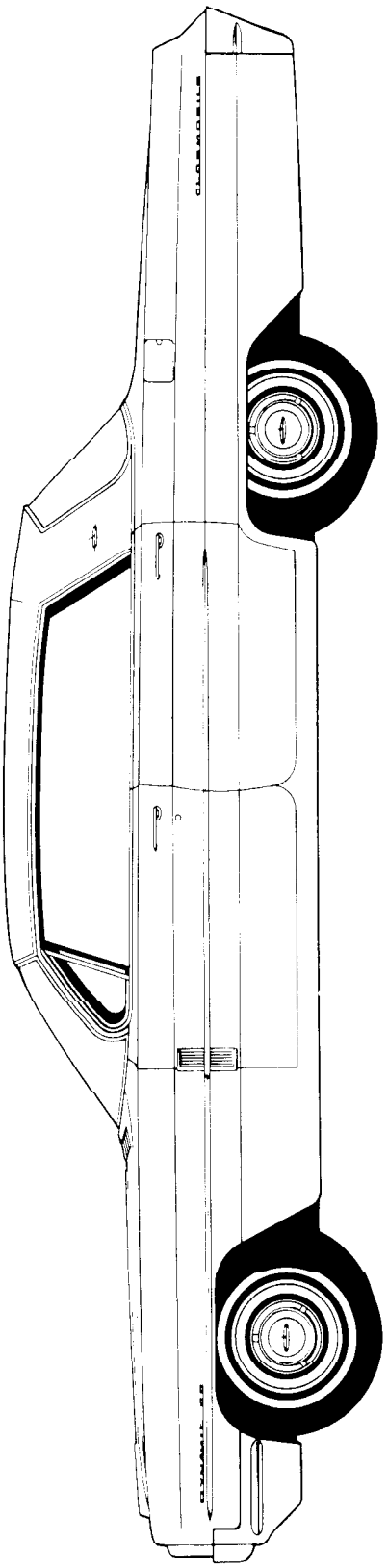


SYNCHROMESH

PERIODIC MAINTENANCE IS NEW FOR 1962. FOR OTHER RECOMMENDATIONS, PROCEDURES AND SPECIFICATIONS, REFER TO THE 1961 88, S88 & 98 SERVICE MANUAL.

PERIODIC MAINTENANCE

The lubricant level should be checked at each engine oil change interval and if found to be below the filler plug level, add SAE 80 (preferred) or SAE 90 Multi-Purpose Gear Lubricant. Periodic or seasonal change of lubricant is not recommended.



FRAME AND BUMPERS

FOR FRAME DATA, REFER TO THE 1961 88, S88 AND 98 SERVICE MANUAL.

CONTENTS OF SECTION 12

BUMPER ALIGNMENT

Vertical, horizontal, fore and aft alignment of the front and rear bumper assemblies is provided for through the use of elongated holes in the bumper to back bar and back bar to frame. Angular adjustment may be provided for by the use of washer(s) between the bumper and back bars.

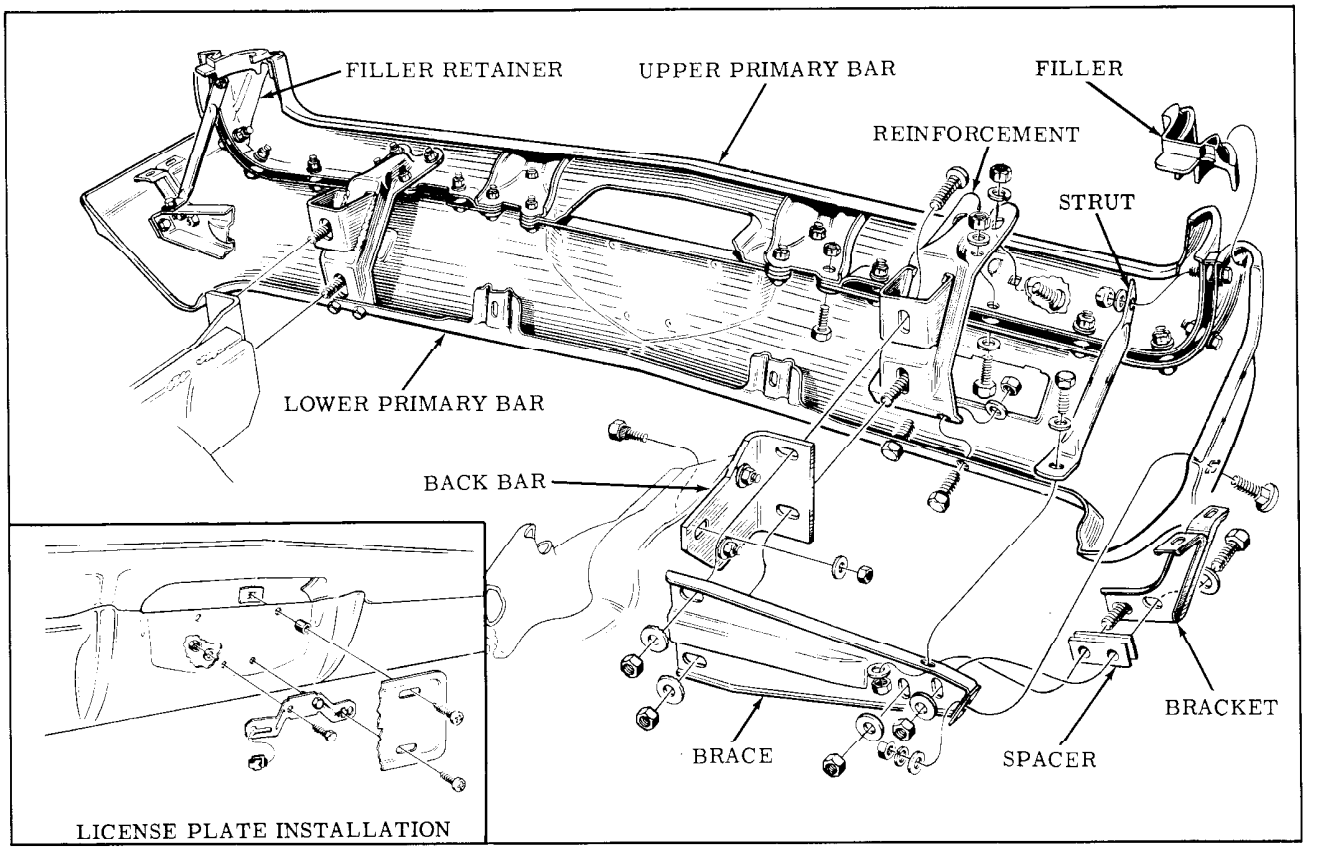
NOTE: The front and rear bumper back bar to frame bolts are serrated. To make fore and aft adjustments, the nuts must be loosened and the bolt driven out until serrations are clear of frame and back bar. Then position bumper and tighten nuts.

To align bumpers, loosen bumper attaching bolts and shift bumper to desired position. Make sure that bumpers are horizontal and clearance between bumper and fenders is even on both sides. Torque bolts as indicated under Torque Specifications.

BUMPER TORQUE SPECIFICATIONS

NOTE: Specified torque is for installation of parts only. Checking of torque during inspection may be 15% below the specified minimum.

APPLICATION	FT. LBS.
FRONT BUMPER	
License Support to Bumper	8 Max.
Reinforcement to Upper Primary Bar	30 to 40
Reinforcement to Back Bar	100 Min.
Back Bar to Frame	100 Min.
Strut to Brace	22 to 28
Lower Primary Bar to Strut	22 to 28
Fender Bracket to Fender and Brace	15 to 20
Upper Primary Bar to Lower Primary Bar	22 to 28
REAR BUMPER	
Inner Guard to Primary Bars (Fiesta Only)	35 to 45
Outer Guard to Primary Bars (Fiesta Only)	22 to 28
Upper Primary Bar to Lower Primary Bars (Fiesta Only)	22 to 28
Back-up Light to Bumper or Ornament (All Except Fiesta)	8 Max.
Bumper to Back Bar	100 Min.
Back Bar to Frame	100 Min.
Step to Bumper (45 Style)	22 to 28
Frame to Support Bracket and Inner Support (All Except Fiesta)	30 to 40
Seal Retainer to Upper Primary Bar (Fiesta Only)	8 Max.



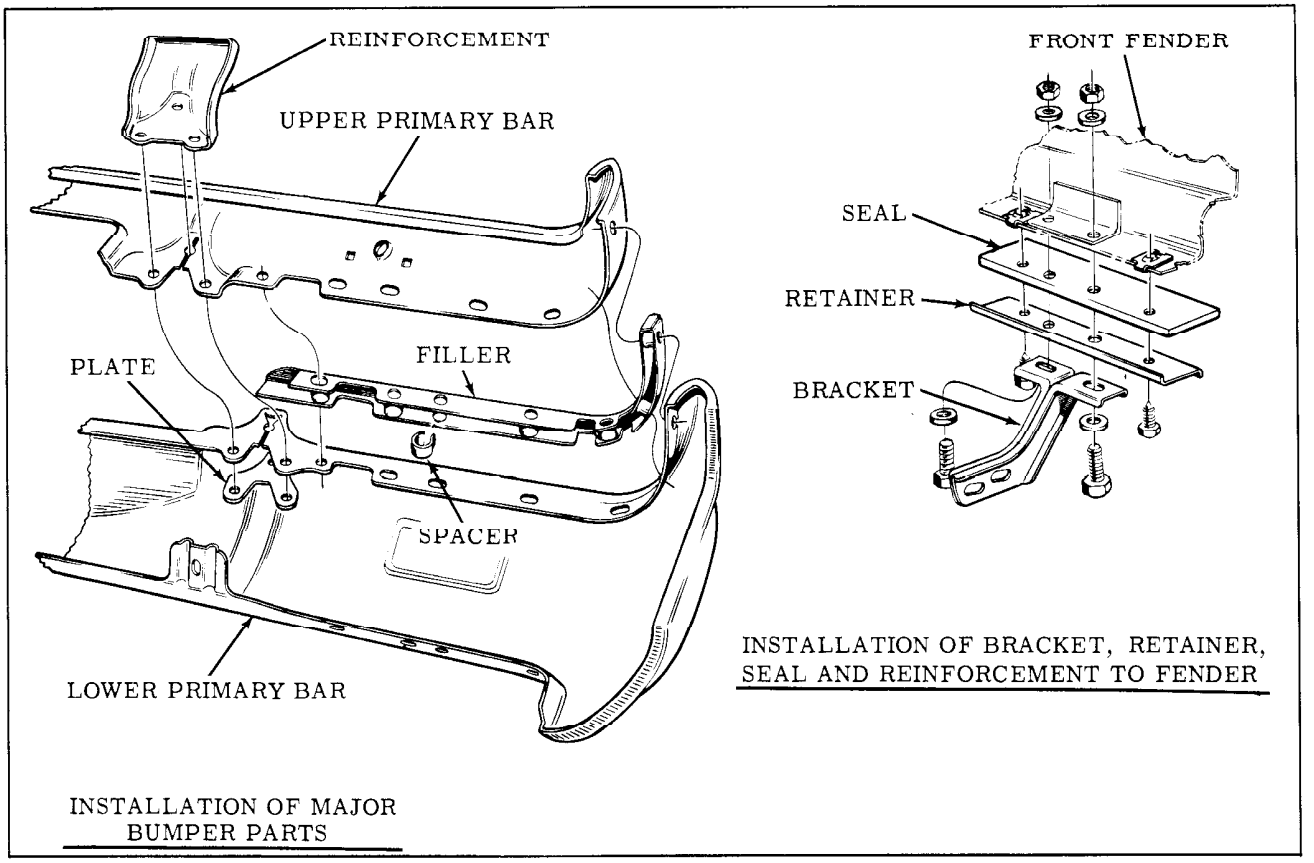


Fig. 12-1 Front Bumper Assembly

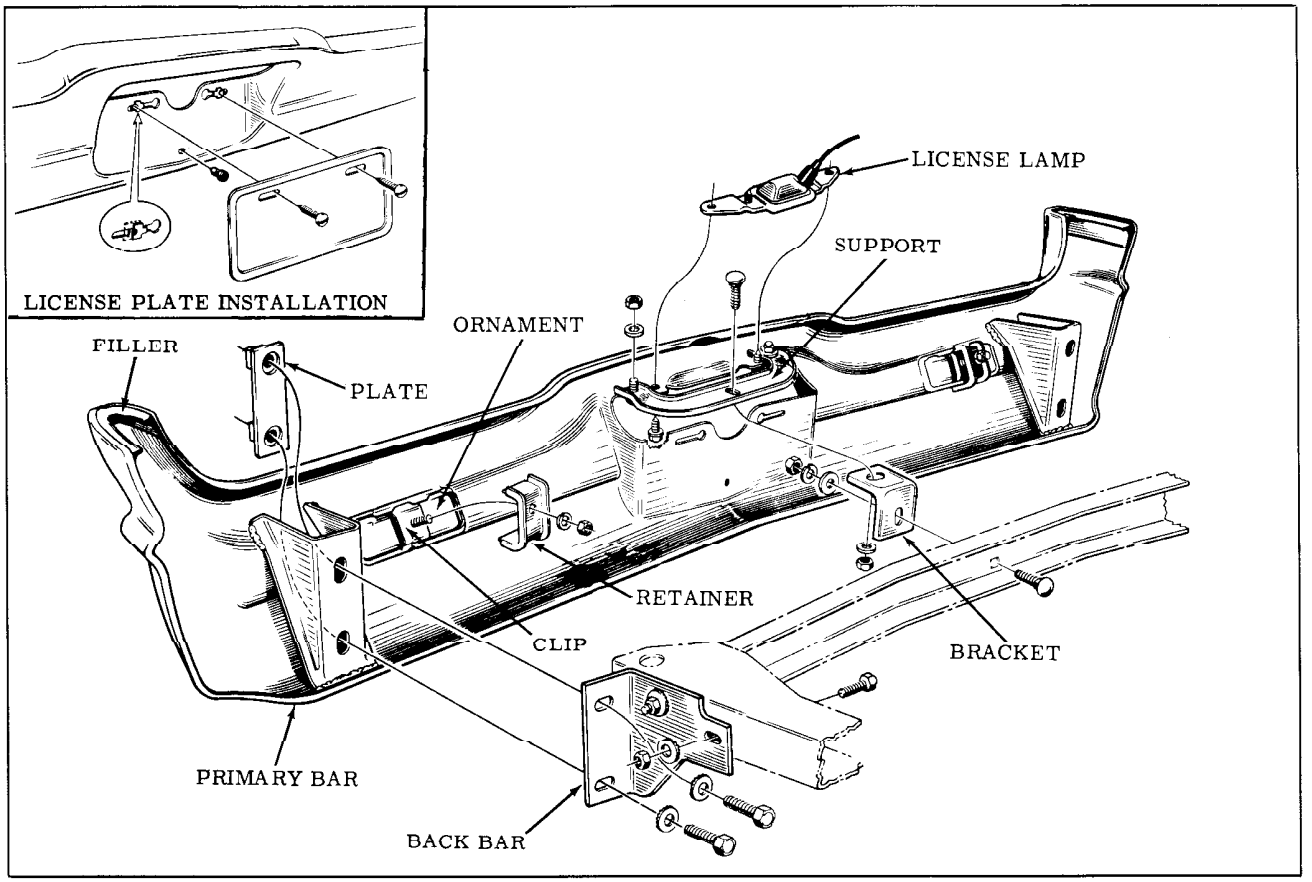


Fig. 12-2 Rear Bumper Assembly (All Except Fiestas)

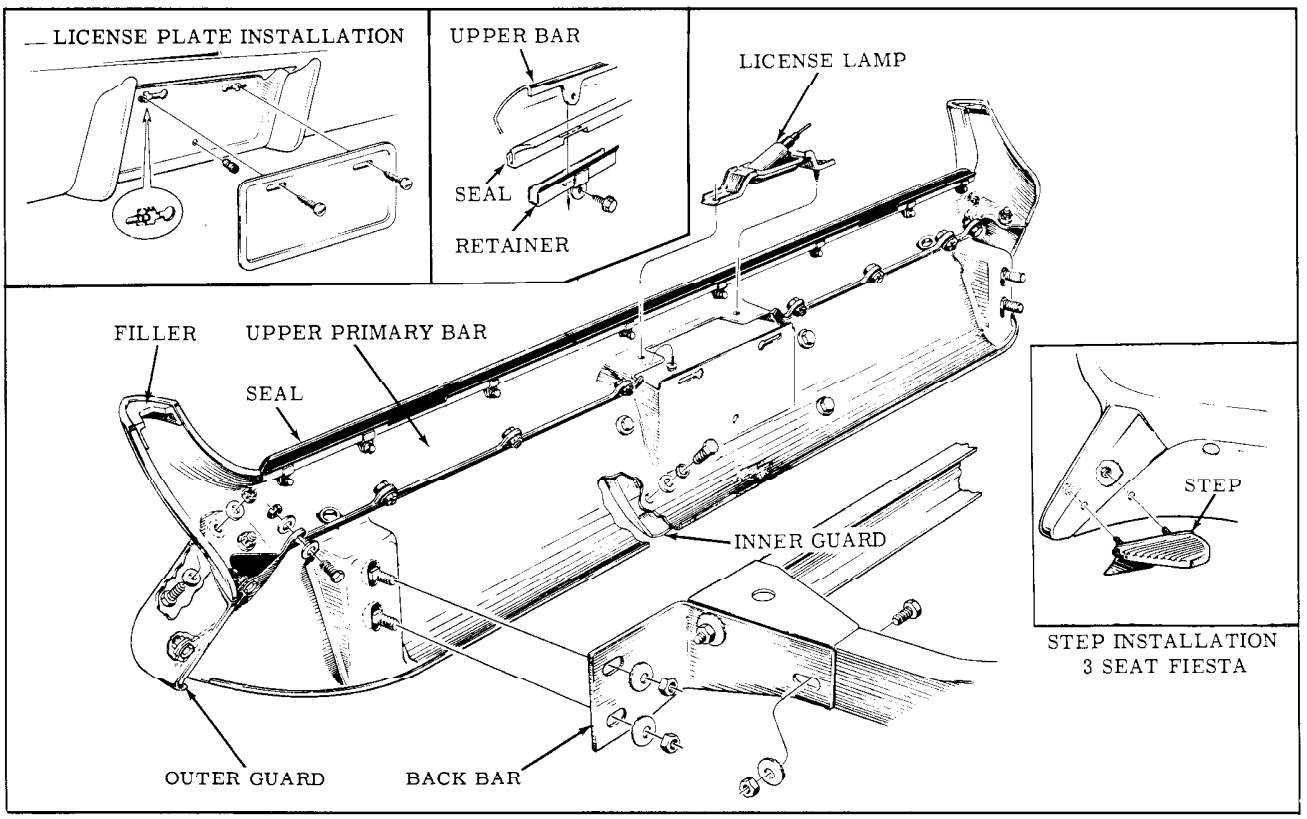


Fig. 12-3 Rear Bumper Assembly (Fiestas)

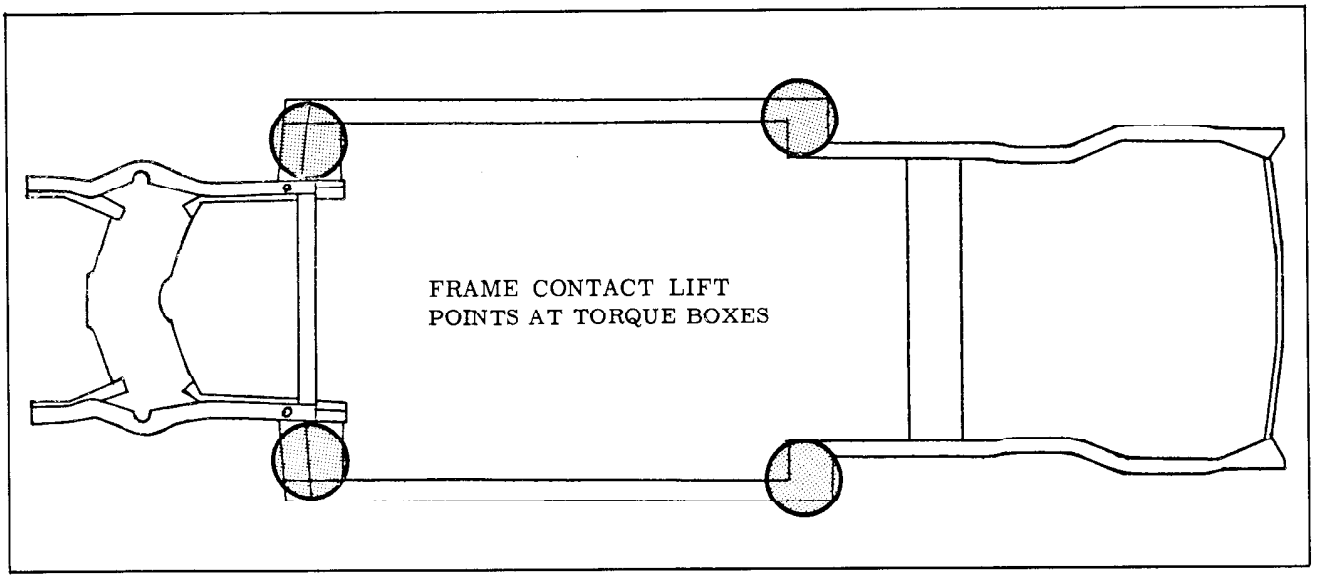


Fig. 12-4 Frame Lift Points

HOISTING OF CAR

When supporting car on a floor jack or floor stands, or a twin post hoist, the car should be supported at the suspension points only. Under no conditions should the car be supported at the extreme ends of frame or at the frame side rail(s) as deforming of frame members may result.

When using a frame contact hoist, the car should be lifted only at the torque boxes (where the front and rear frame sections join the frame side rails). (Fig. 12-4)

ELECTRICAL

ITEMS LISTED IN THE TABLE OF CONTENTS ARE NEW FOR 1962. FOR SERVICE PROCEDURES AND RECOMMENDATIONS NOT LISTED, REFER TO THE 1961, 88, S88 & 98 SERVICE MANUAL AND STARFIRE SUPPLEMENT.

CONTENTS OF SECTION 13

PERIODIC MAINTENANCE

BATTERY

1. Check battery liquid level at each oil change, once a month or more often (when refueling) in hot weather. Level should reach the bottom of the vent well.

   CAUTION: DO NOT OVERFILL.

2. Clean top of battery and terminals every 10,000 miles and check tightness of battery hold-down bolt. To properly clean battery:

   a. Make sure vent plugs are installed tight.

   b. Remove battery cables from battery.

   c. Clean battery and battery cable clamps with a diluted ammonia or soda solution and a brush. When the solution stops foaming, rinse with clear water.

   d. Apply a thin coating of petrolatum to terminals and clamps after installing clamps.

GENERATOR

1. Inspect the commutator and brushes for wear and cleanliness (observe through end frame). If commutator is dirty, clean with number 00 sand paper, brush seating stone or seating paste while engine is running. DO NOT USE EMERY CLOTH.
2. Check generator belt tightness with Tool 33-70 and adjust if necessary.
3. If brushes are worn to less than half their original length they should be replaced.

At the time of brush replacement, the generator end frame bearings should be inspected and repacked, if necessary, as follows:

A. Remove bearings from end frames and wash in clean gasoline.

B. Repack bearings sparingly (25%) with Delco-Remy Bearing Lubricant, Part No. 1948791.

C. Fill the commutator end frame bearing reservoir 50% full of Delco-Remy Bearing Lubricant.

D. Install bearings into end frames.

DISTRIBUTOR

The distributor requires periodic inspection of the cap, rotor, wiring, breaker points and timing.

When replacing the contact point assembly, apply a small amount of Delco-Remy Ball Bearing Lubricant or equivalent to the breaker cam. No other lubrication is required.

IGNITION RESISTOR

The ignition resistor is located inside the chassis wiring harness. The ignition resistor is not serviced separately.

FUEL GAUGE

The instrument cluster fuel gauge has a balanced pointer. When the ignition key is turned off, the pointer may come to rest at any position on the dial.

The gasoline fuel gauge circuit consists of an electrical indicator in the cluster and a float-controlled rheostat in the tank. The circuit can be checked for accuracy with tester BT 11-13.

TESTING FUEL GAUGE CIRCUIT

IMPORTANT: Engine must be running at least

1500 r.p.m. when testing the gasoline gauge to insure adequate operating voltage (14.5 volts) at the gauge.

When checking either at the rear compartment or the instrument cluster, be sure that the correct sequence is followed to insure accurate readings. The checking procedure must be started with Tester BT-11-13 on the "F" position, then moved to the "1/2" and "E" positions, in that order. If checks are made in any other sequence, it will be necessary to stop the engine, restart it, and again set engine speed at 1500 r.p.m. before taking each fuel gauge reading.

FUEL GAUGE CHECK AT REAR COMPARTMENT

1. Set Tester BT-11-13 on "F" position.
2. Connect one lead of tester to the wire in the rear compartment from the instrument panel gauge and the other lead to ground.
3. Start the engine and set at 1500 r.p.m., then check the readings on the instrument panel gauge. It should read at the full position or beyond.
4. Set the tester on "1/2" position. The gauge should read within 1/8" of the 1/2 position. Set the tester at the "E" position. The pointer should read at the "E" graduation or below.

If the gauge registers correctly during this test, the trouble is in the tank unit or the wire from the rear compartment connector to the tank unit. If the gauge reads incorrectly, the trouble is in the instrument panel unit, in the wire from the printed circuit to the rear compartment connector, or in the instrument cluster printed circuit.

When removing the tank unit for inspection, check as follows:

1. Clean all dirt from around the tank unit terminal.
2. Connect the tank unit wire to the rear compartment connector and ground the tank unit to the car.

   CAUTION: Never connect the tank unit directly to a 12 volt source since damage to the unit will result.
3. Turn the ignition switch on, and move the float arm up and down. If the unit is operative, the gauge will give readings corresponding to the movement of the arm.

   NOTE: Readings taken in this manner will not be accurate unless engine is running at 1500 r.p.m. and test is started with float in "full" position and then moved down. Also check for freedom of movement of the float arm.
4. If the tank unit is replaced, always check the new unit in the same manner before installing it in the tank.

FUEL GAUGE CHECK AT CLUSTER

To determine whether the dash gauge or wiring to the rear compartment connector is at fault, proceed as follows:

NOTE: With the instrument cluster printed circuit, it is not possible to disconnect the tank unit wire at the dash gauge. To check the dash gauge alone:

1. Unscrew the plastic caps on both terminals of the dash gauge.
2. Connect one lead of tester to the L.H. terminal of the gauge (as viewed from the rear of the instrument cluster) and the other lead to ground.
3. Set Tester BT-11-13 on "F" position.
4. Disconnect the wiring plug from the printed circuit and connect a jumper wire between a known "hot" source and the R.H. terminal of the gas gauge (as viewed from rear of instrument cluster).
5. Start the engine and set at 1500 r.p.m., then check the reading on the gauge. It should read at the "F" graduation or above.
6. Set the tester at "1/2" position, gauge should read within 1/8" of the "1/2" position. Set the tester at the "E" position. The gauge pointer should register at the "E" graduation or below.

If the gauge registers correctly, the trouble is in the printed circuit or the wire from the printed circuit to the rear compartment connector. If the gauge does not register correctly, during this test, it is defective and should be replaced.

If both dash and tank units register correctly, make a visual inspection of the printed circuit. Defects will show up in the form of blisters or breaks in the circuit. Shorts or breaks in the wiring can be isolated by making a continuity check of the wiring.

INSTRUMENT CLUSTER

The instrument cluster consists of the speedometer head, fuel gauge, safety sentinel (optional equipment), "HOT", "COLD", "HIGH BEAM",

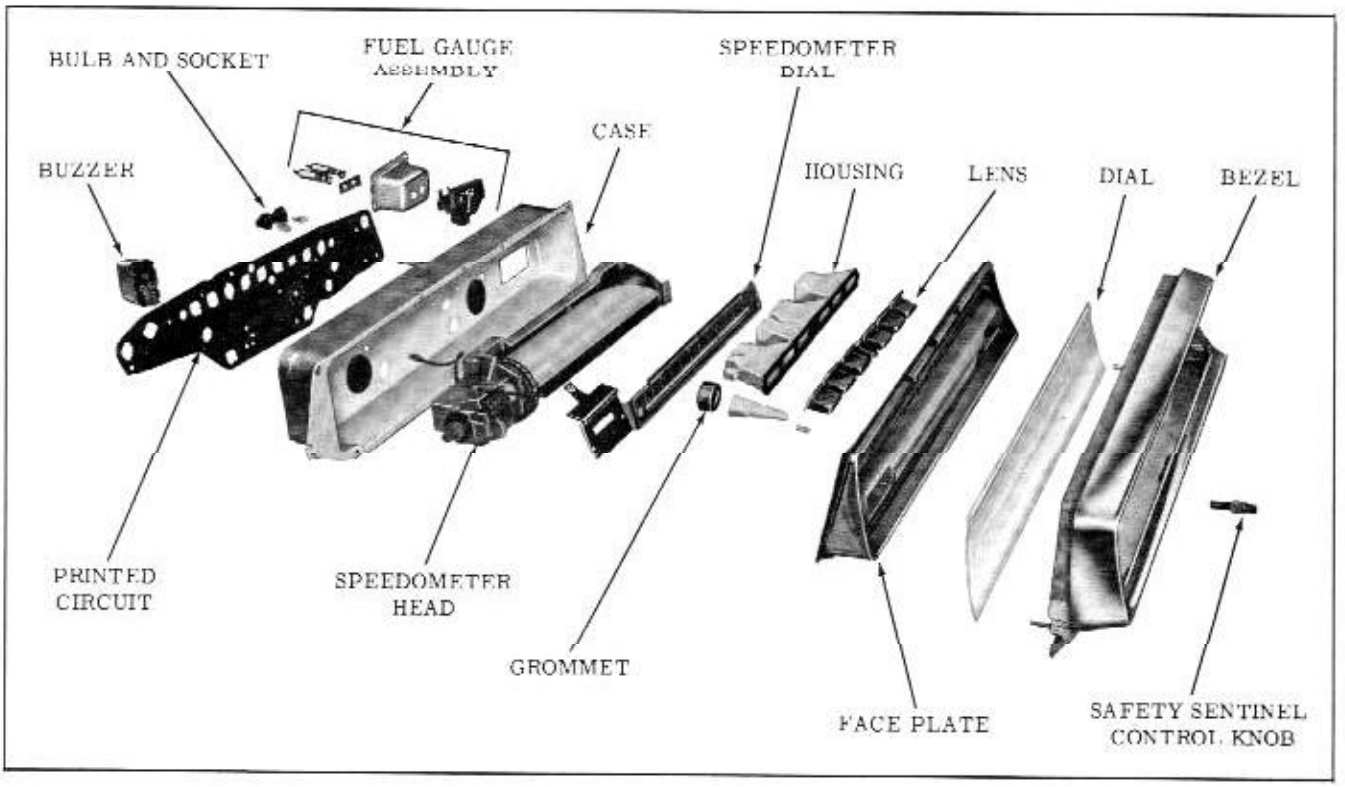


Fig. 13-1 Instrument Cluster

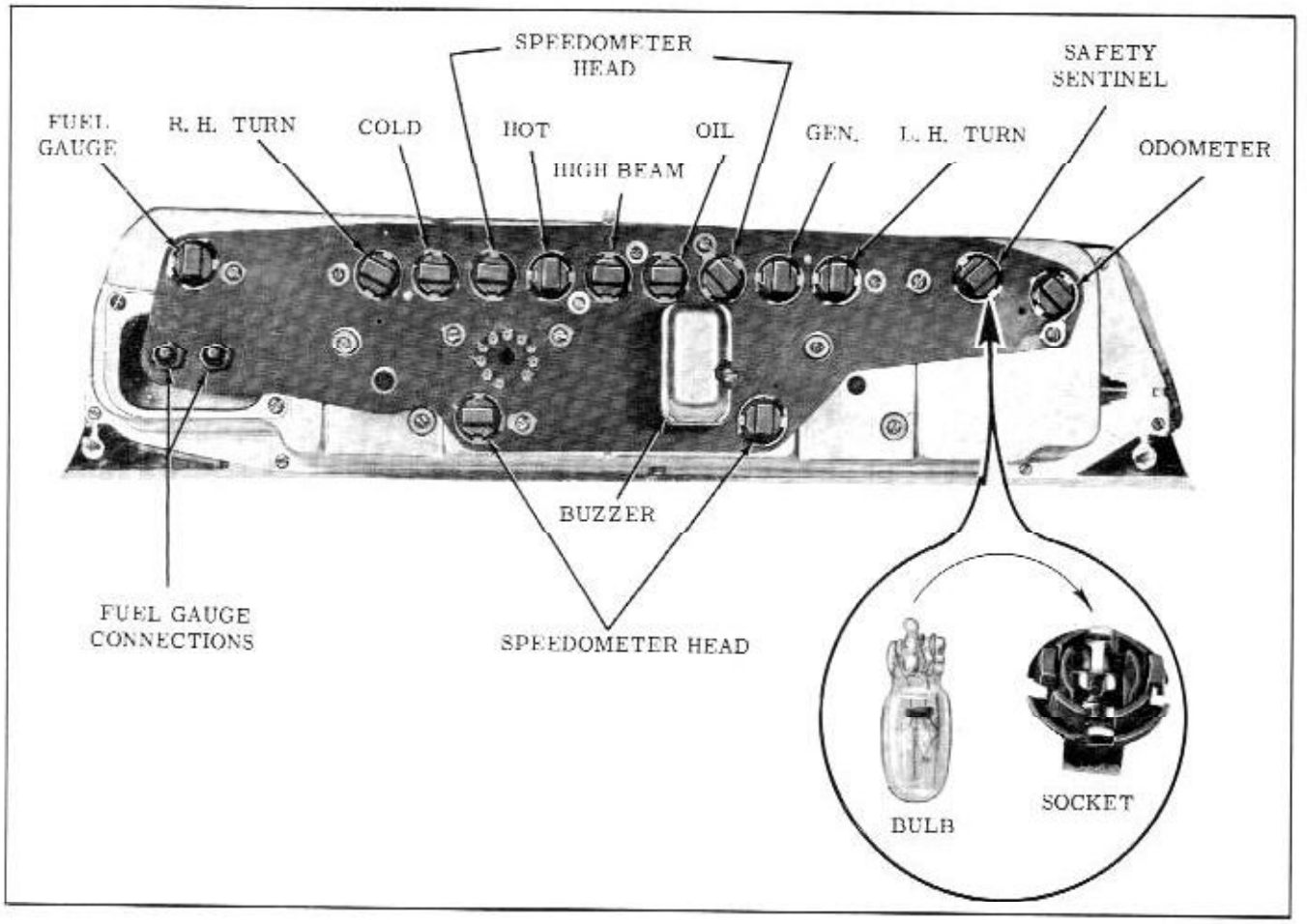


Fig. 13-2 Location of Instrument Lights

"OIL PRESSURE", "GENERATOR" and "TURN SIGNAL" indicators.

All electrical connections in the cluster are made through a printed circuit. The printed circuit is connected to the main wiring harness by a plug-in type connector.

For removal and installation of the instrument cluster assembly, refer to the INSTRUMENT PANEL AND RADIO SECTION.

For replacement of any internal component parts of the instrument cluster refer to Fig. 13-1.

When removing an instrument panel light bulb, the bulb must be pulled straight out of the socket. (Refer to inset Fig. 13-2) Before installation of the bulb into the socket, be sure bulb wires are parallel with the center line of the bulb to prevent a short or open circuit.

PRINTED CIRCUIT

Remove and Install

1. Remove speedometer cluster assembly.
2. Remove the printed circuit attaching screws and the fuel gauge connector nuts and washers.
3. If equipped with safety sentinel, disconnect safety sentinel actuating wire from printed circuit.
4. Remove printed circuit.

To install, reverse removal procedure, transfer light bulbs and safety sentinel buzzer if so equipped.

NOTE: The short printed circuit attaching screws are located at "A" Fig. 13 2.

SPEEDOMETER HEAD

Remove and Install

1. Remove the instrument cluster assembly.
2. If equipped with safety sentinel, remove the safety sentinel control knob.
3. Remove the case to bezel attaching screws.
4. Remove the speedometer head to case attaching screws, located at "B" in Fig. 13-2, and remove the speedometer head from the housing.

   NOTE: If equipped with safety sentinel, remove the actuating wire from the printed circuit.

To install, reverse the removal procedure.

FUEL GAUGE

Remove and Install

1. Remove instrument cluster.
2. Remove the printed circuit.
3. Remove the fuel gauge retainer to case attaching screws and remove the gauge from the instrument cluster.
4. Remove the fuel gauge to retainer connecting studs, flat washers and insulator, then remove gauge.

To install, reverse the removal procedure.

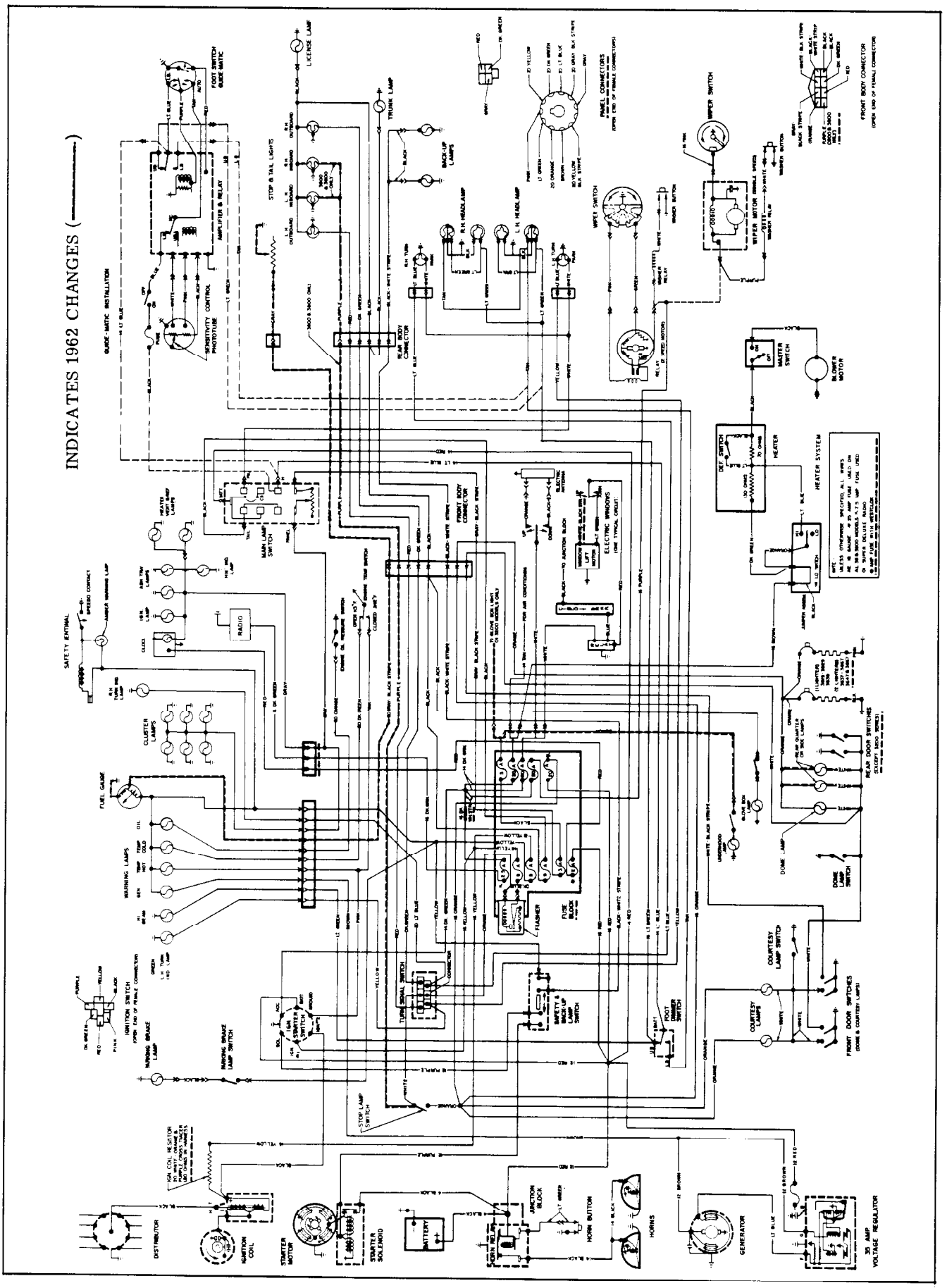


Fig. 13-3 Wiring Diagram

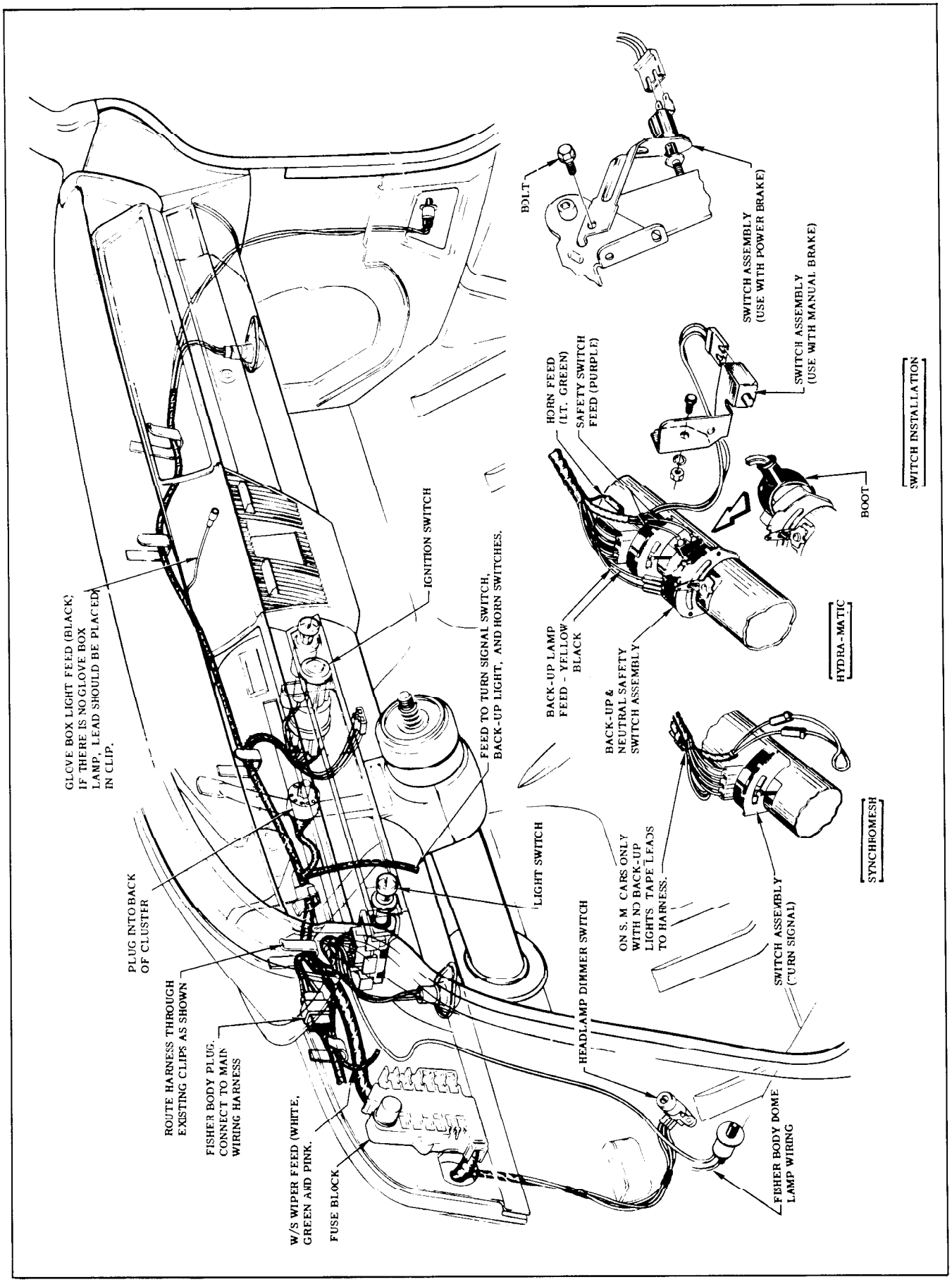


Fig. 13-4 Instrument Panel Wiring

TORQUE SPECIFICATIONS

NOTE: Specified torque is for installation of parts only. Checking of torque during inspection may be 15% below the specifications.

APPLICATION	Ft. Lbs.
1. Battery Hold-Down Nut	1.5 to 2.5
2. Connector Strap to Starting Motor Bolt	6 to 8
3. Distributor Clamp to Cylinder Block Bolt	11 to 14
4. Generator Bracket to Cylinder Head Bolt - Nut	45 to 55
5. Generator to Bracket Bolts & Nuts	22 to 26
6. Ignition Coil to Intake Manifold Stud Nuts	9 to 11
7. Spark Plugs	18 to 34
8. Starter Motor to Flywheel Lower Housing Nut & Bolt	45 to 50
9. Battery Cable to Starter Motor Nut	10 to 12
10. Junction Block Nut	8 to 10
11. Starter Terminals (Solenoid)	1.50 to 1.75
12. Ignition Coil Terminal Nuts	1 to 1.50
13. Generator Terminal Nuts	2 to 4

GENERAL SPECIFICATIONS
DISTRIBUTOR TEST SPECIFICATIONS

Distr. No.	Rotor Rot.	Spring Tension	Vacuum Advance		Mechanical Advance			
1110989	L.H.	19 to 23 oz.	7" to 9"	18"*	Distr. r.p.m.	400	1200	2000
	(Counter-clockwise)		Start	11-1/2° to 13-1/2°*	Degrees	0° to 2°	9° to 11°	12° to 14°

*88 (1111004) Low Compression Option (W4) 17" @ 12° to 14°

STARTING MOTOR

a. Make . . . . . Delco-Remy
b. Brush Spring Tension . . . . . 35 oz. min.
c. No. of Brushes Used 4
d. No. of Fields 4
e. No. of Teeth on Starter Pinion 9
f. No. of Teeth on Flywheel 176
g. Ratio Between Starter Pinion and Ring Gear . . . . . 19.5 to 1
h. Rotation, Viewed from Drive End . . . . . Clockwise
i. Pinion Clearance . . . . . .010" to .140"
j. Free Speed (Model 1107665): 3600 to 5100 r.p.m. at 10.6 volts, 65 to 100 amps.
k. Free Speed (Model 1107776): 3900 to 5400 r.p.m. at 10.6 volts, 80 to 120 amps.

SOLENOID SWITCH

a. Current Consumption (Model 1119798) Both Windings at 10 Volts @ 80°F. 42 to 49 Amps.
b. Current Consumption (Model 1114257) Both Windings at 10 Volts @ 80°F. 47 to 54 Amps.
c. Current Consumption (Model 1119798) Hold-In Winding at 10 Volts@ 80°F. 10.5 to 12.5 Amps.
d. Current Consumption (Model 1114257) Hold-In Winding at 10 Volts@ 80°F. 15.5 to 17.5 Amps.

GENERATOR

a. Charging Rate Cold - at 14.0 Volts, 2500 r.p.m. (Model 1102276) . . . . . 35 Amps.
b. Charging Rate Cold - at 14.0 Volts, 2520 r.p.m. (Model 1102277) . . . . . 40 Amps.
c. Charging Rate Hot . . . . . (Controlled by Current Regulator)
d. Field Current Draw at 12 Volts, 80°F (Model 1102276) . . . . . 1.62 to 1.82 Amps.
e. Field Current Draw at 12 Volts, 80°F (Model 1102277) . . . . . 2.66 to 2.86 Amps.
f. Brush Spring Tension . . . . . 28 oz.

GENERAL SPECIFICATIONS (Cont'd)

GENERATOR REGULATOR

Cut Out Relay

a.	Air Gap	.020"
b.	Point Opening	.020"
c.	Closing Voltage (Model 1119253E)	11.8 to 13.5 Volts (Adjust to 12.8 Volts)
d.	Closing Voltage (Model 1119600)	11.8 to 13.0 Volts (Adjust to 12.8 Volts)

Voltage Regulator

e.	Air Gap (Model 1119253E)	.060"
f.	Air Gap (Model 1119600)	.067"
g.	Upper Contact Opening (Model 1119600)	.016"
h.	Voltage Setting (Model 1119253E)	Refer to Fig. 13-12 - 1961 S.M.
i.	Voltage Setting (Model 1119600)	Refer to Fig. 13-19 - 1961 S.M.
j.	Lower Contact Setting (Model 1119600)	.1 to .3 Volts Lower Than Upper Contacts

Current Regulator

k.	Air Gap	.075"
l.	Current Setting (Model 1119253E)	Refer to Fig. 13-17 - 1961 S.M.
m.	Current Setting (Model 1119600)	Refer to Fig. 13-24 - 1961 S.M.

NOTE: Operating temperature shall be assumed to exist after not less than 25 minutes of continuous operation with a charge rate of 1 to 10 amperes.

BATTERY—12 VOLT

Regular Fuel Engine

a.	Make	Delco-Remy
b.	Model	3KMR62
c.	Plates	9 Per Cell
d.	Capacity at 20 Hr. Rate	62 Ampere Hour
e.	Specific Gravity for fully Charged Battery	1.270 ± :010 at 80°F.

Premium Fuel Engine

a.	Make	Delco-Remy
b.	Model	3KRM70
c.	Plates	11 Per Cell
d.	Capacity at 20 Hr. Rate	70 Ampere Hour
e.	Specific Gravity for fully Charged Battery	1.270 ± .010 at 80°F.

COIL

a.	Primary Resistance	1.28 to 1.42 Ohms
b.	Secondary Resistance	7200 to 9500 Ohms

RESISTOR, IGNITION COIL (IN WIRING HARNESS)

a.	Resistance 80°F	1.75 to 1.85 Ohms

DISTRIBUTOR (1110989)

a.	Cam Angle Range	28° to 32° (Adjust to 30°)
b.	Contact Point Opening	.016"
c.	Contact Arm Spring Tension	19 to 23 oz.
d.	Condenser Capacity	.18 to .23 Mfd.

SPARK PLUGS

a.	Make	AC
b.	Type:	
	Regular Fuel Engine	45
	Premium Fuel Engine	44
	Export Engine	46
c.	Thread	Metric 14MM
d.	Body	13/16" hex.
e.	Spark Gap	.030"

GENERAL SPECIFICATIONS (Cont'd)

HORNS

a. Current Draw at 12 Volts	7 to 11 Amps.

HORN RELAY

a. Point Opening	.020" min.
b. Closing Voltage	1.5 to 9.5 Volts (Adjust to 6.5 Volts)
c. Air Gap - Points Closed	.008" to .020"

TURN SIGNAL FLASHER

a. Flashes per Minute (non-adjustable)	70 to 90

FUSE SPECIFICATIONS AND LOCATION

APPLICATION	FUSE TYPE AND AMPERES	FUSE LOCATION
Electric Clock	AGA 2 Except Westclox uses AGA-1	Located in Fuse Block
Courtesy Lights	SFE 20 Except on 36 & 38 Series which have AGC 25	
Dome Lights		
Stop Lights		
Rear Seat Lighter		
Temperature Indicator Light	SFE 9	
Parking Brake Light		
Fuel Gauge		
Oil Pressure Warning Light		
Generator Warning Light		
Back-Up Light		
Turn Signal		
Glove Compartment Light		
Tail Lights		
Rear Compartment Light		
Underhood Light and 32 Series with Glove Box Light	AGC 5	
Radio - Deluxe	AGW 2.5 (Red Band)	
Radio - Super Deluxe	AGW 7.5	
Heater and/or Air Conditioning	SFE 20	
Electric Windshield Wipers		
Electric Antenna	SFE 20 with 2 way seat AGC 25 with 4 or 6 way seat	
Electric Windows or Seat		
Instrument Cluster Light & Name Plate Light	AGA 3	
Ash Tray Light		
Clock Light		
Heater, Ventilation & Air Conditioning Lights		
Generator Armature and Wire	575532	On "Bat" Terminal of Regulator
Headlights	Circuit Breaker	On Headlight Switch
Electric Seat, Window and/or Convertible Top Motor	Circuit Breaker	L.H. Side of Cowl (in engine compartment)
Guide-Matic Headlight Control	SFE 9	On Headlight Switch
Cigar Lighter (Instrument Panel)	SFE 20	In Back of Lighter
Tachometer	SFE 4	At Tachometer (Console)

LIGHT BULB NUMBERS

Headlamps (inner) (#1) (Upper Beam only)	4001
Headlamps (outer) (#2) (Upper Beam)	4002
Stop Lights and Tail Lights	1034
Parking Lights and Turn Signal Front	
Dome Light	1004
Arm Rest Light	68
Console Rear Courtesy Light	
License Light	67
Courtesy Light (Including Console Side)	90
Side Roof Light	
Ignition Switch	53
Console Shift Indicator Light	
Ash Tray Light	
Shift Indicator Light	57
Heater, Ventilation and A/C Control Light	
Electric Clock (Borg)	
Glove Compartment Light	
Map Case Light (Console)	
Instrument Panel Name Plate Light (36 & 38 Series)	
Tachometer Light	
Parking Brake Warning Light	57X
Oil Pressure Warning Light	158
Odometer Light	
Fuel Gauge	
Generator Warning Light	
Safety Sentinel	
Temperature Indicator Light	
Turn Signal Indicator Lights	
High Beam Indicator	
Instrument Cluster Lights	
Underhood Light	89
Rear Compartment Light	
Back-Up Lights	1073
Electric Clock (Westclox)	1816
Radio Dial Light	1893

AIR CONDITIONING

SERVICE PROCEDURES FOR THE COOL-PACK AIR CONDITIONING SYSTEM ARE CARRY-OVER FOR 1962. PROCEDURES OUTLINED IN THIS SECTION PERTAIN TO THE CUSTOM AIR CONDITIONING SYSTEM.

CONTENTS OF SECTION 14

PERIODIC MAINTENANCE

Remove road accumulation from condenser at every engine oil change interval or as necessary.

Check and adjust compressor belt tension at each engine oil change interval.

The system should be operated for at least five minutes each month.

GENERAL DESCRIPTION

The air conditioning system provides refrigerated and dehumidified air to cool the car interior.

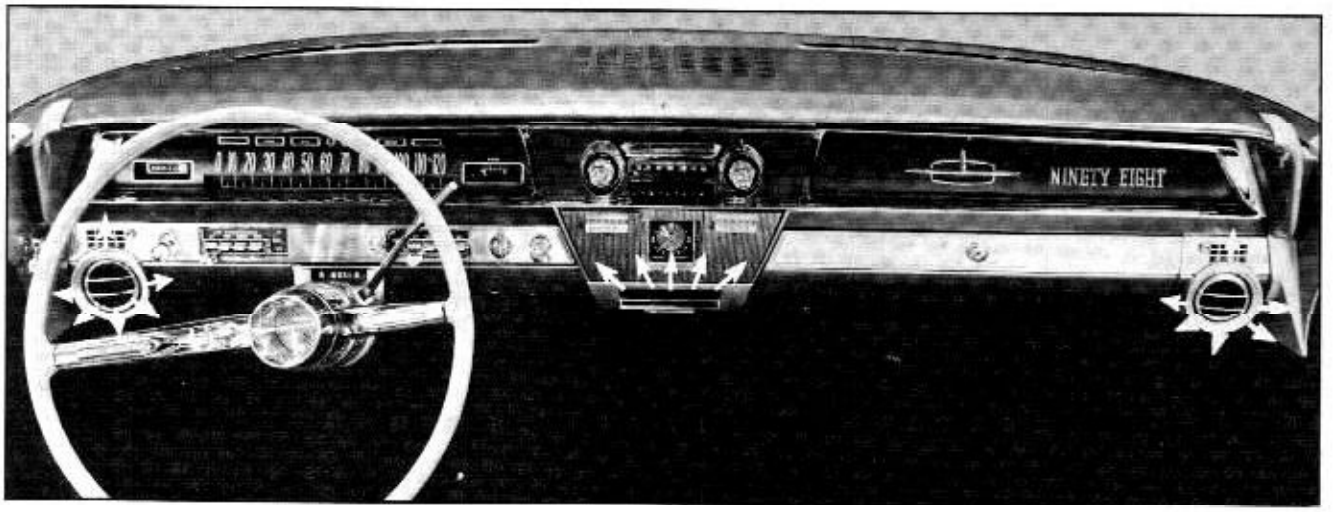


Fig. 14-1 Air Outlets

The system uses both outside and recirculated air.

The temperature of the air entering the passenger compartment is regulated by a single control. Outside air is directed through the evaporator and discharged into the passenger compartment for normal ventilation. For normal cooling, "NORMAL" button depressed, 100% outside air passes through the evaporator core. For maximum cooling, "RECIR" button depressed, approximately 75% recirculated air and 25% outside air is directed through the evaporator core.

Air Outlets (Fig. 14-1)

Adjustable air outlets are located on either side and under the instrument panel. The left and right air outlets may be adjusted to direct the air as desired. In addition, auxiliary side outlets are provided to allow additional upper level cooling. These outlets are equipped with shut-off valves. The center outlet can be controlled to direct or shut off the air. For maximum cooling the center outlet should be wide open. Floor cooling is provided by discharging air directly to the floor from fixed openings in the air manifold located under the instrument panel.

The air condition control assembly is mounted in the instrument panel. A three speed blower switch is located in the control assembly, (Fig. 14-2)

FAST COOL DOWN

To rapidly cool a car which has been standing for a period of time in the sun, open the center outlet, depress "NORMAL" button, slide temperature level to the extreme right position and turn blower speed switch on "HI". Open car windows just long enough to expel hot air. After car has cooled, adjust temperature control lever position to suit individual comfort. Air flow can be directed by adjusting the side and center outlets. The recommended position of these outlets, for best over-all front and rear seat cooling, is when the side outlets are adjusted to direct the air flow along the inside roof line, and the auxiliary side outlets are open.

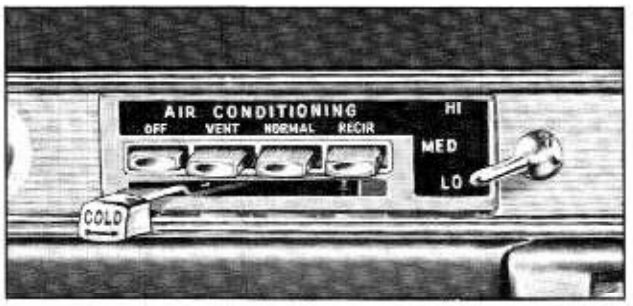


Fig. 14-2 Controls

DRIVING CONDITIONS

For normal driving conditions, the driver may adjust the temperature of cool air by moving the control lever to suit individual comfort. Selection of blower speeds should be regulated according to the amount of air forced into the passenger compartment by the forward motion of the car.

When driving in heavy traffic, it may be desirable to set the blower speed switch on "HI". At higher car speeds, air will be forced by the forward motion of the car into the passenger compartment in greater volume, lessening the speed requirements of the blower motor. It then may be desirable to set the blower speed switch on "MED" or "LO". (Fig. 14-2).

OPERATION OF SYSTEM

COMPRESSOR

The refrigeration system uses a recirculating axial type 6 cylinder compressor, with intake and discharge valve reeds for each cylinder. These valve reeds cause the compressor to have a definite separation between the discharge (high) side and the suction (low) side. Oil is picked up by the Refrigerant in the compressor and is pumped through the refrigeration system. A magnetic operated clutch pulley permits the compressor to run only when refrigeration is desired. The compressor is completely serviceable.

A serial number plate is attached to the top side of the compressor and includes the Serial Number and Model Number.

IMPORTANT: ALWAYS INCLUDE BOTH SERIAL NO. AND MODEL NO. ON REPORTS.

PRESSURE RELIEF VALVE

The compressor is equipped with a pressure relief valve which is placed in the system as a safety factor. Under certain conditions, the refrigerant on the discharge side may exceed a safe operating pressure. To prevent damage, the valve is designed to open automatically at approximately 440 p.s.i. Any condition that causes this valve to open should be corrected, and the refrigerant oil and refrigerant should be replenished as necessary.

SHUT-OFF VALVES

The compressor suction and discharge lines attach to shut-off valves on the outside of the compressor. These valves are used to make pressure checks and for servicing the refrigerant system.

The hand shut-off valves are two way valves.

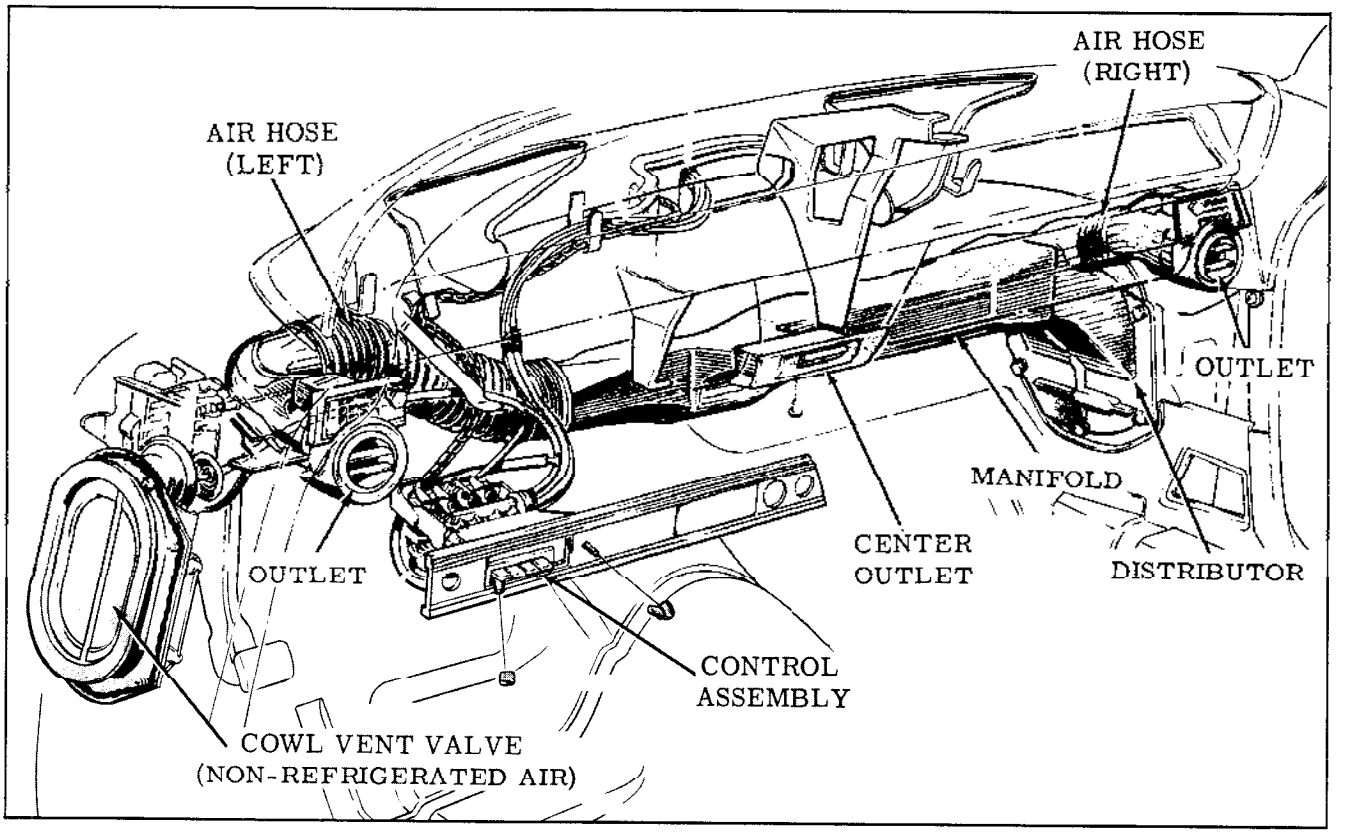


Fig. 14-3 Air Outlets and Controls

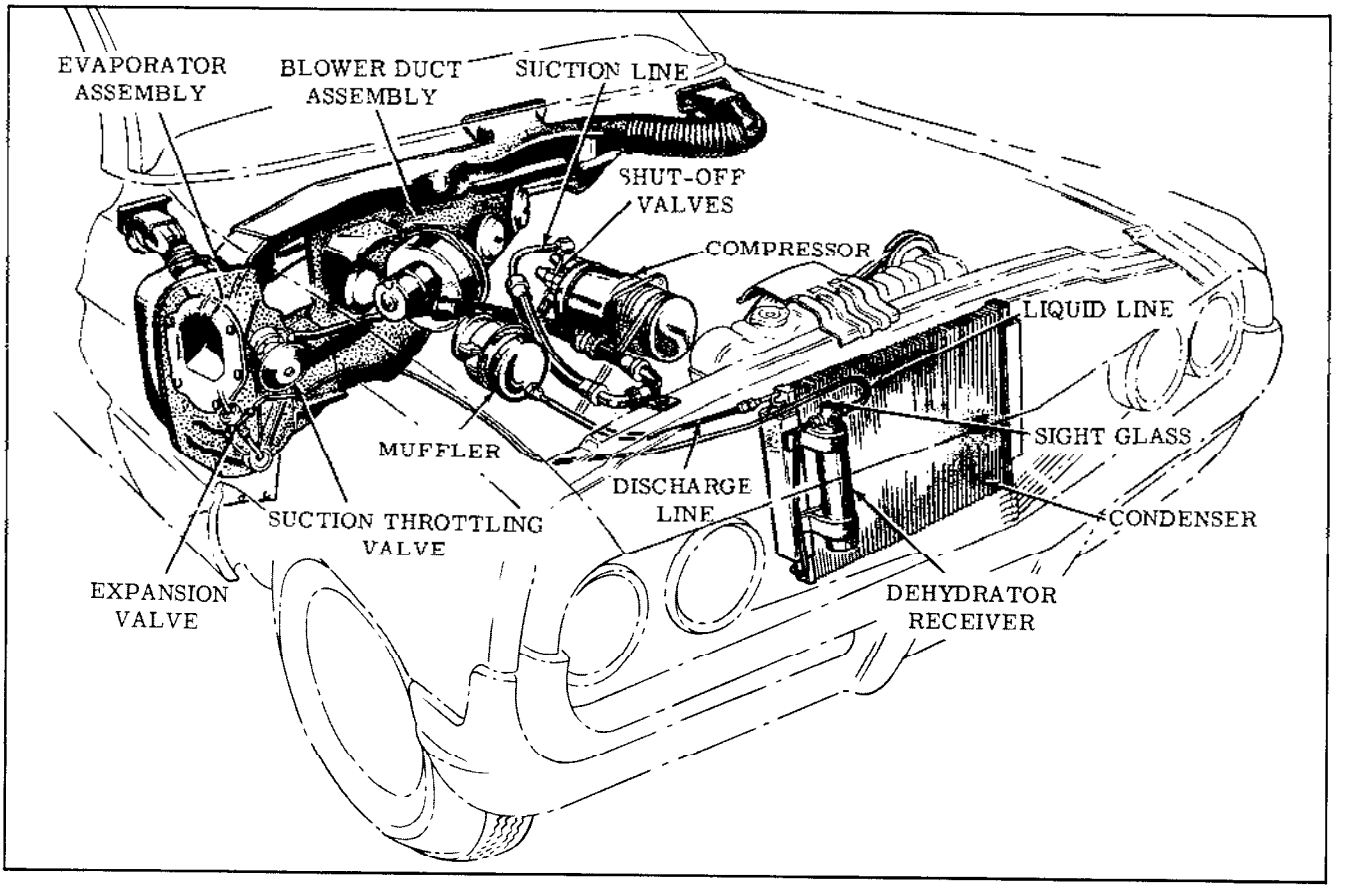


Fig. 14-4 Refrigerant System

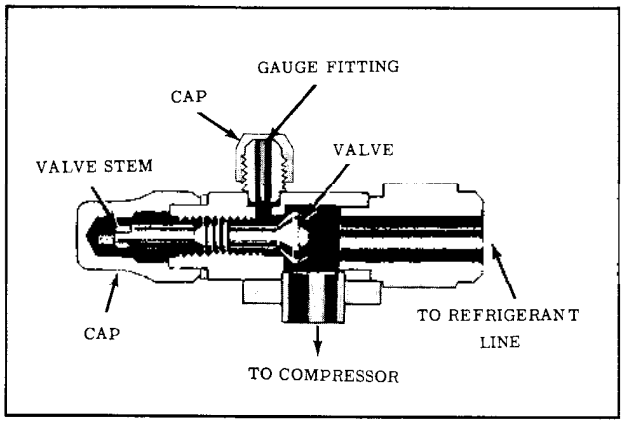


Fig. 14-5 Compressor Valve

When the valve stems are turned completely counterclockwise, the passage to the compressor is connected to the refrigerant line, but sealed from the gauge fitting. (Fig. 14-5) This is the normal operating position.

When the valve stems are turned completely clockwise, the passages to the refrigerant lines are sealed, and the passages to the gauge fittings are opened. In this position, the evaporator and condenser are shut off from the compressor and the compressor can be removed or serviced.

CAUTION: NEVER OPERATE THE COMPRESSOR WITH THE DISCHARGE VALVE CLOSED (FULLY CLOCKWISE).

When the valve stems are opened slightly from the counterclockwise position, both the passages to the gauge fittings and to the compressor are open. This permits pressure gauge readings while operating the system.

NOTE: The discharge valve is the outboard valve; the suction valve is the inboard one.

The valves are serviced as an assembly and are sealed at the compressor by means of two "O" rings.

MUFFLER

A muffler in the discharge side of the system reduces compressor noises and high pressure line vibrations. The muffler tank absorbs the surges from the compressor in a manner similar to the action of a hydraulic accumulator. No repairs are to be made on the muffler. If it is defective, it should be replaced. Always install the muffler with the outlet side down.

CONDENSER

The condenser assembly is made up of coils which carry the refrigerant, and cooling fins which provide rapid transfer of heat. The condenser is located in front of the engine cooling system radiator so that it receives a high volume of air from the movement of the car and from the engine fan. The air passing through the condenser cools the high pressure refrigerant vapor, causing it to condense into a liquid.

SIGHT GLASS

The sight glass (at the top of the dehydrator receiver) is provided to aid in diagnosis, by permitting the refrigerant to be observed. The appearance of a steady flow of bubbles or foam, after the compressor has run long enough to stabilize, indicates a shortage of refrigerant, when checking in temperatures above 75°F.

The sight glass can be serviced without removing the dehydrator receiver assembly. After removal of the retaining screw the sight glass can be lifted out with caulking compound and the "O" ring can be removed with a wire hook.

CAUTION: When performing this operation the system should not be left open longer than absolutely necessary as the dehydrator will absorb an excess of moisture. Refer to SERVICING OF THE REFRIGERANT SYSTEM.

DEHYDRATOR RECEIVER ASSEMBLY

The functions of this unit are to absorb moisture and foreign material that may be present in the system after assembly, and to insure a solid charge of liquid refrigerant in the line feeding the expansion valve, providing the system is properly charged. This unit is not serviceable, and should be replaced when there has been a leak in the suction side of the system which permitted air and moisture to be drawn into the system.

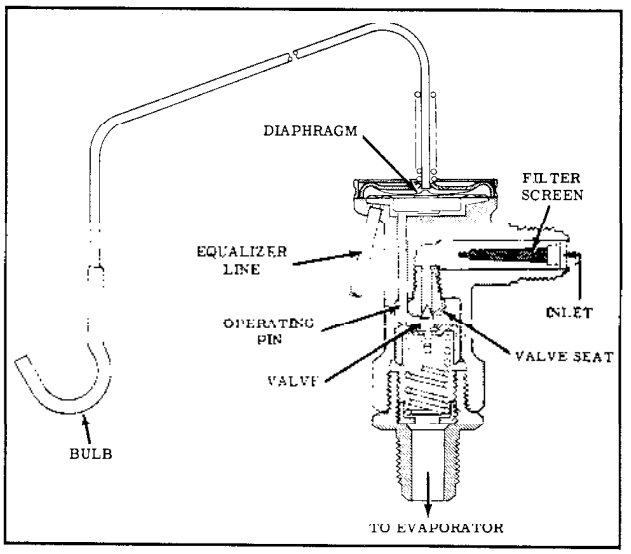


Fig. 14-6 Expansion Valve

EXPANSION VALVE (Fig. 14-6)

The expansion valve, mounted outside the evaporator, is an externally equalized valve, controlling the flow of refrigerant into the evaporator.

Spring force moves the valve toward the seat restricting refrigerant flow into the evaporator. A capillary tube filled with carbon dioxide provides the temperature regulation of the expansion valve. Carbon dioxide in the tube increases the pressure on the diaphragm when it senses an increase in temperature on the evaporator suction line. Movement of the diaphragm downward forces the operating pins to move the valve away from the seat allowing liquid refrigerant to enter the evaporator to maintain the desired temperature.

Equalizing pressure from the suction line is directed to the bottom side of the diaphragm and assists the spring in opposing pressure on the top of the diaphragm, and acts as a further control on the flow of refrigerant into the evaporator.

NOTE: It is important that the expansion valve capillary tube be tightly clamped to the suction line at the evaporator. Both the suction line and the capillary tube should be clean at the points of contact.

EVAPORATOR

The evaporator is a device which cools and dehumidifies the air before it enters the car. High pressure liquid refrigerant flows through the expansion valve into the low pressure area of the evaporator. This regulated flow of refrigerant boils immediately. Heat from the evaporator core surface is lost to the boiling and vaporizing refrigerant, which is cooler than the core, thereby cooling the core. The heat in the air passing through the evaporator core loses its heat to the cooler surface of the core, thereby cooling the air. As the process of heat loss from the air to the evaporator core surface is taking place, any moisture (humidity) in the air condenses on the outside surface of the evaporator core and is drained off as water.

SUCTION THROTTLING VALVE (Fig. 14-7)

The suction throttling valve performs two functions in the refrigeration circuit. First, it limits the evaporator minimum pressure to prevent "freeze-up" of the evaporator coils, and second, it provides a means for controlling evaporator discharge air temperature.

The valve controls minimum evaporator pressure by throttling the flow of refrigerant through

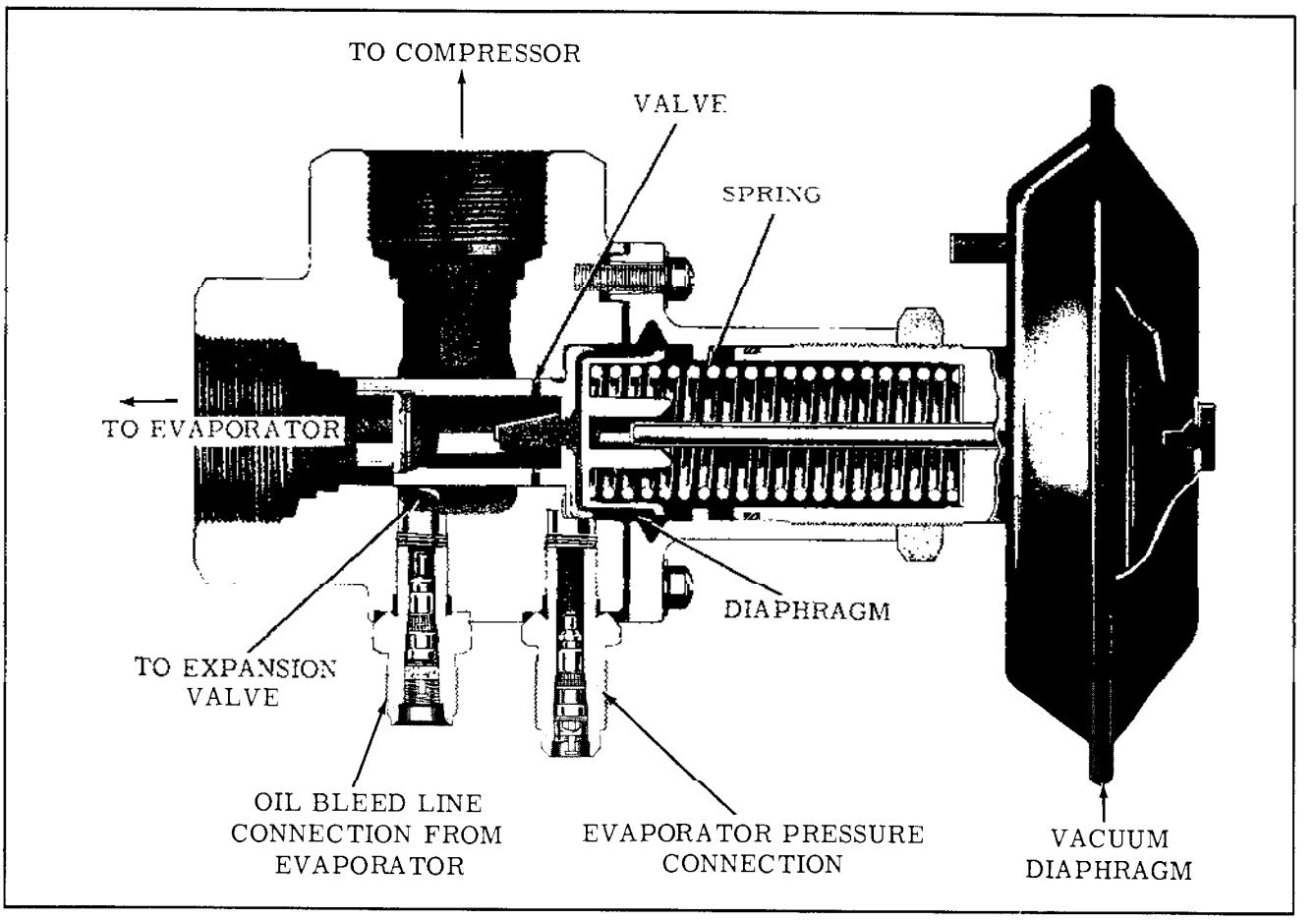


Fig. 14-7 Suction Throttling Valve

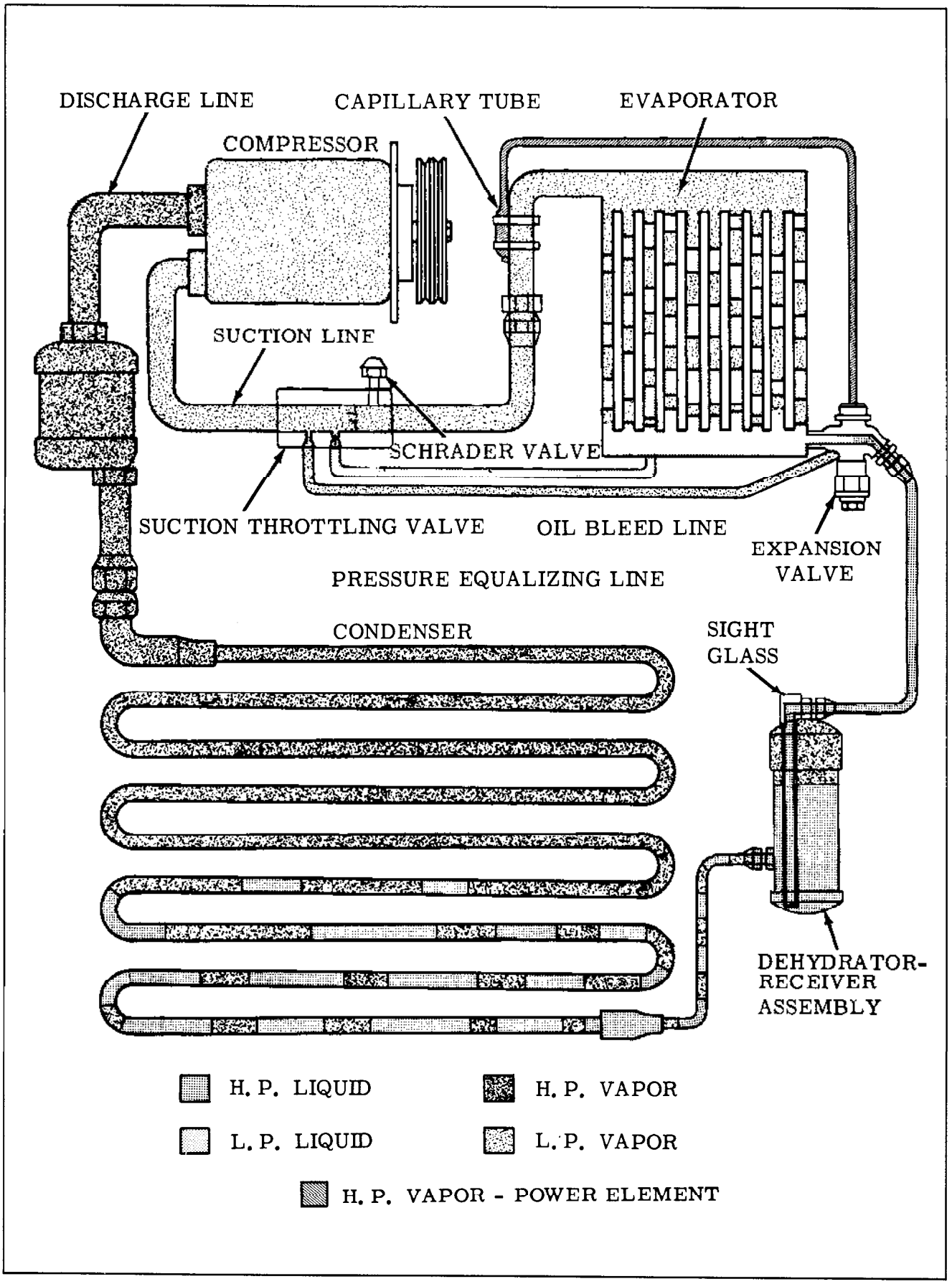


Fig. 14-8 Refrigeration Circuits

the suction line. The evaporator pressure is maintained by a balance of spring force, above the diaphragm, and evaporator pressure below the diaphragm. The valve is used as a temperature control, through the use of a vacuum diaphragm and vacuum control switch. The temperature lever, on the air conditioning control, actuates the vacuum control switch which in turn is connected to the suction throttling valve vacuum diaphragm by means of a vacuum hose. With the "Normal" or "Recir", button depressed and the temperature lever to the left, 7" of vacuum is applied to the diaphragm and the diaphragm plus the spring in the suction throttling valve is used to maintain high evaporator pressure.

As the temperature lever is moved to right, the vacuum is gradually reduced. This lowers the evaporator pressure. When the temperature lever is at the extreme right position, vacuum is completely shut off from the diaphragm and spring force only controls the evaporator pressure, which results in maximum cooling ability of the evaporator and consequently maximum cooling of the discharge air. The suction throttling valve should be adjusted to maintain a minimum evaporator pressure of 29.5 p.s.i.

To insure return of oil to the compressor, under partially depleted refrigerant charge conditions, an oil bleed line connects the bottom of the evaporator and the suction line at the suction throttling valve. A valve core, located in the bleed line fitting at the suction throttling valve, opens at 5 to 12 p.s.i. pressure difference.

REFRIGERATION CIRCUIT (Fig. 14-8)

Heat laden, low pressure vapor refrigerant is drawn into the compressor and pumped from the compressor through the muffler to the condenser under high pressure. The vapor is heated as a result of the compression process. As it passes through the condenser, the high pressure - high temperature vapor is cooled, which causes the vapor to condense into liquid. The liquid refrigerant passes from the condenser into the dehydrator receiver which acts as a reservoir. The liquid in the receiver is still under high pressure.

Liquid refrigerant from the receiver now passes on to the expansion valve. The expansion valve meters refrigerant into the evaporator core. When the pressure in the evaporator is reduced, the liquid refrigerant immediately begins to boil at low temperature as it enters the evaporator. As the refrigerant passes through the evaporator, it continues to boil, absorbing heat from (and thereby cooling) the air passing through the evaporator core. By the time the refrigerant leaves the evaporator, it has completely vaporized and has warmed approximately 6^{O}F.

Refrigerant returns from the evaporator through the suction pressure line to the compressor. When the evaporator pressure drops below 29.5 p.s.i. the suction throttling valve restricts the flow of refrigerant to the compressor, thereby raising the evaporator pressure to prevent freezing of the core. It is this same action that regulates the amount of cooling when the temperature lever on the instrument panel is moved to the left.

PRECAUTIONS IN HANDLING REFRIGERANT 12

Do Not Leave Refrigerant Drum Uncapped

All refrigerant drums have a metal screw cap. This cap protects the valve and safety plug from damage; therefore, the protective cap should always be replaced when the drum is not in use.

Do Not Subject Drum to High Temperature

The drum should not be exposed to the radiant heat of the sun, for the resulting increase in pressure may cause the safety plug on the drum to burst.

The refrigerant drum should never be subjected to excessive temperature when charging a system. The drum should be heated for charging purposes by placing in 125^{O}F. water. Never heat above 125^{O}F. or use a blow torch, radiator, or stove to heat the drum.

Do Not Weld or Steam Clean On or Near the System

Welding or steam cleaning of, or near, any of the refrigerant lines or components of the refrigerant system can build up dangerous pressures in the system.

Do Not Fill the Drum Completely

When filling a small drum from a larger one, always allow space above the liquid for expansion. If the drum were completely filled and the temperature increased, tremendous hydraulic force would develop.

Do Not Discharge Vapor Into Area Having Exposed Flame

Large quantities of refrigerant 12 should not be discharged into a closed room. The refrigerant may displace the oxygen in the air. Also, heavy concentrations of refrigerant 12 in contact with a live flame, such as a gas heater, or drawn into the intake of a running engine will produce a poisonous gas. This gas will also tarnish all bright metal surfaces.

Do Not Expose Eyes to Refrigerant

One of the most important precautions is protection of the eyes when handling refrigerant. Any liquid refrigerant which may accidentally escape is approximately 21.7°F. below zero. If any refrigerant comes in contact with the eyes, serious injury could result. Always wear goggles to protect the eyes when handling refrigerant.

If refrigerant should come in contact with the eyes:

1. DO NOT rub the eyes. Splash the eyes with cold water to gradually get the temperature above the freezing point.
2. Apply a protective film of an antiseptic oil over the eye ball to reduce the possibility of infection.
3. Consult a doctor or an eye specialist immediately.

Should liquid refrigerant come in contact with the skin, the injury should be treated the same as though the skin has been frostbitten or frozen.

MAINTAINING CHEMICAL STABILITY IN THE REFRIGERATION SYSTEM

The efficient operation of the air conditioning refrigeration system is dependent on the pressure-temperature relationship of pure refrigerant. As long as the system contains only pure refrigerant (plus a certain amount of compressor oil which mixes with the refrigerant), it is considered to be chemically stable.

When foreign materials, such as dirt, air or moisture, are allowed to get into the system, they will effect chemical stability, resulting in acids or sludge which could cause the expansion valve to freeze up, and change the pressure-temperature relationship of the refrigerant. Thus, the system will no longer operate at the proper pressures and temperatures, and the efficiency will decrease and parts deteriorate.

The following general practices should be observed to insure chemical stability in the system:

Keep Lines Sealed

When disconnecting refrigerant lines, the lines should be at, near or above surrounding room temperature to prevent formation of condensation inside the lines. The lines should also be immediately capped to prevent entrance of dirt or foreign material.

Keep Tools Clean

Tools should be kept clean and dry. This includes the gauge set and replacement parts. Keep gauge lines plugged.

Use Clean Dry Oil Container

When adding oil to compressor, the container should be exceptionally clean and dry due to the fact that refrigeration oil is as moisture-free as possible; therefore, it will quickly absorb any moisture with which it comes in contact.

Keep Oil Container Capped

The oil container should not be opened until ready for use and should be capped immediately after use to reduce the possibility of the oil absorbing moisture.

Do Not Keep System Open Longer Than Five Minutes

PRECAUTION IN HANDLING LINES

All line connections use "O" rings for sealing. Replacement lines must be checked to see if they are completely sealed and dehydrated. Refrigerant lines must be free of kinks which would restrict the flow of refrigerant and cause noise.

Insulated clamps are used to reduce vibration and it is important to reinstall all the clamps when a line is replaced. Tightening connections is very important and the proper size wrenches should be used. The opposing fitting should always be held with a wrench to prevent distortion of connecting lines or components. This is especially important in tightening a hose connection as twisting a hose stiffens it and permits it to transmit more vibration. ALWAYS USE TWO WRENCHES WHEN TIGHTENING OR LOOSENING LINE FITTINGS. "O" rings should be coated with refrigeration oil and installed on the line before the line is inserted into the fitting, to insure proper sealing. Torque "O" ring fittings as follows:

TORQUE IN FT. LBS.

TUBE O.D.	SWIVEL NUT ON STEEL TUBE	SWIVEL NUT ON ALUMINUM TUBE
1/4	10 to 15	5 to 7
3/8	30 to 35	11 to 13
1/2	30 to 35	11 to 13
5/8	30 to 35	18 to 21
3/4	30 to 35	23 to 28

CAUTION: ALWAYS WEAR SAFETY GOGGLES WHEN OPENING REFRIGERANT LINES.

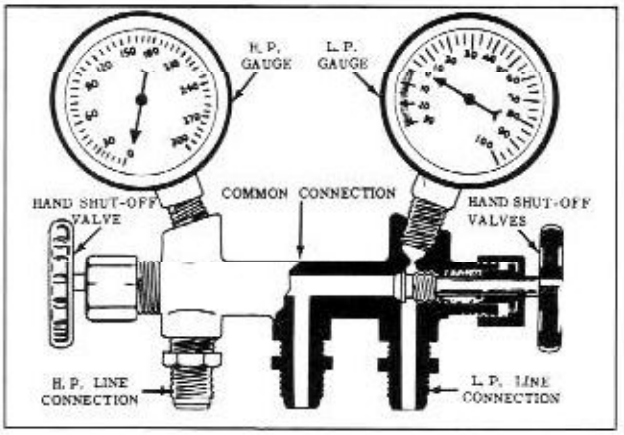


Fig. 14-9 Gauge Set

In the event any line is opened to atmosphere, it should be IMMEDIATELY capped to prevent entrance of moisture and dirt.

SPECIAL EQUIPMENT

REFRIGERATION GAUGE SET (Fig. 14-9)

The gauge set is used when discharging, evacuating, charging, or diagnosing trouble in the system. The low pressure gauge is graduated into pounds of pressure from 0 to 100 and in the opposite direction in inches of vacuum from 0 to 30. The high pressure gauge is graduated from 0 to 300 pounds pressure. The center connection is common to both and is for the purpose of attaching a line for adding refrigerant or evacuating the system. When this connection is not required, it should be capped with a flare nut and cap.

The shut-off valves close each opening to the connector and to each other. They DO NOT open or close off pressure to the gauges.

LEAK DETECTOR (TORCH)

The leak detector (torch) is used to locate a leak in any part of the refrigerant system. To operate, the detector is ignited and the sampling tube is held close to all possible points of leakage (fittings, connections, etc.). If the flame changes color, particularly green, brilliant blue, or purple, refrigerant is being drawn into the sample tube, indicating a leak.

CAUTION: DO NOT BREATHE THE FUMES THAT ARE PRODUCED BY THE LEAK DETECTOR AS THEY ARE POISONOUS.

CAUTION: The valve should never be closed tightly when the needle is hot because the needle will "freeze" when the burner cools and the valve seat will be damaged.

For confined areas, such as sections of the evaporator and condenser, the alcohol torch or a Borne O Matic torch is the only method which can be used.

LEAK DETECTOR (LIQUID)

There are a number of fittings and places throughout the air conditioning unit where leak detector solution (Part No. 564255) may be used to pinpoint leaks.

Apply the solution to the suspected area with a swab that is attached to the bottle cap. Bubbles will form within seconds if there is a large leak.

VACUUM PUMP

The vacuum pump is recommended as a service tool. If a leaking system has been operated in a discharged condition, the receiver dehydrator assembly should be replaced and a vacuum pump should be used to thoroughly evacuate the system.

SERVICING OF INDIVIDUAL UNITS (NOT IN REFRIGERANT SYSTEM)

The following services and repairs concern parts of the air conditioning system which can be serviced without opening the refrigerant system.

COMPRESSOR BELT ADJUSTMENT

Tool 33-70 is used to check the compressor belt tension. (Fig. 14-10)

If belts require adjustment:

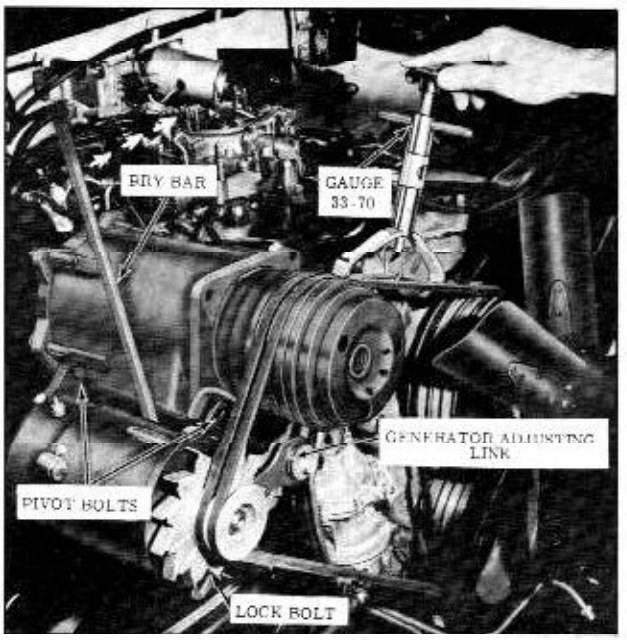


Fig. 14-10 Compressor Belt Adjustment

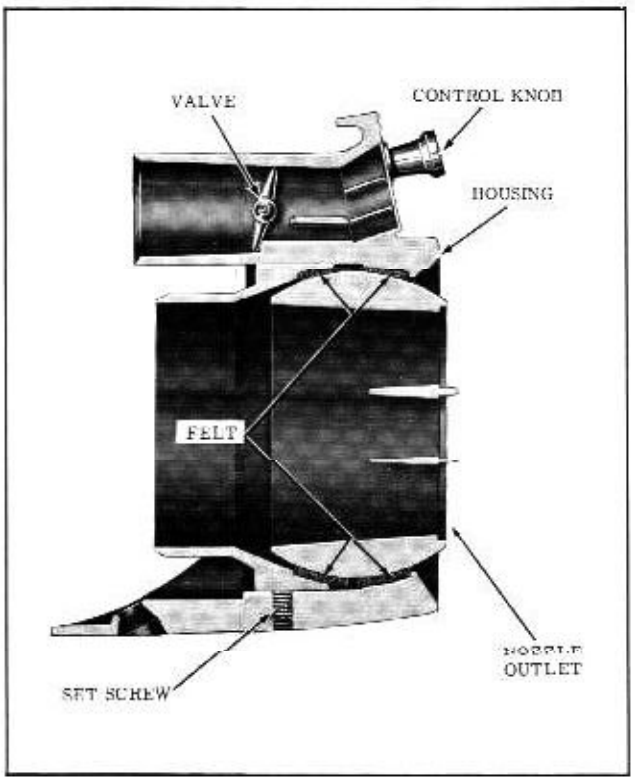


Fig. 14-11 Air Outlet Adjustment

1. Loosen the generator bracket bolts and link.
2. Pivot the generator until the pointers on Tool 33-70 are even with line on tool plunger.
3. Tighten the generator bracket bolts and adjusting link.
4. Check the other belt, if it is outside the gauge limits, replace both belts as a matched set.

AIR OUTLETS

Adjustment (Fig. 14-11)

Nozzles should be free to rotate but tight enough to remain in a set position. If the tension is insufficient:

1. Loosen set screw at bottom through opening in housing.
2. From behind instrument panel, push in retainer to tighten or pull out to loosen ball adjustment.
3. Tighten set screw.

Removal (Fig. 14-12)

1. Remove side panel.
2. Remove air duct from outlet.
3. Remove nut and screw at bottom of housing, then remove outlet assembly.

COMPRESSOR CLUTCH SWITCH

Adjustment (Fig. 14-13)

The compressor clutch switch is actuated by the sliding lever in the control assembly. The switch should close when the lever is moved 3/16" from the extreme left position. If necessary to adjust, loosen the two attaching screws and rotate switch into correct position. Tighten screws.

CONTROL ASSEMBLY

Removal and Installation (Fig. 14-14)

1. Remove the two control to cluster nuts at top of control behind instrument panel.
2. Remove control assembly from instrument panel.

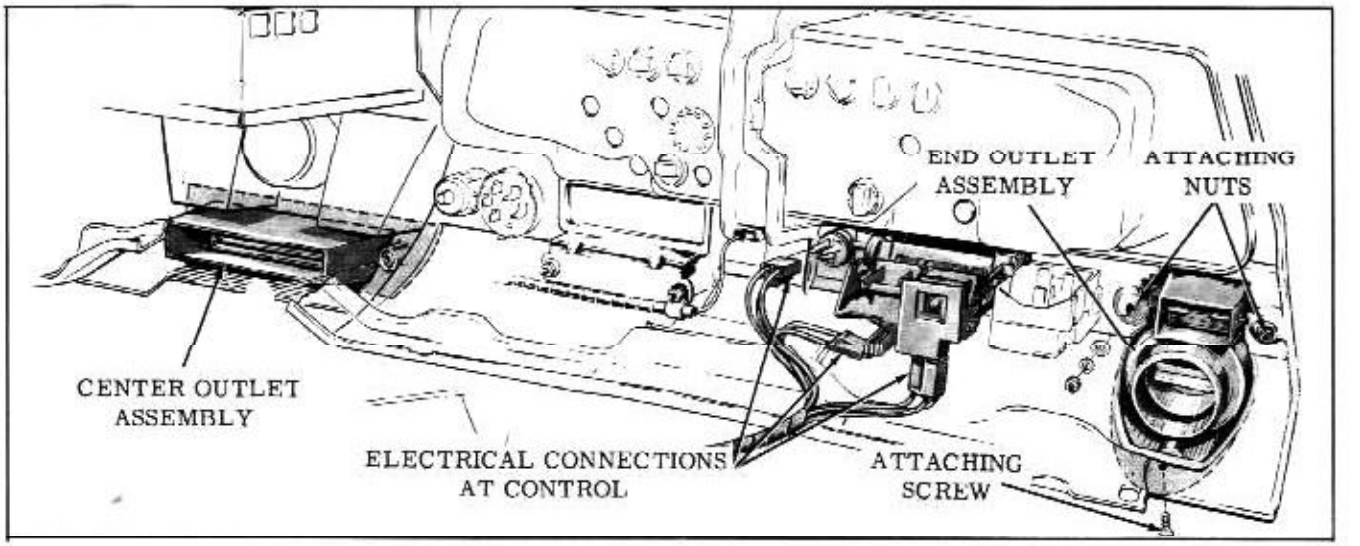


Fig. 14-12 Air Outlets and Controls

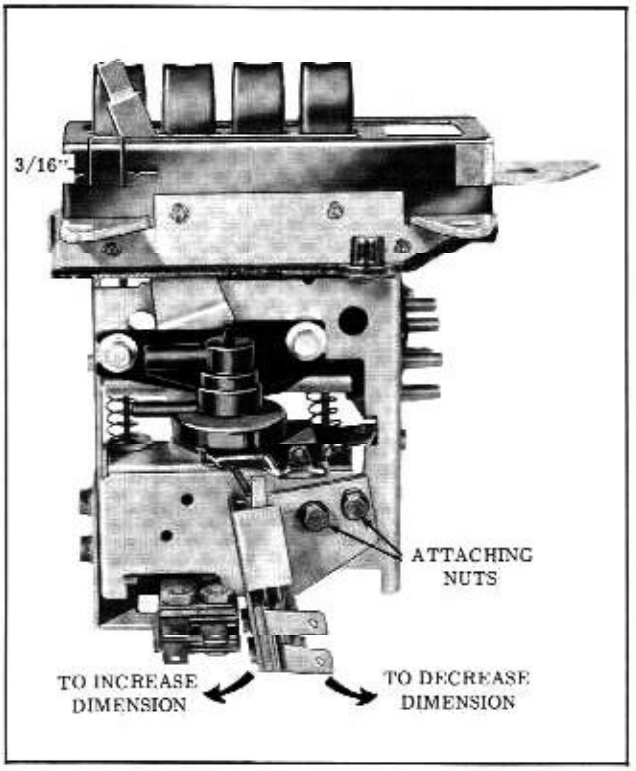


Fig. 14-13 Compressor Clutch Switch Adjustment

3. Remove vacuum hoses, wires and light socket from control assembly.

4. To install, reverse removal procedure. Refer to Fig. 14-14, and Fig. 14-59 for proper installation of hoses.

BLOWER MOTOR

The blower motor assembly is mounted on the blower duct at the right side of the cowl in the engine compartment. To remove the motor and blower, remove the 5 motor to case attaching screws, and the suction hose clamp from the fender tie bar. Disconnect the motor lead at the connector and remove the motor ground wire screw. Bend the suction hose down at the housing and remove the blower motor assembly.

BLOWER DUCT ASSEMBLY

Removal and Installation (Fig. 14-15)

1. Disconnect battery ground cable.

2. Remove air cleaner.

3. Remove vacuum hoses from three diaphragms on duct, and disconnect wiring at resistor.

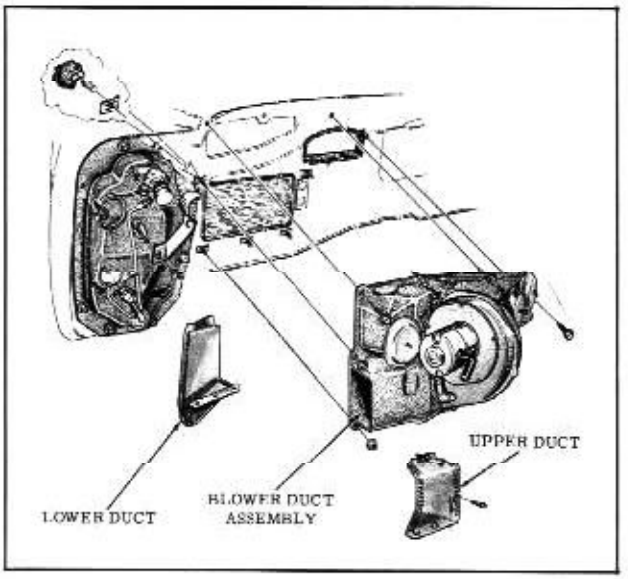


Fig. 14-15 Blower Duct Assembly

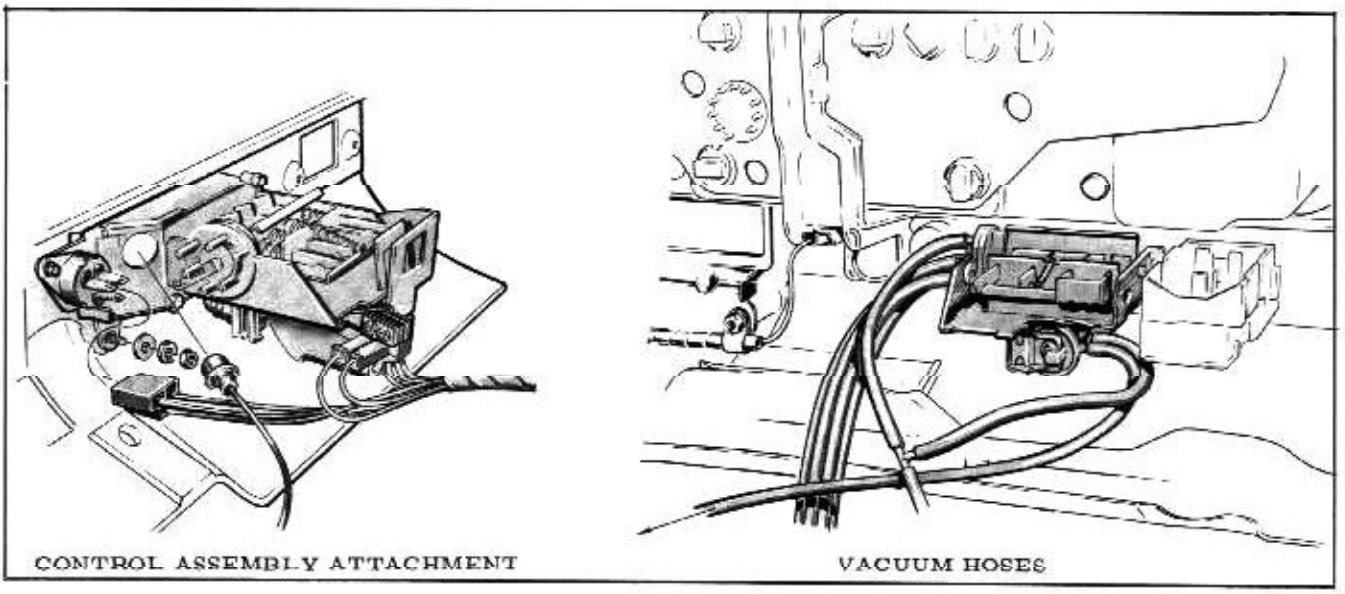


Fig. 14-14 Control Assembly Installation

4. Disconnect motor lead at connector and remove motor ground wire screw.

5. Remove the suction line clamp.

6. Disconnect heater hoses at heater core. Wire the upper hose above coolant level. Drain coolant from heater core in a small container.

7. Remove wires and windshield washer hoses from clips at top of duct.

8. Remove right front wheel and fender filler access plate.

9. Disconnect heater core and case from cowl.

10. Remove six screws from evaporator to blower connecting duct, then remove top section of connecting duct.

11. Remove nuts and screws holding duct assembly to cowl, then remove duct assembly.

12. Remove the lower section of connecting duct from blower duct assembly.

When installing, reverse removal procedure. Be sure rubber gasket is in place on cowl, and reseal connecting duct.

DIAPHRAGM ADJUSTMENTS (Blower Duct Assembly Removed)

The three vacuum diaphragms mounted on the blower duct are pre-set prior to assembly and no adjustment is possible until the blower duct assembly is removed.

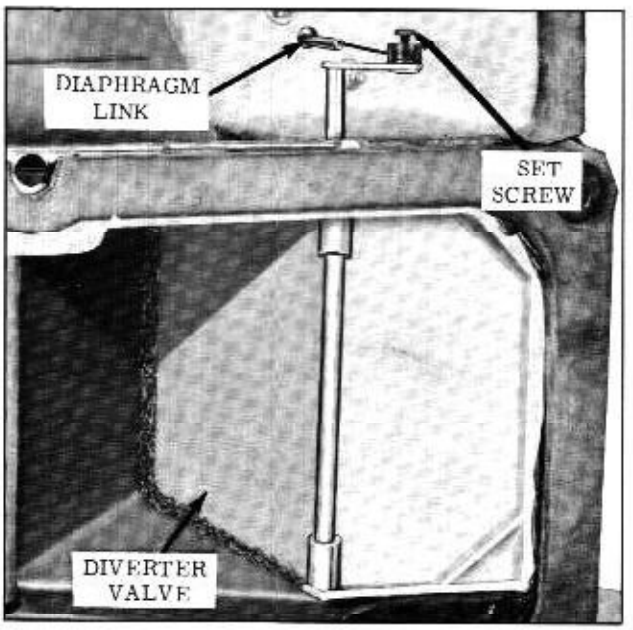


Fig. 14-16 Diverter Valve Adjustment

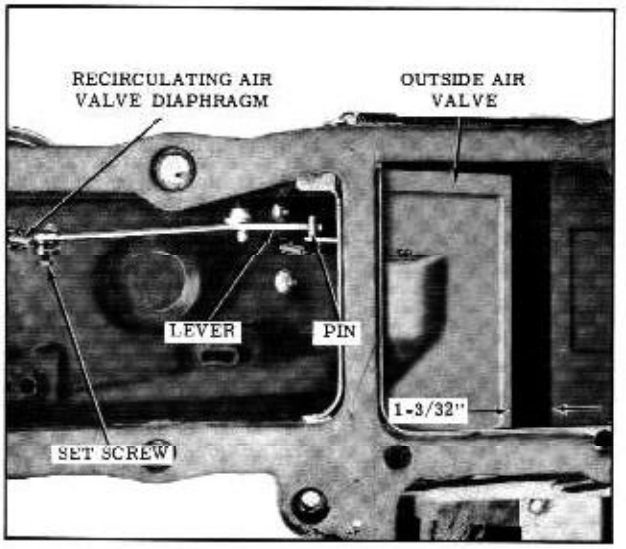


Fig. 14-17 Outside Air Valve Adjustment

Diverter Valve (Fig. 14-16)

With the diverter valve held closed by spring tension, loosen set screw and pull diverter valve diaphragm link out until it is not quite fully extended, then tighten set screw.

Outside Air Valve (Fig. 14-17)

With the outside air valve closed by spring tension, loosen the set screw and pull outside air valve diaphragm link out until it is not quite fully extended, then tighten set screw.

Recirculating Air Valve (Fig. 14-18)

With set screw loosened, position outside air valve open 1-3/32" from edge of door opening. A wood block 1-3/32" wide can be used as a gauge for this dimension. Push recirculating diaphragm

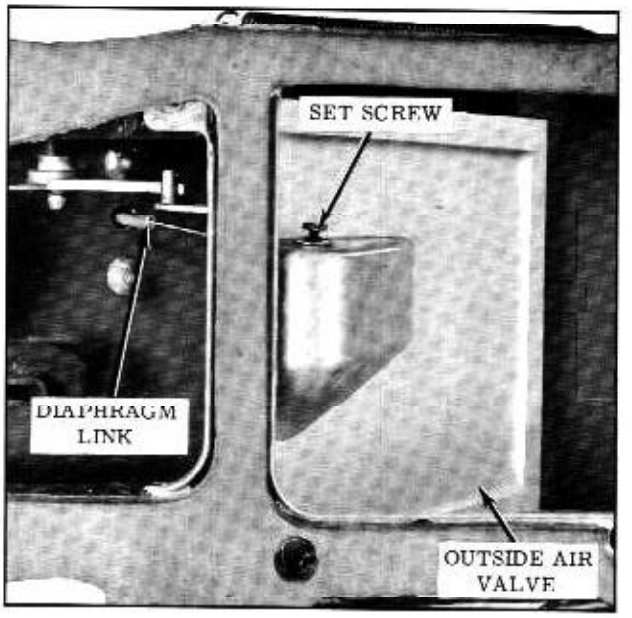


Fig. 14-18 Recirculating Air Valve Adjustment

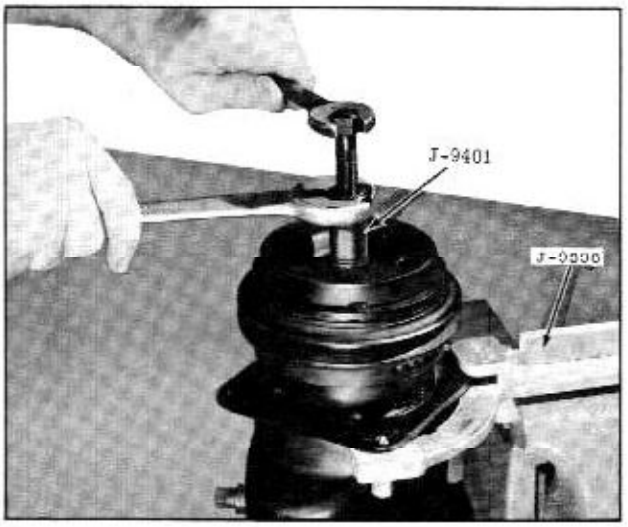


Fig. 14-19 Removing Driven Plate

link all the way in and tighten set screw. With outside air valve open 1-3/32" and the diaphragm link pushed all the way into the diaphragm, the lever should just contact the pin.

DRIVEN PLATE, DRIVE PLATE AND PULLEY ASSEMBLY

The following procedures can be performed with the compressor either on or off the car. When working with the compressor on the car, the compressor should be disconnected from the mounting bracket and tipped upward to provide adequate working clearance.

DRIVEN PLATE

Removal

1. Using a thin wall socket, remove the lock nut from the compressor shaft. Use Tool J-972-A to hold driven plate.
2. Install Puller J-9401 into hub of driven plate. Hold main body of tool and turn forcing screw clockwise to remove driven plate. (Fig. 14-19)
3. Remove tool from hub of driven plate.
4. Remove the retaining ring and spacer washer from inside the driven plate.
5. Remove key from either the compressor shaft or the driven plate.
6. Inspect driven plate for cracks or stresses in the resilient drive. Do not place driven plate for a scoring condition. (Fig. 14-20)

Installation

1. Insert the square drive key into the hub of driven plate, allow it to project approximately 3/16" out of the keyway.

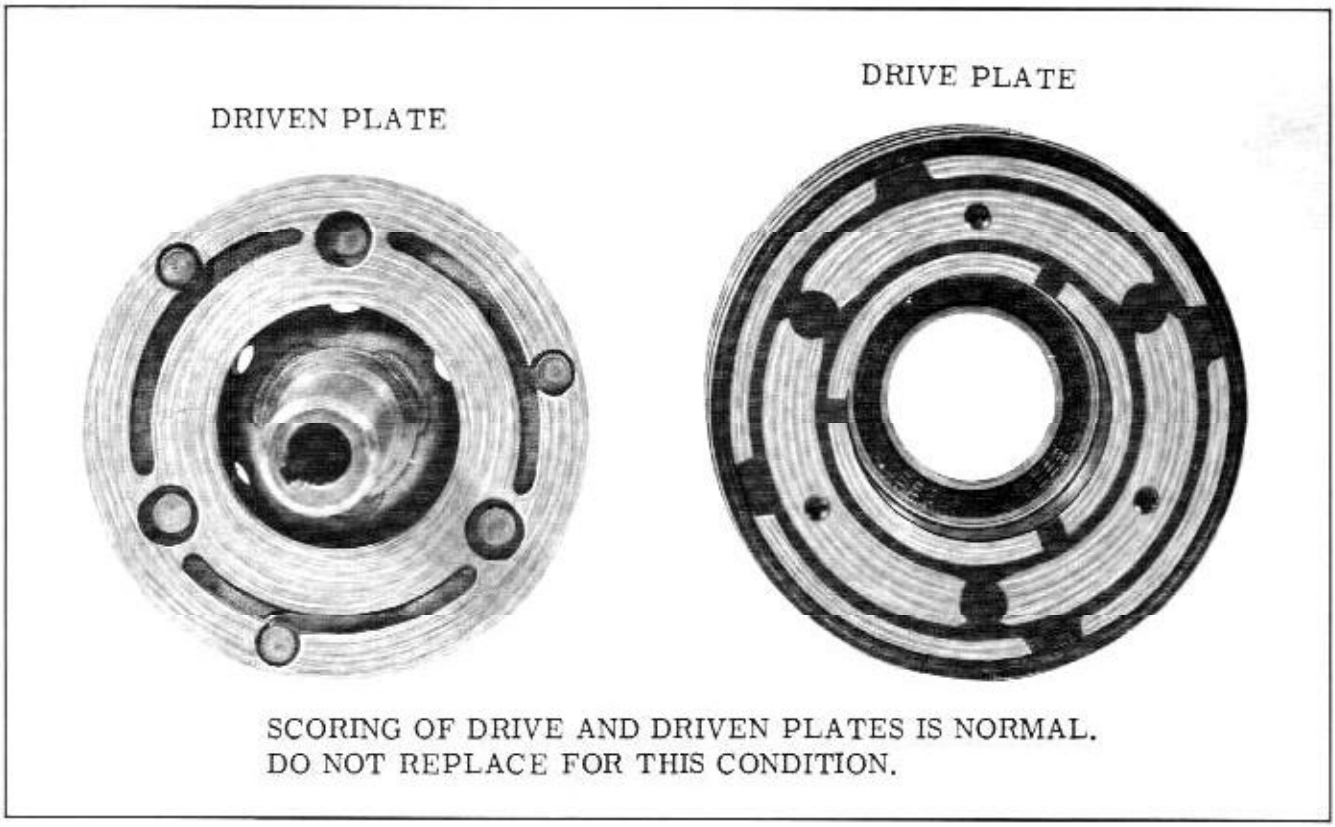


Fig. 14-20 Normal Clutch Plate Wear

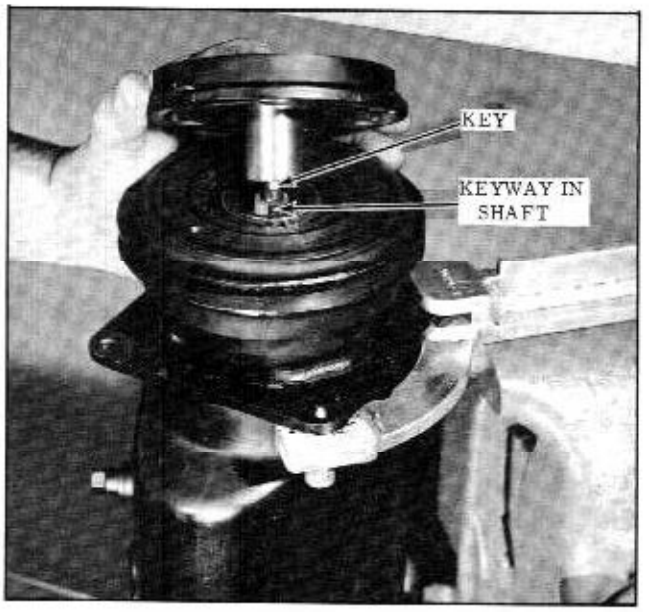


Fig. 14-21 Aligning Driven Plate Key

2. Line up the key in the hub with keyway in the shaft. (Fig. 14-21)

3. Position the Driven Plate Installing Tool J-9480 on the threaded end of the shaft. The "Free" Washer, J-9480-2, should be in place under the hex nut on the tool. This tool has a lefthand thread on the body. (Fig. 14-22).

4. Press the driven plate onto the shaft until there is approximately 3/32" space between the frictional faces of the clutch plates.

5. Remove installing tools.

6. Install hub spacer washer and snap ring.

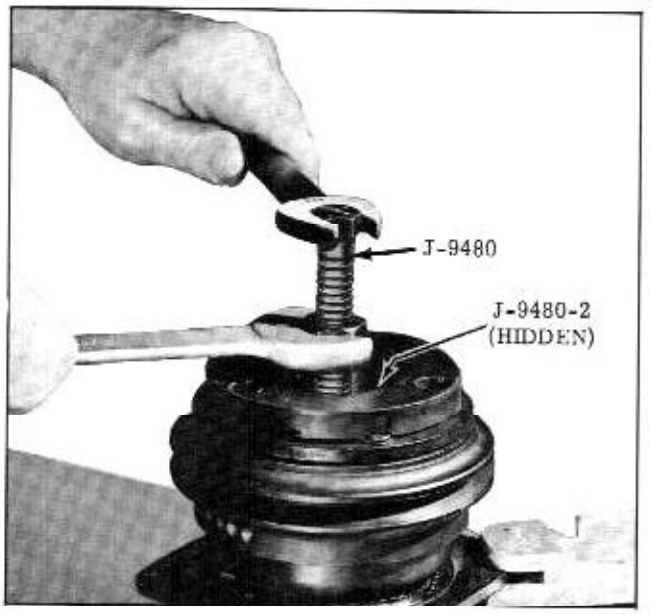


Fig. 14-22 Installing Driven Plate

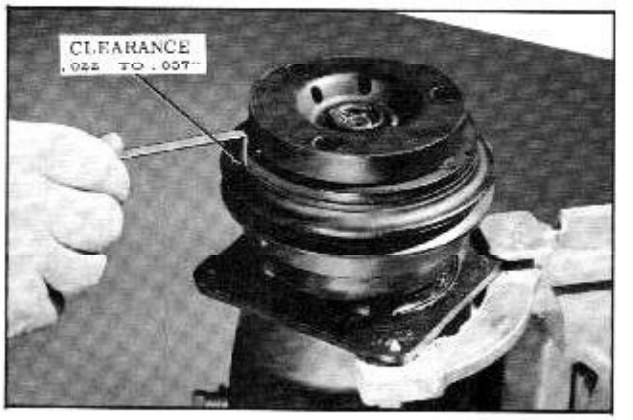


Fig. 14-23 Checking Air Gap

7. Install the lock nut, using a thin wall socket. Tighten 14 to 16 foot pounds torque. The air gap between the friction faces should now be between .022" to .057" clearance. (Fig. 14-23)

DRIVE PLATE AND PULLEY ASSEMBLY

Removal

1. With the driven plate removed, remove the pulley retaining ring with Tool J-6435. (Fig. 14-24)

2. Insert Pilot J-9395 over shaft then remove pulley with Puller J-8433. (Fig. 14-25)

3. If necessary to remove the pulley bearing proceed as follows:

   a. Remove the bearing retaining ring.

   b. Drive out bearing with brass drift.

Fig. 14-24 Removing Pulley Retaining Ring

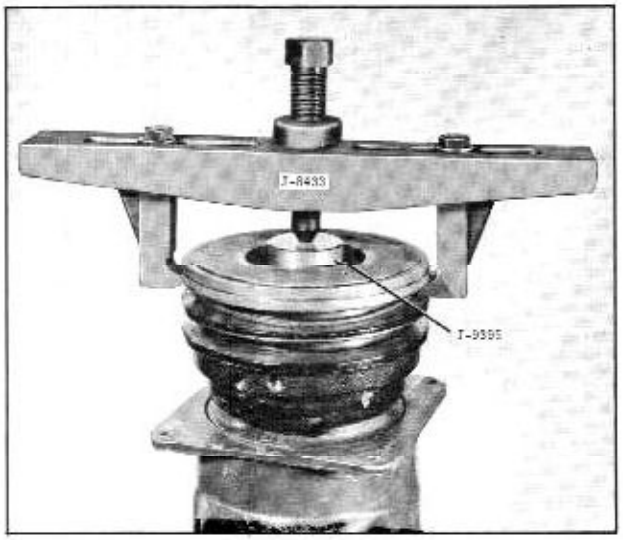


Fig. 14-25 Removing Pulley and Drive Plate

c. Install new bearing as shown in Fig. 14-26, then install retaining ring.

Installation

1. Install the pulley and bearing assembly on the end of the compressor, with Tool J-9481. (Fig. 14-27) The pulley should rotate freely.
2. Install the pulley retaining ring with Tool J-6435.

CLUTCH COIL AND HOUSING

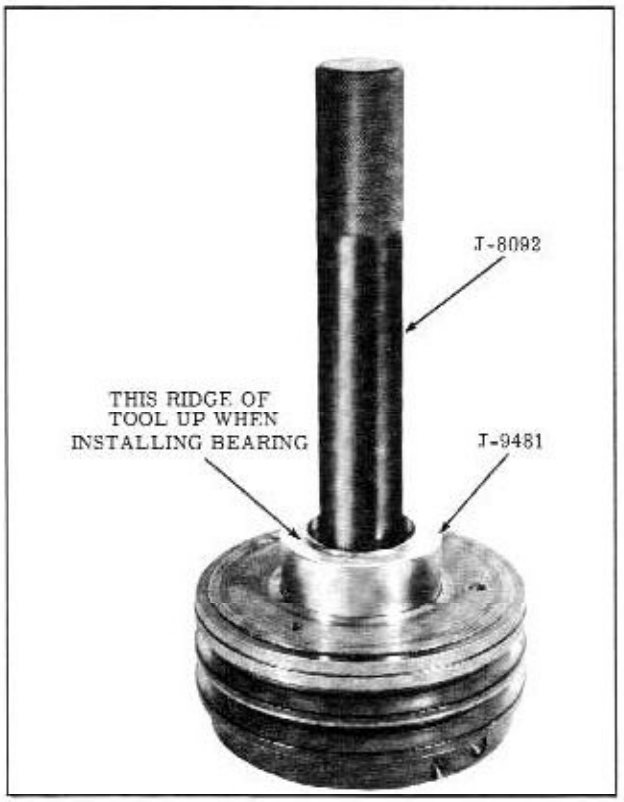


Fig. 14-26 Installing Pulley and Drive Plate Bearing

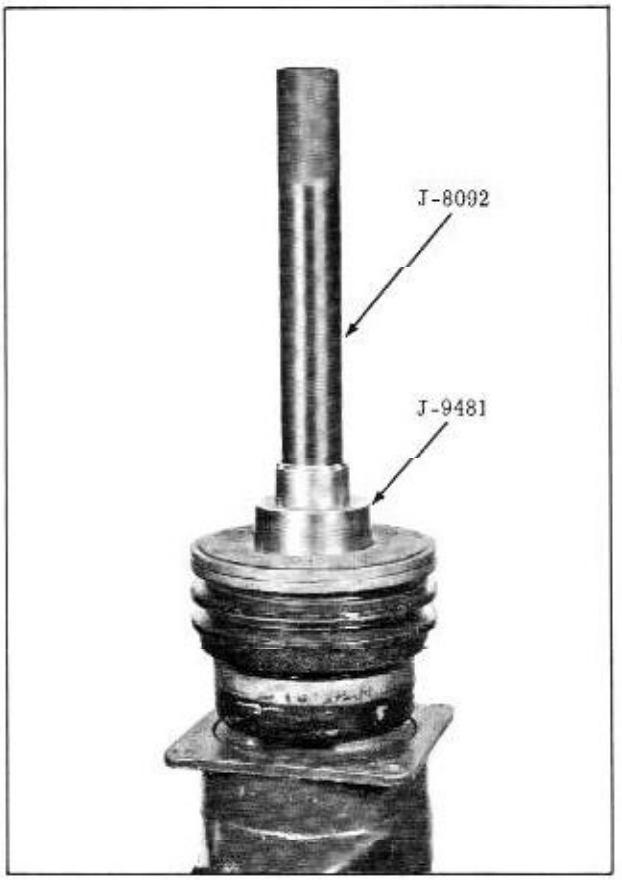


Fig. 14-27 Installing Pulley and Drive Plate on Compressor

Removal

1. With the driven and drive plates removed, scribe the clutch coil housing and compressor housing.
2. Remove the clutch coil housing retaining ring with Tool J-6435. (Fig. 14-28)

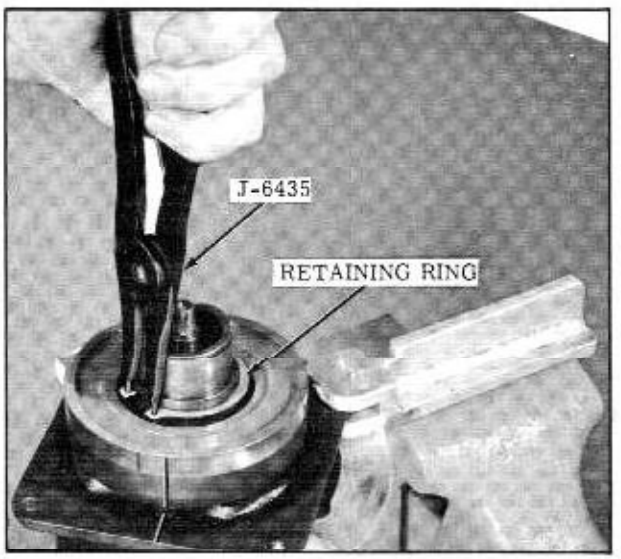


Fig. 14-28 Removing Coil Housing Retaining Ring

3. Remove coil housing assembly.

Installation

1. With the scribe marks aligned, locate the extrusions on the coil housing with the holes in the front head.

2. Install the coil retainer ring with Tool J-6435.

SERVICING OF THE REFRIGERANT SYSTEM

In removing and replacing any part of the refrigerant system except the compressor, the following operations must be performed.

1. Discharge the system by releasing the refrigerant to atmosphere.

2. Remove and replace the defective part.

3. Evacuate the system of air and moisture.

4. Charge the system with refrigerant 12.

DISCHARGING THE SYSTEM

1. With the engine stopped, remove protective caps from compressor discharge and suction shut-off valves. (Fig. 14-29)

2. Make sure both valves are turned fully counterclockwise; this is to assure that gauge outlets are closed.

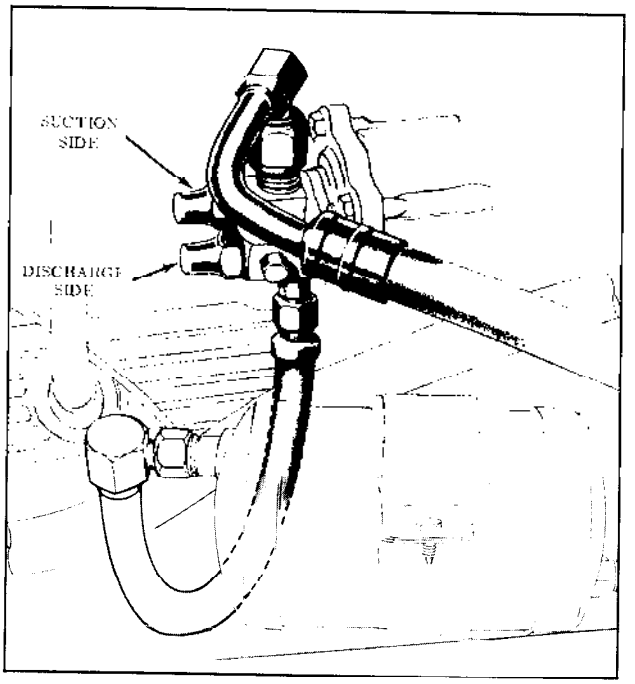


Fig. 14-29 Shut-Off Valve Location

3. Remove caps from both gauge outlets on compressor.

4. Crack open (turn clockwise) discharge and suction shut-off valves on compressor and allow refrigerant to escape from the system.

CAUTION: Do not open valves beyond cracking point or compressor oil may be discharged with the refrigerant.

The complete system has now been discharged of refrigerant and any part in the refrigeration system can be replaced.

EVACUATING THE SYSTEM WITHOUT USING VACUUM PUMP (VACUUM PUMP RECOMMENDED)

1. Have gauge set and refrigerant drum connected as shown in Fig. 14-30.

2. Turn compressor discharge shut-off valve fully clockwise. Turn compressor suction shut-off valve fully counterclockwise, then two turns clockwise. Install end caps and tighten.

CAUTION: Leave compressor high pressure gauge outlet cap off.

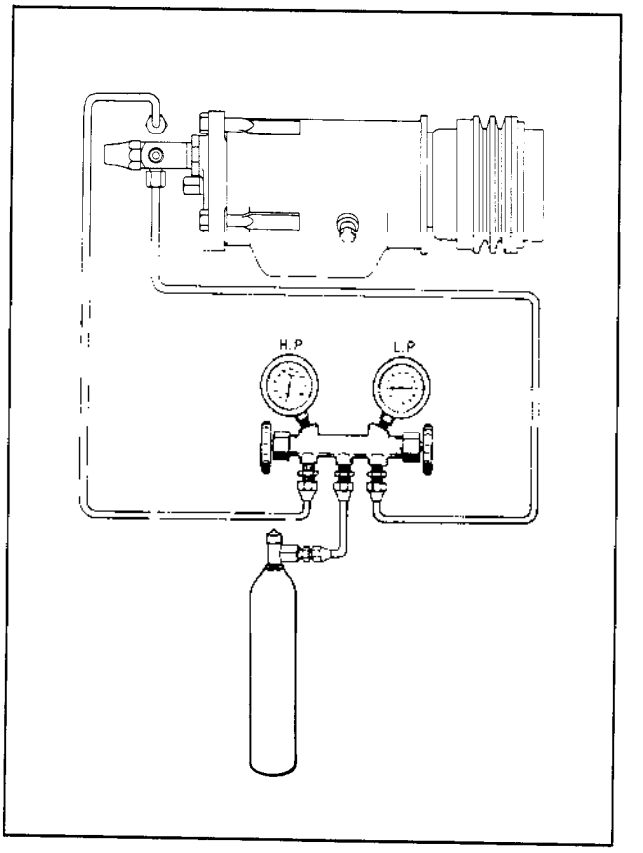


Fig. 14-30 Evacuating The System

3. Close high pressure gauge valve and open low pressure gauge valve.

4. Set refrigeration temperature control lever fully to the right, start engine and allow to run at slow idle to obtain a vacuum of 28" for 5 minutes.

5. While engine is running, install cap on compressor high pressure gauge outlet.

6. Stop engine and observe if 28" vacuum will hold for 3 minutes.

7. Open valve on refrigerant drum and allow system to charge up to drum pressure; then close valve on refrigerant drum.

8. Again discharge the system through the compressor high pressure gauge outlet, by removing gauge outlet cap. After system is discharged, start the engine. Allow to run at slow idle to obtain a vacuum of 28" for 5 minutes.

9. While engine is running, install cap on compressor high pressure gauge outlet, then stop the engine.

   NOTE: This second evacuation is to eliminate any air or moisture that might have remained in the system.

10. Place refrigerant drum on scales and weigh accurately. This is to determine amount of refrigerant used to bring the system up to drum pressure and to complete the full charge of refrigerant. Set drum in a pail of water at not more than 125°F. if desired. (If pail of water is used, weigh it with refrigerant drum.)

11. Open valve on refrigerant drum to charge system to drum pressure.

12. Turn compressor discharge shut-off valve fully counterclockwise and remove gauge outlet cap.

13. Crack open compressor discharge shut-off valve to purge outlet, crack open high pressure gauge valve to purge hose, and connect hose to compressor while purging.

14. Turn compressor discharge shut-off valve clockwise two turns, then close high pressure gauge valve.

The system is now ready for charging.

CHARGING THE SYSTEM

After the system is evacuated, leave the gauge set and refrigerant drum connected for the charging process. Also make sure the high pressure gauge valve is closed, the low pressure gauge valve is open, and the valve on the refrigerant drum is closed; then proceed as follows:

1. Open valve on refrigerant drum to allow refrigerant to enter the system. Start the engine and operate at fast idle with the temperature control fully to the right and the "NORMAL" button depressed. Close low pressure valve in gauge set at frequent intervals to be certain pressure in the low side is always maintained above 5 p.s.i.

2. When 4 lbs. 4 ozs. of refrigerant has entered the system, close the refrigerant drum valve and the low pressure gauge valve.

3. Turn both compressor shut-off valves fully counterclockwise, remove the gauge set, and replace caps on shut-off valves and gauge fittings.

4. After the system is charged a performance check should be made. Observe particularly for excessive head pressures.

SUCTION THROTTLING VALVE (Fig. 14-31)

Disassembly

1. Discharge refrigerant system.

2. Remove the fender access hole cover, then remove valve assembly from the car.

3. Loosen vacuum diaphragm lock nut, then remove vacuum diaphragm from valve assembly.

   NOTE: Diaphragm assembly is under spring tension. Apply pressure to diaphragm when removing.

4. Remove and discard "O" ring from diaphragm.

5. Remove spring and washer.

6. Remove diaphragm cover attaching screws, then remove cover, retainer cup, diaphragm and piston.

7. Remove diaphragm from piston.

8. Remove Schrader valves from fittings.

   NOTE: Do not interchange Schrader valves as the oil bleed line Schrader valve has a special calibration.

9. Thoroughly clean valve body and piston with cleaning solvent and blow out all passages and screen with compressed air.

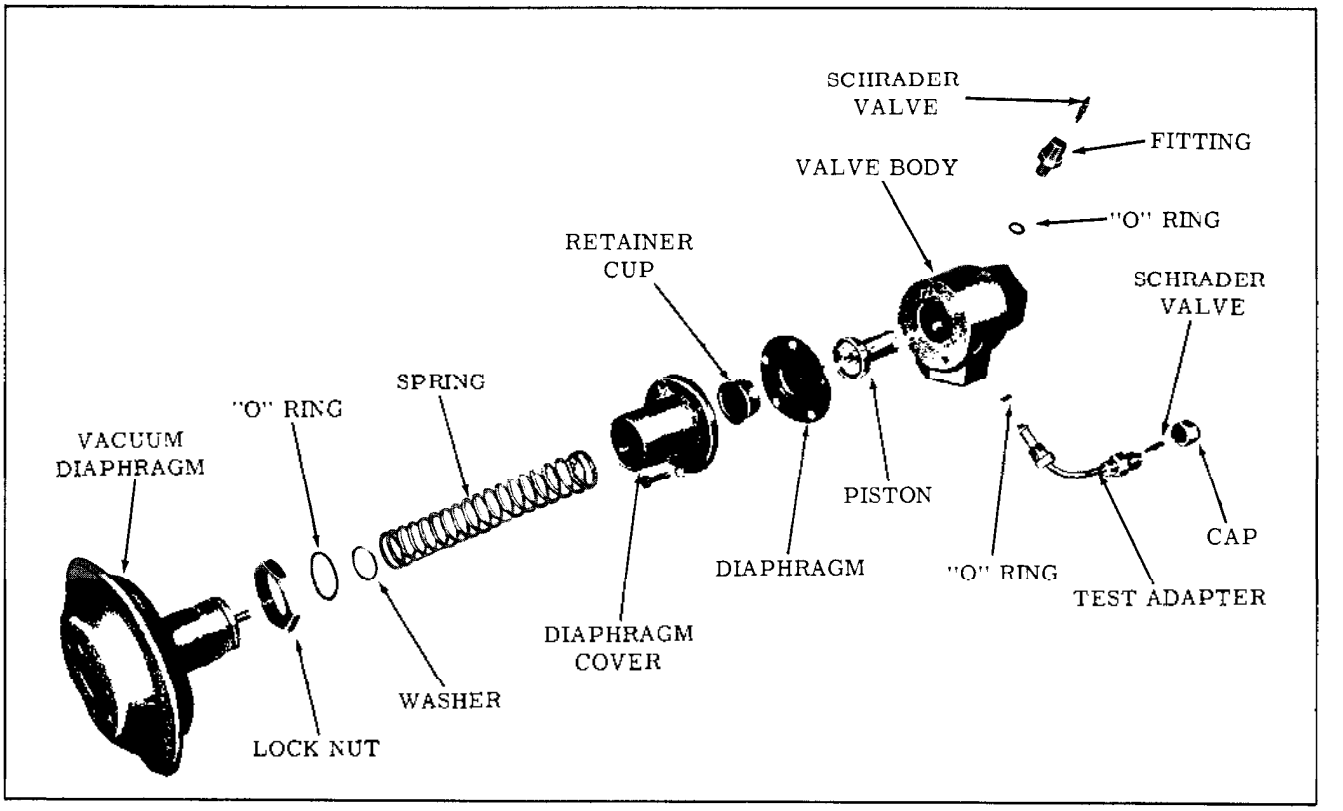


Fig. 14-31 Suction Throttling Valve

Assembly

1. Lubricate tip of diaphragm with compressor oil and insert diaphragm into piston.
2. Insert piston and diaphragm into valve body.
3. Position retainer cup into diaphragm, open end out, then install the diaphragm cover and retain loosely with the attaching screws.
4. Move piston back and forth several times to properly seat diaphragm, then tighten the attaching screws.
5. Install a new "O" ring on the vacuum diaphragm.
6. Position washer and spring into the vacuum diaphragm cavity.
7. Insert the vacuum diaphragm and spring into the diaphragm cover. Apply pressure to vacuum diaphragm and thread vacuum diaphragm into diaphragm cover.
8. Install Schrader valves into their respective fittings.

   NOTE: To determine the correct position of the Schrader valves, depress the Schrader valves. The valve with the least spring resistance must be installed in the oil return line fitting.
9. Install the valve on the evaporator, then evacuate and charge the system.
10. Adjust suction throttling valve as outlined under SUCTION THROTTLING VALVE ADJUSTMENT.

SUCTION THROTTLING VALVE ADJUSTMENT (Fig. 14-32)

The suction throttling valve is adjusted to regulate evaporator pressure so that it will not fall below 29 to 30 p.s.i. If it controls below 29 p.s.i., the evaporator will "ice-up" and refrigeration

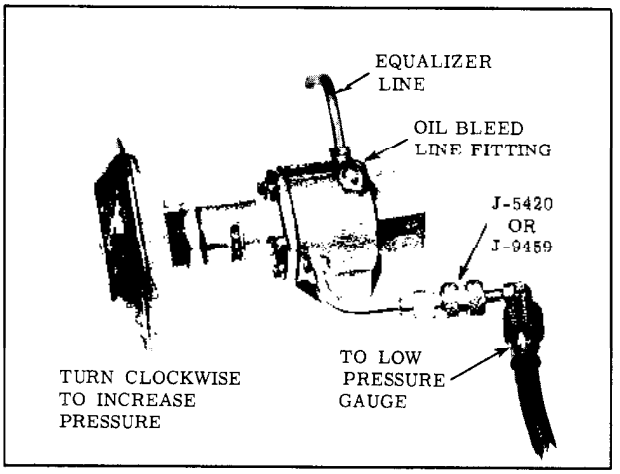


Fig. 14-32 Suction Throttling Valve Adjustment

capacity will be reduced. If the valve controls higher than this pressure an undesirable loss of refrigeration will occur which will be especially noticeable in extremely hot weather. This is because for each pound in pressure higher than 30 p.s.i., the discharge air temperature will be raised one degree. The controlling pressure of the valve can be checked and adjusted as follows:

1. Remove Schrader valve fitting cap at the suction throttling valve.
2. Install Adaptor J-5420 on the low pressure gauge hose, and connect the adaptor to the Schrader valve fitting on the suction throttling valve.
3. Purge the gauge and hose by opening the low pressure gauge valve for a few seconds.
4. Start engine and run at fast idle. Move temperature control lever to the extreme right position, turn blower speed on "HIGH" and depress "RECIRCULATION" button.

   NOTE: When adjusting the suction throttle valve after the system has been discharged the temperature control valve must be moved back and forth 10 to 15 times to normalize the suction throttling valve diaphragm.

5. Allow system to operate a few minutes then observe evaporator pressure on gauge. Continue to increase engine R.P.M. until evaporator pressure no longer changes. If the stabilized evaporator pressure is not 29 to 30 p.s.i., adjust valve as follows:
   A. Remove the fender access hole cover.
   B. Disconnect vacuum hose from suction throttling valve diaphragm.
   C. Loosen lock nut on diaphragm and rotate diaphragm clockwise to raise evaporator pressure or counterclockwise to lower evaporator pressure.
   D. After pressure has been adjusted to specifications, tighten lock nut and install vacuum hose on diaphragm.
7. Shut off engine and remove gauge assembly.
8. Install Schrader valve fitting cap and the fender access hole cover.

EVAPORATOR ASSEMBLY

Removal

1. Discharge the system as outlined under DISCHARGING THE SYSTEM.
2. Remove fender plate access hole cover.
3. Disconnect the liquid line at the expansion valve, and low pressure lines near evaporator. Tape fittings to prevent entrance of dirt and moisture.

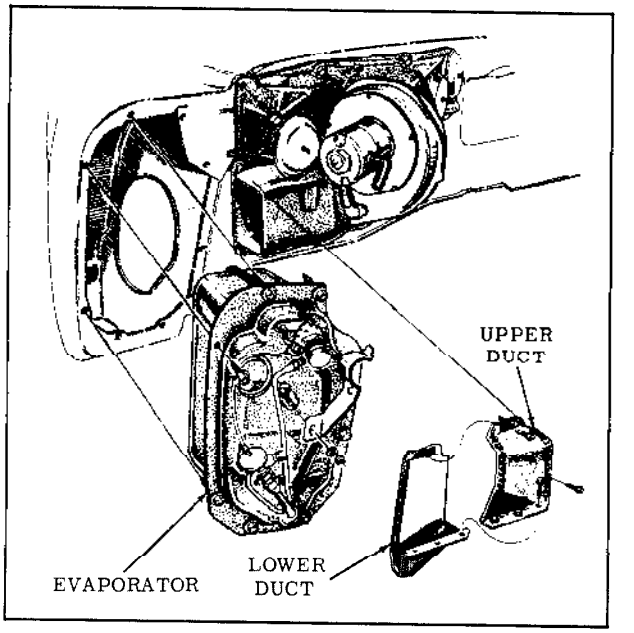


Fig. 14-33 Evaporator Removal

4. Remove six screws from evaporator to blower connecting duct, then remove upper section of duct. (Fig. 14-33)
5. Loosen two screws on inside of lower section of connecting duct, then slide from blower duct.
6. Remove evaporator attaching screws and remove evaporator through access hole.

Disassembly

1. On bench, remove expansion valve from evaporator by loosening the line fittings and removing the capillary bulb.
2. Remove evaporator housing bolts, nuts and washers, then remove evaporator from housing.

To assemble, reverse disassembly procedure.

Installation

1. With rubber gasket cemented to evaporator housing, position the evaporator assembly in cowl opening and install attaching screws.
2. Install lower section of connecting duct in blower duct. Then install the two screws on inside of duct.
3. Place upper section of connecting duct in position, then install attaching screws.
4. Remove caps and tape from lines, oil the fittings with Frigidaire 525 Viscosity Oil, then connect the lines to the evaporator pipes.

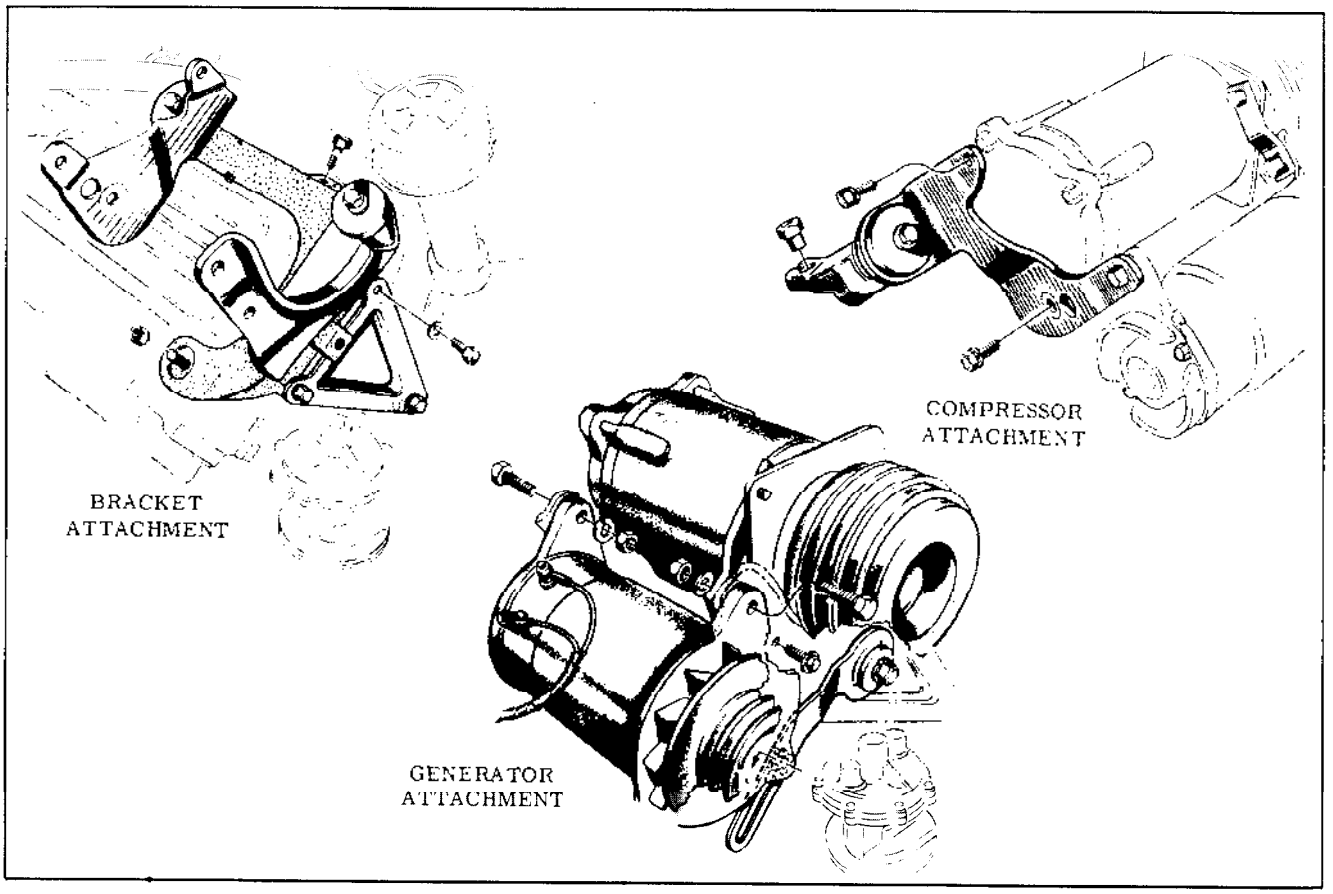


Fig. 14-34 Compressor Removal

5. Install the filler plate cover, bracket and anti-squeak.
6. Evacuate the system as outlined under EVACUATING THE SYSTEM.
7. Charge the system as outlined under CHARGING THE SYSTEM.
8. Leak test all line fittings that were disconnected. Refer to LEAK DETECTOR.

COMPRESSOR (Fig. 14-34)

Removal

1. Remove protective caps from compressor discharge and suction pressure hand shut-off valves.
2. Turn both compressor hand shut-off valves fully clockwise.
3. Disconnect clutch coil wire at compressor connector.
4. Remove the belts from the compressor pulley.
5. Remove the bolt holding the hand shut-off valve assembly to the compressor, then remove the assembly from the compressor. Install Tool J-9527, with fittings capped, on the compressor to prevent loss of oil.
6. Disconnect generator from compressor and bracket.
7. Remove the compressor to bracket bolts, then remove the compressor assembly.

Installation

1. Position the compressor on the mounting bracket then install and tighten the compressor to bracket bolts.
2. Install generator and tighten all attaching bolts. (Fig. 14-34)
3. Install coil wire.
4. Remove Tool J-9527 and install two new "O" rings on the valve port openings and position the hand shut-off valve assembly on the compressor. Install the mounting bolt and tighten to 15 ft. lbs. torque.
5. Install belts and adjust tension using Tool 33-70.
6. If compressor was removed for some internal malfunction and foreign material has circulated throughout the system, discharge complete system and proceed as follows:

   a. Install a charging line to the compressor

high pressure gauge outlet and to a drum of refrigerant 12.

b. Disconnect the liquid line from the dehydrator receiver assembly on the inlet side, and cap the dehydrator receiver immediately.

c. Turn the high pressure hand shut-off valve fully counterclockwise, then turn it back two turns clockwise.

d. Open the refrigerant drum valve and turn the drum upside down to allow liquid refrigerant to flush through the condenser and out the line. Use approximately 2 lbs. of refrigerant for this operation.

e. Close the drum valve and connect the dehydrator receiver assembly.

f. Remove the expansion valve screen and clean or replace as necessary.

g. Remove the charging line from the compressor discharge pressure gauge outlet, install the gauge set, and evacuate the entire system as outlined under EVACUATING THE SYSTEM.

h. Recharge the system as outlined under CHARGING THE SYSTEM WITH REFRIGERANT - COMPLETE CHARGE.

COMPRESSOR SHAFT SEAL (Fig. 14-35)

Removal

1. Remove compressor from the car. Refer to COMPRESSOR - Removal.

2. Remove driven plate from compressor. Refer to DRIVEN PLATE - Removal.

3. Remove seal seat retaining ring with Tool J-5403.

4. Remove the seal seat with Tool J-9393 as shown in Fig. 14-36.

5. Remove the seal seat "O" ring from inside the housing.

6. Insert Tool J-9392 on top of seal. Rotate clockwise and force tool downward until tool engages tangs of seal. Remove seal by lifting tool out of housing. (Fig. 14-37)

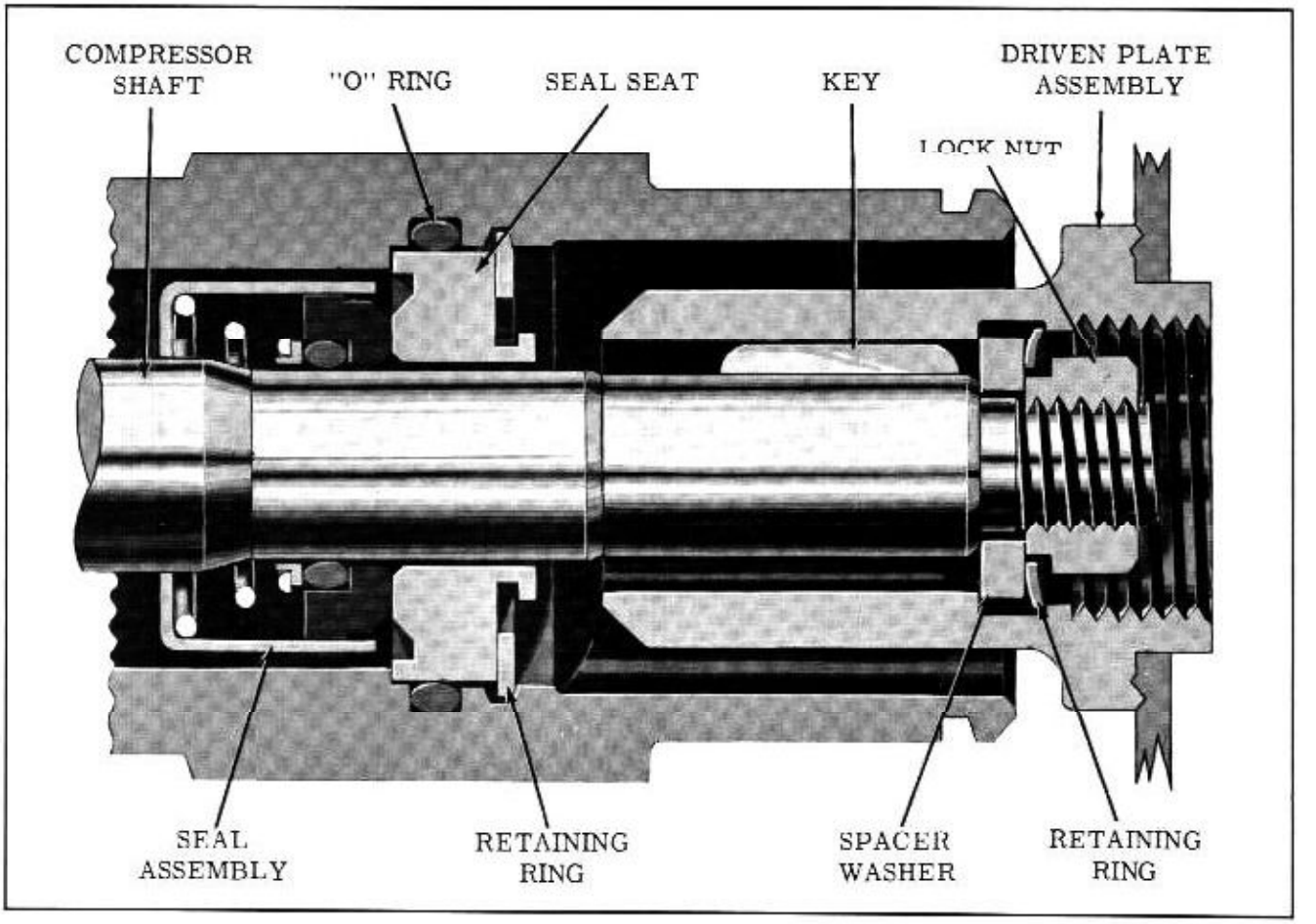


Fig. 14-35 Compressor Shaft and Seal

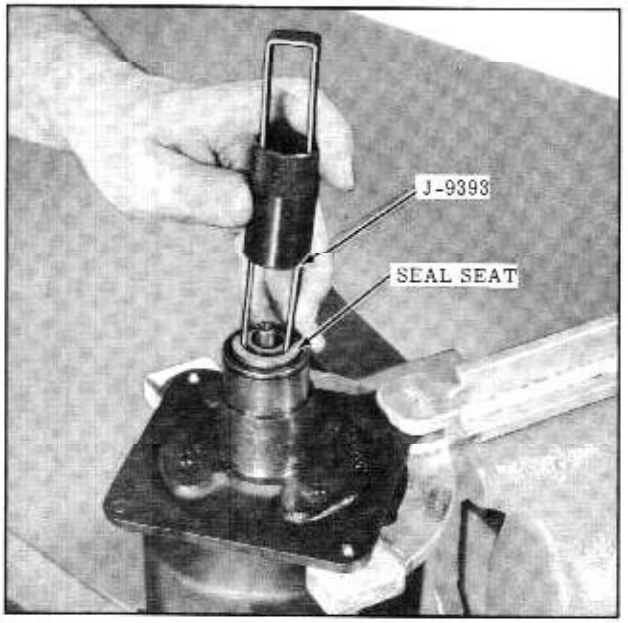


Fig. 14-36 Removing Seal Seat

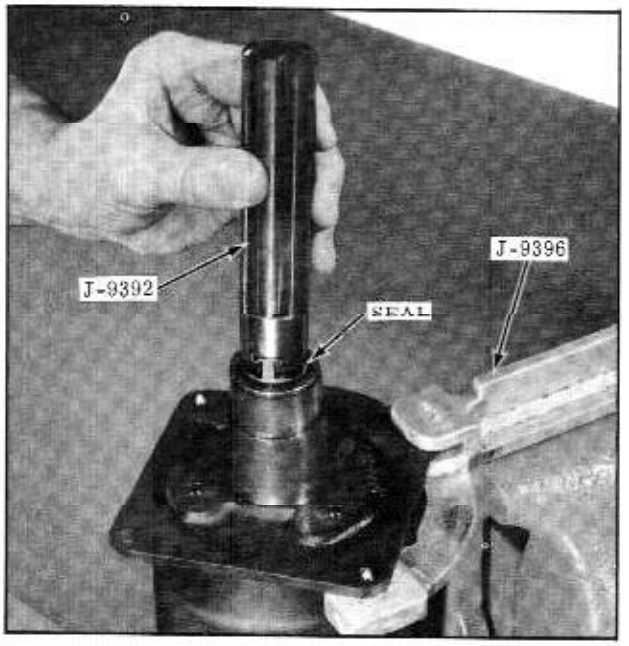


Fig. 14-37 Removing Seal

Installation

1. Place the new seal seat "O" ring in the groove inside the neck of the compressor front head.
2. With Tool J-9392, install seal by rotating tool while applying a light pressure, until seal locks in place. Rotate tool counterclockwise slightly to release from seal, and remove tool.
3. Oil the interior of the seal cavity, shaft and seal, using clean Frigidaire 525 Viscosity Oil.
4. Grip the seal seat with Tool J-9393. Push it into place so as not to disturb the "O" ring in the groove and to also affect a seal with this "O" ring.
5. Install the seal seat retainer with J-5403.
6. With Tool J-9527 installed on compressor (Fig. 14-38), leak test the compressor as follows:
   a. Using the J-5725 Gauge Set, connect the center hose to the refrigerant drum and the high and low pressure hoses to the compressor.
   b. With the high pressure valve and the low pressure valve open, allow refrigerant to flow into the compressor.
   c. Open the oil plug fitting in the compressor housing and allow the air to exhaust until refrigerant starts to flow from the fitting.
   d. Close the oil plug fitting and allow the drum pressure to stabilize in the compressor.
   e. Check and correct any leaks that may exist.
   f. Remove gauge set, cap fittings on Tool J-9527 then add oil as outlined under CHECKING AND ADDING OIL.
7. Install driven plate on compressor.
8. Install compressor on car.

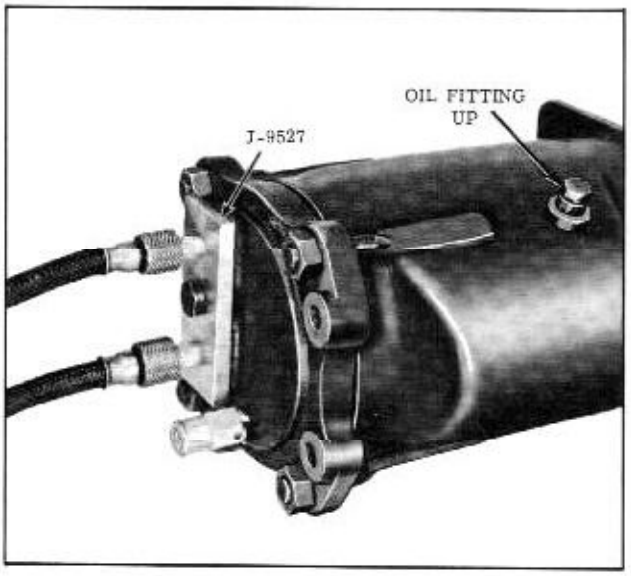


Fig. 14-38 Leak Testing Compressor

COMPRESSOR DISASSEMBLY (Fig. 14-39)

Before disassembling the compressor, remove the oil drain screw and allow all of the oil to drain from the compressor into a clean container; this is to determine the amount and condition of the oil.

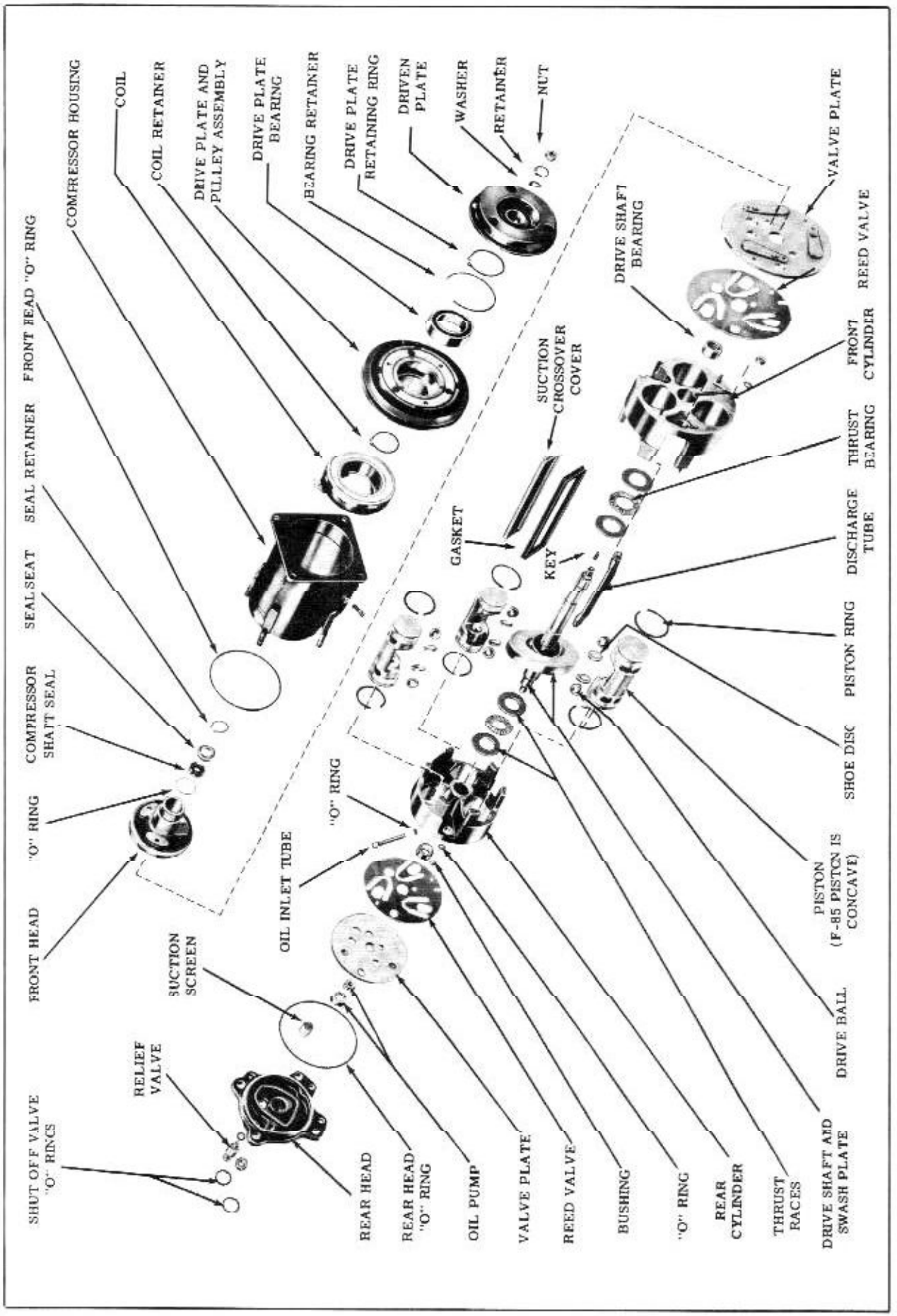


Fig. 14-39 Air Conditioning Compressor

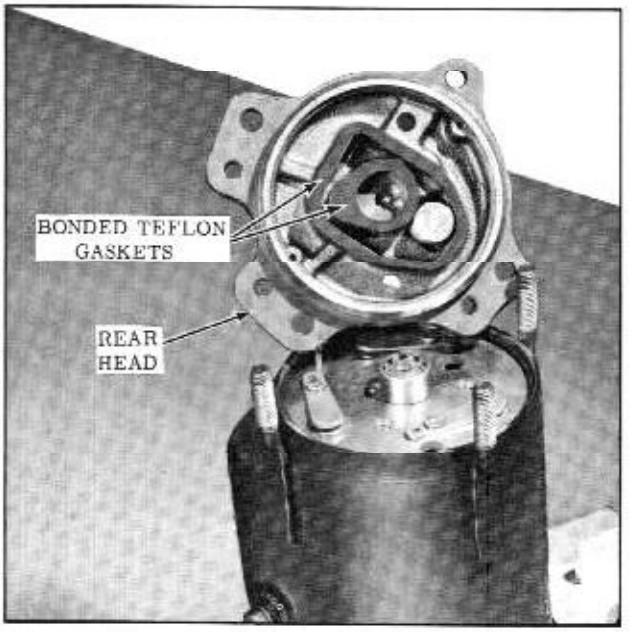


Fig. 14-40 Rear Head Removal

REAR HEAD

1. With compressor mounted in a vise or in Holding Fixture J-9396, rear head up, scribe rear head and compressor housing.
2. Remove the 4 rear head to housing attaching nuts.
3. Remove the rear head, inspect teflon gaskets on the casting. If teflon gaskets are damaged replace the rear head. (Fig. 14-40)
4. Remove the suction screen from the rear head.
5. Remove the oil pump gears. If gears are damaged, gears should be replaced.
6. Remove the rear head "O" ring and discard.

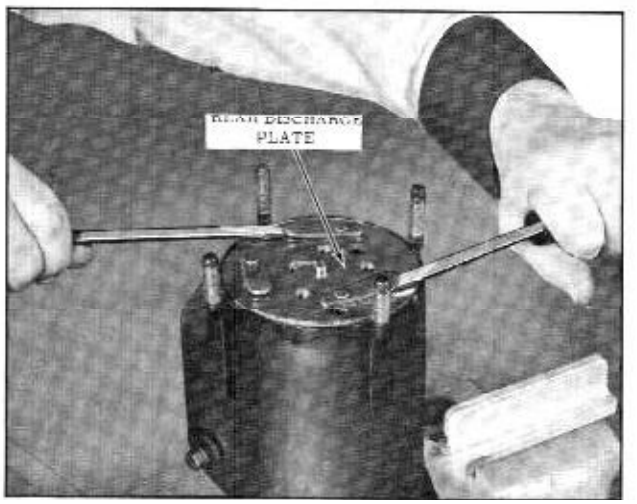


Fig. 14-41 Removing Rear Discharge Plate

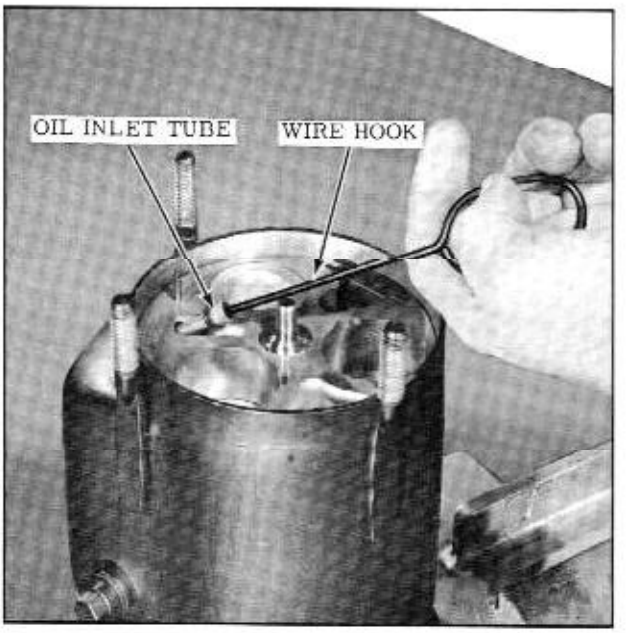


Fig. 14-42 Removing Oil Inlet Tube

7. Remove the rear discharge valve plate and reed valve assembly. Separate the discharge valve plate and reed valve and inspect. (Fig. 14-41)
8. Remove the oil inlet tube and "O" ring. Discard "O" ring. (Fig. 14-42)

FRONT HEAD

1. Remove the cylinder assembly from the rear of the compressor housing by pushing on the compressor shaft. (Fig. 14-43)

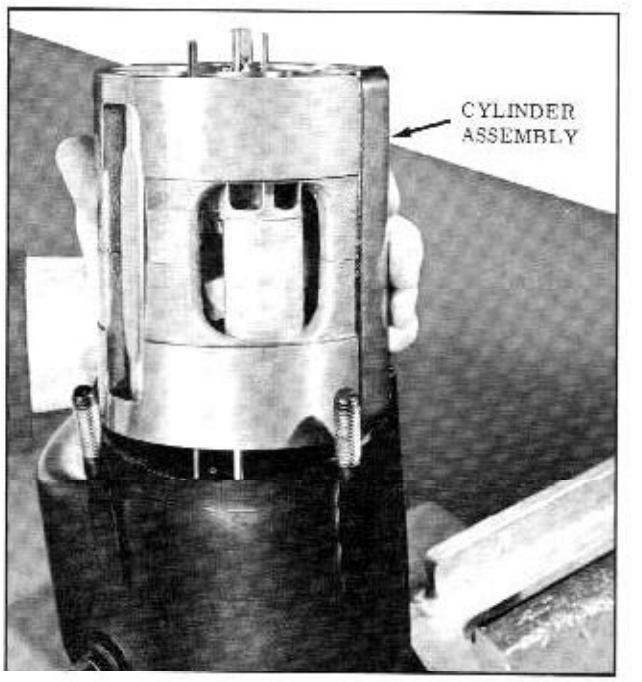


Fig. 14-43 Removing Cylinder from Housing

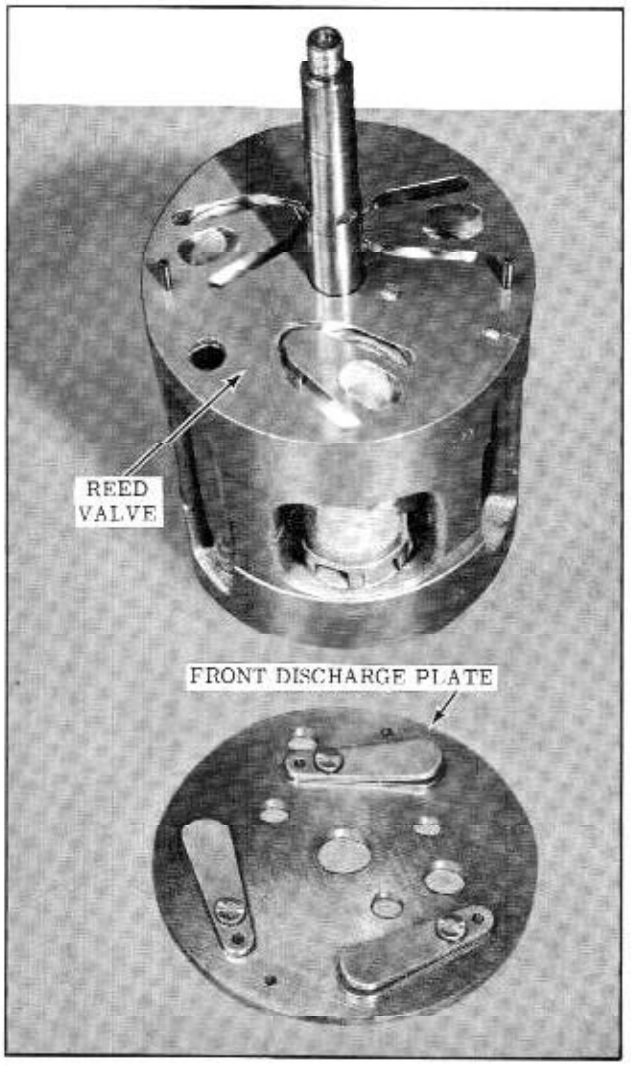


Fig. 14-44 Front Head Discharge Plate and Reed Valve

2. Remove the front head by tapping it to the rear with a wood block. Discard "O" ring. Check teflon sealing surfaces of head.

3. Remove the front discharge valve plate and reed valve assembly. Separate discharge plate from reed valve and inspect. (Fig. 14-44)

CYLINDER

1. Remove the suction cross over cover and seal. (Fig. 14-45)

2. Drive the cylinder halves apart using a wood block and hammer. (Fig. 14-46)

3. Remove the rear half of the cylinder from the pistons.

4. Remove and discard the discharge tube. (Fig. 14-47)

5. If necessary to remove the drive shaft bearing from the rear cylinder half, remove the

Fig. 14-45 Removing Suction Crossover Cover

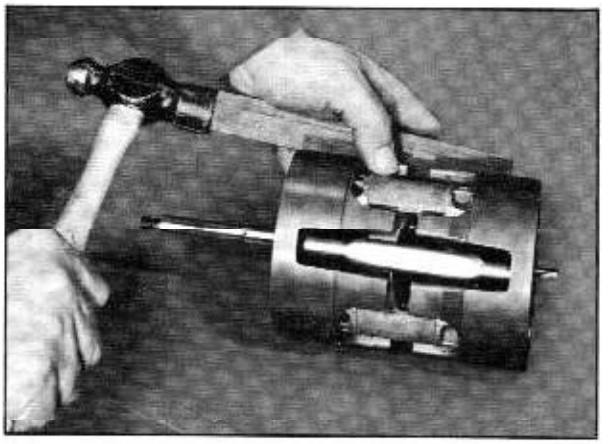


Fig. 14-46 Separating Cylinder Halves

bearing with a brass drift, then install a new bearing, with manufacturers name towards rear, as shown in Fig. 14-48.

6. Mark pistons with their respective cylinders, so that pistons can be reinstalled in their original position and location.

7. Rotate shaft until a piston is at its highest point. Push shaft away from head until the piston assembly can be removed. Separate the piston, piston drive balls, and piston rings and place in Tray J-9402, in compartments associated with proper end of piston. Discard all piston shoe discs.

8. Repeat procedure until all pistons are removed. (Fig. 14-49)

9. Remove shaft and swash plate assembly.

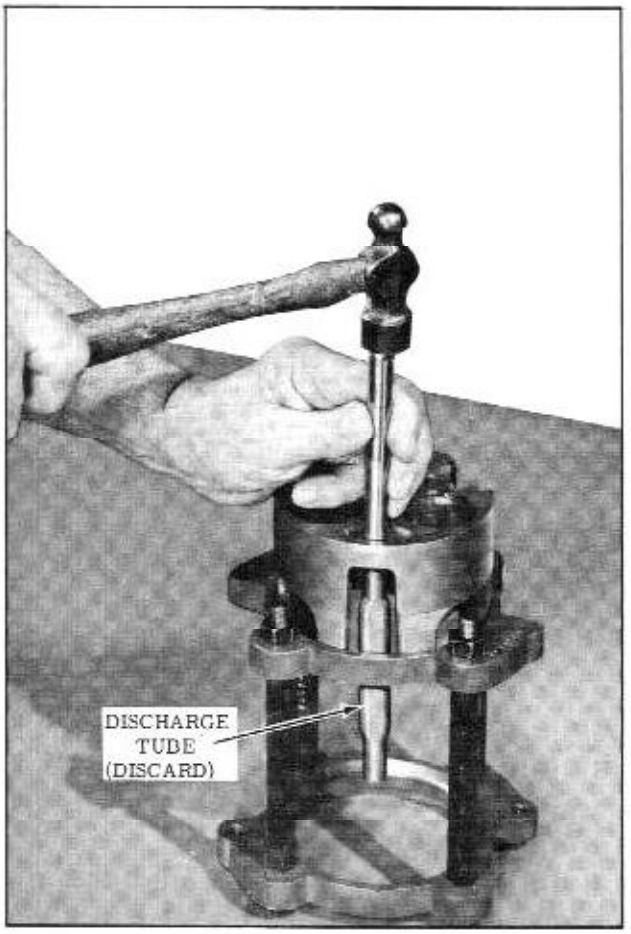


Fig. 14-47 Removing Discharge Tube

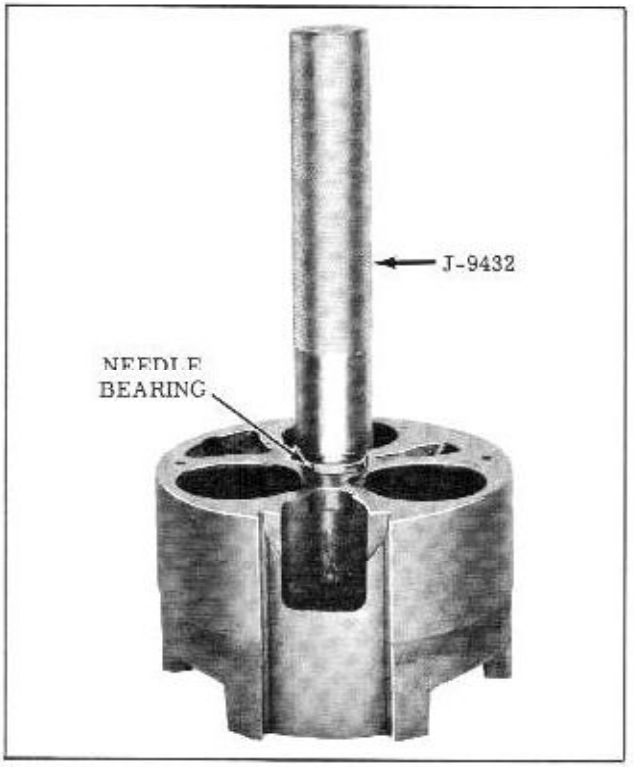


Fig. 14-48 Installing Drive Shaft Bearing

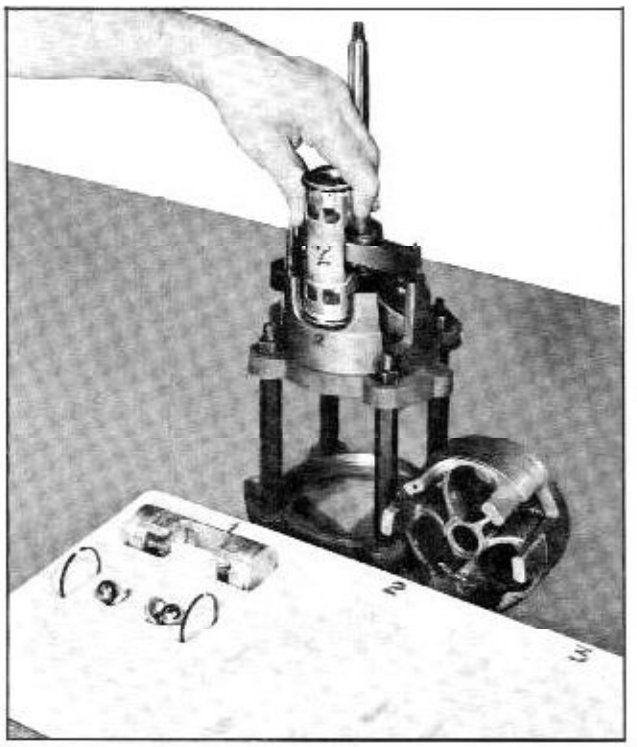


Fig. 14-49 Removing Piston

Separate thrust bearings and races and discard. Inspect bearing surfaces of shaft and swash plate assembly.

10. If necessary to replace the front cylinder half drive shaft bearing, repeat Step 5.

11. Wash all parts to be reused in clean solvent (oleum). Dry with compressed air.

COMPRESSOR ASSEMBLY

CYLINDER

1. Position front half of cylinder on the Cylinder Assembly Fixture J-9558.

THRUST BEARING RACE CHART

Service *Part Number	Thickness Dimension	Identification No. Stamped on Race
6556000	.0920	0
6556060	.0970	6
6556070	.0980	7
6556080	.0990	8
6556090	.1000	9
6556100	.1010	10
6556110	.1020	11
6556120	.1030	12

* The last three digits indicate identification number on race.

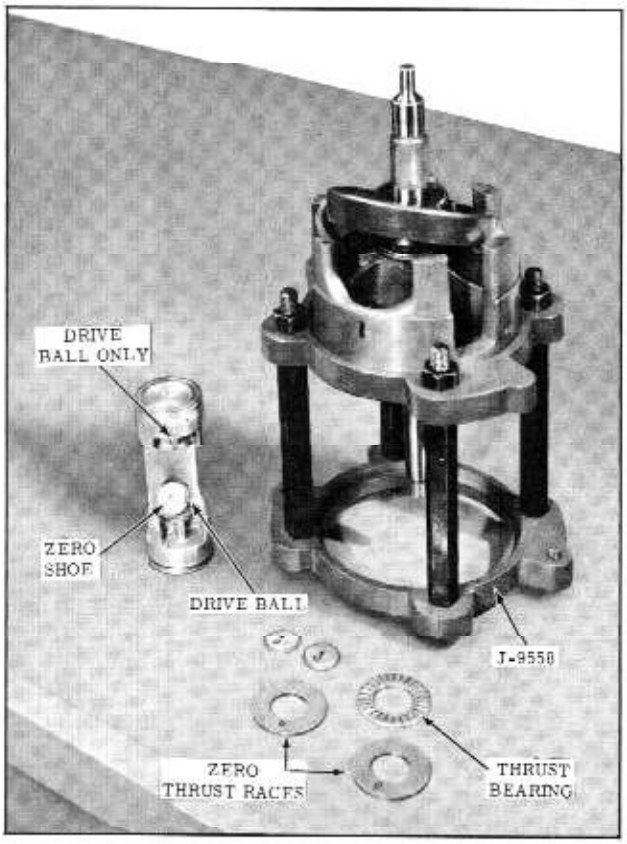


Fig. 14-50 Assembling Parts for Clearance Check

2. Position a zero thrust race, a thrust bearing and another zero thrust race over the front and rear ends of the compressor shaft. Retain bearings and thrust washers with clean petrolatum. Install shaft into front cylinder, threaded end of shaft down. (Fig. 14-50)

3. Apply a light smear of clean petrolatum to the ball pockets of each of the three pistons.

4. Place the balls in the piston pockets.

5. Apply a light smear of clean petrolatum to the cavity of three new zero shoe discs.

6. Place a zero shoe over each ball in the front end of the piston. The front end of the piston has an identifying notch in the casting web. (Fig. 14-51)

7. Place a ball only in the rear ball pocket of each of the three pistons.

   NOTE: Do not assemble any of the piston rings at this time.

8. Rotate the shaft and swash plate until the high point of the swash plate is over the piston cylinder bore, which has been identified as No. 1. Raise the shaft until the front end of the piston can be inserted in the cylinder bore, at the same time place the front ball and shoe and the rear ball only over the swash plate.

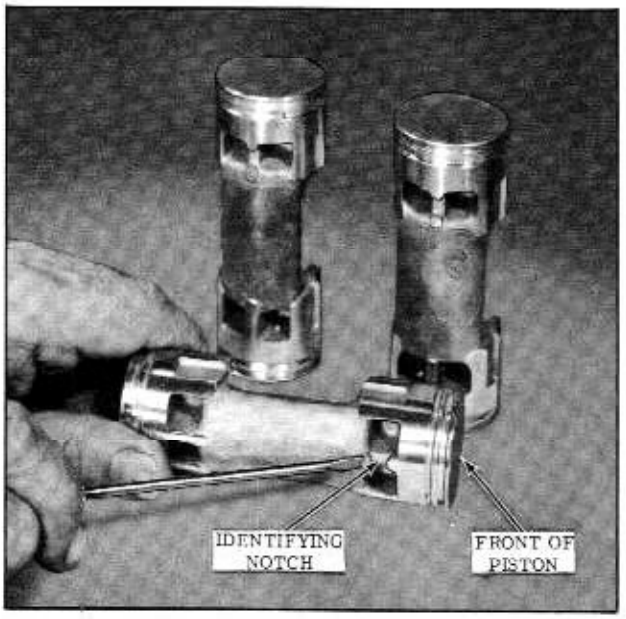


Fig. 14-51 Piston Identification

9. Repeat this operation for pistons No. 2 and No. 3.

   NOTE: The balls and shoes must adhere to the piston during this assembly.

10. Align the rear cylinder with the front cylinder. Tap into place, using a wood block and mallet.

11. Assemble the head ring of Tool J-9558 and nuts to the fixture, tighten the nuts to approximately 15 foot pounds torque.

12. Use a leaf type feeler gauge to check between the rear ball and swash plate. (Fig. 14-52)

Fig. 14-52 Checking Drive Ball to Swash Plate Clearance

Use a suitable combination of feeler gauge leafs until the combination will result in a FORCED FIT between the ball and swash plate. Rotate the shaft approximately 120°, and make a second check with feeler gauge between the ball and plate. Rotate the shaft again approximately 120° and again check with a feeler gauge between the parts. Record the three readings. From the three checks, select a numbered shoe to correspond to the minimum feeler gauge reading for No. 1 piston (refer to SHOE CHART). Mark piston number on the shoe package. The shoe may be put in the assembly tray in the compartment corresponding to the piston number and rear ball pocket position. Repeat procedure for the remaining pistons.

EXAMPLE

	Position 1	Position 2	Position 3	Select and Use Shoe No.
Piston #1	.019"	.0195"	.019"	19
Piston #2	.020"	.020"	.020"	20
Piston #3	.021"	.021"	.022"	21

SHOE CHART

SERVICE *PART NUMBER	IDENTIFICATION NO. STAMPED ON SHOE
6557000	0
6556180	18
6556190	19
6556200	20
6556210	21

* The last three digits indicate identification number on shoes.

13. To determine the clearance between the rear thrust bearing and the upper or outer-rear thrust race, use a combination of feeler gauge leafs to get a FORCED FIT between these two parts. (Fig. 14-53)

14. Select from stock a numbered thrust race that corresponds to the feeler gauge reading. Mark the package "REAR" place it in the assembly tray corresponding to this position.

15. Loosen and remove the nuts and ring from the checking fixture. Remove the rear cylinder, pistons and rear outer thrust race.

16. Install the correct thrust race, determined in Step 14, over the compressor shaft. Apply a light smear of petrolatum to the thrust races to aid in holding them in place during assembly.

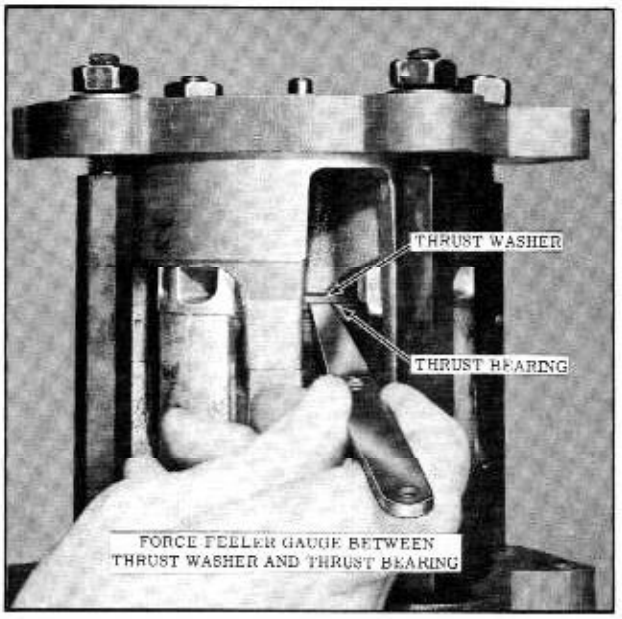


Fig. 14-53 Checking Drive Shaft End Play Clearnace

17. Assemble a piston ring, scraper groove toward the piston ball socket, to each end of the three pistons.

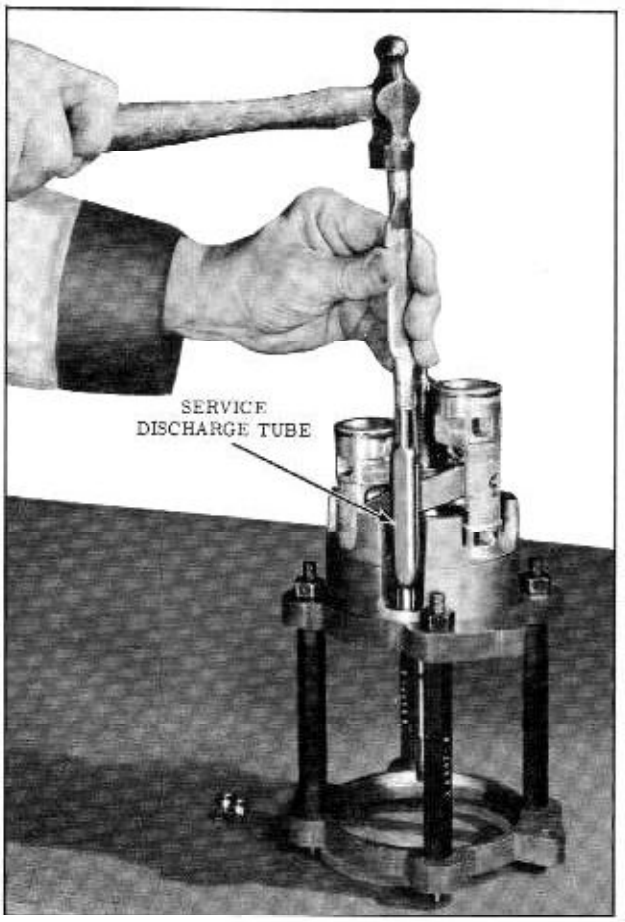


Fig. 14-54 Installing Discharge Tube

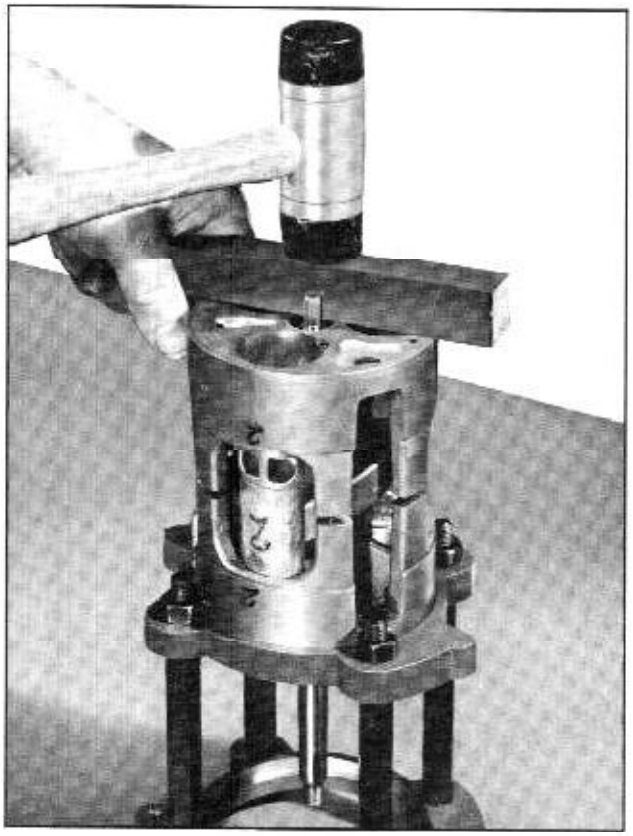


Fig. 14-55 Assembling Cylinder Halves

18. Apply a light smear of petrolatum to the numbered shoes and place them over the correct ball in the rear of the piston.

19. Rotate the swash plate so the high point is above cylinder bore No. 1. Carefully assemble piston No. 1, complete with ball and a zero shoe on the front end and ball and numbered shoe on the rear end, over the swash plate. Compress and enter the front piston ring into the front cylinder half. Repeat this operation for pistons No. 2 and No. 3.

20. Assemble one end of the service discharge crossover tube into the hole in the front cylinder. (Fig. 14-54)

21. Rotate the shaft to position the pistons in a "stair step" arrangement. Place the rear half of the cylinder over the shaft and start the pistons and rings into the cylinder bores. When satisfied that all parts are in proper alignment, tap rear cylinder with a wood block and mallet to seat the rear cylinder over the locating dowel pins. (Fig. 14-55)

22. Generously lubricate all moving parts with Frigidaire 525 Viscosity Oil. Check for the free rotation of the mechanism.

23. Remove cylinder assembly from fixture.

24. Assemble a new rectangular gasket to the suction crossover cover. Coat the gasket

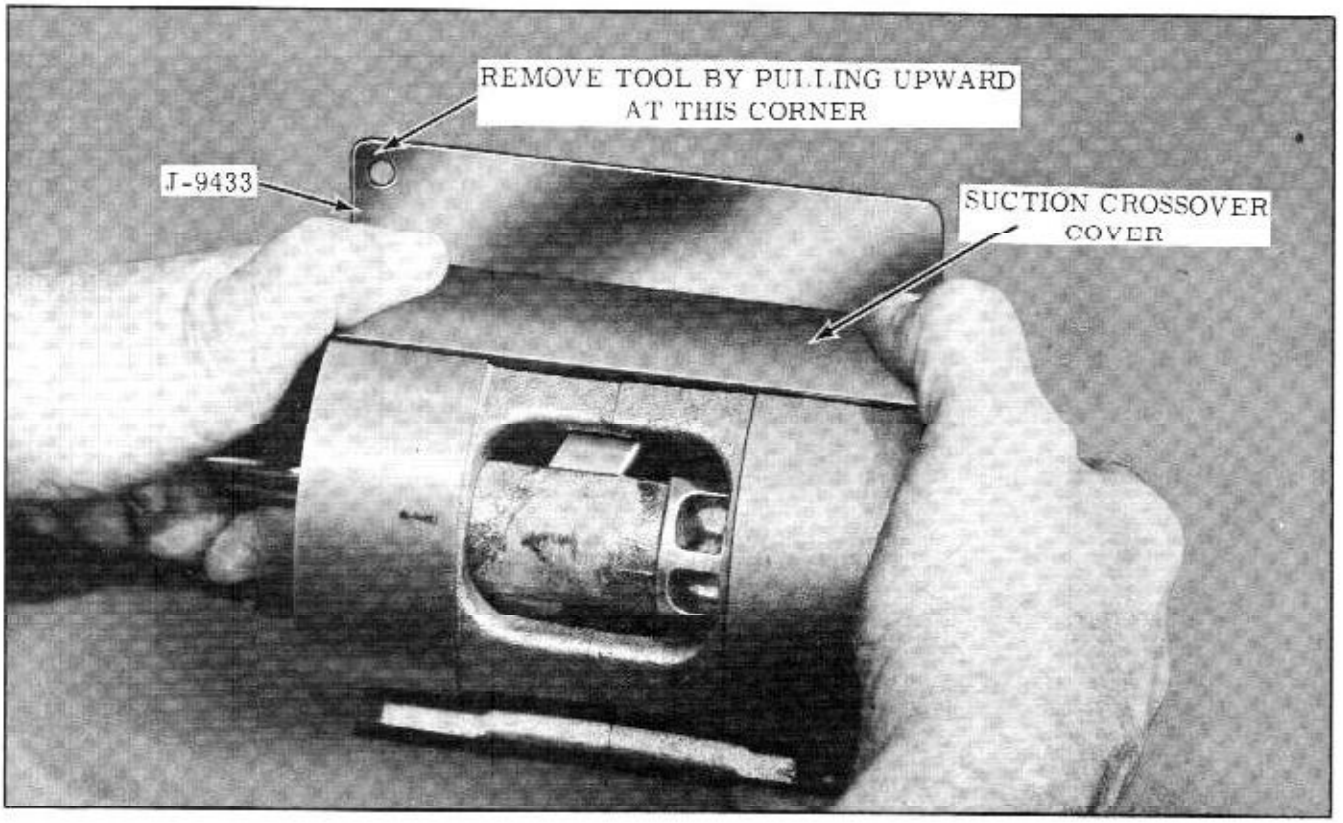


Fig. 14-56 Installing Suction Crossover Cover and Seal

with Frigidaire 525 Viscosity Oil. Start one side of the gasket and cover into the "dove tail" slot in the cylinder. Position Tool J-9433 between the gasket and the "dove tail" slot. Center the cover and gasket with the ends of the cylinder faces. Press down on the cover to snap it into place and remove tool. (Fig. 14-56)

25. Assemble the suction reed valve and the front discharge valve plate to the front end of the cylinder. Align the dowel pin holes, suction ports and oil return slot.

NOTE: The front discharge valve plate has a large diameter hole in the center.

26. Install "O" ring and bushing over discharge tube. (Fig. 14-57)

27. Coat the teflon gasket surfaces on the webs of the front head with Frigidaire 525 Viscosity Oil. Examine the location of the dowel pins and contour of the webs. Rotate so as to position it properly over discharge reed retainers. Use care to avoid damaging the teflon gasket surfaces. When in proper alignment, seat with light mallet taps.

28. Apply an ample amount of Frigidaire 525 Viscosity Oil around the angle groove at the lower edge of the head and to the "O" ring. Assemble the "O" ring in the groove.

29. Mount the compressor housing on the holding fixture, attaching bolts up.

30. Coat the inside machined surfaces of the housing with Frigidaire 525 Viscosity Oil. Install the cylinder assembly into the housing. Line up the oil sump with the oil intake tube hole.

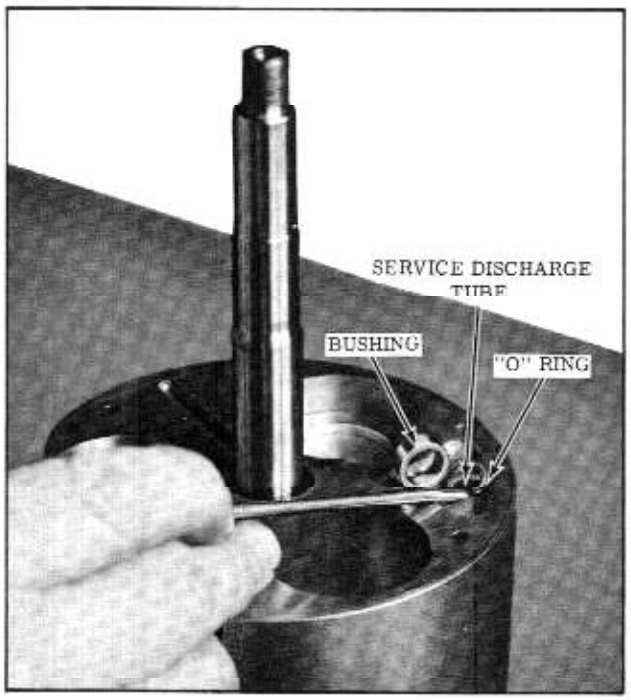


Fig. 14-57 Installing "O" Ring and Bushing

31. Position a new "O" ring on the oil intake tube, apply oil to the cavity and "O" ring. Insert the tube and "O" ring, rotating the cylinder assembly to align the tube with the hole in the housing baffle.

32. Install "O" ring and bushing over discharge tube.

33. Position the rear suction reed valve and discharge valve assembly to align with the dowel pins, then slide it into place over pins.

34. Assemble the inner oil pump gear over the "D" shaped flat on the shaft. Place the outer oil pump gear into oil pump gear cavity in the head. Retain with petrolatum.

35. Generously oil the valve plate around the outer ends where the large "O" ring will be placed. Oil the valve reeds, oil pump gears, and the area where the teflon gasket will contact the valve plate.

36. Coat the rear head to housing "O" ring with Frigidaire 525 Viscosity Oil and place it on the valve plate in contact with the housing.

37. Place the suction screen in the rear head.

38. Assemble the rear head to the compressor housing, using care not to damage the teflon gasket.

NOTE: If oil pump gears do not mesh, a slight movement of the rear head or drive shaft will aid in meshing of the gears.

39. Assemble the nuts to the threaded housing studs. Tighten 19 to 23 ft. lbs. torque.

40. Position 2 "O" rings in the cavity at the rear of the compressor.

41. Install Tool J-9527 on compressor (Fig. 14-38). then leak test the compressor as follows:

a. Using the J-5725 Gauge Set, connect the center hose to the refrigerant drum and the high and low pressure hoses to the compressor.

b. With the high pressure valve and the low pressure valve open, allow refrigerant to flow into the compressor.

c. Open the oil plug fitting in the compressor housing and allow the air to exhaust until refrigerant starts to flow from the fitting.

d. Close the oil plug fitting and allow the drum

pressure to stabilize in the compressor.

e. Check and correct any leaks that may exist.

f. Release the pressure and remove gauge set.

g. Install caps on fittings of Tool J-9527.

42. Add oil to compressor as outlined under CHECKING AND ADDING OIL.

ADDING REFRIGERANT—PARTIAL CHARGE

The proper charge of refrigerant to insure a clean sight glass under operating conditions at various ambient temperatures is 4 lbs. 4 ozs. Since less than 4 lbs. 4 ozs. will result in a clear sight glass under some load conditions, it is necessary to consider load effects when checking and adding refrigerant to the system. The load can be varied by changing the blower speed as listed in the following chart. Be sure to operate the system for at least 5 minutes before checking sight glass.

Ambient Temp. (Outside of Car)	Blower Switch Position	Temperature Control Setting	Push Button Setting	Engine R. P. M.
70° to 80°	High	Fully To Right	"Normal"	1600
80° to 90°	Medium	Fully To Right	"Normal"	1600
90° or above	Low	Fully To Right	"Normal"	1600

If the system is low on refrigerant, proceed as follows:

1. Turn off the ignition.

2. Remove both compressor hand shut-off valve protective caps and make sure both valves are turned fully counterclockwise.

3. Remove both compressor gauge outlet fitting caps and install the gauge hoses on the fittings. (Fig. 14-58)

4. Make sure both gauge valves are closed, then turn both compressor hand shut-off valves two turns clockwise.

5. Crack open both gauge valves to purge the gauge hoses through the center hose, and crack open the valve on the refrigerant drum or the "Fits-All" valve on a 15 oz. refrigerant can. While refrigerant is escaping from the center hose of the gauge set and the valve fitting on the refrigerant container, connect the center hose to the refrigerant container.

6. Close the refrigerant container valve and both gauge valves.

7. Start the engine and set at 1600 R.P.M. Make sure the temperature control lever is fully to the right, the "NORMAL" button is depressed, and the blower switch is set according to the preceeding chart.

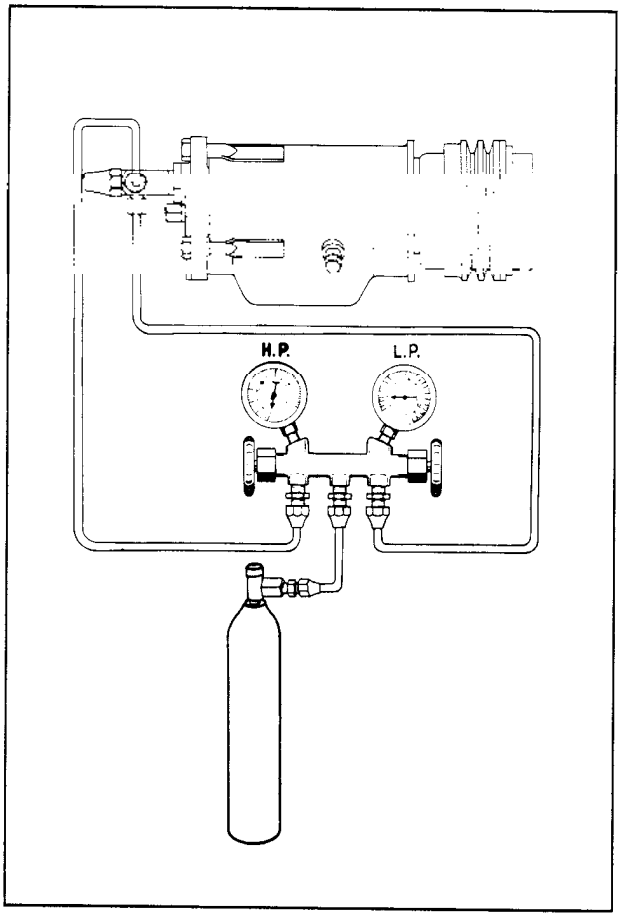


Fig. 14-58 Adding Refrigerant Partial Charge

8. Open valve on refrigerant container and the low pressure gauge valve to allow refrigerant to enter the system. When sight glass clears, close refrigerant container valve.

9. Wait two minutes, then check the sight glass. If vapor is still visible, open the refrigerant container valve and again allow refrigerant to enter the system. Add 1/4 lb. of refrigerant after sight glass clears.

10. Shut off engine, turn both compressor hand shut-off valves fully counterclockwise, remove gauge set, and install all protective caps.

CHECKING AND ADDING OIL

The compressor was originally charged with 10.5 ounces of Frigidaire 525 Viscosity Oil. During normal operation, because of an affinity of refrigerant 12 for oil, a certain amount of oil will circulate throughout the system along with the liquid and vapor. If any major loss of oil has occurred, such as a severe compressor seal leak, line breakage, damaged condenser, etc., proceed

as follows after making the necessary repairs.

1. Remove belts and coil electrical lead.
2. Remove compressor.
3. Transfer compressor to bench and loosen the oil drain screw.
4. Allow all of the oil to drain from the compressor into a clean container; this is to determine the amount and condition of oil.

   NOTE: If the examination of the oil shows any foreign material; sludge, water, etc., flush the system as outlined under COMPRESSOR - Installation Step 6, and fill compressor with 10.5 ounces of oil.

5. If the condition of the oil indicates that the compressor is free of any contamination, position the compressor so that the oil test valve flange is on the top side and pour from a graduated bottle, New Frigidaire 525 Viscosity Oil into the compressor in the amount required as follows:

   a. If oil drained in Step 4 was more than 1-1/2 ounces, add to the compressor the amount drained in Step 4.

   b. If oil drained in Step 4 was less than 1-1/2 ounces and a major oil loss has occurred, add 6 ounces of oil to the compressor.

   c. If the compressor is overhauled, add 1 ounce in addition to the oil added in Steps 5a or 5b.

   d. If a new service compressor is to be installed, drain service compressor and fill with oil as indicated in Steps 5a or 5b.

   e. If refrigeration components are replaced add oil as follows in addition to the oil added in Steps 5a, 5b or 5c.

Evaporator	3 Fluid Ounces
Condenser	1 Fluid Ounce
Dehydrator Receiver	1 Fluid Ounce

6. Tighten the oil drain screw.
7. Install compressor.
8. Evacuate the system to remove air and moisture; then charge the system with refrigerant.

PERFORMANCE TEST

The Performance Test should be made with the car doors and windows closed, the temperature control lever fully to the right, "NORMAL" button depressed, blower speed switch on "HI", an auxiliary fan in front of the radiator, and the car hood down as far as possible. Since the gauge hoses prevent the hood from being completely closed, cover the complete hood-to-cowl opening to prevent engine heat from entering the evaporator.

1. Remove access hole cover from right fender filler plate.
2. Remove Schrader valve fitting cap at the suction throttling valve.
3. Install Adapter J-5420 on the low pressure gauge hose, and connect the adapter to the Schrader valve fitting on the suction throttling valve, then momentarily open low pressure gauge valve to purge gauge hose.
4. Remove the compressor high pressure gauge outlet cap and install high pressure gauge hose.
5. Make sure high pressure gauge valve is closed, then turn compressor high pressure hand shut-off valve two turns clockwise. Momentarily open high pressure gauge to purge the gauge and hose.
6. In Park or Neutral with parking brake applied, adjust engine speed to 1600 R.P.M.
7. After temperature and humidity have been determined, compare test results with the PERFORMANCE CHART.
8. When test is completed, turn high and low pressure hand shut-off valves fully counterclockwise. Disconnect gauge hoses, and install protective caps.
9. Install Schrader valve fitting cap.
10. Install access hole cover.

DIAGNOSIS OF PERFORMANCE TEST RESULTS

CONDITION AND CAUSE	CORRECTION
EVAPORATOR PRESSURE TOO HIGH	
A. Defective or improperly adjusted suction throttling valve.	A. Adjust or repair as necessary.
B. Restriction in suction line.	B. Remove, inspect, and clean or replace.
C. Loose compressor drive belts.	C. Adjust as outlined.
D. Defective clutch or coil.	D. Check or replace as necessary.
E. Defective expansion valve.	E. Replace as necessary.
F. Expansion valve capillary tube not tight to evaporator suction line.	F. Check clamp for tightness.
G. Clutch slipping.	G. Refer to CLUTCH SLIPPAGE.
HIGH PRESSURE SIDE OF SYSTEM TOO HIGH	
A. Engine overheated.	A. Check engine cooling system.
B. Restricted air flow through condenser.	B. Remove foreign material from engine radiator and condenser.
C. Air in system or overcharge of refrigerant.	C. Momentarily discharge system on discharge side with engine not running; then, operate system and recheck pressure. Repeat as necessary. Check sight glass with system under load.
D. Restriction in condenser, dehydrator receiver assembly, or any discharge or liquid line.	D. Remove parts, inspect for restricted passage, and clean or replace.
E. Too much oil in compressor.	E. Drain oil and add correct amount.
NOZZLE DISCHARGE AIR TOO WARM (With Other Readings OK)	
A. Air hoses not properly connected.	A. Inspect air hoses and manifolds.
B. Defective or mispositioned evaporator drain hoses.	B. Replace or align as necessary.
C. Poor Seal - Evaporator to cowl.	C. Correct sealing.
CLUTCH SLIPPAGE	
A. Head pressure too high.	A. Discharge system until bubbles appear in sight glass and then add one pound of refrigerant.
B. Pulley wobbles.	B. Check and replace, if necessary, the pulley bearing. If pulley has been worn by bearing, replace pulley.

DIAGNOSIS OF PERFORMANCE TEST RESULTS (Cont'd.)

CONDITION AND CAUSE	CORRECTION
VELOCITY OF AIR AT DISCHARGE NOZZLES TOO LOW	
A. Restricted evaporator core in evaporator assembly.	A. Wash evaporator core. Remove air distributor from cowl trim pad and spray water through evaporator with hose.
B. Restricted air hoses.	B. Inspect and replace if necessary.
C. Defective blower motor.	C. Check and replace if necessary.
D. Defective switches.	D. Check and replace if necessary.
E. Poor wiring connection (Low voltage at blower.)	E. Correct wiring.
EVAPORATOR PRESSURE TOO LOW	
A. Insufficient Refrigerant charge.	A. Add refrigerant.
B. Restricted air flow through evaporator.	B. Check air flow.
SWEATING OF AIR DISCHARGE NOZZLES	
A. Heater valve not completely closed or leaking.	A. Check air valve for proper closing.
B. Air leak at cowl or floor pan.	B. Properly seal all holes in cowl and floor pan.
WATER BLOWING OUT AIR DISCHARGE NOZZLE	
A. Plugged or kinked evaporator drain hose.	A. Clean or align as necessary.
INOPERATIVE CONTROLS	
A. Inadequate vacuum.	A. Check vacuum. All controls should move with 10° Hg. Check hoses.

PRESSURE—TEMPERATURE RELATIONSHIP OF REFRIGERANT-12

Temp. °F	Pressure	Temp. °F	Pressure	Temp. °F	Pressure	Temp. °F	Pressure	Temp. °F	Pressure
-8	5.4	22	22.4	52	49.0	82	87.0	112	140.1
-6	6.3	24	23.9	54	51.0	84	90.1	114	144.2
-4	7.2	26	25.4	56	53.0	86	93.2	116	148.4
-2	8.2	28	27.0	58	55.4	88	96.4	118	153.0

PRESSURE—TEMPERATURE RELATIONSHIP OF REFRIGERANT-12 (Cont'd.)

Temp. °F	Pressure	Temp. °F	Pressure	Temp. °F	Pressure	Temp. °F	Pressure	Temp. °F	Pressure
0	9.2	30	28.5	60	58.0	90	99.6	120	157.1
2	10.2	32	30.1	62	60.0	92	103.0	122	161.5
4	11.3	34	32.0	64	62.5	94	106.3	124	166.1
6	12.3	36	33.4	66	65.0	96	110.0	126	171.0
8	13.5	38	35.2	68	67.5	98	113.3	128	175.4
10	14.6	40	37.0	70	70.0	100	117.0	130	180.2
12	15.9	42	39.0	72	73.0	102	121.0	132	185.1
14	17.1	44	41.0	74	75.5	104	124.0	134	190.1
16	18.4	46	43.0	76	78.3	106	128.1	136	195.2
18	19.7	48	45.0	78	81.1	108	132.1	138	200.3
20	21.0	50	47.0	80	84.1	110	136.0	140	205.5

GENERAL SPECIFICATIONS

Engine Idle Speed	(Refer to Engine Tune-Up and/or Carburction Section)
Cooling System Capacity (With Air Conditioning)	22 qts.
Fuse (at Fuse Block)	SFE 20 Amps.
Amount of Refrigerant 12 in System:	4 Lbs. 4 Oz.
Total Amount of Oil in Refrigerant System	10.5 Fluid Oz.
Type of Oil	Frigidaire 525 Viscosity

TORQUE SPECIFICATIONS

Application	Ft. Lbs.
Compressor Rear Support to Compressor Bolt	22 to 26
Compressor Bracket to Cylinder Head Nut	45 to 55
Compressor Front Support to Compressor Bolt	14 to 17
Compressor Support to Compressor	15
Compressor Bracket Brace to Bracket and Front Cover Bolt	22 to 26
Compressor Support to Insulator to Compressor Bracket Bolt	35 to 50
Shut-Off Valve Assembly to Compressor	15
Driven Plate to Compressor Shaft Nut	14 to 16
Rear Head to Compressor Housing Nuts	19 to 23

	Tube O.D.	Swivel Nut On Steel Tube	Swivel Nut On Aluminum Tube
Refrigerant Line Connections	1/4	10 to 15	5 to 7
	3/8	30 to 35	11 to 13
	1/2	30 to 35	11 to 13
	5/8	30 to 35	18 to 21
	3/4	30 to 35	23 to 28

PERFORMANCE CHART

COWL INLET		EVAPORATOR PRESSURE		DISCHARGE AIR R. H. NOZZLE	PRESSURES HIGH (DISCHARGE)
REALTIVE HUMIDITY	AIR TEMP. °F.	(AT SUCTION THROTTLING VALVE)	ENGINE R.P.M.	TEM. ± 1°F.	±10 LBS.
20	60	28-1/2	1600	32-1/2	182
	70	28-1/2		34	188
	80	28-1/2		36	204
	90	28-1/2		39	226
	100	33		49	272
	110	38		62	320
30	60	28-1/2	1600	33	183
	70	28-1/2		35-1/2	192
	80	29		39	210
	90	30-1/2		43	236
	100	36		54	285
	110	43		67	337
40	60	28-1/2	1600	34	184
	70	28-1/2		37	196
	80	30		41-1/2	216
	90	33		47-1/2	245
	100	39		59	298
	110	48-1/2		72	355
50	60	29	1600	35	185
	70	29		38-1/2	200
	80	31-1/2		44	222
	90	35		51-1/2	254
	100	43		64	312
	110	54		77	372
60	60	29	1600	35-1/2	187
	70	29		40	203
	80	32-1/2		46-1/2	228
	90	37		55-1/2	263
	100	46-1/2		69	323
	110	59-1/2		81-1/2	390
70	60	29	1600	36-1/2	188
	70	29-1/2		41-1/2	207
	80	34		49	235
	90	39		60	273
	100	49-1/2		74	337
80	60	29	1600	37	189
	70	30		43	211
	80	35		51-1/2	240
	90	41		64	282
	100	53		79	350
90	60	29	1600	38	190
	70	30-1/2		44	215
	80	36-1/2		54	245
	90	43		68	290
	100	56		83-1/2	363

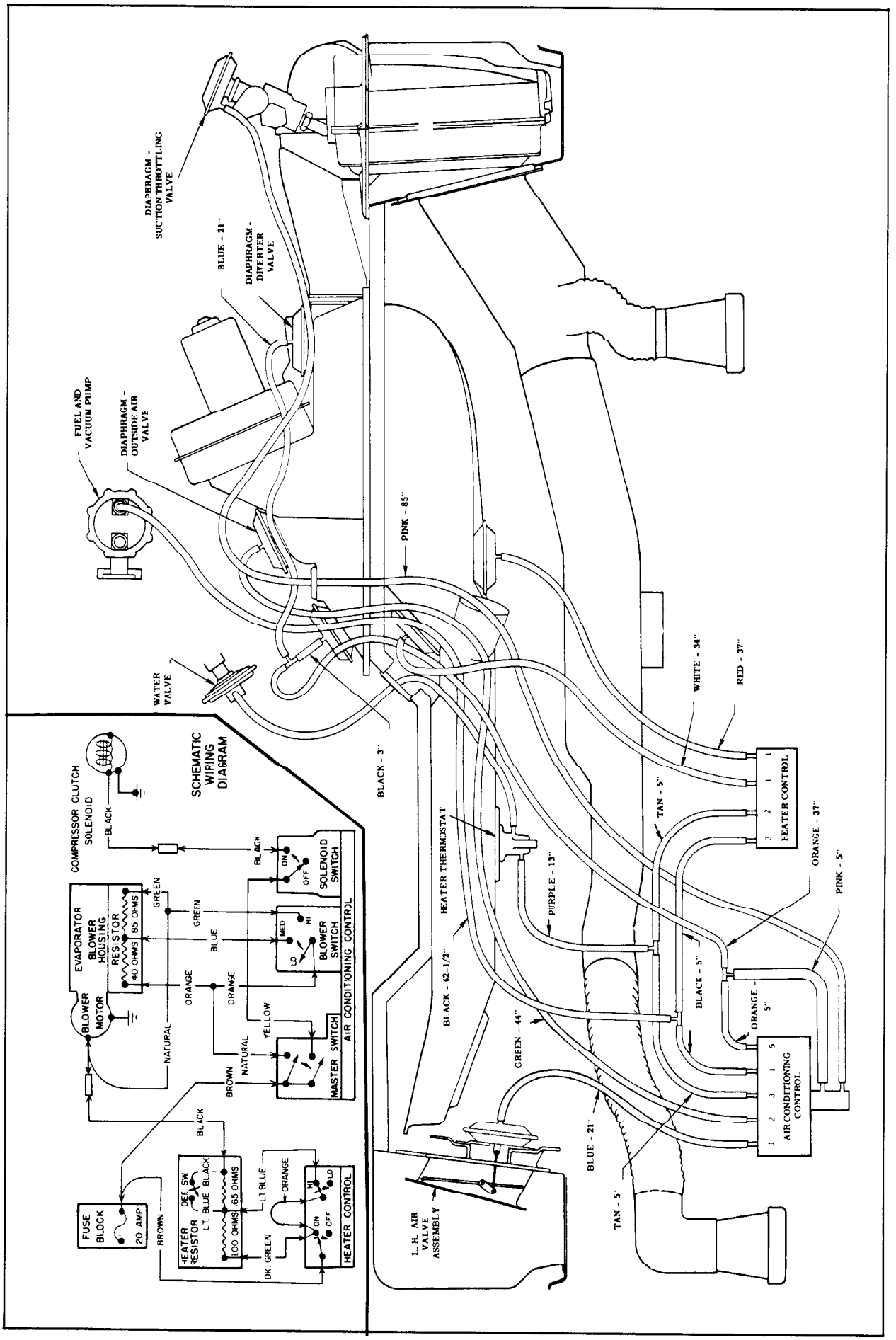
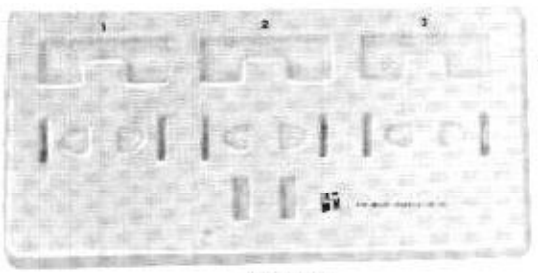


Fig. 14-59 Vacuum and Electrical Diagrams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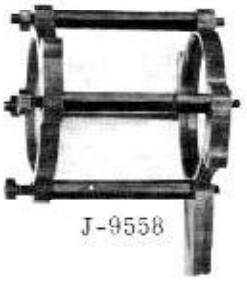
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J-8433

J-9395


J-9401


J-9480-2


J-9480


J-6435


J-5403


J-9393


J-9392


J-9481


J-5453

J-5421


J-9432


J-9527


J-5420


J-972-A


J-5725


J-5462

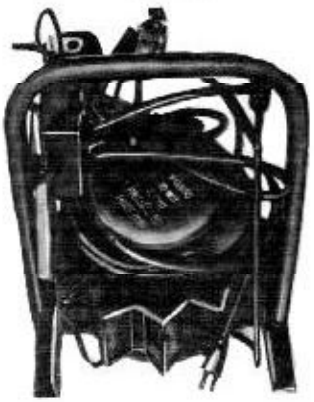

J-9433


J-5418


J-6084


J-6271


J-6272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J-972-A	Spanner Wrench (Used for Holding Driven Plate)	J-8433	Compressor Pulley Puller
J-5403	Snap Ring Pliers	J-9392	Seal Remover & Installer
J-5418	Gauge Charging Line	J-9393	Seal Seat Remover & Installer
J-5420	Gauge Adapter	J-9395	Puller Pilot
J-5421	Pocket Thermometer	J-9401	Hub & Drive Plate Assembly Remover
J-5428	Vacuum Pump	J-9402	Cylinder Assembly Tray
J-5453	Goggles	J-9432	Needle Bearing Remover & Installer
J-5462	Refrigerant Drum Hook-Up Set	J-9433	Suction Crossover Seal Installer
J-5725	Gauge Manifold Test Unit	J-9480	Driven Plate Installer
J-6084	Leak Detector Kit	J-9481	Pulley Bearing & Drive Plate Assembly Installer
J-6271	Fits-All Valve		
J-6272	#3 Multi-Opener	J-9527	Leak Test Adapter
J-6435	Snap Ring Pliers	J-9558	Checking Fixture

Fig. 14-60 Tools

INSTRUMENT PANEL AND RADIO

CONTENTS OF SECTION 15

INSTRUMENT PANEL

The instrument panel lower section is a removable panel and is retained by bolts and sheet metal screws. All instruments and units can be removed without removing the instrument panel lower section.

REMOVE AND INSTALL

1. Remove the windshield side garnish moldings and instrument panel side panels.
2. If equipped with:
   A. Power Steering - Disconnect steering column assembly.
   B. Standard Steering - Disconnect steering column assembly and loosen gear at frame to provide clearance.
   C. Console - Remove console.
3. The following wiring and/or controls must be disconnected:
   a. Heater, ventilation and/or air conditioning controls.
   b. Printed circuit connector.
   c. Speedometer cable.
   d. Radio, front and rear seat speaker and antenna leads.
   e. Ignition and headlight switch connectors.
   f. Power top, courtesy light and power antenna switch leads.
   g. Instrument panel wiring harness connector.
   h. Hoses from deck lid vacuum release control.
   i. Courtesy lights.
   j. Cigar lighter lead.
4. Remove instrument panel attaching screws. (Fig. 15-1)
5. With aid of a helper, lower panel and remove assembly from car.
6. To install the lower panel assembly reverse the removal procedure.

INSTRUMENTS

All the instruments are electrically operated, except the speedometer and Hydra-Matic indicator which are mechanically operated. A speed warning device (Safety Sentinel) is offered as optional equipment on all models. A knob on the instrument cluster allows the driver to pre-set his desired speed. When this speed is reached a light goes on and a buzzer sounds.

The generator, temperature, and oil pressure indicators use colored lights to warn the driver of conditions other than normal when the engine is operating at speeds above idle or is at normal operating temperature.

The light sockets used in the instrument cluster can be removed by turning the socket 1/8 of a turn counterclockwise.

NOTE: For servicing of instrument panel components, refer to ELECTRICAL SECTION.

CLOCK

The clock incorporates a self-regulating feature. When the hand setting knob is pulled out to set the hands, an automatic regulating device is placed in operation. Setting the hands ahead or back will

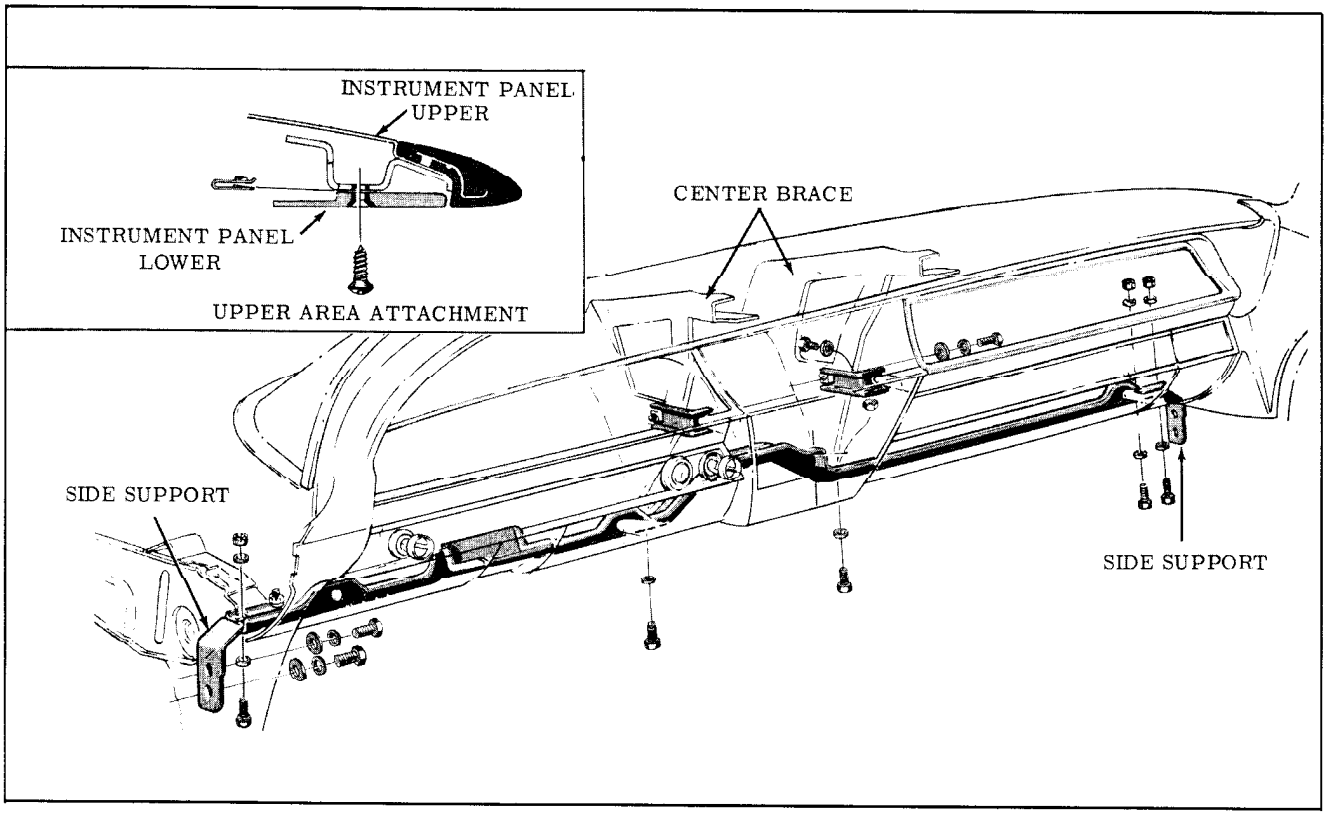


Fig. 15-1 Instrument Panel

cause the device to regulate the clock to run either faster or slower, determined by the degree of time setting change.

The clock is removed and installed from the rear of the instrument panel. (Fig. 15-2)

SPEEDOMETER CLUSTER

Removal and Installation

1. Disconnect the printed circuit connector.
2. Disconnect the speedometer cable from the speedometer head.
3. Remove the 3 cluster to instrument panel attaching screws. (Fig. 15-3)
4. Remove cluster from the front of the instrument panel.
5. To install, reverse removal procedure. Be sure anti-squeak (black cloth tape) is installed as shown in Fig. 15-4.

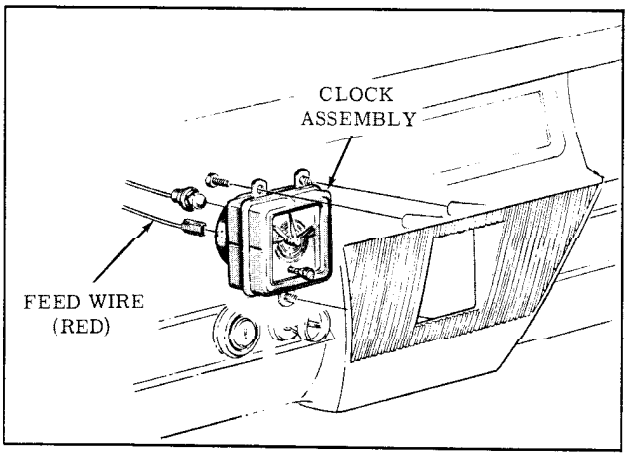


Fig. 15-2 Clock Assembly

SPEEDOMETER CABLE ASSEMBLY

Removal and Installation

1. Reach behind the end of the instrument panel and the front door hinge pillar and disconnect the speedometer cable.
2. Remove the left air outlet grille and cowl trim panel.

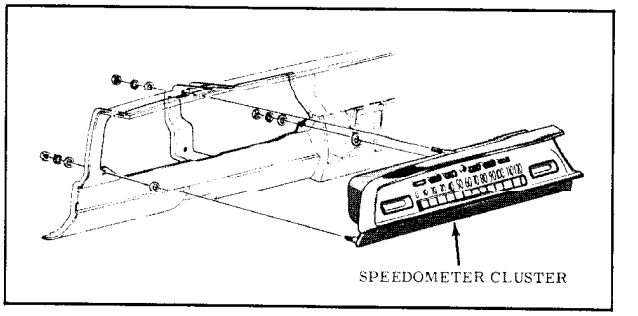


Fig. 15-3 Instrument Cluster Assembly

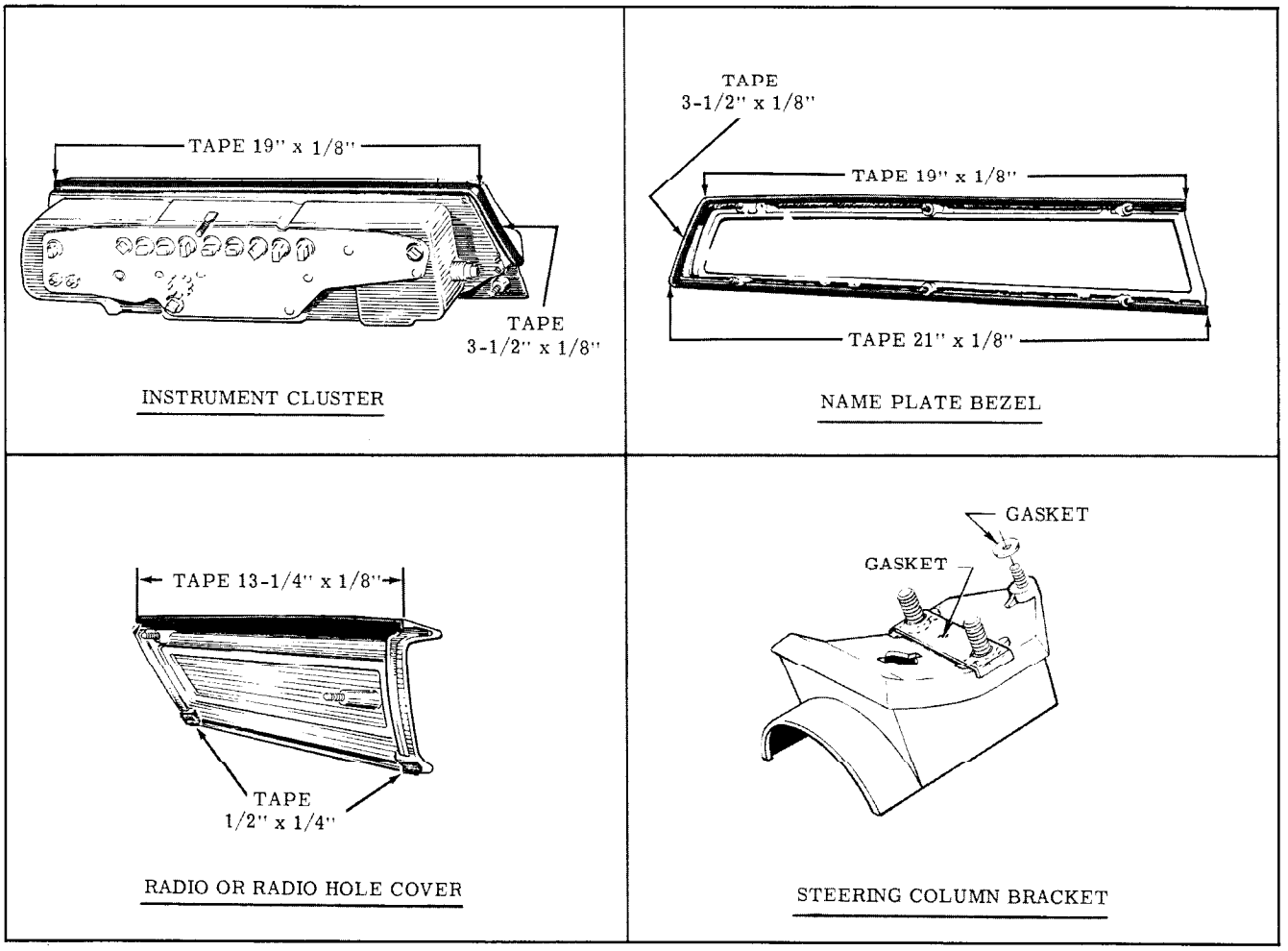


Fig. 15-4 Anti-Squeak Application

3. Disconnect cable from transmission.

4. Remove cable from car. (Refer to Fig. 15-5 for routing and cable clip locations)

5. To install, reverse the removal procedure.

HYDRA-MATIC INDICATOR NEEDLE

Remove and Install (Fig. 15-6)

To remove the Hydra-Matic indicator needle, remove steering column cap from steering column bracket, loosen the set screws on the shifter tube, then carefully remove the needle. To install, reverse the removal procedure, using extreme care to prevent damage to the needle. Move selector lever through entire range to check for needle interference.

Adjust

With the steering column cap removed from the steering column bracket, move the selector lever to "Neutral" position. Align Hydra-Matic needle with "N", tighten the set screw, then move selector lever through entire range to check needle alignment with remaining selector positions. Readjust needle if necessary.

INSTRUMENT PANEL MOLDINGS (Fig. 15-7)

RADIO AND CLOCK HOLE COVERS

The radio and clock hole covers can be removed by removing the attaching nuts and washers accessible from the rear of the instrument panel.

CONTROL PANEL MOLDING

Remove and Install

1. Disconnect the light switch, ignition switch and cigar lighter from the instrument panel.

2. Loosen the left end molding. If equipped with air conditioning, remove side panel and air conditioning outlet.

3. Remove the molding attaching nuts and molding.

4. To install, reverse removal procedure.

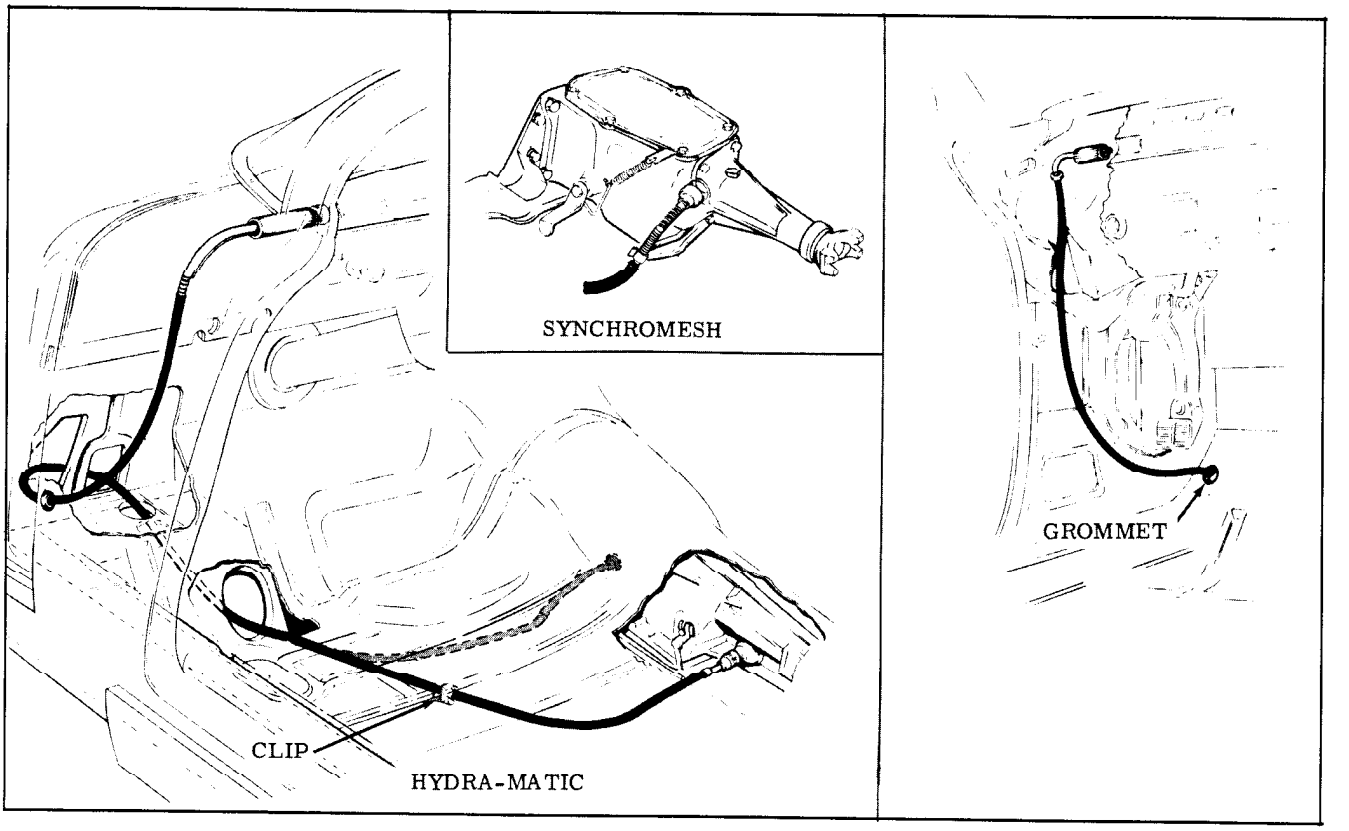


Fig. 15-5 Speedometer Cable Routing

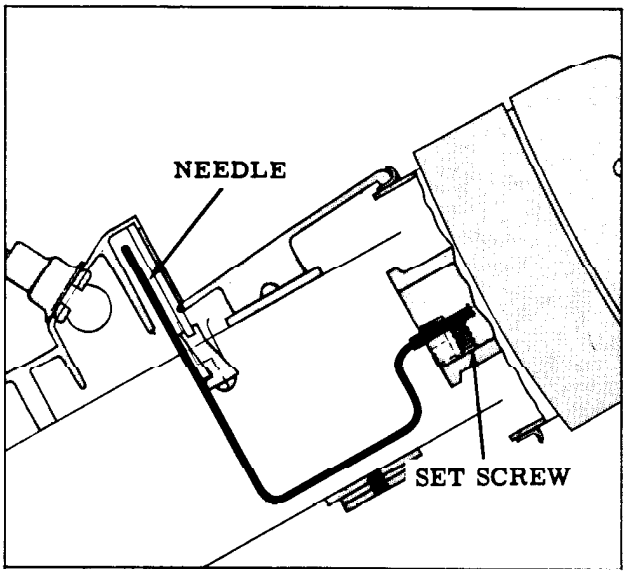


Fig. 15-6 Hydra-Matic Indicator Needle

GLOVE BOX DOOR MOLDING

Remove and Install

The glove box door molding can be removed after removing the lock cylinder and the molding attaching screws.

L.H. OR R.H. END MOLDINGS

The end moldings are retained by two nuts and washers. In order to remove an end molding it is necessary to remove a side panel and a side garnish molding.

SIDE PANELS

In order to remove a side panel it is necessary to remove the windshield side garnish molding. The side panels are retained by three sheet metal screws. (Fig. 15-8) To remove the left side panel it is necessary to disconnect the wiring connector from the wiper control after the panel has been disengaged from the hinge pillar and instrument panel.

When installing the side panel and garnish molding, install anti-squeaks (black cloth tape) as indicated in Fig. 15-8.

INSTRUMENT PANEL COVER (See BODY SECTION)

GLOVE BOX (See BODY SECTION)

ASH TRAYS

Ash tray light sockets are a push-fit in their panel housings which are mounted above the ash tray housing on the instrument panel.

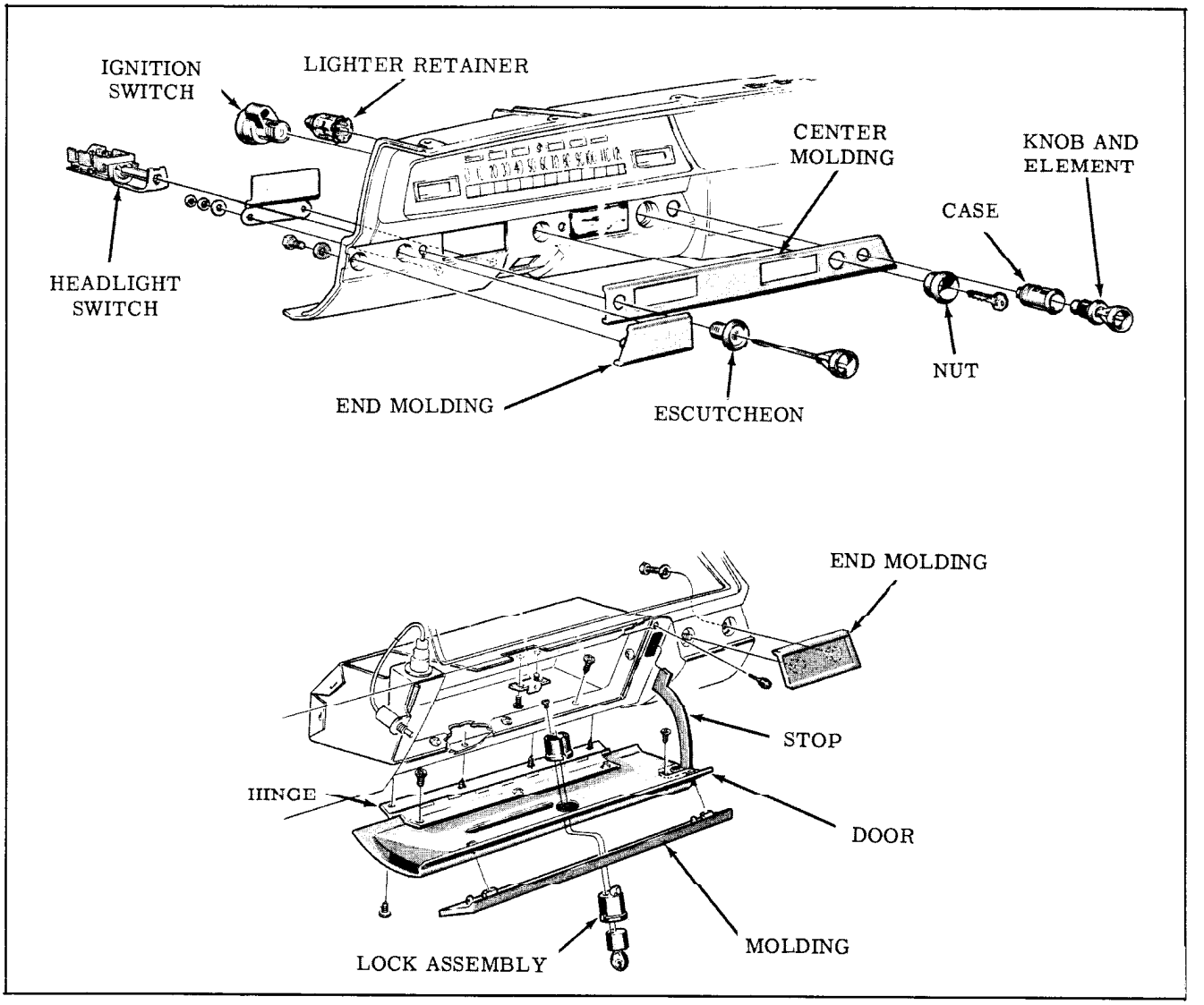


Fig. 15-7 Instrument Panel Moldings

STEERING COLUMN BRACKET

The steering column bracket is fastened to the instrument panel by 3 studs, washers, and nuts. Anti-squeak gaskets are used between the steering column bracket and the instrument panel. (Fig. 15-4)

IMPORTANT: The Hydra-Matic indicator needle must be removed before removing bracket. (See HYDRA-MATIC INDICATOR NEEDLE.)

NAME PLATE

The name plate is attached as shown in Fig. 15-9. When installing name plate be sure anti-squeaks (black cloth tape) are installed as shown in Fig. 15-4.

COURTESY LIGHTS

The instrument panel courtesy light socket assembly is of the snap-in type, installed from under the instrument panel. The courtesy lights are attached to the instrument panel lower brace by one screw and are located by a tang.

PARKING BRAKE LIGHT

The parking brake light is mounted on the parking brake pedal. To remove, push in on the back of the unit to compress spring, and turn the socket clockwise 1/8 turn.

HEADLIGHT SWITCH (Fig. 15-7)

The brightness of the instrument panel lights is controlled through a variable resistor unit by turning the light switch knob right or left.

On cars equipped with Guide-Matic the light switch incorporates a switch, located between the pull knob and escutcheon, which permits the selection of automatic or manual headlight control.

To Remove Headlight Switch:

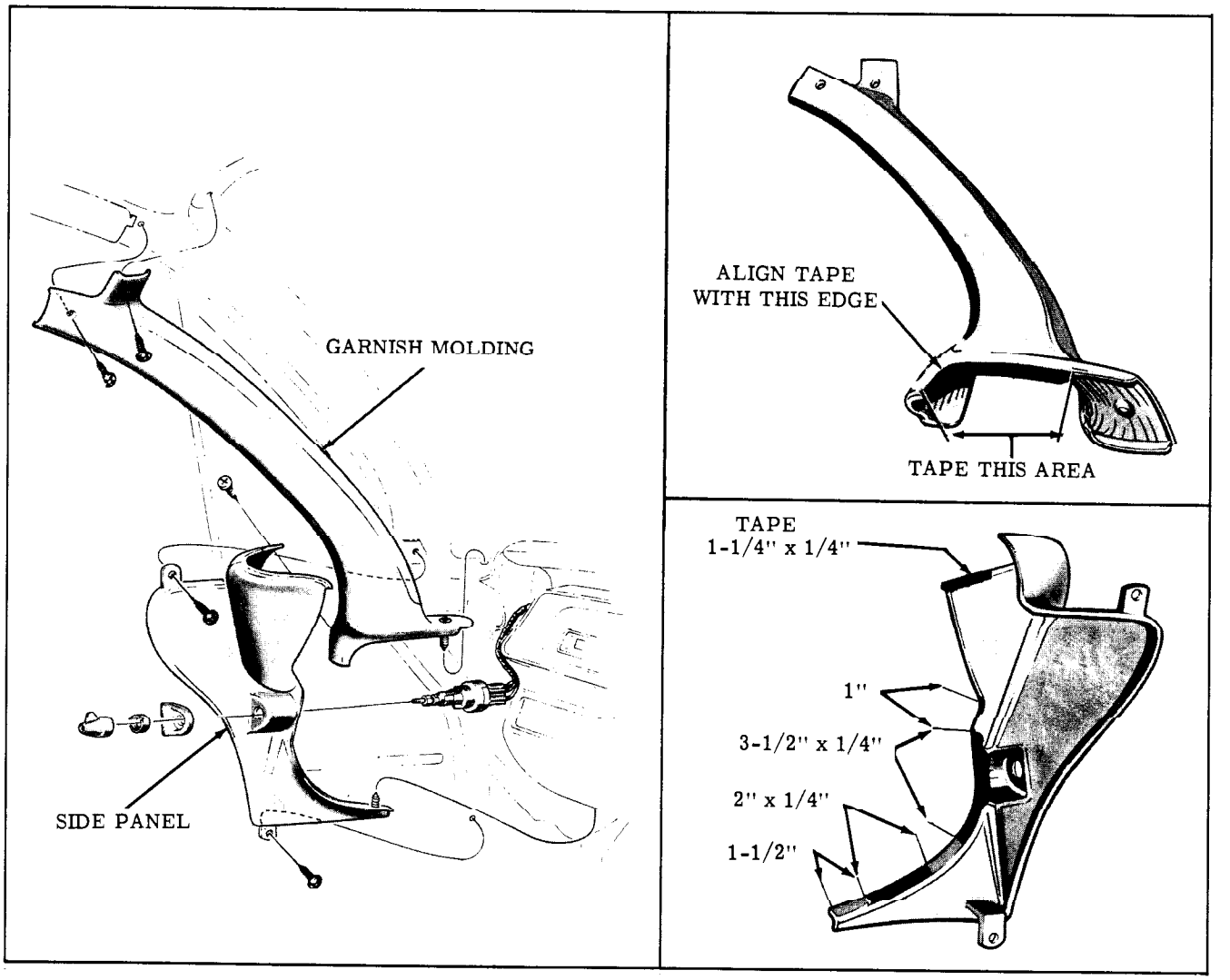


Fig. 15-8 Side Panel and Garnish Molding

1. Disconnect wiring connector from the light switch.
2. Remove knob and rod by first pulling knob out to "Headlight" position, then depress button on bottom of switch assembly and pull rod out.
3. If car is equipped with Guide-Matic, loosen Guide-Matic switch knob set screw and remove switch knob.
4. Remove escutcheon with an Allen wrench.
5. Remove headlight switch from rear of instrument panel.

To install, reverse removal procedure.

IGNITION STARTER SWITCH (Fig. 15-7)

To Remove Switch Assembly:

1. Remove light socket.
2. Remove escutcheon from instrument panel, then remove switch assembly from underside of instrument panel.

   NOTE: A tool to remove escutcheon can be made from 16 gauge metal 4" long and 1" wide.
3. Disconnect wiring connector from back of ignition switch. (Fig. 15-10)

To Remove Lock Cylinder:

1. Remove escutcheon.
2. Insert key and turn to the left.
3. Push a wire in hole in face of lock cylinder.
4. Turn cylinder to extreme left and withdraw cylinder.

CIGAR LIGHTER

To Remove Lighter Assembly:

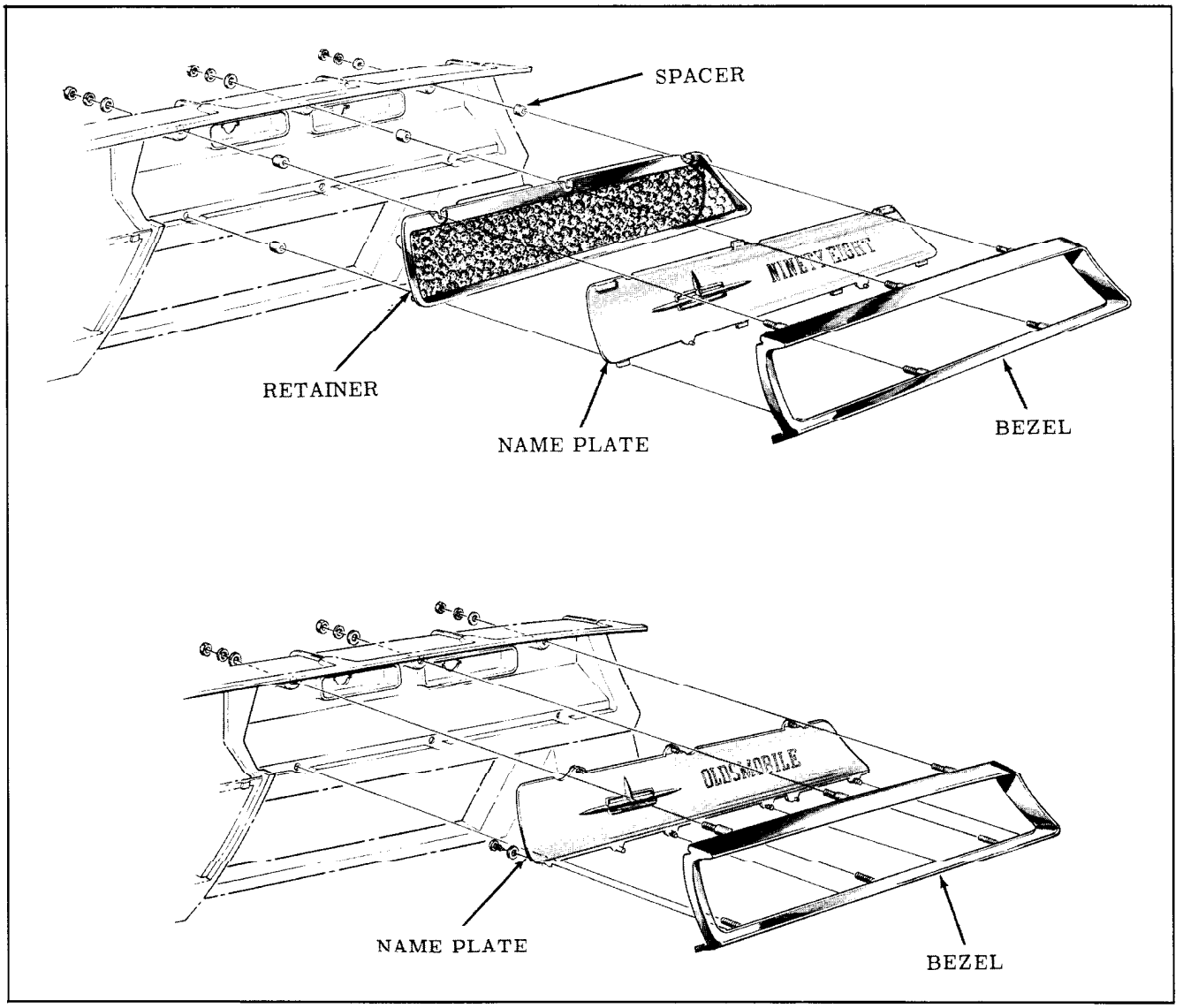


Fig. 15-9 Name Plates

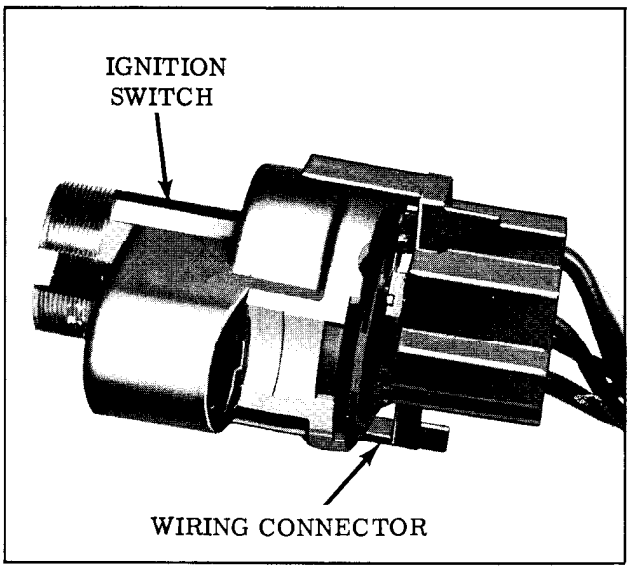


Fig. 15-10 Ignition Switch Connector

1. Disconnect fuse holder on back of lighter.
2. Unscrew the retainer from the lighter body.
3. Remove lighter body from front of instrument panel.

VENTILATION AND HEATING CONTROLS (See VENTILATING AND HEATING-1961 Service Manual)

WINDSHIELD WIPER CONTROL

To remove the wiper control it is necessary to remove the left side panel. The control is attached as shown in Fig. 15-8.

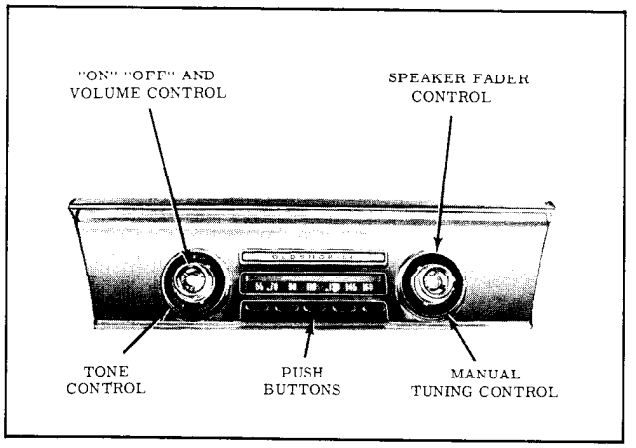


Fig. 15-11 Deluxe Radio

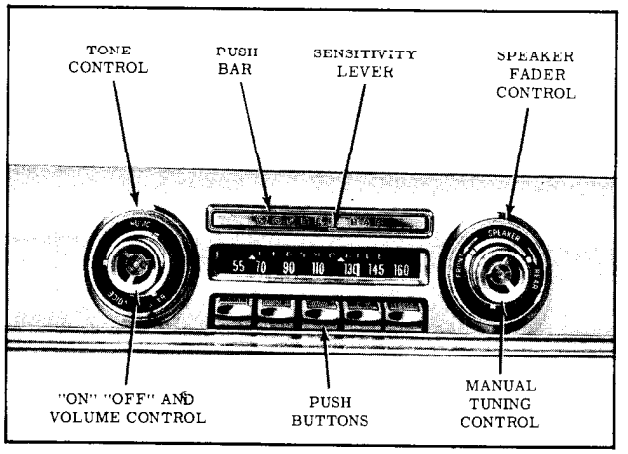


Fig. 15-12 Super Deluxe Radio

RADIO

DELUXE—SUPER DELUXE (Figs. 15-11 and 15-12)

The radio consists of the receiver unit and the speaker unit. The serial number plate on the deluxe and super deluxe radio is located on the bottom of the receiver chassis.

On cars equipped with a rear seat speaker, a variable type control located behind the manual tuning knob modulates both the front and rear speakers simultaneously. (Fig. 15-9) As the control is turned counterclockwise, the volume of the front speaker increases while the volume of the rear speaker decreases. As the control is turned clockwise the volume of the front speaker diminishes while the volume of the rear speaker increases. After the desired speaker modulation is obtained, the volume of both speakers can be regulated by the volume control knob.

Both the Deluxe and Super Deluxe models have 5 push buttons for touch tuning, which mechanically tunes the radio to pre-selected stations, and a control knob for manual selection of stations.

In addition to push button tuning, the Super Deluxe model features automatic tuning. Depressing the foot selector switch or the center push bar rejects any station previously selected and automatically selects and tunes the next available station.

The sensitivity of the automatic tuning mechanism can be increased or decreased by the sliding lever located under the bar. The lever has three positions. When the lever is to the left, only the stronger or local stations will be received. The sensitivity can be increased by moving the lever to the middle or extreme right position.

Push Button Adjustment

Adjustment of the mechanical push button tuning system on the Deluxe and Super Deluxe models is the same.

1. Allow the receiver to warm up for a few minutes.
2. Select a push button for the desired station. Pull the button slightly to the left and then out as far as it will go.
3. Tune in the desired station manually.
4. Push the selected button to its maximum IN position. This is the locking operation.
5. Proceed in the same manner for the remaining stations.
6. After all the buttons have been adjusted, recheck the settings. Push each button, then see if the station can be tuned in more accurately manually. If so, repeat step 2 and reset the station manually.

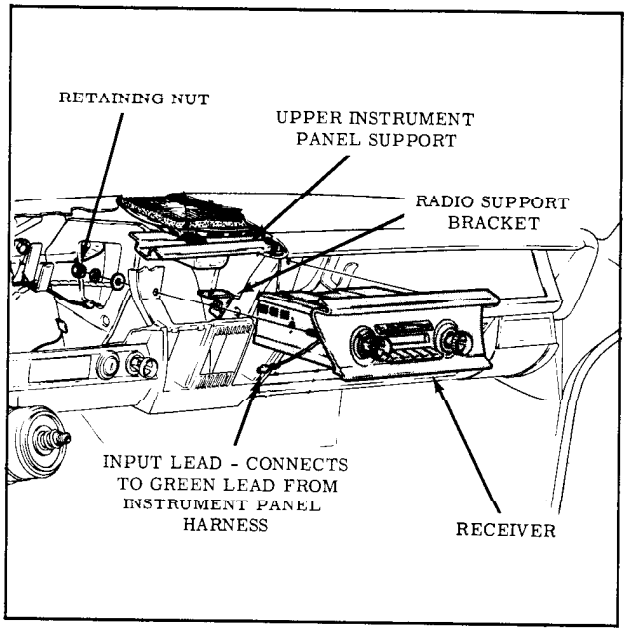


Fig. 15-13 Radio and Speaker Installation

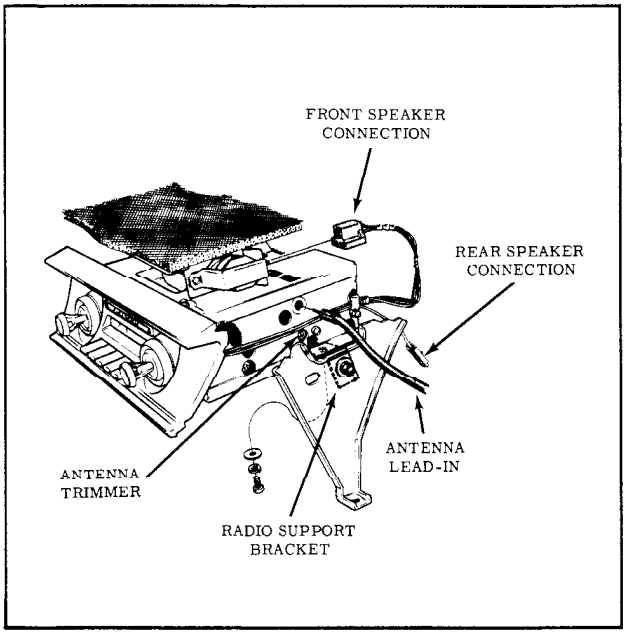


Fig. 15-14 Radio Installation

Receiver or Dial Light Removal (Figs. 15-13 and 15-14) (Deluxe or Super Deluxe)

1. Disconnect radio lead from wiring harness.
2. Disconnect front and rear seat speakers.
3. Disconnect antenna lead-in from receiver, through opening in top of glove box.
4. On Super Deluxe radios, disconnect foot selector plug-in connector from right side of receiver.
5. Remove or disconnect any accessory switches or dummy plates from the instrument panel, above the radio receiver escutcheon.
6. Disconnect receiver bracket from receiver side support and the receiver to instrument panel attaching nuts, then remove the receiver from the front of the instrument panel.
7. If dial light is to be removed, remove the radio top cover.

To install receiver, reverse the removal procedure. Be sure anti-squeak (black cloth tape) is installed as shown in Fig. 15-4.

FOOT SELECTOR SWITCH—REMOVAL (Super Deluxe Radio)

1. Fold floor mat to expose foot switch and remove attaching screws.
2. Remove foot switch wiring lead from clips along upper side of dash, then remove plug-in connector from right side of radio receiver.

To install switch, reverse the removal procedure.

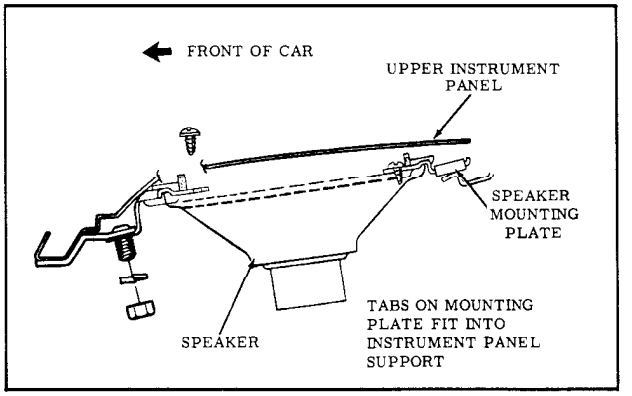


Fig. 15-15 Front Speaker Installation

RADIO SPEAKERS

FRONT SPEAKER REMOVAL

To remove the front speaker, remove the radio receiver then remove the speaker attaching nut and the speaker. (Fig. 15-15)

To install, reverse removal procedure.

REAR SEAT SPEAKER REMOVAL All Styles (Except Fiestas and Convertibles)

The rear seat speaker is mounted under the parcel shelf, and is accessible through the rear compartment. To remove speaker:

1. Disconnect lead from terminal.
2. Remove four mounting nuts, lock washers, and flat washers, while supporting speaker to prevent it from dropping. (Fig. 15-16)

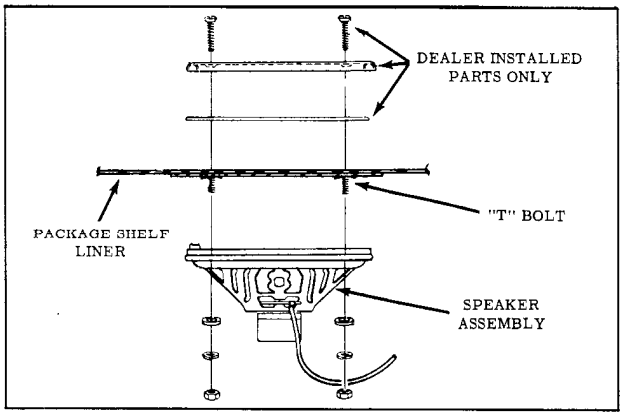


Fig. 15-16 Rear Seat Speaker (All Except 35, 45 & 67)

To install, reverse removal procedure, being careful to avoid damaging the speaker cone while aligning the speaker assembly over the mounting screws.

Convertibles

The rear seat speaker on convertibles is mounted on the rear seat back. To remove speaker, proceed as follows:

1. Remove rear seat cushion.
2. Remove the upper two body to seat back attaching screws, accessible from the rear compartment.
3. Remove the two lower seat back attaching screws and tip seat back forward.

   NOTE: Place protective covering on floor panel to prevent soiling of seat back.

4. Remove four speaker assembly to seat back attaching screws.
5. Disconnect lead wire from speaker. Remove the four speaker attaching screws and remove speaker. (Fig. 15-17)
6. If speaker grille is to be replaced, it can be removed by removing the four self threading attaching nuts.
7. To install, reverse removal procedure.

Fiestas

The rear speaker on Fiestas is mounted on the rear quarter trim panel on the left side of the car. To remove the speaker proceed as follows:

1. Remove rear quarter trim panel.

   CAUTION: Speaker ground wire is attached to inner quarter panel. Do not break the ground wire.

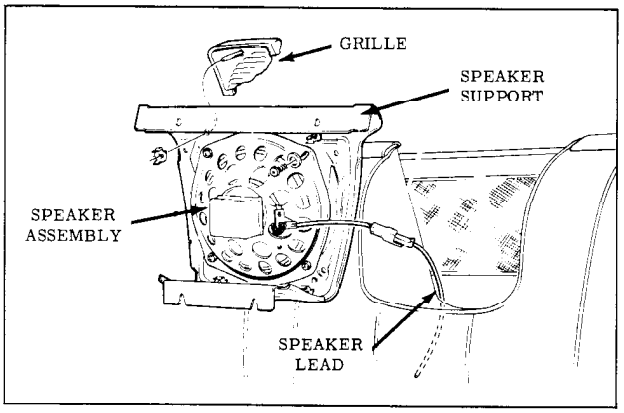


Fig. 15-17 Rear Seat Speaker (67 Styles)

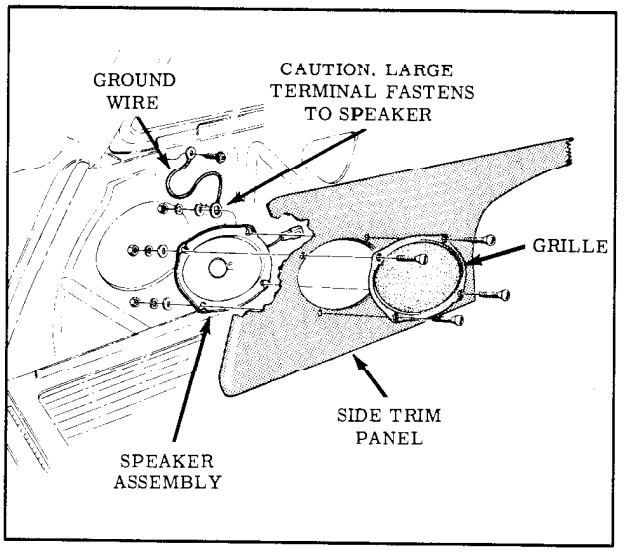


Fig. 15-18 Rear Seat Speaker (Fiestas)

2. Disconnect speaker ground wire from the inner quarter panel.
3. Remove speaker assembly from the quarter panel. (Fig. 15-18)
4. To install, reverse the removal procedure. To replace the speaker lead, refer to Fig. 15-19.

ANTENNA

TRIMMER ADJUSTMENT

1. With the antenna fully extended, turn the radio on.
2. Turn the volume control full on and tune the receiver to a weak station between 600 and 1000 K.C. on the dial.
3. With a small screwdriver, adjust the antenna trimmer located on the R.H. side of the receiver just below antenna connector. Trimmer is accessible through hole in top of glove box.

MANUAL ANTENNA

Removal and Installation

1. Reach through the access hole in the top of the glove box and withdraw the antenna lead from the radio chassis.
2. Remove the right air outlet grille and cowl trim panel.
3. Refer to Fig. 15-20 and remove antenna assembly.
4. To install, reverse the removal procedure.

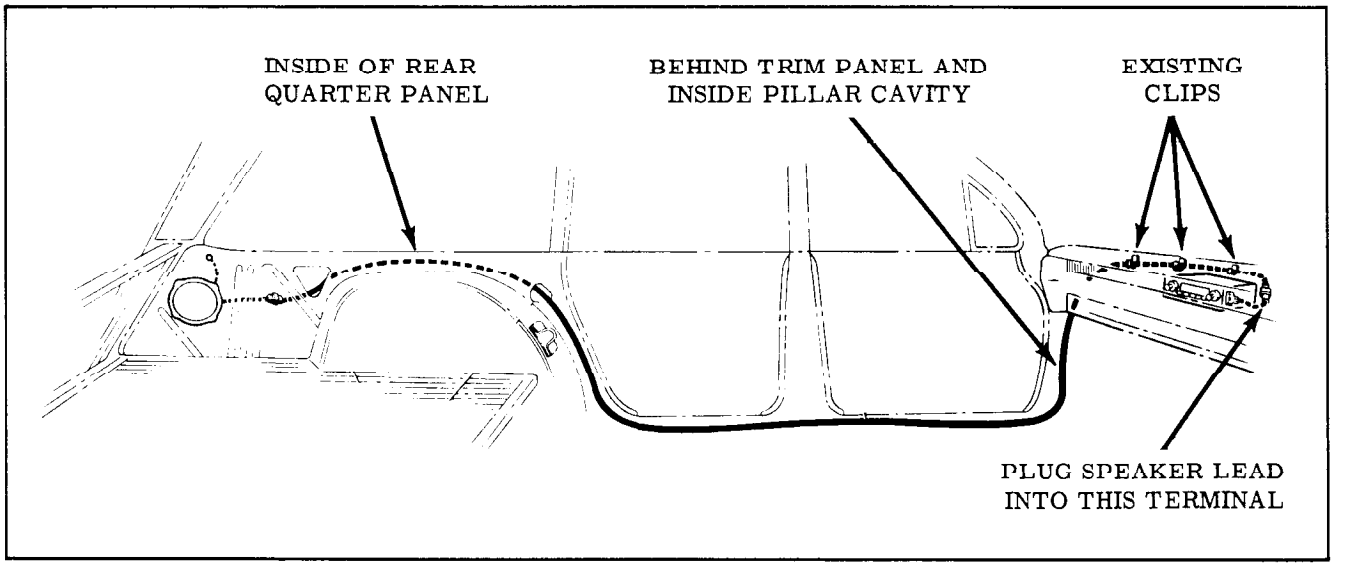


Fig. 15-19 Rear Seat Speaker Lead (Fiestas)

ELECTRIC ANTENNA (All Except Fiestas) (Fig. 15-21)

Removal and Installation

1. Pull back trim panel and floor covering from antenna mounting area in rear compartment.

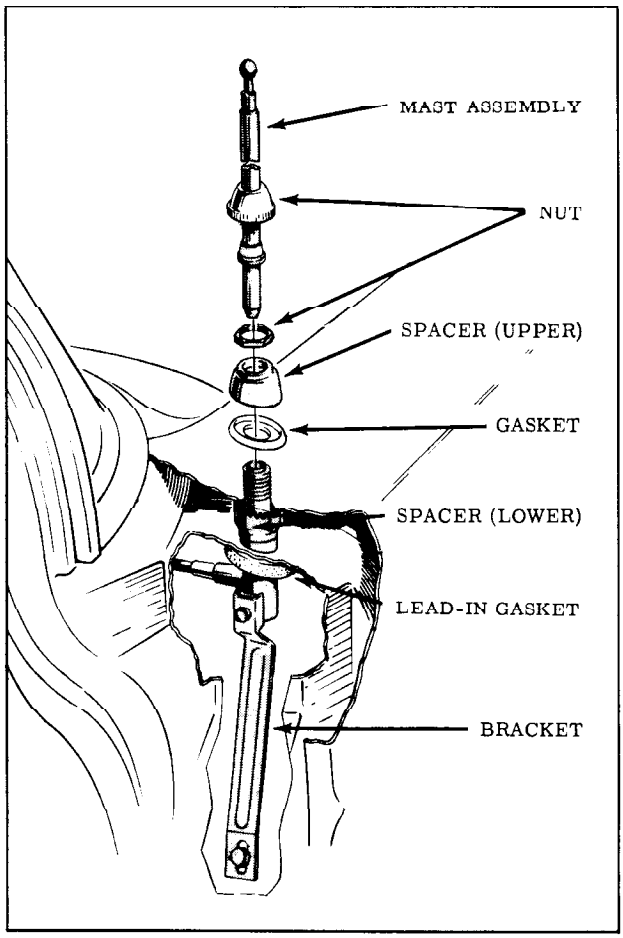


Fig. 15-20 Manual Antenna Installation

2. Disconnect connector plug, ground lead and unscrew lead-in nut from antenna tube.

3. Remove cap nut from antenna on top of right rear quarter panel using Tool J-9215.

4. Remove bracket to floor pan screws, cover, and remove antenna.

5. To install, reverse removal procedure. Align antenna mast to a vertical position before tightening bracket screws.

NOTE: For lead-in cable and wiring harness removal refer to Fig. 15-22 for routing and clip location. An access hole in the top

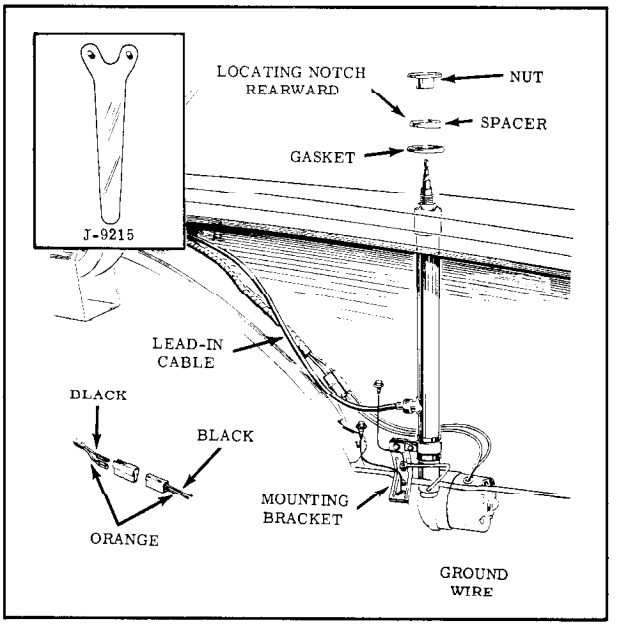


Fig. 15-21 Power Antenna (Except Fiestas)

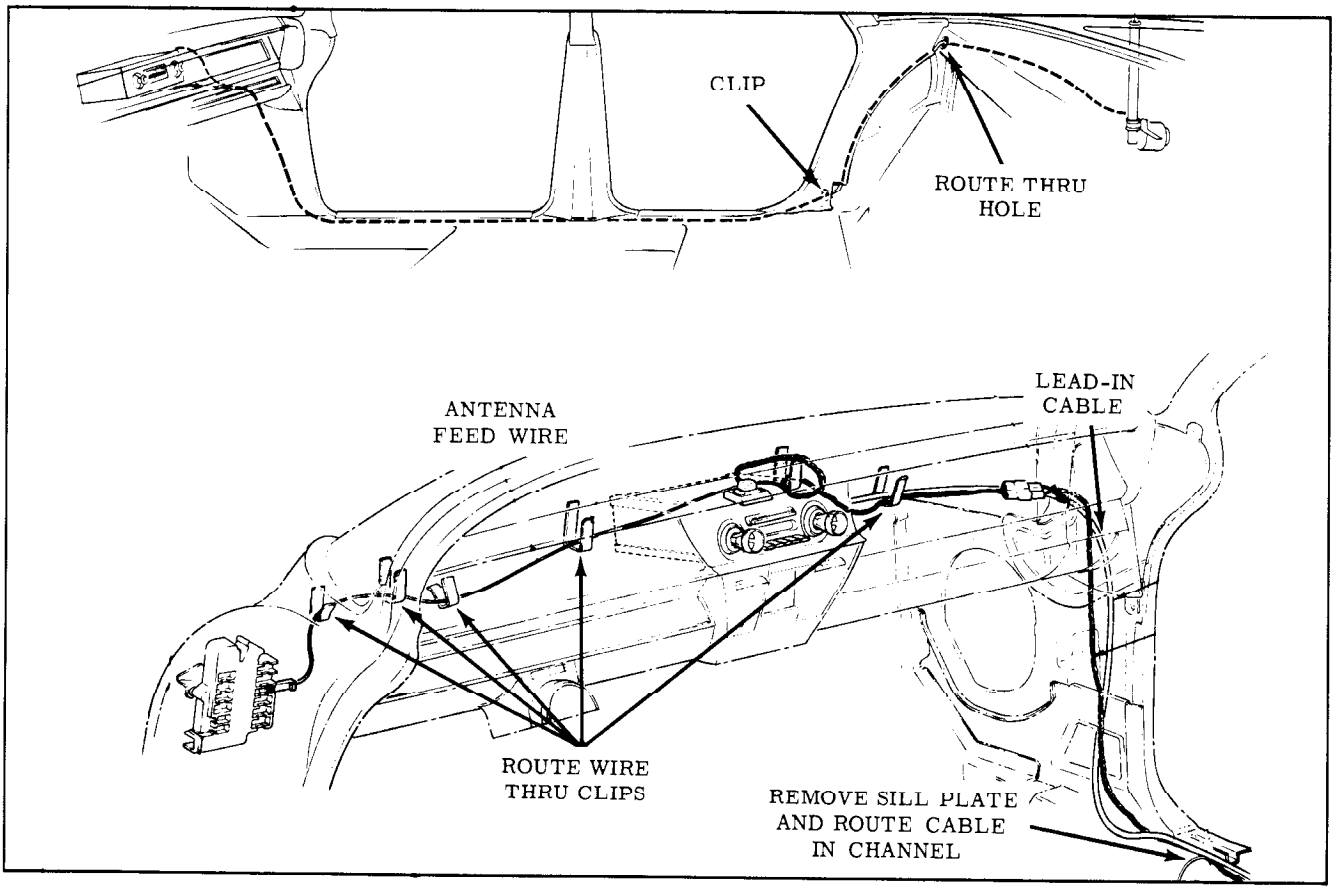


Fig. 15-22 Power Antenna Lead-In (Except Fiestas)

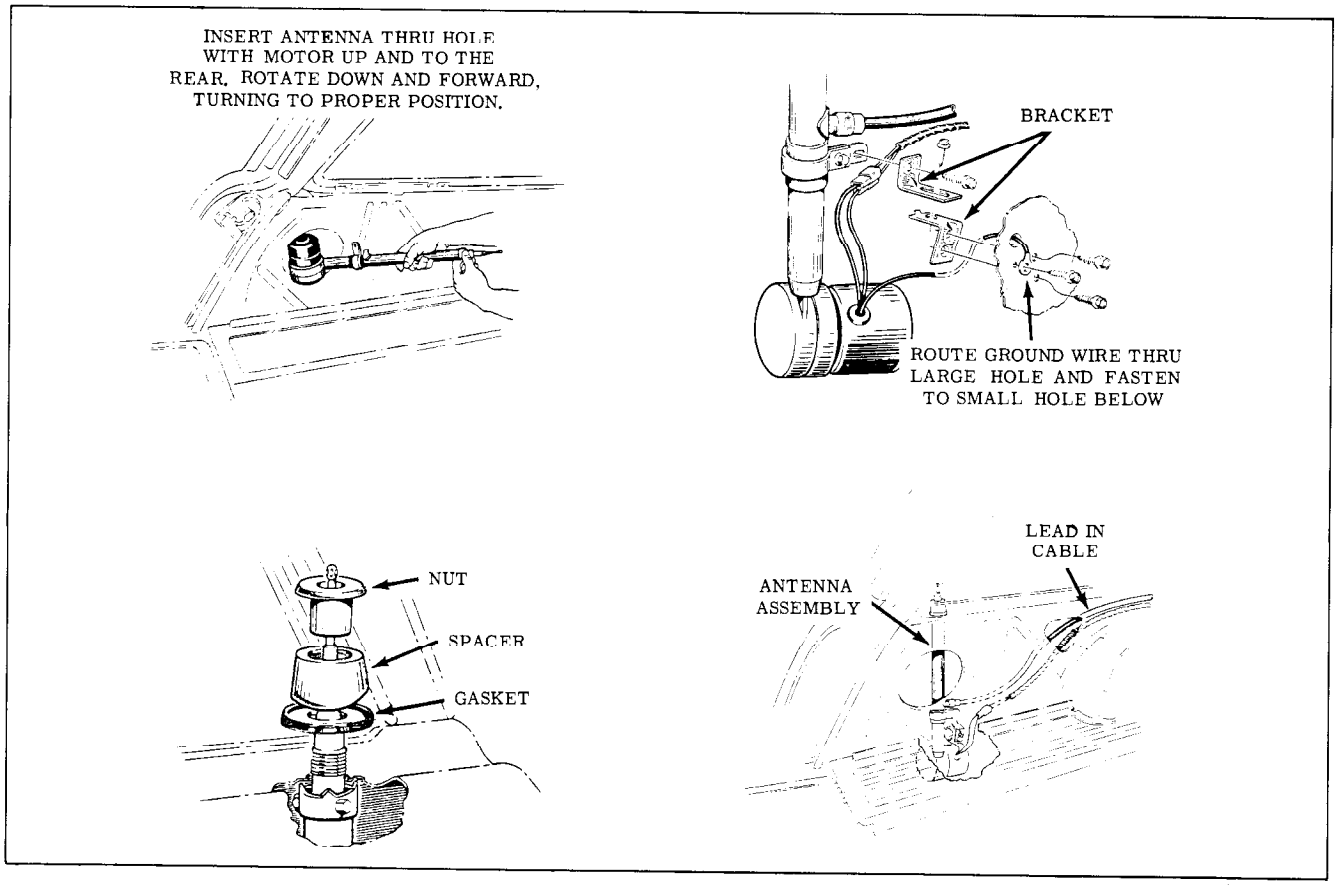


Fig. 15-23 Power Antenna Installation (Fiestas)

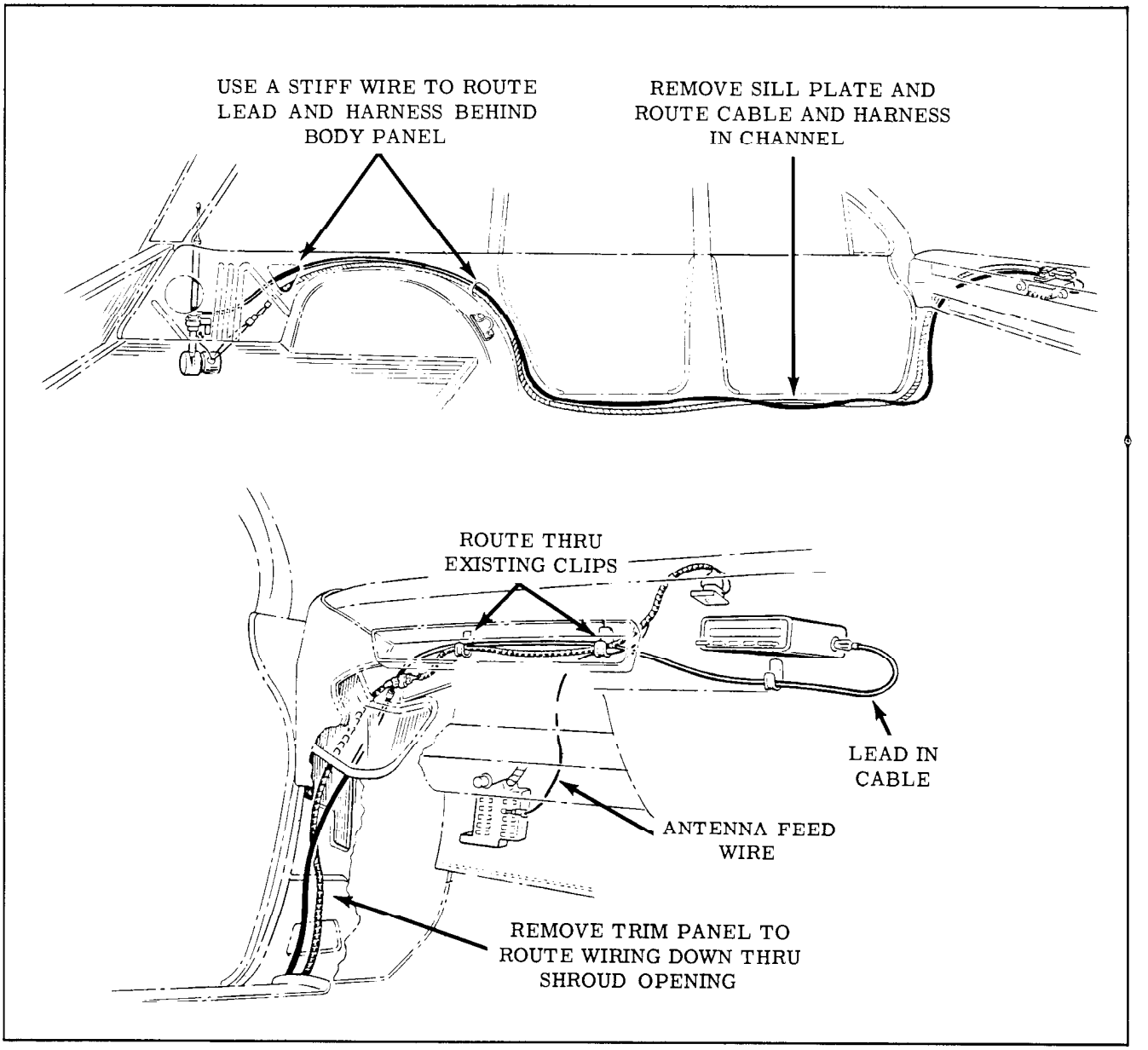


Fig. 15-24 Power Antenna Lead-In (Fiestas)

of the glove box is provided for disconnecting and connecting the lead-in.

ELECTRIC ANTENNA (Fiestas)

Antenna Removal and Installation (Fig. 15-23)

1. Lower antenna mast if possible and remove nut at fender mounting with Tool J-9215.
2. Remove the left rear garnish moldings and left rear quarter trim panel.
3. From inside the rear quarter inner panel disconnect the connector plug, ground strap and the lead-in.
4. Remove antenna bracket screws from inner panel and withdraw the antenna assembly.
5. To install, reverse the removal procedure. In and out, and forward and rearward mast alignment is provided by elongated mounting bracket holes.

Lead In, Removal and Installation

1. Remove left rear quarter trim panels and door sill plates.
2. Fold back floor mats and remove body wiring shield.
3. Remove cowl trim panel and remove antenna lead-in.

NOTE: A hole is provided in the top of the

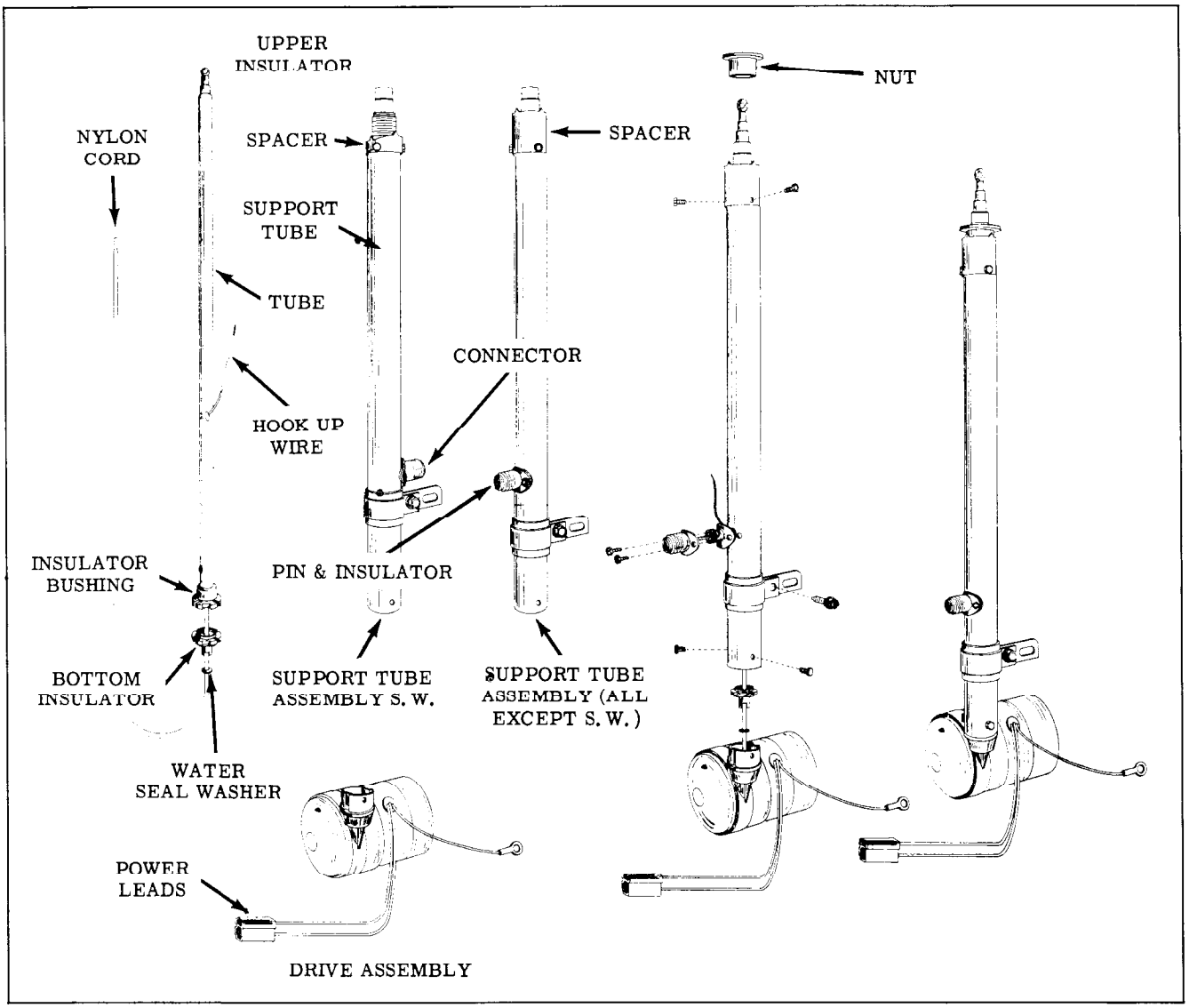


Fig. 15-25 Power Antenna

glove box which permits lead-in removal from the radio chassis without removing the glove box.

4. To install, reverse the removal procedure and route and retain the lead-in as shown in Fig. 15-24.

ELECTRIC ANTENNA

Disassembly (Fig. 15-25)

The following parts are serviceable: Drive Assembly, Mast Assembly and Support Tube Assembly. To service any of these parts proceed as follows:

1. Remove the two connector to support tube screws and remove connector.

2. Unsolder hook-up wire at pin and remove pin and insulator assembly.

NOTE: Do not overheat pin by slow soldering as the pin insulator will be destroyed.

3. Remove the three support tube to drive assembly screws.

4. While applying a back and forth rotary motion, pull until support tube is removed from antenna.

NOTE: Do not remove upper insulator from support tube.

5. If the drive assembly or mast assembly is to be replaced, proceed as follows:

a. While applying a rocking motion, pull on mast until insulator bushing is removed from the drive assembly tubular fitting.

b. Energize motor until entire length of nylon cord is expelled from drive assembly. To prevent a kink or bend in nylon cord, keep it taut by pulling on mast.

NOTE: If motor is inoperative, it will be necessary to manually remove the nylon cord from the drive assembly as follows:

c. Place the assembly in a vise so that the normal plane of the nylon cord is parallel with the floor.

d. Pull on nylon cord until it is completely expelled from the drive assembly.

CAUTION: No attempt should be made to disassemble antenna further than Step 5-d.

Assembly

1. Thread nylon cord through bottom insulator, (small diameter end down) and water seal washer.

2. Energize motor and feed nylon cord into drive assembly. Do not allow nylon cord to bend or kink.

NOTE: Push water seal washer and bottom insulator all the way down into tabular fitting (make sure that keyways in bottom insulator are rotated to key position) before nylon cord completely disappears into drive assembly.

3. Push mast assembly into tubular fitting making sure that the upper edge of the insulator bushing is below the center of the 3 support tube to drive assembly screw holes.

4. Install support tube over mast assembly, making sure hook-up wire is extended through proper hole in support tube. Line up 3 holes in support tube and install the 3 screws.

5. Solder hook-up wire to pin and insulator assembly being careful not to overheat.

6. Install connector over pin and insulator assembly and install 2 screws.

Diagnosis

If antenna fails to operate properly, check the following possible sources of trouble.

1. Excessive tightening of cap nut on fender will result in excessive operating noise in the car.

2. A stalled or slowly operating mast may be caused by bent or dirty mast sections. If dirty, wipe with oily cloth.

3. See that fuse is not burned out.

4. See that ground wire is tight.

5. To determine whether fault is in the antenna or the control circuit, disconnect the leads coming from antenna. Connect a jumper wire to the positive battery terminal and touch jumper wire to each of the terminals of the wires coming from the drive assembly. If antenna does not operate, the fault is in the antenna drive assembly. If antenna does operate, the fault is in the control circuit.

6. If trouble is in the control circuit:

   a. Examine electrical connections at switch, making sure they are securely connected.

   b. Check wiring at switch with lamp or motor.

If antenna lead-in is suspected of being bad, check radio operation using an antenna lead-in known to be good.

NOTE: If excessive static is encountered, check suppressors and static eliminators for proper installation. (Fig. 15-26)

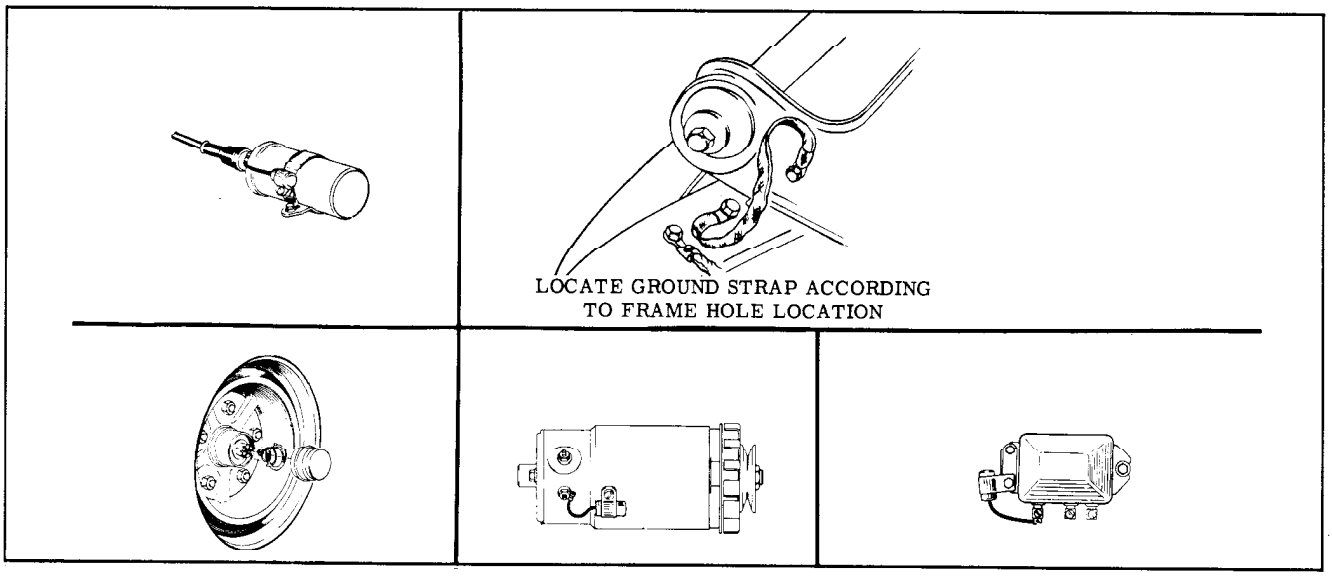
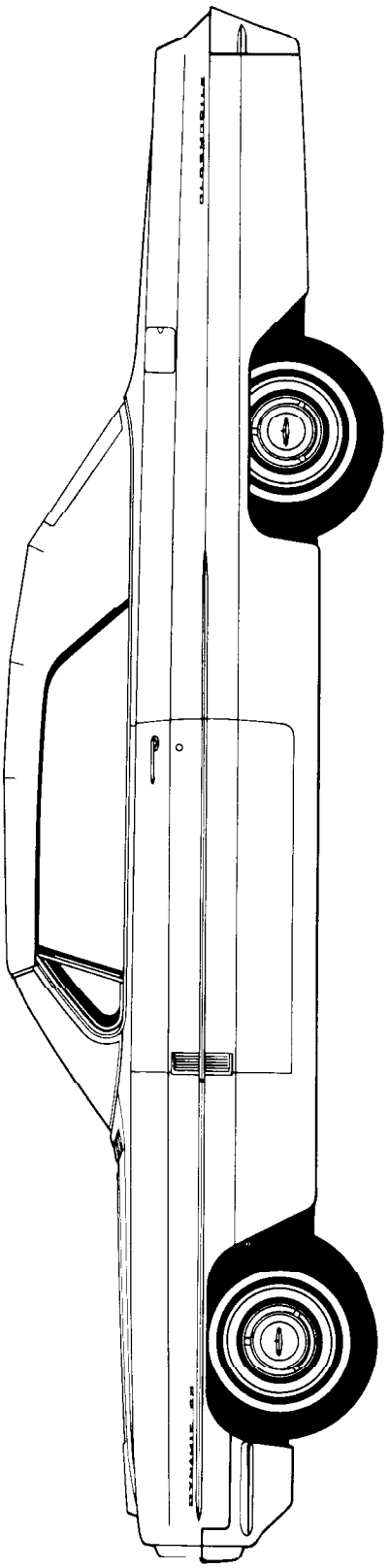


Fig. 15-26 Static Eliminators and Suppressors



CHASSIS SHEET METAL
VENTILATION AND HEATING

ITEMS LISTED IN THE TABLE OF CONTENTS ARE NEW FOR 1962. FOR ITEMS NOT LISTED REFER TO THE 1961 88, S88 AND 98 SERVICE MANUAL AND SUPPLEMENT. FOR INFORMATION ON VENTILATION AND HEATING, REFER TO THE 1961 88, S88 AND 98 SERVICE MANUAL.

CONTENTS OF SECTION 16

HOOD MOLDING AND LETTERS (Fig. 16-1)

All cars have hood letters and a hood center molding. In addition, all 36 and 38 Series cars have a hood horizontal front molding. All letters and moldings are retained by nuts, accessible from the underside of the hood.

COWL VENT GRILLE

Remove and Install (Fig. 16-3)

1. Remove windshield wiper arms.
2. With the use of Tool J-6592-02, remove wiper transmission to escutcheon nut and escutcheon.
3. Raise hood and remove six cowl vent grille to cowl screws.
4. Remove cowl vent grille.

To install, apply a medium-bodied sealer around vent grille attaching screw holes and vent grille tab slots in cowl, also be sure anti-squeak tape is installed on both ends of the grille. Then, carefully slide grille rearward to engage rear edge of grille between windshield lower reveal moldings and molding attaching clips and reverse removal procedure.

FENDER

Removal

Before removing a fender, painted areas and moldings adjacent to the fender should be covered for protection against scratches. When removing fender, fender must be moved slightly forward to clear the front door ornament. On fender installation, it is important that all anti-squeaks and seals be reinstalled. If the anti-squeaks and seals are damaged, they should be replaced.

FENDER SIDE MOLDINGS

The fender side moldings, script and ornaments are attached as shown in Fig. 16-4. To remove the fender side moldings, it is necessary to loosen the fender at the cowl, disconnect it at the lower bracket then move fender outward to reach the rear attaching nuts.

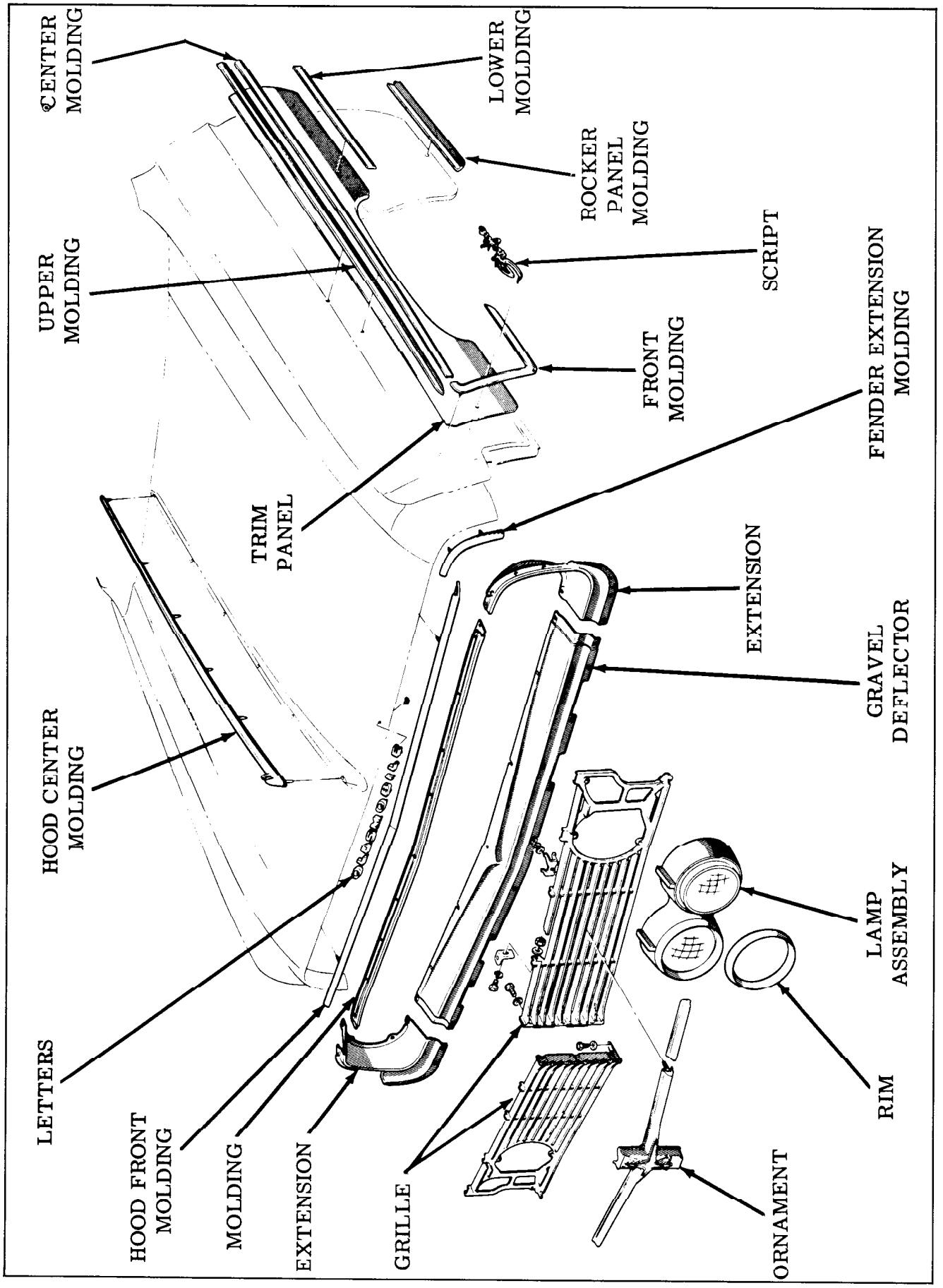


Fig. 16-1 Sheet Metal Ornamentation

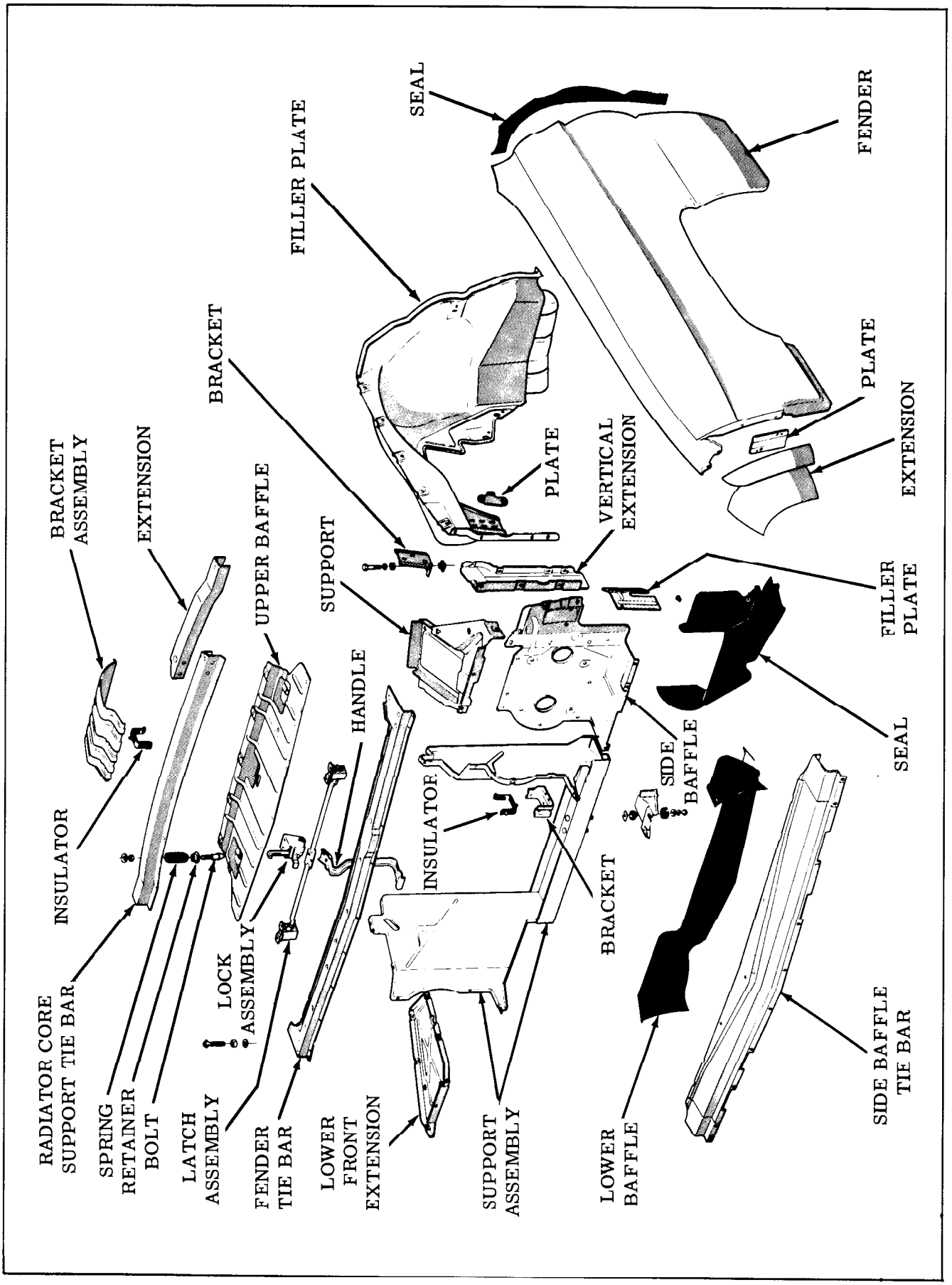


Fig. 16-2 Chassis Sheet Metal, Exploded

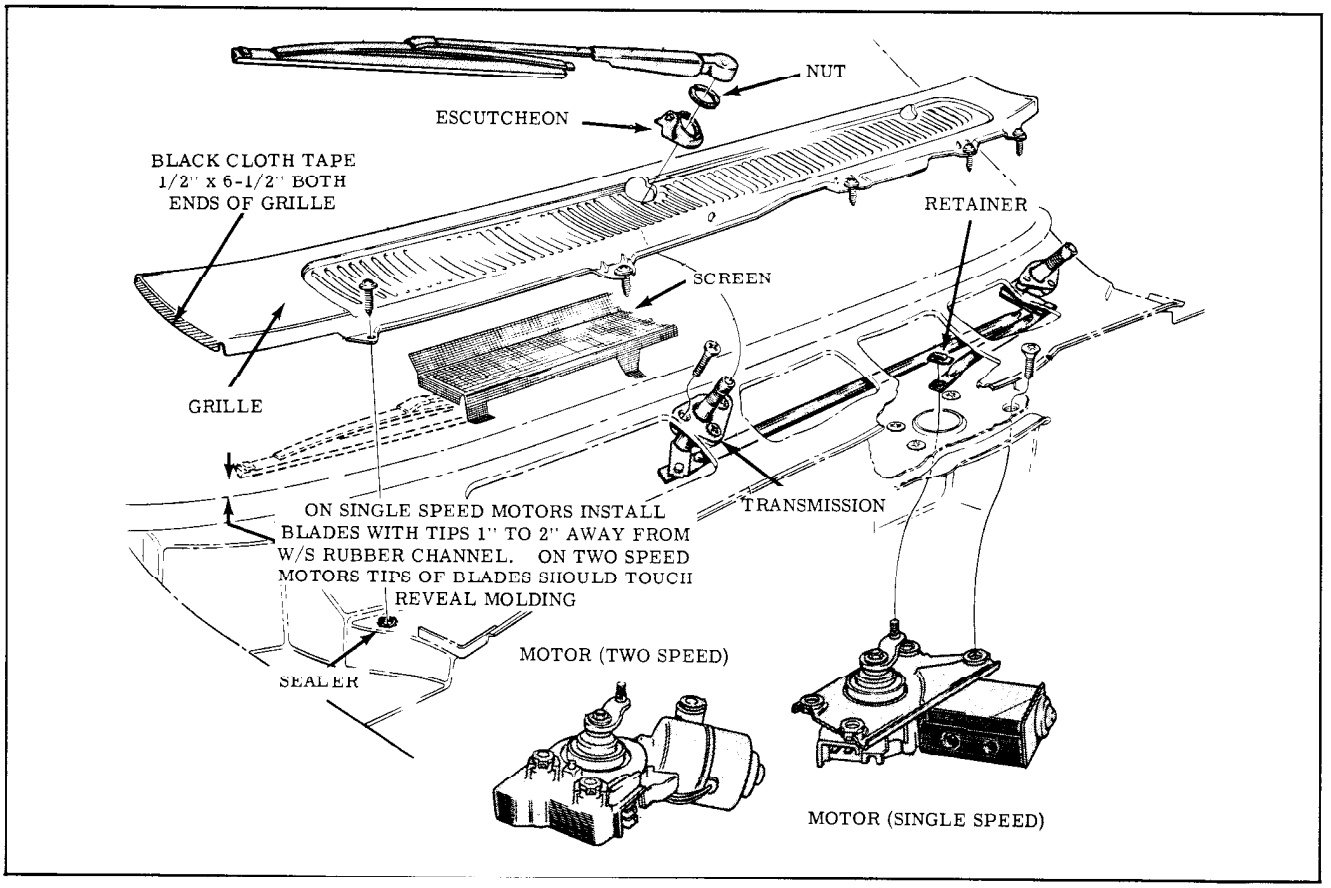


Fig. 16-3 Cowl Vent Grille

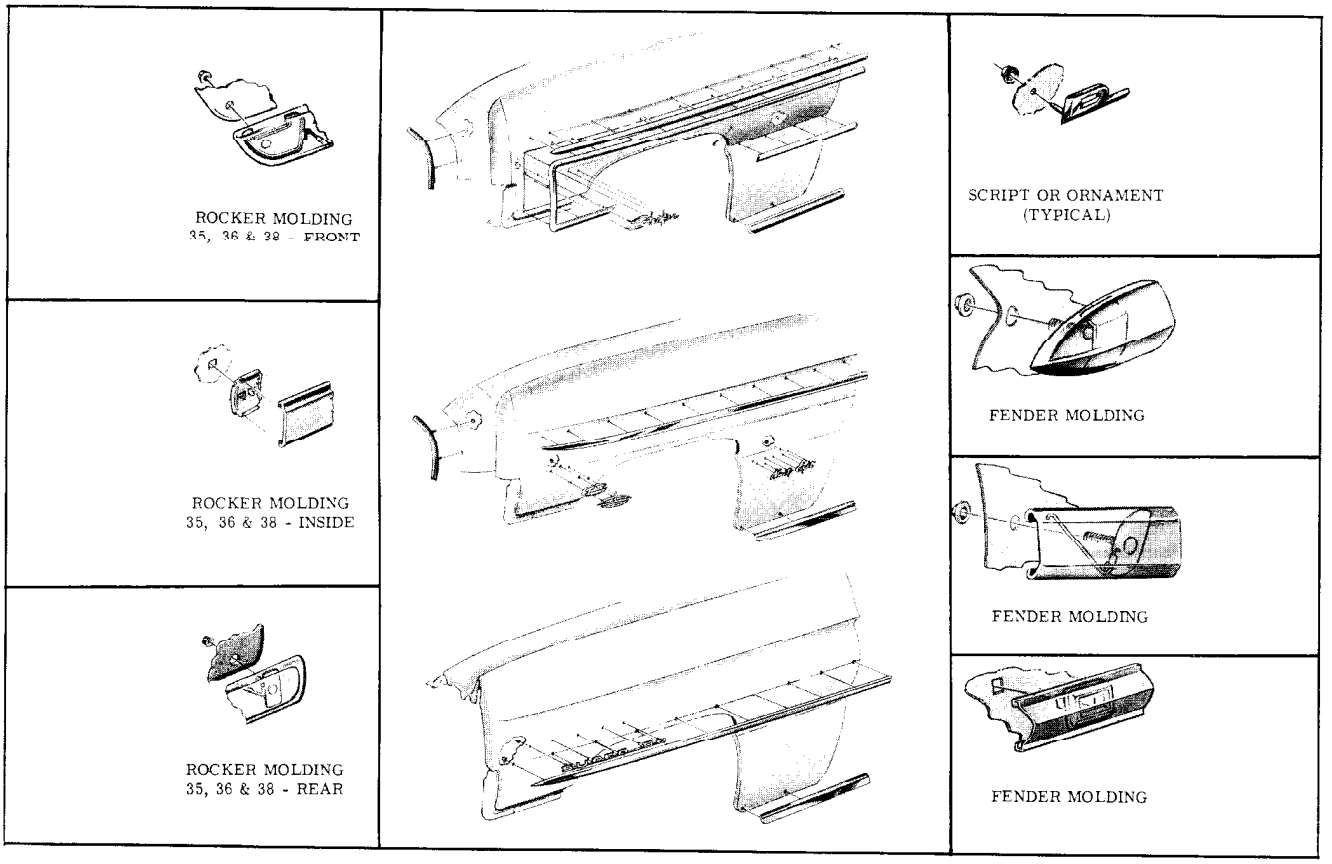


Fig. 16-4 Front Fender Molding, Script and Ornament Attachment

BODY

ITEMS LISTED IN THE TABLE OF CONTENTS ARE NEW FOR 1962. FOR OPERATIONS THAT ARE NOT LISTED, REFER TO THE 1961 88, S88 & 98 SERVICE MANUAL. FOR 47 STYLE OPERATIONS THAT ARE NOT LISTED REFER TO THE 37 STYLE IN THE 1961 88, S88 AND 98 SERVICE MANUAL.

CONTENTS OF SECTION 17

FRONT AND REAR DOOR WINDOW GLASS RUN CHANNEL INNER AND OUTER STRIP ASSEMBLIES (All Series)

Glass run channel strip assemblies are used on all doors 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 secured to the door inner panel by a series of attaching clips. The outer strip assembly is constructed of a molded rubber and is 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 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. (Fig. 17-1)

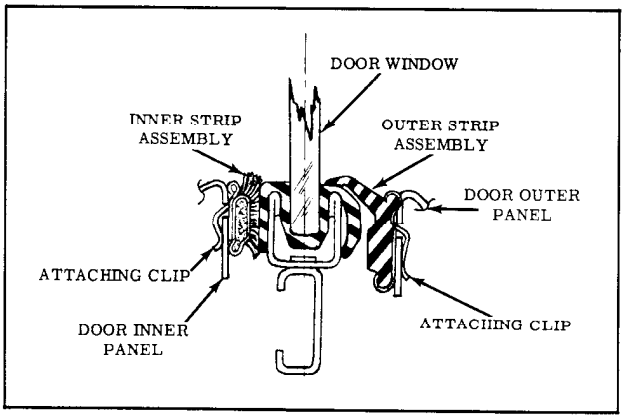


Fig. 17-1 Front and Rear Door Window Glass Run Channel Inner and Outer Strip Assemblies

Removal and Installation

1. Lower door window and apply masking tape

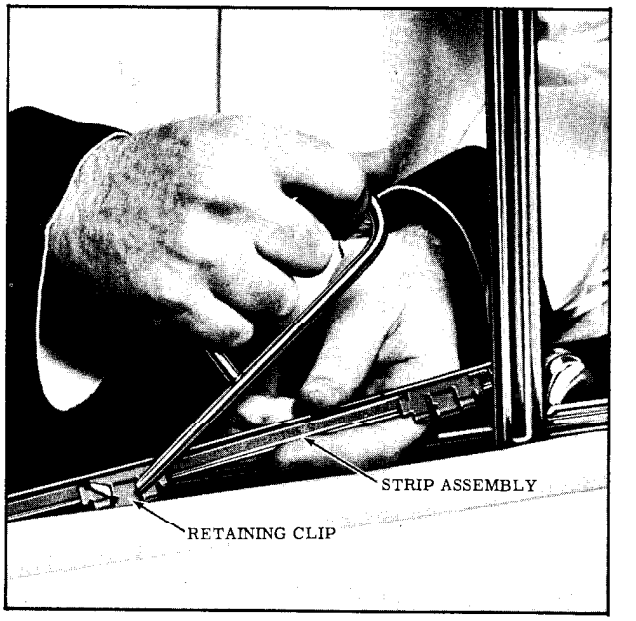


Fig. 17-2 Door Glass Run Channel Outer Strip Assembly -- Inner Typical

over door panel adjacent to strip assembly to protect paint finish.

2. On styles equipped with a belt reveal molding, remove attaching screws.

3. With a hooked tool, carefully pry up inner edge of strip assembly at clip locations and remove assembly from door. (Fig. 17-2)

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.

6. Remove tape from door panel.

Figures 17-3, 17-4, 17-5 and 17-6 illustrate the proper position of a fully lowered door window for maximum glass stability.

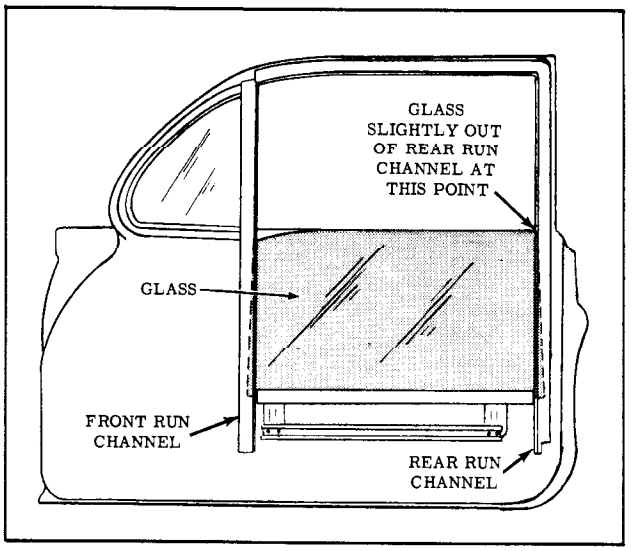


Fig. 17-3 "47" Styles (Typical Front Door)

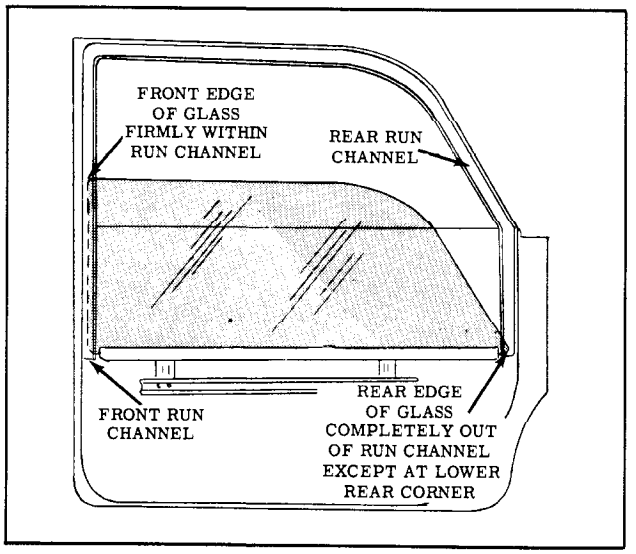


Fig. 17-4 "69" Style Rear Door (Typical)

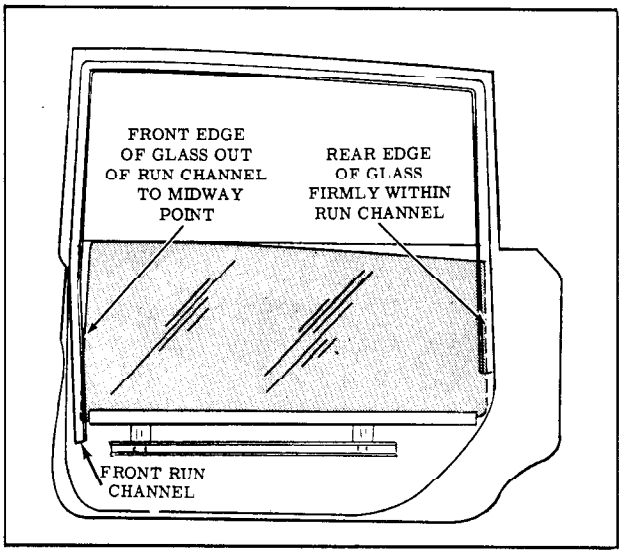


Fig. 17-5 "19" Style Rear Door (Typical)

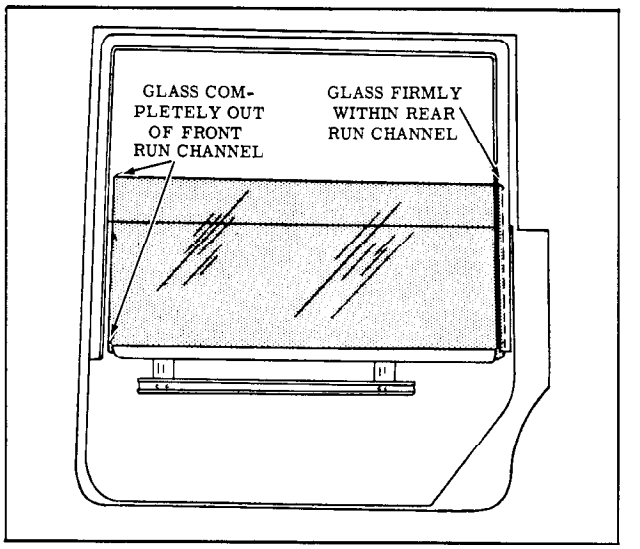


Fig. 17-6 "35" Style Rear Door

SIDE ROOF RAIL WEATHERSTRIP ("29" 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.

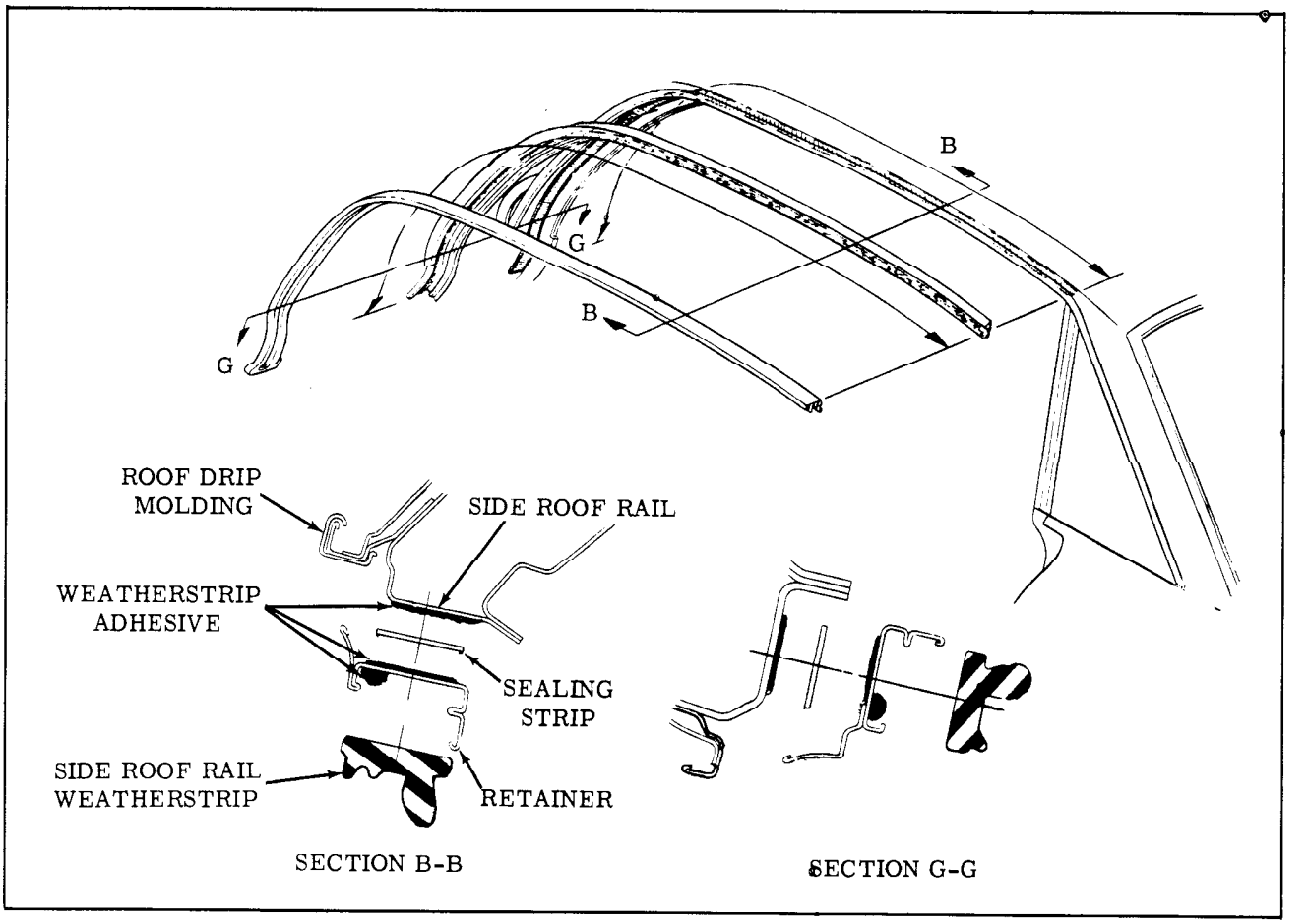


Fig. 17-7 3829 Style Side Roof Rail Weatherstrip Assembly

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. (Section "B-B", Fig. 17-7)
3. Apply weatherstrip cement to rear end of side roof rail weatherstrip and cement weatherstrip to front end of stationary rear quarter window. (Section "G-G", Fig. 17-7)
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" and "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. (Section "B-B", Fig. 17-8)

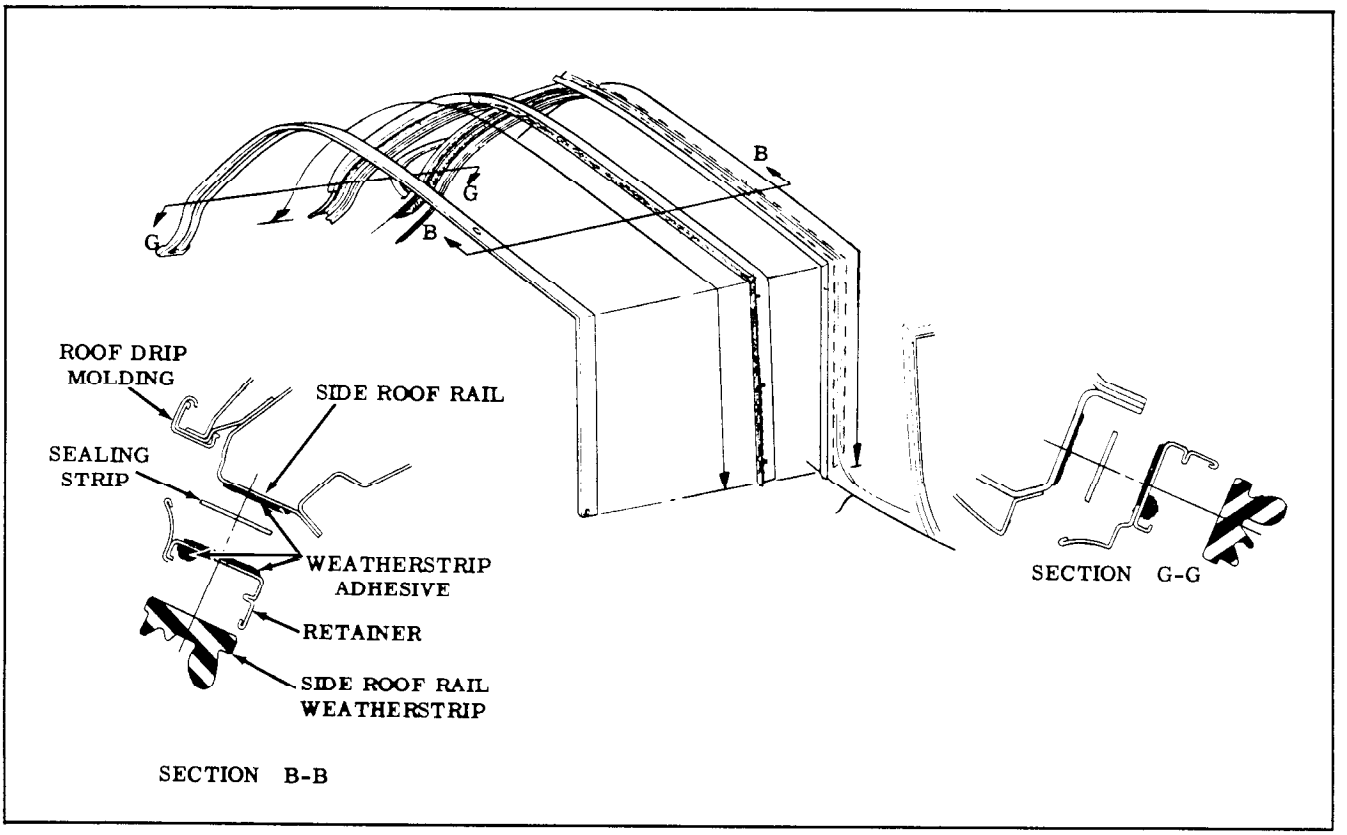


Fig. 17-8 "47" and "39" Style Side Roof Rail Weatherstrip Assembly

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.

IMPORTANT: Before attempting to adjust the side roof rail weatherstrip, first check and make certain that the ventilator and front and rear door windows are properly aligned.

1. To adjust side roof rail weatherstrip "in or out" first determine and mark retainer at 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 ("47" Styles)

Figures 17-9 and 17-10, identify and show the relationship of major components of the rear quarter hardware of "47" style bodies. All rear quarter windows are made of solid tempered safety plate glass.

WINDOW ASSEMBLY—MANUAL OR ELECTRIC (32, 35, 36 Series, "47" Styles)

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

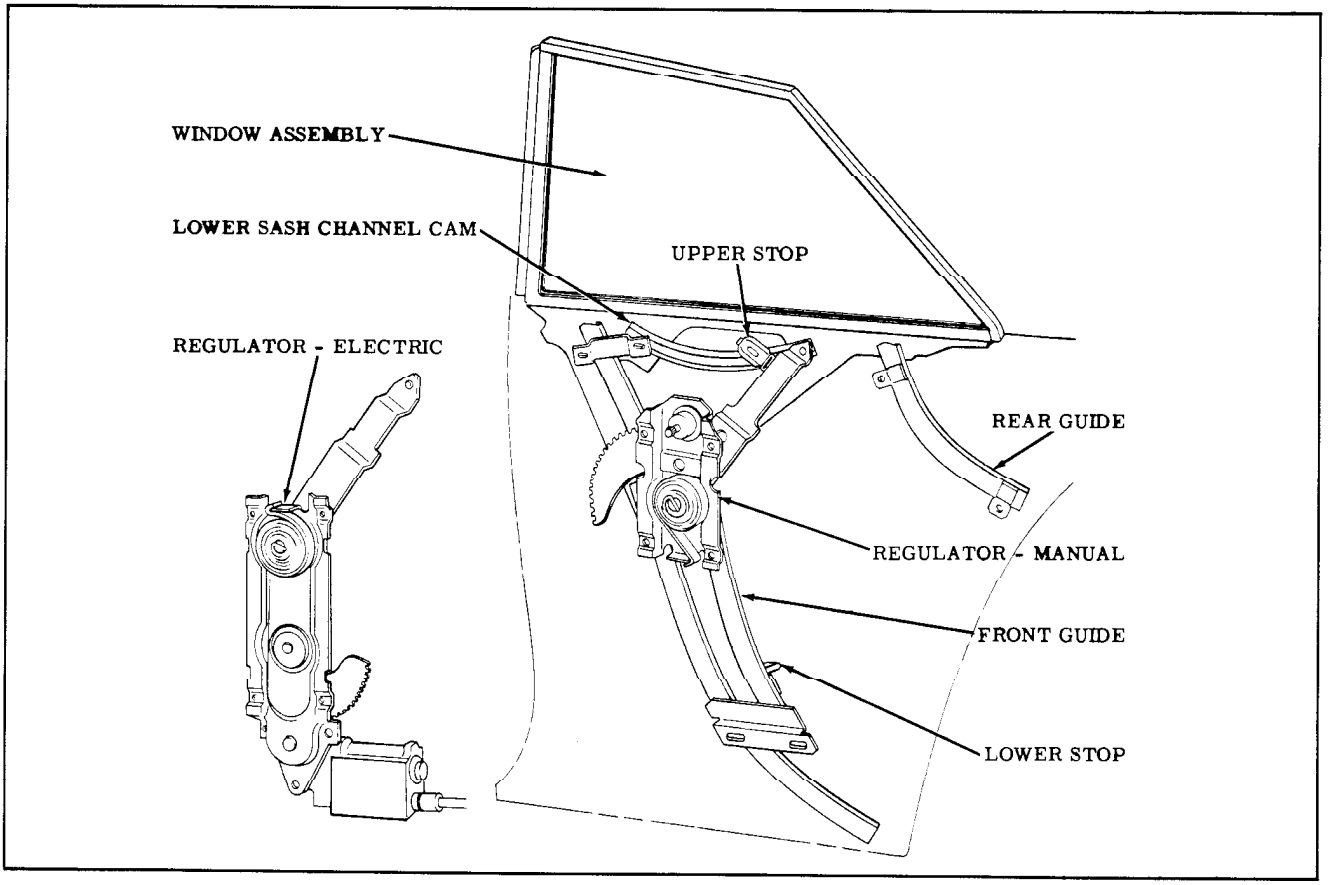


Fig. 17-9 Rear Quarter Hardware (3847 Style)

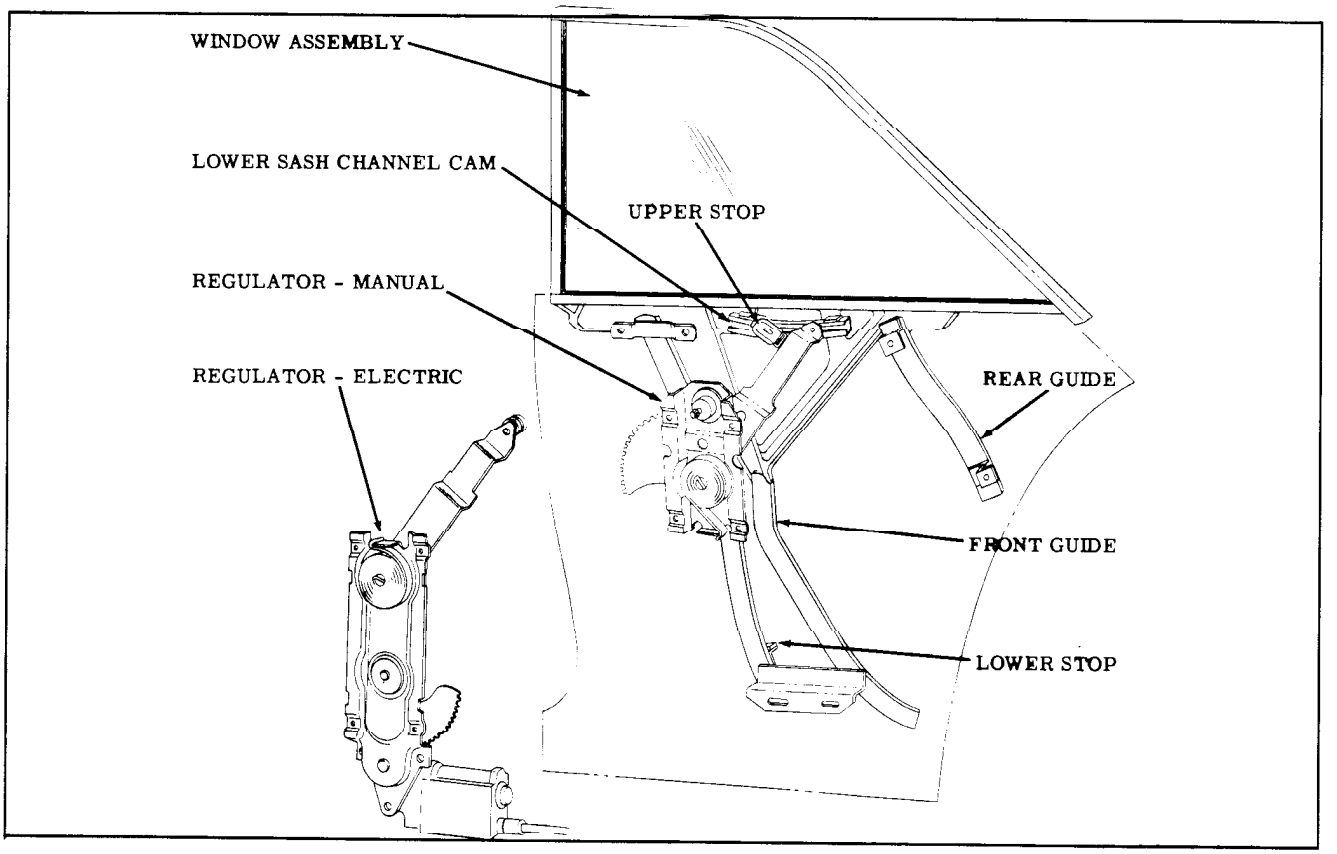


Fig. 17-10 Rear Quarter Hardware (3247, 3547, 3647 Styles)

cover. 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. 17-11) 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. 17-11) Detach cam from roller on regulator arm and remove cam.

4. Remove rear quarter window front guide adjusting stud nuts. (Fig. 17-11)

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.

WINDOW ASSEMBLY—MANUAL AND ELECTRIC (98 Series, "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. 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. 17-11) 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 lower sash channel cam attaching screws. (Fig. 17-11) Detach cam from roller on regulator arm and remove cam.

4. Mark (scribe) position of window lower stop on front guide to enable reinstalling stop in same position. Loosen window lower stop attaching screw and slide stop to bottom of guide.

5. Lower window to run lower roller on window sash channel frame out of front guide channel at the bottom.

6. Lift window upward and inboard to disengage upper roller on window sash channel from rear channel on front guide. Remove window assembly from body.

7. To install, reverse removal procedure. Prior to installation, lubricate channel of window, lower sash channel cam with Lubriplate or its equivalent. Seal all hardware attachments that have been disturbed.

WINDOW ADJUSTMENTS ("47" Styles)

1. Remove rear seat cushion and seat back assemblies. Remove rear quarter arm rest and trim assemblies.

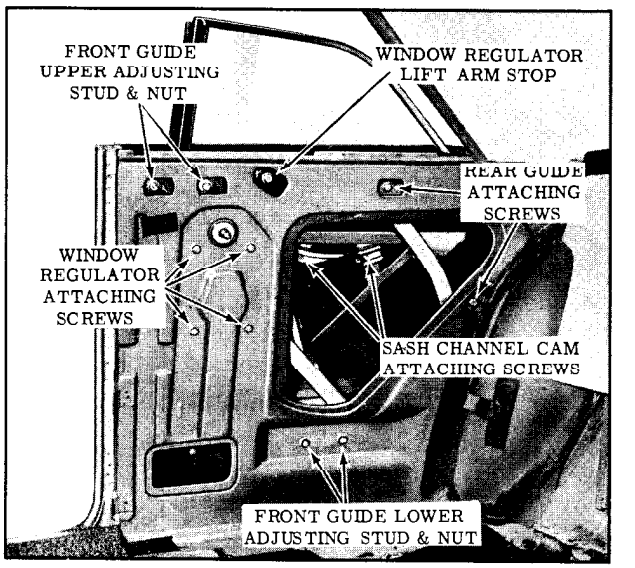


Fig. 17-11 Rear Quarter Hardware ("47" Style)

2. To adjust the window fore or aft, loosen the front and rear guide attaching stud nuts. (Fig. 17-11) 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. 17-11) 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. (Fig. 17-11) 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. (Fig. 17-11) Operate window to full up position and tighten upper stud 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. 17-11)

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.

WINDOW REGULATOR ASSEMBLY— MANUAL AND ELECTRIC

Removal and Installation ("47" Styles)

1. Remove rear quarter window. 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. 17-11); then remove regulator assembly through large access hole.

3. To install, reverse removal procedure. Seal all hardware attaching locations that have been disturbed.

WINDOW FRONT GUIDE ASSEMBLY

Removal and Installation ("47" Styles)

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. 17-11)

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.

WINDOW REAR GUIDE ASSEMBLY

Removal and Installation ("47" Styles)

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. 17-11) 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 "47" Styles. Seal rear guide attaching screws.

WINDOW GLASS RUN OUTER SEALING STRIP

Removal and Installation (88 Series, "47" Styles)

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 screws at forward end of outer sealing strip, securing nylon quarter-window-frame-channel-guide-plate and outer sealing strip to rear quarter outer panel return flange. Disengage outer sealing strip retaining clips from rear quarter outer panel return flange by pressing strip assembly downward.

   NOTE: If necessary, use a screwdriver or other suitable tool to disengage retaining clips, however, use care not to damage painted surfaces or to distort shape of clips.

4. To install, reverse removal procedure.

REAR QUARTER UPPER TRIM ASSEMBLY

Removal and Installation ("47" Styles)

1. Remove back window side garnish molding and side roof rail rear finishing molding. Remove quarter belt finishing molding, where present.

2. On styles with courtesy lamps in the upper trim assembly, remove courtesy lamp lens and 2 screws securing reflector and remove lamp assembly.

3. Carefully insert Trim Panel Removing Tool J-6335 or other suitable tool between headlining and upper edge of upper trim assembly. Disengage upper trim assembly retaining clips from roof extension inner panel by pulling inboard at clip locations. Remove trim assembly from body.

4. To install, reverse removal procedure.

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.

UPPER REVEAL MOLDING ("69" Styles)

Removal and Installation (Fig 17-12)

1. Remove both right and left back window side garnish moldings.

2. Under inner lip of back window rubber channel, remove nut from both right and left bolt and clip assemblies at locations "B".

3. From outside of body disengage both right and

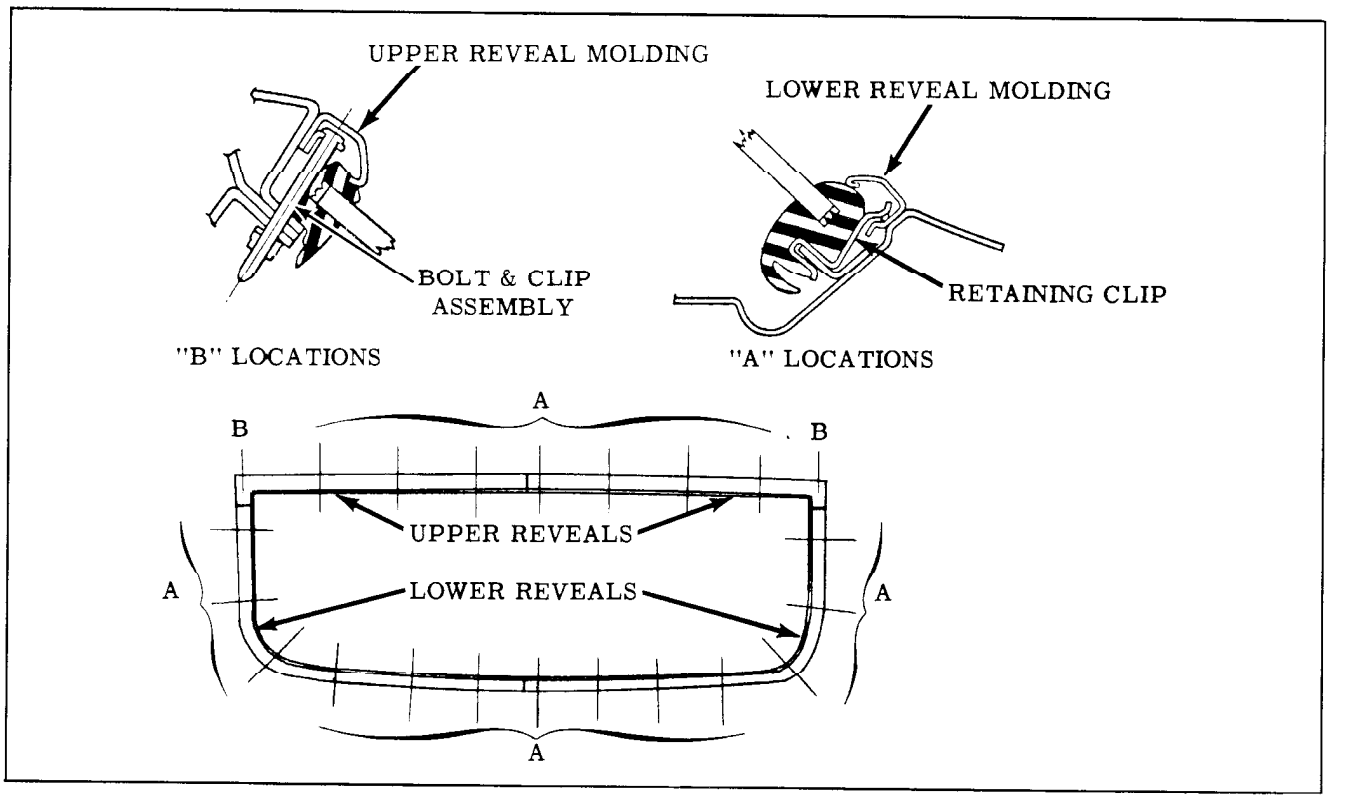


Fig. 17-12 Back Window Reveal Moldings ("69" Styles)

left upper reveal moldings from retaining clips "A" and remove moldings from body.

4. To install, reverse removal procedure.

LOWER REVEAL MOLDING ("69" Styles)

Removal and Installation (Fig. 17-12)

1. Remove back window side garnish moldings.
2. Under inner lip of back window rubber channel remove nuts from bolt and clip assemblies at locations "B".
3. Disengage upper reveal molding sufficiently from retaining clips "A" to allow removal of lower reveal moldings.
4. 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.
5. To install, reverse removal procedure.

LOWER REVEAL MOLDING (3247, 3547 & 3647 Styles)

Removal and Installation (Fig. 17-13)

1. From inside rear compartment under rear compartment front and shelf panel, remove nuts from both bolt and clip assemblies at "B".
2. Remove belt reveal moldings.
3. 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. 17-13) Perform this operation at each molding clip location "D" and remove molding from body.
4. 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.

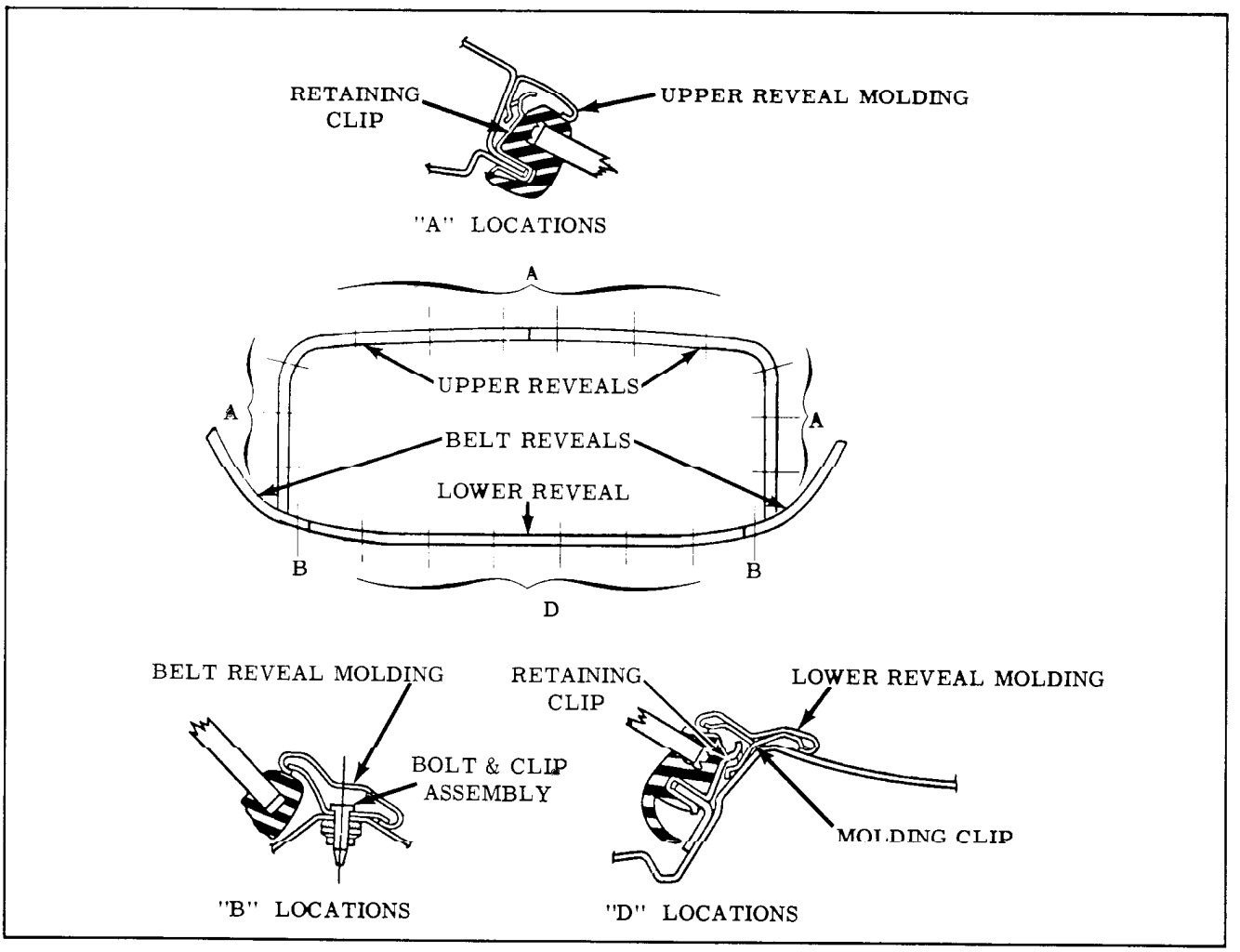


Fig. 17-13 Back Window Reveal Molding (3247, 3547, 3647 Styles)

UPPER REVEAL MOLDING (3247, 3547, & 3647 Styles)

Removal and Installation (Fig. 17-13)

1. Starting at upper end of molding, disengage molding from first three or four retaining clips "A".
2. Remove nut from belt reveal molding bolt and clip assembly at locations "B".
3. Slide molding off remaining clips "A" by pulling molding upwards.

   NOTE: When removing left upper molding only, disengage upper end of right molding sufficiently to allow removal of left molding, which it overlaps.
4. To install, reverse removal procedure.

SIDE REVEAL MOLDING (3839 and 3847 Styles)

Removal and Installation (Fig. 17-14)

1. Remove back window side garnish molding.
2. Inside body under lip of back window rubber channel remove nut from bolt and clip assembly at location "B".
3. From outside body, disengage retaining clip "A" on belt reveal molding.
4. Disengage retaining clips "A" on side reveal molding and remove molding from body.
5. To install, reverse removal procedure.

UPPER REVEAL MOLDING (3839 and 3847 Styles)

Removal and Installation (Fig. 17-14)

1. Remove back window side garnish moldings.
2. From inside body under inner lip of back window rubber channel remove nuts from bolt and clip assemblies at locations "B".
3. From outside body disengage side reveal moldings from retaining clips "A".

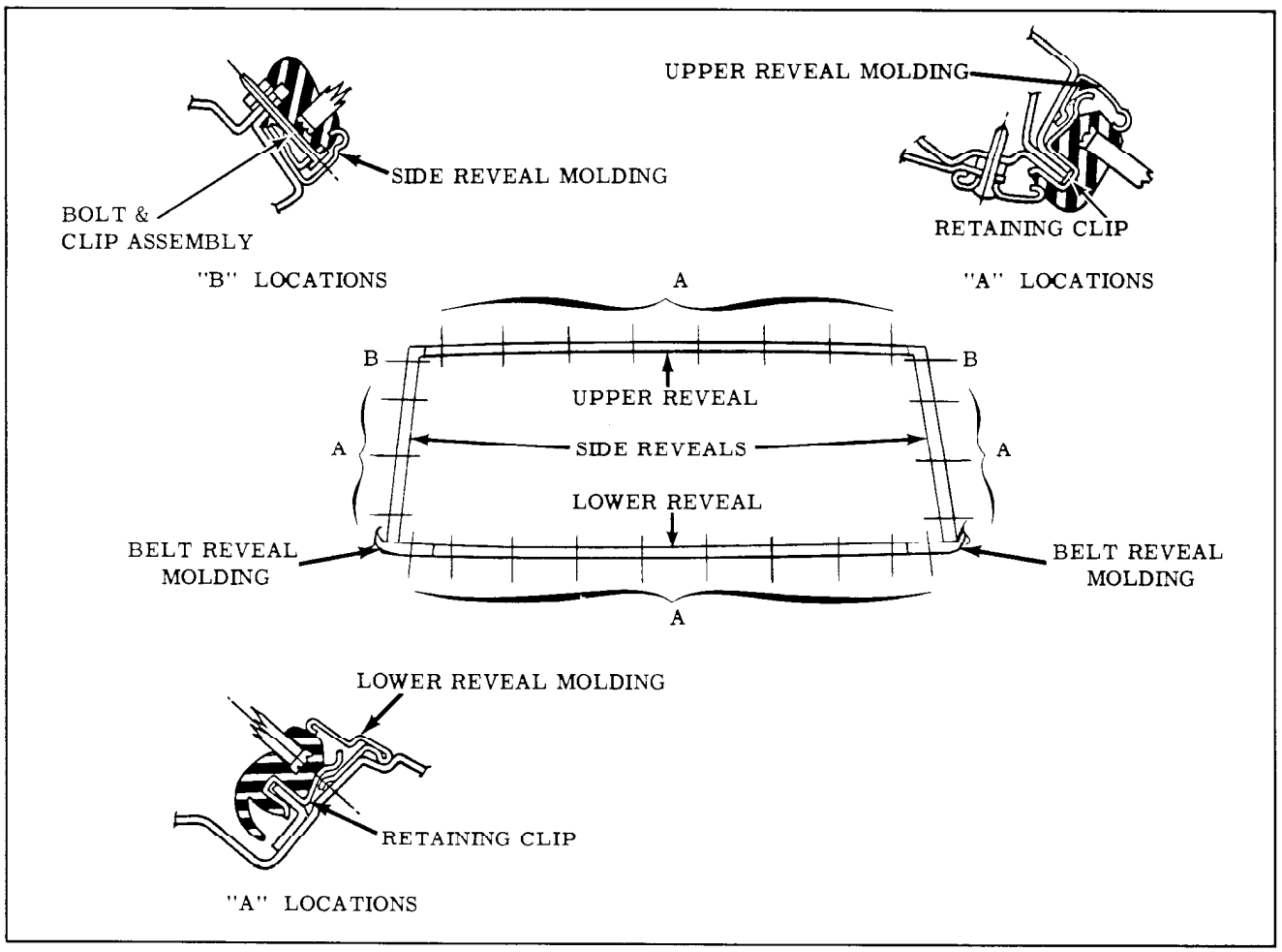


Fig. 17-14 Back Window Reveal Moldings (3839, 3847 Styles)

4. Pull side reveal moldings away from rubber channel sufficiently to allow disengagement of upper reveal molding retaining clips at locations "A"; then, remove upper reveal molding from body.

5. To install, reverse removal procedure.

LOWER REVEAL MOLDING (3839 and 3847 Styles)

Removal and Installation (Fig. 17-14)

1. Completely remove belt reveal molding from one side of body.

2. Disengage lower reveal molding from first three or four retaining clips "A"; then, slide molding off remaining clips by pulling molding towards side of body where belt reveal molding has been removed.

3. To install, position molding and engage molding with retaining clips.

EXTERIOR MOLDINGS

The exterior moldings are identified in Figs. 17-15, 17-16, 17-17 and 17-18.

ROOF DRIP MOLDING SCALP (3269-47, 3569-47 & 3647 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 molding scalp. On "47" Styles, the scalp is overlapped by the side roof rail weatherstrip and reveal molding.

Figure 17-19 illustrates the typical methods used in attaching moldings to the body.

Removal and Installation

1. Remove the windshield pillar drip molding scalp.

2. On "47" Styles, remove the side roof rail retainer and reveal molding.

3. With a pointed hook tool, unsnap the scalp from the drip molding.

4. Start the removal on the underside of the molding at either end.

5. To install, position the scalp over the upper lip of the drip molding and snap the lower rolled edge of the scalp under the drip molding.

6. Seal and install the previously removed parts.

ROOF DRIP MOLDING FRONT SCALP AND ROOF DRIP MOLDING REAR SCALP (3819, 29, 47, 39 Styles)

The front and rear 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. On "29" Styles, the scalp is overlapped by the side roof rail weatherstrip and by the rear quarter upper reveal molding. On "39" and "47" Styles, the scalp is overlapped by the side roof rail weatherstrip and retainer.

Removal and Installation

1. Remove the windshield pillar drip molding scalp.

2. On "29", "39" and "47" Styles, remove the side roof rail weatherstrip and retainer.

3. On "29" Styles remove the rear quarter window upper reveal molding.

4. To remove the rear scalp, detach only the required length of the front scalp.

5. To remove either scalp, use a pointed hook tool and unsnap the scalp from the drip molding. Start the removal on the underside of the drip molding at either end.

6. To install, position the scalp over the upper lip of the drip molding and snap the lower rolled edge of the scalp under the drip molding.

7. Install the rear scalp before the front scalp.

8. Seal and install the previously removed parts.

FRONT DOOR OUTER PANEL UPPER ORNAMENT AND FRONT DOOR OUTER PANEL LOWER ORNAMENT (3800 Series)

The ornaments are secured to the front door by integral studs with attaching nuts at the front hemming flange and snap-in type clips. The ornaments are overlapped by the front door outer panel vertical molding.

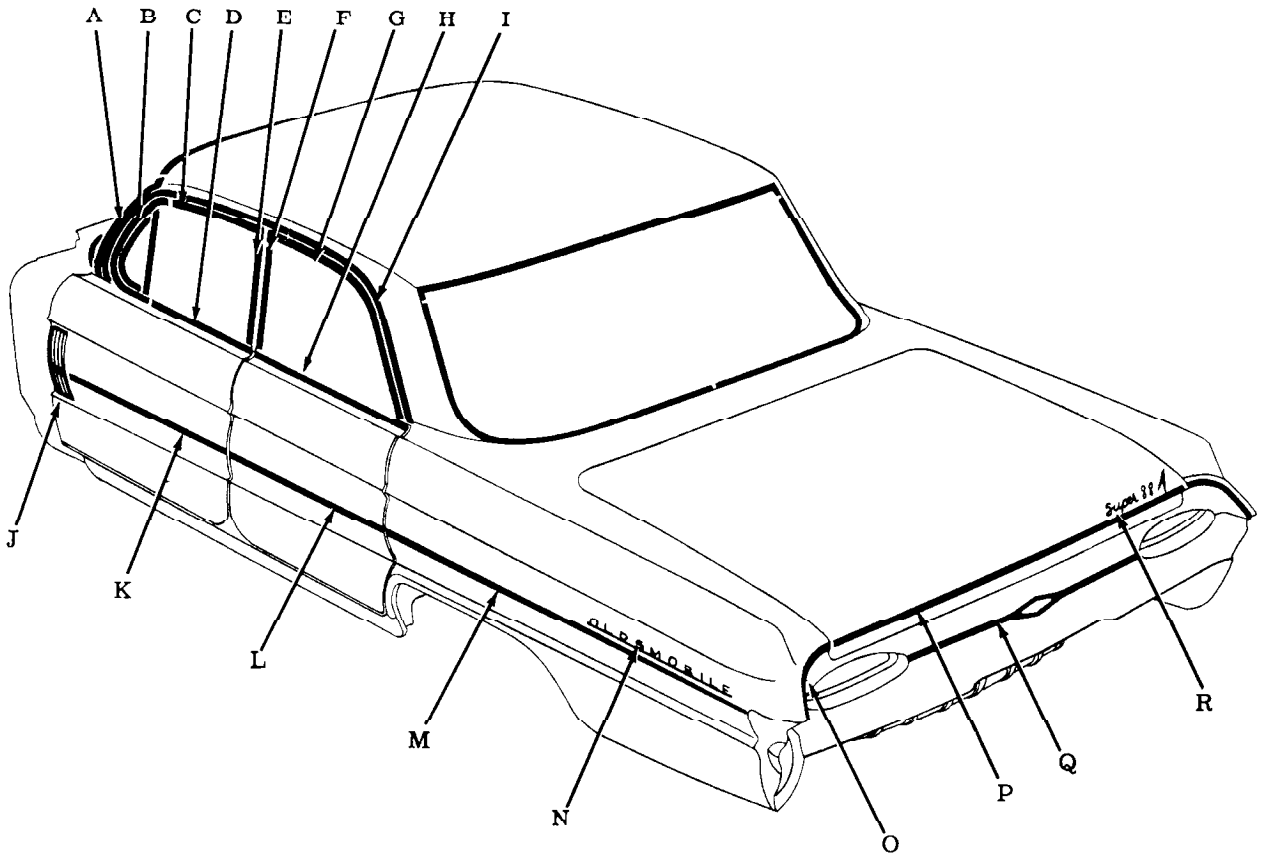
Removal and Installation

1. Remove the front door outer panel vertical molding.

2. Remove the attaching nuts at the hemming flange.

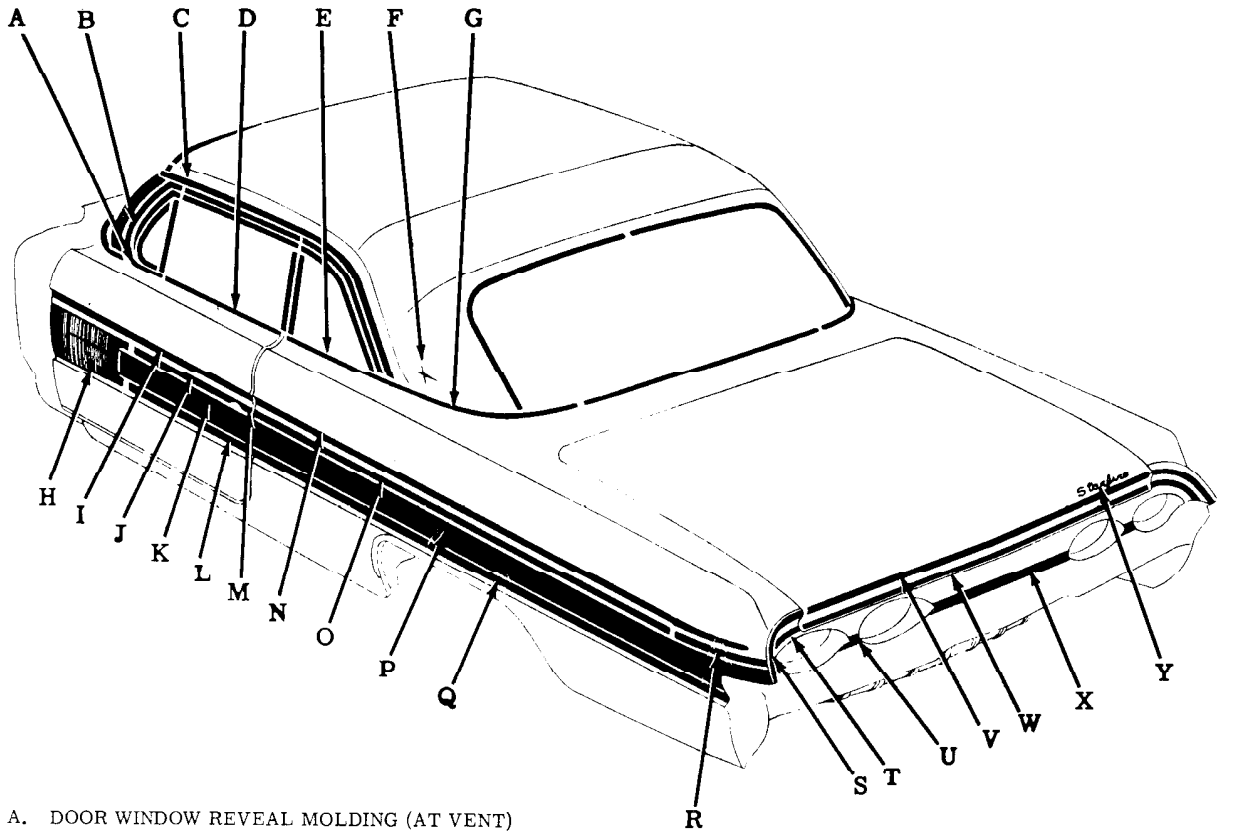
3. With a thin flat-bladed tool, unsnap the ornament from the door panel.

4. To install the ornaments, replace and seal the retaining clips as necessary.



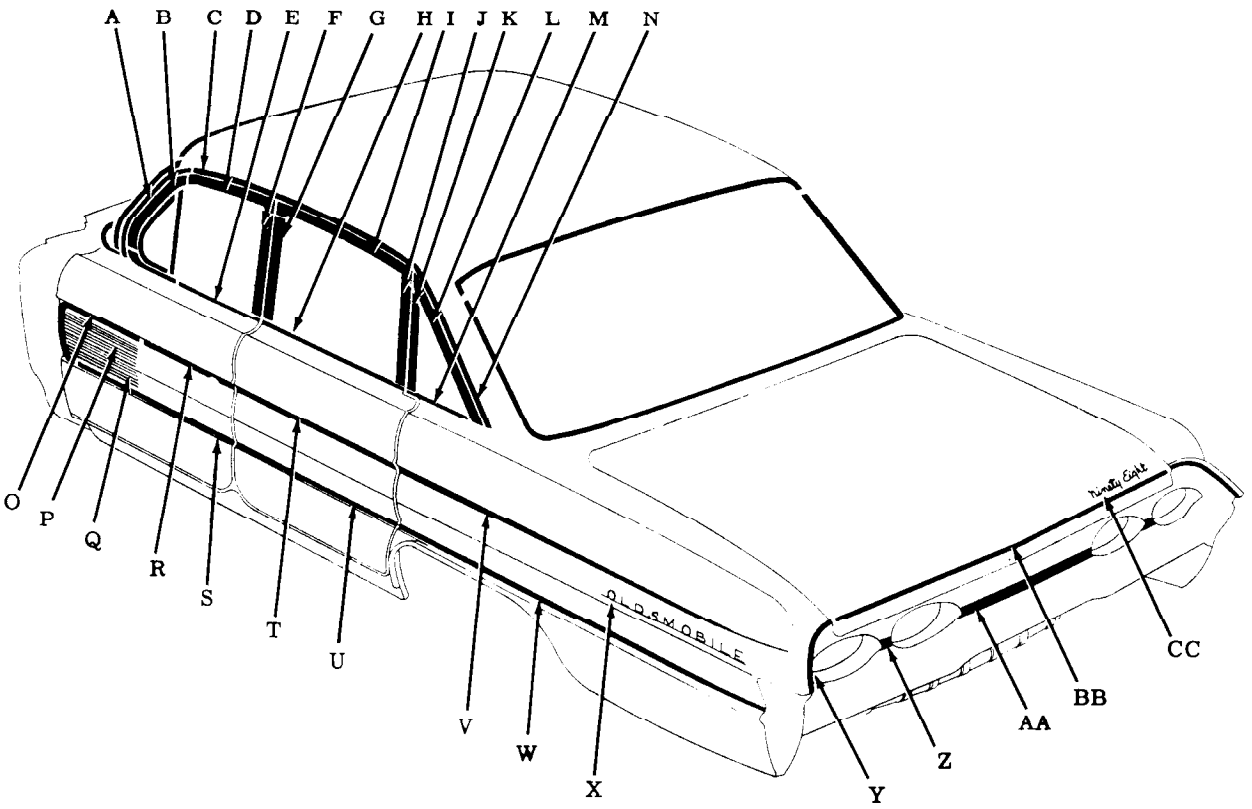
A. WINDSHIELD PILLAR DRIP MOLDING SCALP
B. FRONT DOOR WINDOW FRAME FRONT VERTICAL SCALP MOLDING
C. FRONT DOOR WINDOW FRAME UPPER SCALP MOLDING
D. FRONT DOOR WINDOW REVEAL MOLDING
E. FRONT DOOR WINDOW FRAME REAR VERTICAL SCALP MOLDING
F. REAR DOOR WINDOW FRAME FRONT VERTICAL SCALP MOLDING
G. REAR DOOR WINDOW FRAME UPPER SCALP MOLDING
H. REAR DOOR WINDOW LOWER REVEAL MOLDING
I. ROOF DRIP MOLDING SCALP
J. FRONT DOOR OUTER PANEL LOWER ORNAMENT
K. FRONT DOOR OUTER PANEL LOWER REAR MOLDING
L. REAR DOOR OUTER PANEL LOWER MOLDING
M. REAR FENDER LOWER MOLDING
N. REAR FENDER NAME PLATE
O. REAR OF REAR FENDER MOLDING
P. REAR COMPARTMENT LID OUTER PANEL MOLDING
Q. REAR END PANEL MOLDING
R. REAR COMPARTMENT LID OUTER PANEL NAME PLATE

Fig. 17-15 Exterior Moldings (3569 Style)



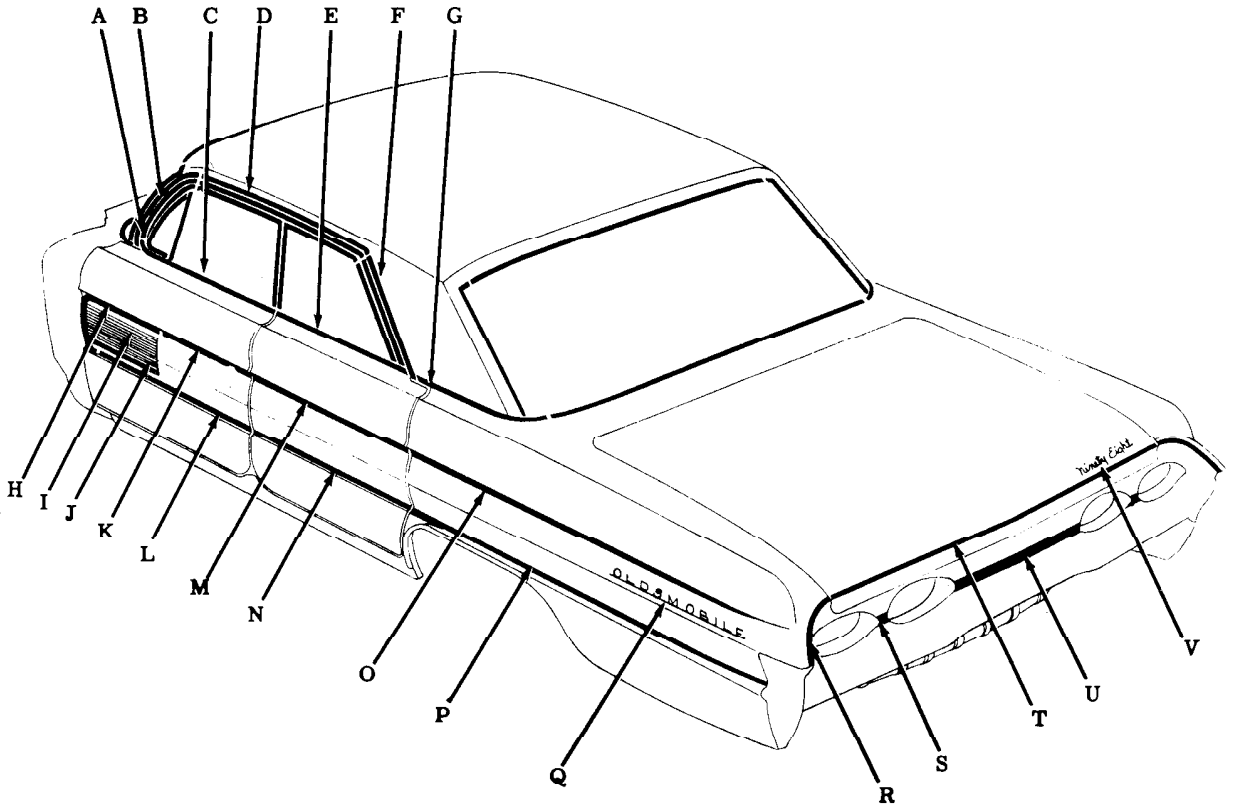
A. DOOR WINDOW REVEAL MOLDING (AT VENT)
B. WINDSHIELD PILLAR DRIP MOLDING SCALP
C. ROOF DRIP MOLDING FRONT SCALP
D. DOOR WINDOW REVEAL MOLDING
E. REAR QUARTER WINDOW REVEAL MOLDING
F. ROOF EXTENSION PANEL EMBLEM
G. REAR QUARTER BELT REVEAL MOLDING
H. DOOR OUTER PANEL LOWER ORNAMENT
I. DOOR OUTER PANEL UPPER MOLDING
J. DOOR OUTER PANEL LOWER FRONT MOLDING
K. DOOR OUTER PANEL INSERT MOLDING
L. DOOR OUTER PANEL INSERT FINISHING MOLDING
M. DOOR OUTER PANEL LOWER REAR MOLDING
N. REAR FENDER UPPER MOLDING
O. REAR FENDER LOWER FRONT MOLDING
P. REAR FENDER INSERT MOLDING
Q. REAR FENDER INSERT FINISHING MOLDING
R. REAR FENDER LOWER REAR MOLDING
S. REAR OF REAR FENDER MOLDING
T. REAR OF REAR FENDER LOWER MOLDING
U. REAR END PANEL SIDE MOLDING
V. REAR COMPARTMENT LID OUTER PANEL MOLDING
W. REAR COMPARTMENT LID OUTER PANEL LOWER MOLDING
X. REAR END PANEL CENTER MOLDING
Y. REAR COMPARTMENT LID OUTER PANEL NAME PLATE

Fig. 17-16 Exterior Moldings (3647 Style)



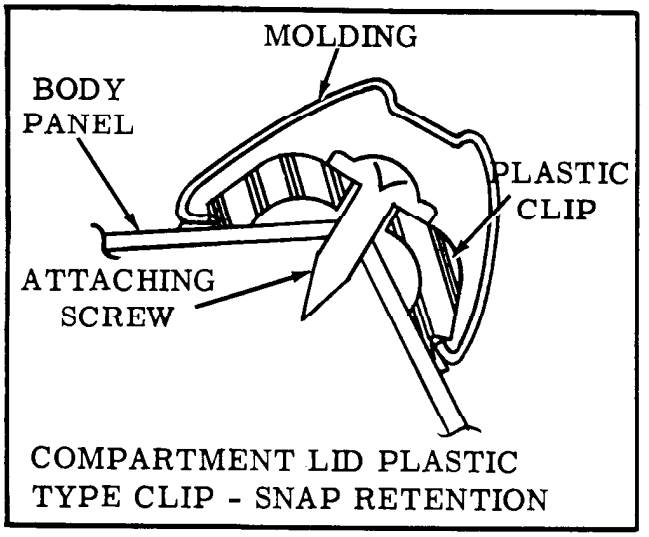
A. WINDSHIELD PILLAR DRIP MOLDING SCALP
B. FRONT DOOR WINDOW FRAME FRONT VERTICAL SCALP MOLDING
C. ROOF DRIP MOLDING FRONT SCALP
D. FRONT DOOR WINDOW FRAME UPPER SCALP MOLDING
E. FRONT DOOR WINDOW REVEAL MOLDING
F. FRONT DOOR WINDOW FRAME REAR VERTICAL SCALP MOLDING
G. REAR DOOR WINDOW FRAME FRONT VERTICAL SCALP MOLDING
H. REAR DOOR WINDOW REVEAL MOLDING
I. REAR DOOR WINDOW FRAME UPPER SCALP MOLDING
J. REAR DOOR WINDOW FRAME REAR VERTICAL SCALP MOLDING
K. REAR QUARTER WINDOW FRONT REVEAL MOLDING
L. REAR QUARTER WINDOW UPPER REVEAL MOLDING
M. REAR QUARTER WINDOW LOWER REVEAL MOLDING
N. ROOF DRIP MOLDING REAR SCALP
O. FRONT DOOR OUTER PANEL VERTICAL MOLDING
P. FRONT DOOR OUTER PANEL UPPER ORNAMENT
Q. FRONT DOOR OUTER PANEL LOWER ORNAMENT
R. FRONT DOOR OUTER PANEL UPPER MOLDING
S. FRONT DOOR OUTER PANEL LOWER MOLDING
T. REAR DOOR OUTER PANEL UPPER MOLDING
U. REAR DOOR OUTER PANEL LOWER MOLDING
V. REAR FENDER UPPER MOLDING
W. REAR FENDER LOWER MOLDING
X. REAR FENDER NAME PLATE
Y. REAR OF REAR FENDER MOLDING
Z. REAR END PANEL SIDE MOLDING
AA. REAR END PANEL CENTER MOLDING
BB. REAR COMPARTMENT LID OUTER PANEL MOLDING
CC. REAR COMPARTMENT LID OUTER PANEL ORNAMENT

Fig. 17-17 Exterior Moldings (3819, 3829 Styles)

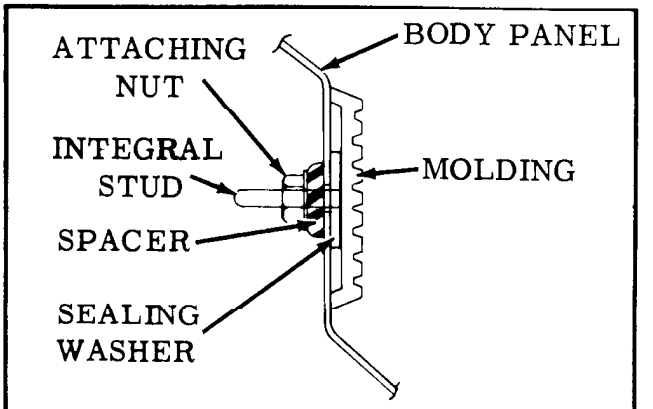


A. FRONT DOOR WINDOW REVEAL MOLDING (AT VENT)
B. WINDSHIELD PILLAR DRIP MOLDING SCALP
C. FRONT DOOR WINDOW REVEAL MOLDING
D. ROOF DRIP MOLDING FRONT SCALP
E. REAR DOOR WINDOW REVEAL MOLDING
F. ROOF DRIP MOLDING REAR SCALP
G. REAR QUARTER BELT REVEAL MOLDING
H. FRONT DOOR OUTER PANEL VERTICAL MOLDING
I. FRONT DOOR OUTER PANEL UPPER ORNAMENT
J. FRONT DOOR OUTER PANEL LOWER ORNAMENT
K. FRONT DOOR OUTER PANEL UPPER MOLDING
L. FRONT DOOR OUTER PANEL LOWER MOLDING
M. REAR DOOR OUTER PANEL UPPER MOLDING
N. REAR DOOR OUTER PANEL LOWER MOLDING
O. REAR FENDER UPPER MOLDING
P. REAR FENDER LOWER MOLDING
Q. REAR FENDER NAME PLATE
R. REAR OF REAR FENDER MOLDING
S. REAR END PANEL SIDE MOLDING
T. REAR COMPARTMENT LID OUTER PANEL MOLDING
U. REAR END PANEL CENTER MOLDING
V. REAR COMPARTMENT LID OUTER PANEL NAME PLATE

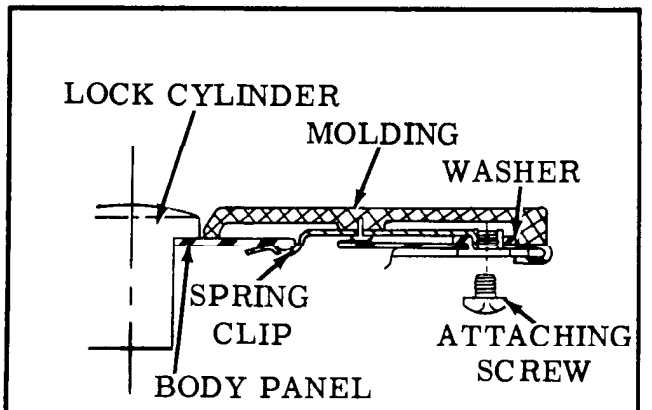
Fig. 17-18 Exterior Moldings (3839 Style)



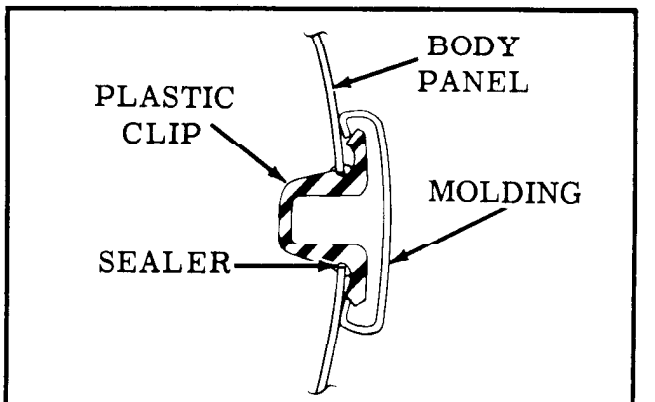
COMPARTMENT LID PLASTIC TYPE CLIP - SNAP RETENTION



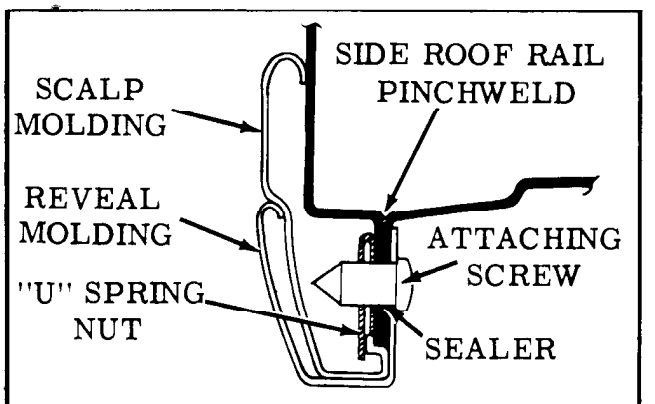
INTEGRAL STUD & NUT ATTACHMENT



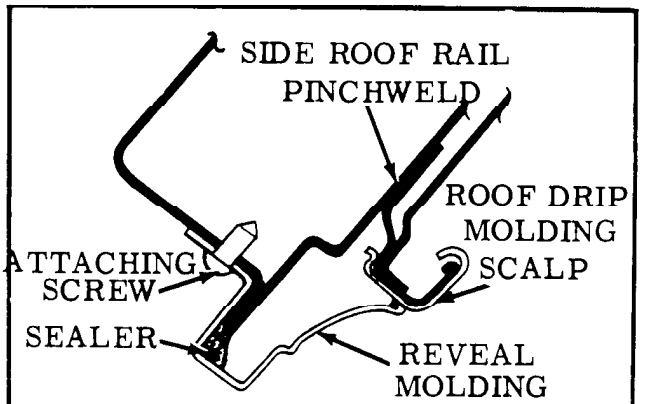
FRONT DOOR REAR MOLDING ATTACHMENT



LOWER MOLDING PLASTIC BATH-TUB TYPE CLIP - SNAP RETENTION



REAR QUARTER WINDOW SCALP AND REVEAL MOLDING - SCREW AND NUT ATTACHMENT



REAR QUARTER WINDOW UPPER REVEAL MOLDING - SCREW ATTACHMENT

Fig. 17-19 Typical Molding Installations

5. Install sealing washers over the studs.
6. Position the ornaments to the door panel and snap them into place.
7. Install the attaching nuts and the previously removed moldings.

FRONT DOOR OUTER PANEL LOWER ORNAMENT (3200 and 3500 Series)

The ornament is retained to the front door by integral studs and attaching nuts at the front hemming flange and a retaining screw.

Removal and Installation

1. Remove the front door outer panel lower rear molding and remove the ornament attaching screw.
2. Remove the attaching nuts at the front hemming flange.
3. To install the ornament, install the sealing washers to the ornament studs.
4. Apply body caulking compound around retaining screw hole.
5. Position the ornament to the door panel and secure the attaching screw and nuts.
6. Install the door outer panel lower rear molding.

FRONT DOOR OUTER PANEL LOWER ORNAMENT (3647, "67" Styles)

The ornament is secured to the front door by integral studs with attaching nuts and a retaining screw.

1. Remove the door outer panel lower front molding to remove the ornament attaching screw.
2. Remove the door trim pad and water deflector to remove two attaching nuts.
3. Remove the insert finishing molding and insert molding.
4. Remove the two attaching nuts at the front hemming flange.
5. To install the ornament, install sealing washers to ornament studs.
6. Position the ornament to the door.
7. Install and seal the attaching screw.
8. Install spacers and attaching nuts to the ornament studs.
9. Install previously removed parts.

FRONT DOOR OUTER PANEL VERTICAL MOLDING (3800 Series)

The molding is secured to the door by integral studs and attaching nuts, a snap-in type clip and retaining screws. The molding is overlapped by the front door outer panel upper and lower molding.

Removal and Installation

1. Remove the front door outer panel upper and lower molding.
2. Remove the attaching screws at the upper and lower rear corners of the molding.
3. Remove the attaching nuts at the front hemming flange.
4. With the flat-bladed tool, unsnap the molding from the door panel at the upper center clip location.
5. To install the molding, replace the retaining clip in the door panel and seal as necessary.
6. Install washers over the attaching studs.
7. Position the molding to the door panel and snap the molding into the retaining clip.
8. Secure and seal the attaching screws and nuts.
9. Install the previously removed moldings.

FRONT DOOR OUTER PANEL LOWER REAR MOLDING (3200 and 3500 Series)

The molding is retained to the front door by "bath-tub" type snap-on clips, a retaining screw at the rear hemming flange and telescopes into the door panel lower ornament at the front.

Removal and Installation

1. Remove the attaching screw at the rear hemming flange.
2. With a flat-bladed tool, unsnap the molding from the door panel at each clip location.
3. Slide the molding rearward to disengage it from the ornament.
4. To install the molding, replace damaged clips and seal as required.
5. Slide the molding into the ornament positioning the molding to the rear edge of the front door and over the retaining clips and snap it into place.
6. Seal and install the end attaching screw.

FRONT DOOR OUTER PANEL UPPER MOLDING AND FRONT DOOR OUTER PANEL LOWER MOLDING (3800 Series)

Each molding is secured to the door panel by an attaching screw at the rear hemming flange and by snap-in type clips.

Removal and Installation

1. Remove the attaching screw and with a flat-bladed tool, unsnap the molding from the door panel starting at the rear.
2. To install the molding, replace damaged clips and seal as required.
3. Position the molding to the front vertical molding and to the rear edge of the door and snap it into place.
4. Install and seal the attaching screw.

DOOR OUTER PANEL UPPER MOLDING (3647, 67 Styles)

The molding is secured to the door by retaining screws at the front and rear hemming flange and by snap-on type clips.

Removal and Installation

1. Remove the retaining screws at the front and rear hemming flange.
2. Insert a thin flat-bladed tool at the bottom of the molding to gain initial access to each clip.
3. Engage and squeeze the side of each clip with the tool and disengage it from the outer panel.
4. Start at either end of the molding.
5. Position an insulated, small, wedge-shaped shim behind the molding during the removal operation to prevent the clips from re-engaging the outer panel.
6. To install the moldings, replace damaged clips as required.
7. Apply body caulking compound to the attaching holes and to the clips.
8. Position the molding to the door and snap in the clips.
9. Install the attaching screws.

DOOR OUTER PANEL LOWER FRONT MOLDING AND DOOR OUTER PANEL INSERT FINISHING MOLDING (3647, 67 Styles)

The molding is secured to the door by snap-in type clips which were previously installed on the molding.

Removal and Installation

1. Insert a thin flat-bladed tool at the bottom of the molding to gain the initial access to each clip.
2. Engage and squeeze the side of each clip with the tool and disengage it from the outer panel.
3. Start at the rear end of the molding and position an insulated, small, wedge-shaped shim behind the molding during the removal operation to prevent the clips from re-engaging the outer panel.
4. To install the moldings, replace damaged clips as required.
5. Apply body caulking compound to the attaching holes and the clips.
6. Position the front molding to the ornament and to the door and snap the molding into place.

DOOR OUTER PANEL INSERT MOLDING (3647, 67 Styles)

The insert molding is secured to the door by attaching screws under the door lower molding and by the insert finishing molding. The front end of the insert is overlapped by the lower ornament.

Removal and Installation

1. Remove the door outer panel lower front, rear, and insert finishing molding.
2. Remove the attaching screws.
3. Move the insert rearward to disengage it from the ornament.
4. To install the insert, position the molding to the door engaging the front end under the lower ornament.
5. Install the attaching screws.
6. Install the door lower front, rear and insert finishing moldings.

DOOR OUTER PANEL LOWER REAR MOLDING (3647, 67 Styles)

The molding is secured to the door by a retaining screw at the rear hemming flange and by spring tension from clip, which is an integral part of the molding.

Removal and Installation

1. Remove the retaining screw; slide the molding rearward and lift to disengage it from the door.
2. To install the molding, apply caulking compound to the spring clip hole.
3. Slide the molding into position, engaging the spring clip.
4. Install and seal the attaching screw.

REAR DOOR OUTER PANEL UPPER MOLDING AND REAR DOOR OUTER PANEL LOWER MOLDING (3819-29-39 Styles)

Each molding is secured to the door panel by an attaching screw at the rear hemming flange and by snap-in type clips.

Removal and Installation

1. Remove the attaching screw and with a flat-bladed tool, unsnap the molding from the door panel, starting at the rear end.
2. To install the molding, replace and seal the damaged clips as necessary.
3. Position the molding to the door and snap it in place.
4. Install and seal the attaching screw at the rear hemming flange.

REAR DOOR OUTER PANEL LOWER MOLDING (3239, 69 Styles)

The molding is secured to the rear door by a bolt and clip assembly with attaching nut at the front hemming flange and by snap-in type clips previously installed on the molding.

Removal and Installation

1. Remove the attaching nut at the front hemming flange.
2. With a flat-bladed tool, unsnap the molding from the door, starting at the front.
3. To install the molding, replace damaged clips as required.
4. Position the molding to the front edge of the door, aligning the clip to the holes.
5. Snap the molding to the door and install the attaching nut.

REAR DOOR OUTER PANEL LOWER MOLDING (3547, 39, 69 Styles)

The molding is secured to the rear door by "bath-tub" type snap-on clips, bolt and clip assembly with attaching nut at the front hemming flange and by an attaching screw at the rear hemming flange.

Removal and Installation

1. Remove the front attaching nut and the rear attaching screw.
2. With a flat-bladed tool, unsnap the molding from the door at each clip location.
3. To install the molding, replace the damaged clips as required.
4. Position the molding to the door and over the edge of the retaining clip and snap it into place.
5. Install and seal the front attaching nut and rear attaching screw.

REAR QUARTER WINDOW LOWER REVEAL MOLDING (3247 Option and 3547, 3847 Styles)

The molding is secured to the rear quarter panel return flange by screws.

Removal and Installation

1. Remove the rear quarter window.
2. Remove the attaching screws and the molding.
3. To install, position the molding along the rear quarter panel return flange.
4. Install the attaching screws and the previously removed parts.

REAR QUARTER BELT REVEAL MOLDING (3247, 3547 & 3647 Styles)

The molding is secured to the extension panel by bolt and clip assemblies. The front of the molding is overlapped by the rear quarter window lower reveal molding.

Removal and Installation

1. Remove the roof extension trim panel.
2. Remove attaching nuts at roof extension panel.
3. Remove the rear attaching nut at the rear compartment location.
4. Slide the molding rearward until the molding is disengaged from the rear quarter window lower reveal.
5. To install the molding, apply body caulking compound around the molding studs.
6. Position the molding and insert the front end of the molding under the quarter window lower reveal molding.
7. Slide the molding forward until it fits the body contour.
8. Secure the attaching nut at rear compartment.
9. Secure the attaching nuts at the roof extension panel.
10. Install the removed trim.

REAR QUARTER BELT REVEAL (3839, 47 Styles)

The molding is secured to the roof extension panel by bolt and clip assemblies with attaching nuts and at the rear, by clips which were previously installed to the back window retaining flange.

Removal and Installation

1. Remove the quarter upper trim panel.
2. Remove the attaching nuts.
3. With a pointed hook tool unsnap the molding from the retaining clips.
4. To install the molding, replace damaged clips where required.
5. Apply body caulking compound to the bolt studs and around the attaching holes.
6. Position the molding to the panel.
7. Snap the molding over the rear retaining clip.
8. Install the sealed attaching nuts.
9. Install the quarter upper trim panel.

ROOF EXTENSION PANEL EMBLEM (3239, 3539 Styles)

The emblem is secured to the roof extension panel by integral attaching studs and sealed attaching nuts.

Removal and Installation

1. Remove the rear quarter upper trim assembly.
2. Remove the attaching nuts and the emblem.
3. To install, apply body caulking compound to the attaching studs and nuts.
4. Position the emblem to the body and install the attaching nuts to effect a watertight seal.
5. Install the previously removed parts.

ROOF EXTENSION PANEL ORNAMENT (3647 Styles)

The ornament is secured to the roof extension panel integral studs with attaching nuts.

Removal and Installation

1. Remove the rear quarter courtesy lamp.
2. Remove the ornament attaching nuts through the courtesy lamp access hole.
3. To install the ornament, apply caulking compound to the ornament studs.
4. Position the ornament to the panel and install the attaching nuts to effect a watertight seal. Install the previously removed parts.

REAR FENDER NAME PLATE (All Series)

The name plate is secured to the rear fender by integral studs and attaching nuts.

Removal and Installation

1. Remove or loosen the rear compartment side trim and remove the attaching nuts.
2. To install the plate, apply caulking compound around the plate studs.
3. Position the plate to the fender and install the sealed attaching nuts.
4. Install the rear compartment side trim.

REAR FENDER LOWER MOLDING (3547, 39, 69 Styles)

The molding is secured to the fender by a bolt and clip assembly with attaching nut at the rear and by plastic "bath-tub" type snap-on clips.

Removal and Installation

1. Remove or loosen the rear compartment trim and remove the attaching nut.
2. With a thin flat-bladed tool, unsnap the molding from the fender at each clip location starting at either end.
3. To install the molding, replace damaged clips and seal as necessary.
4. Position the molding to the front end of the fender and over the edge of the clip and snap it into place.
5. Install and seal the attaching nut and install the rear compartment trim panel.

REAR FENDER LOWER MOLDING (3247, 67 Styles)

The molding is secured to the rear fender by plastic snap-in clips which were previously installed on the molding.

Removal and Installation

1. With a thin flat-bladed tool, unsnap the molding from the fender at each clip location.
2. To install the molding, replace the plastic clips, position the molding to the fender and snap it into place.

REAR FENDER UPPER MOLDING AND REAR FENDER LOWER MOLDING (3819, 29, 39, 47, 67 Styles)

Each molding is secured to the rear fender by snap-in type clips and by bolt and clip assemblies with attaching nuts. The lower molding uses "bath-tub" type snap-on clips in the center.

Removal and Installation

1. Remove the rear compartment side trim.
2. Remove the attaching nuts at the rear compartment area.
3. With a thin flat-bladed tool, unsnap the molding from the fender at each clip location, starting at the rear clip.
4. To install the moldings, replace damaged clips and seal as necessary.
5. Apply caulking compound to bolt and clip assembly studs.
6. Position the molding to the front end of the fender and over the edge of the "bath-tub" type clips (lower molding only) and snap it into place.
7. Install the sealed attaching nuts.
8. Install the rear compartment side trim.

REAR FENDER UPPER MOLDING, REAR FENDER LOWER FRONT MOLDING AND REAR FENDER INSERT FINISHING MOLDING (3647, 67 Styles)

Each molding is secured to the rear fender by snap-in type clips at the front half and by bolt and clip assemblies with attaching nuts at the rear. The lower front molding is overlapped by the rear fender lower rear molding.

Removal and Installation

1. Remove the rear compartment side trim.
2. Remove the rear fender lower rear molding before removing the lower front molding.
3. Remove the rear attaching nuts.
4. With a thin flat-bladed tool unsnap the molding from the fender at each clip location starting at the rear.
5. To install the molding, replace damaged clips and seal as necessary.
6. Position the molding to the rear fender and snap it into place.
7. Install the attaching nuts.
8. Install the rear fender lower rear molding and the rear compartment side trim.

REAR FENDER INSERT MOLDING (3647, 67 Styles)

The insert molding is secured to the fender by attaching screws located under the lower front, lower rear and the insert finishing molding.

Removal and Installation

1. Remove the rear fender lower front, lower rear and the insert finishing molding.
2. Remove the attaching screws.
3. To install the insert, position the molding to the panel and install the attaching screws.
4. Install the previously removed parts.

REAR FENDER LOWER REAR MOLDING (3647, 67 Styles)

The molding is secured to the rear fender by integral studs with attaching nuts and telescopes

into the rear fender upper front and rear fender lower front molding.

Removal and Installation

1. Remove the rear compartment side trim.
2. Remove the attaching nuts.
3. Lift the molding and slide it rearward.
4. To install the molding, install sealing washers over the studs.
5. Position the molding to the upper and lower front molding.
6. Install the sealed attaching nuts.
7. Install the rear compartment side trim.

REAR OF REAR FENDER MOLDING ASSEMBLY (35, 36, 38 Series)

The molding is secured to the rear of rear fender by bolt and clip assemblies with attaching nuts.

Removal and Installation

1. To remove the molding, remove the attaching nuts.
2. To install the molding, install sealing washers over the molding studs.
3. Position the molding to the panel and install the sealed attaching nuts to effect a watertight seal.

REAR OF REAR FENDER LOWER MOLDING (36 Series)

The molding is secured to the rear of rear fender by integral studs with attaching nuts, and by an attaching screw at the lower outer corner.

Removal and Installation

1. Remove or loosen the rear compartment trim.
2. Remove the attaching nuts and the attaching screws.
3. To install the molding, position the molding to the fender and install a sealing washer over the integral studs.
4. Install the attaching nut to effect a watertight seal.
5. Install the rear compartment trim.

COMPARTMENT LID OUTER PANEL ORNAMENT (3200 & 3500 Series) COMPARTMENT LID OUTER PANEL NAME PLATE (32, 35, 36, 38 Series)

The name plates are secured to the lid outer panel by integral studs with sealed attaching nuts.

Removal and Installation

1. Remove the attaching nuts through the inner panel access cutouts.
2. To install, apply body caulking compound to the attaching studs and nuts.
3. Position the name plate to the lid outer panel and install the attaching nuts to effect a watertight seal.

REAR COMPARTMENT LID OUTER PANEL LOWER MOLDING (3647, 67 Styles)

The molding is secured to the rear compartment lid by attaching screws.

Removal and Installation

1. Remove the attaching screws at the rear compartment lid return flange.
2. To install the molding, align the molding clips with the holes in the compartment lid.
3. Position the molding and install the sealed attaching screws to effect a watertight seal.

REAR COMPARTMENT LID OUTER PANEL MOLDING ASSEMBLY (35, 36, 38 Series)

The molding is secured to the rear compartment lid by snap-on clips and by attaching screws at the outer ends.

Removal and Installation

1. Remove the outer attaching screws and with a thin flat-bladed tool, unsnap the molding from the outer panel at each clip location.
2. To install the molding, replace and seal the screws on retaining clips as necessary.
3. Position the molding to the compartment lid and over the edge of the attaching clip and snap it into place.
4. Install the attaching screws at each end to effect a watertight seal.

REAR END PANEL MOLDING ASSEMBLY (All Series) REAR END PANEL CENTER MOLDING (36 & 38 Series) AND REAR END PANEL SIDE MOLDING (36 & 38 Series)

The molding is secured to the rear end panel by integral studs with attaching nuts.

Removal and Installation

1. Remove the attaching nuts.
2. To install the molding, install washers over the molding studs.
3. Position the molding to the panel.
4. Install the attaching nuts to effect a watertight seal.

HYDRO- LECTRIC SYSTEM ("67" Styles)

The new high pressure hydro-lectric unit used in the convertible bodies, consists of a 12 volt reversible type motor, a rotor-type pump, two hydraulic lift cylinders, and an upper and lower hydraulic hose assembly. NEW SPECIFICATIONS FOR PUMP PRESSURE TEST ARE 340 TO 380 P.S.I.

CONVERTIBLE 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 (Part No. 1098737) for sealing the cloth inner lining of the top material and back curtain assembly.

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:

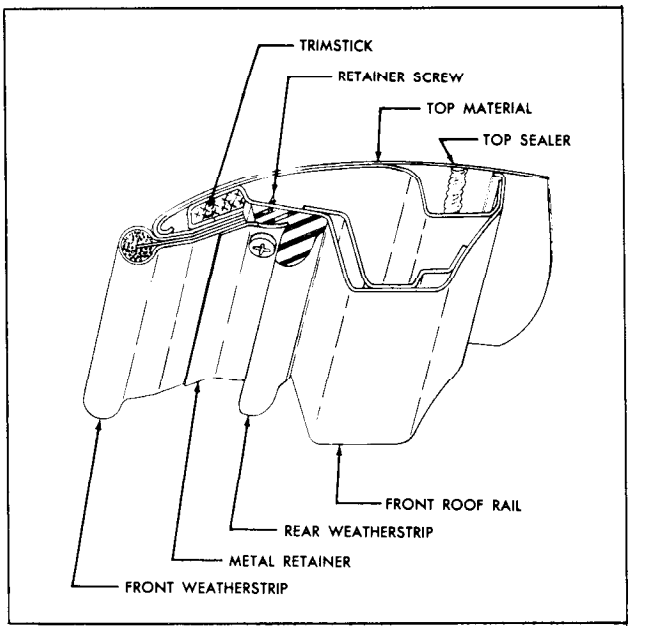


Fig. 17-20 Front Roof Rail Sealing

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. 17-20)
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. 17-21)

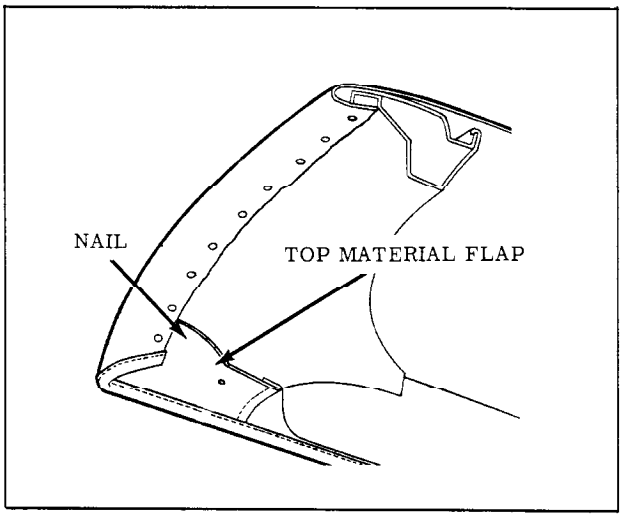


Fig. 17-21 Top Material Attachment to Roof Rail

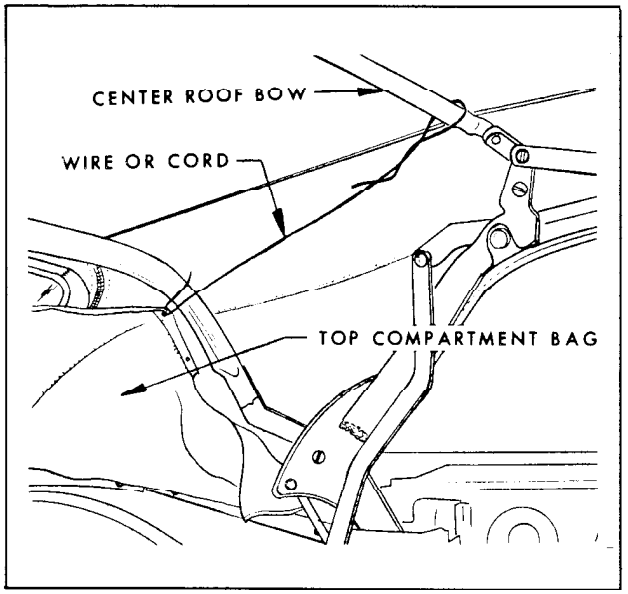


Fig. 17-22 Top Compartment Bag Held in Position

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 center roof bow to provide ready access to attaching bolts. (Fig. 17-22)

6. At each rear quarter area remove attaching bolts and washer securing rear quarter trim stick assembly to rear quarter inner panel. (Fig. 17-23)

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. 17-24) Reference marks should be transferred to new back curtain when Step 8 of installation procedure is performed.

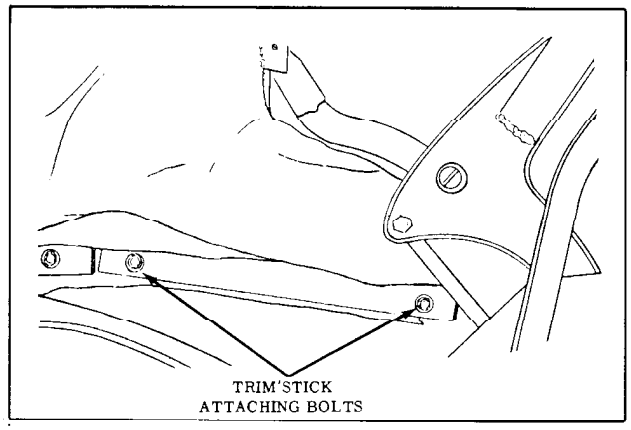


Fig. 17-23 Rear Quarter Trim Stick

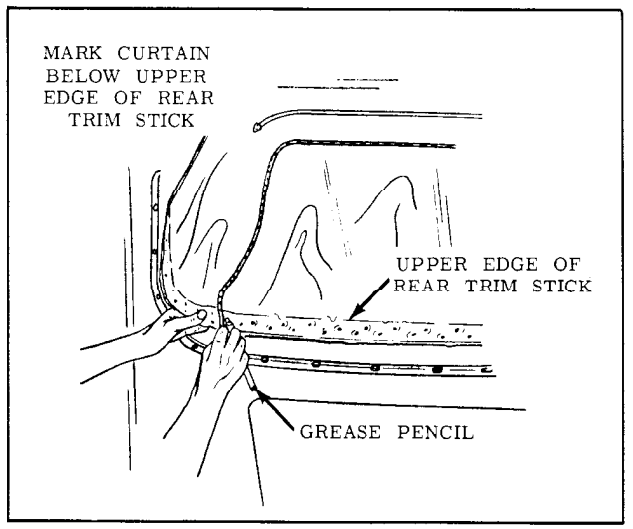


Fig. 17-24 Locating Edge of Top Material

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. 17-25) 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.

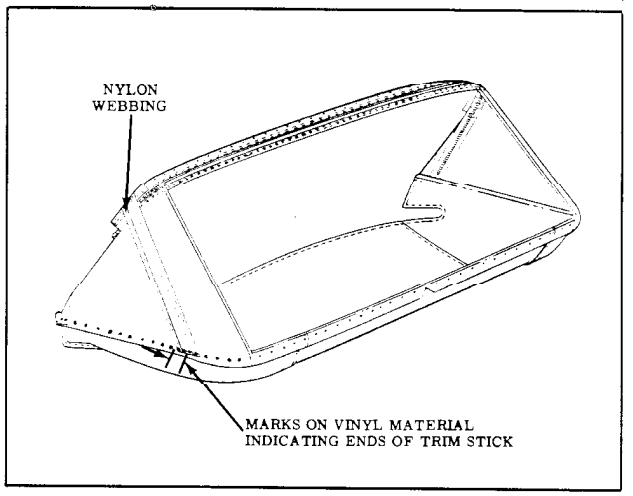


Fig. 17-25 Marking Back Curtain

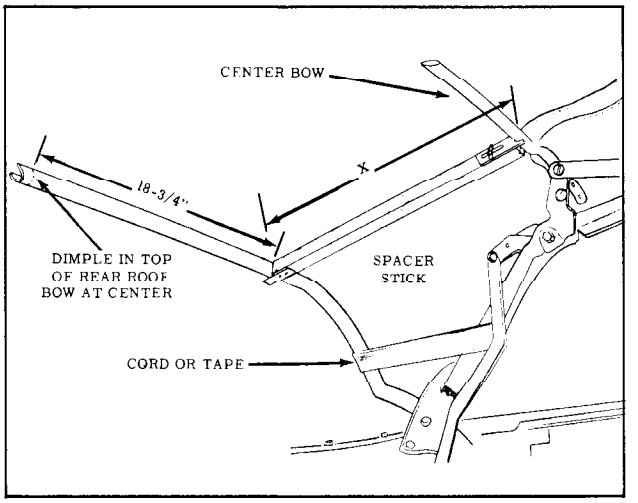


Fig. 17-26 Installation of Spacer Sticks

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 bow. (Fig. 17-26) 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 Fig. 17-27.

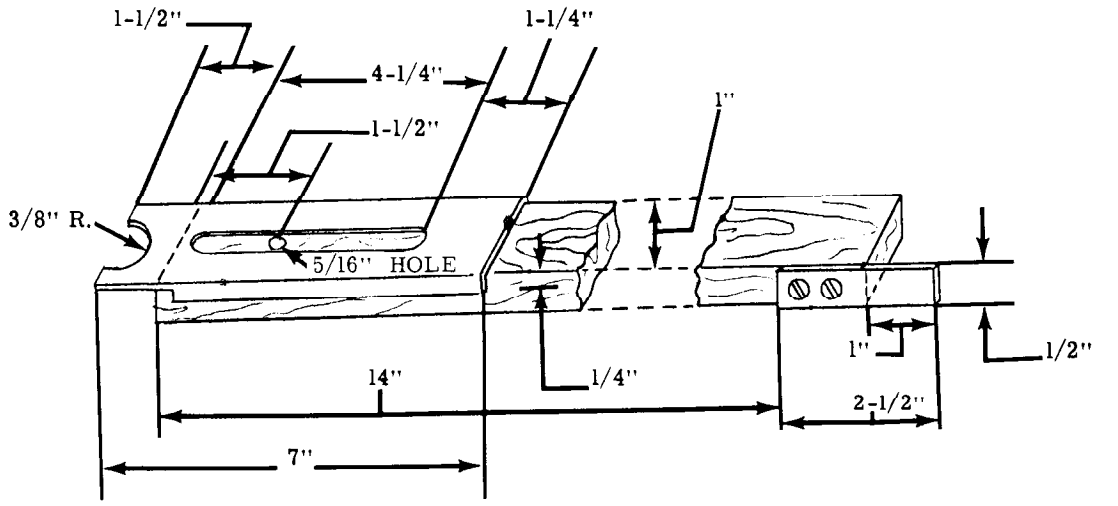
13. Temporarily tie or tape rear bow to rear side roof rails. (Fig. 17-26) Detach nylon webbing, side stay pads and back curtain assembly from rear bow.

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, mark ends of rear and rear quarter trim sticks on vinyl surface of back curtain material. (Fig. 17-25) Reference marks for trim sticks should be transferred to new back curtain material when Step 8 of installation procedure is performed.

16. Remove right and left nylon webbing from rear trim stick. (Fig. 17-25)

17. Remove back curtain assembly from rear and



MATERIAL PER STICK

WOOD - 1/2" x 1" x 15-1/2"
STEEL - 1/32" x 1/2" x 2-1/2"
STEEL - 1/32" x 1-1/2" x 7"
2 - SCREWS #6 x 1/2"
BOLT 1/4" x 20" x 1"
WING NUT 1/4" x 20"
2 - WASHERS 1/4" I. D.

Fig. 17-27 Spacer Stick Dimensions

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. 17-26) Adjust sticks so that dimension "X" (measured along spacer stick from front upper rolled edge of rear roof bow to center of center bow) is 16-3/8" ± 1/4". Tie or tape rear bow to rear side roof rails.

2. In all cases, dimension "X", previously described, must be between 16-1/8 "and 16-5/8" 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 trim cement. (Fig. 17-28)

4. Trim selvage end of side stay pads just forward of rear rolled edge of rear roof bow. (Fig. 17-29)

5. Distance from center of center bow to rolled

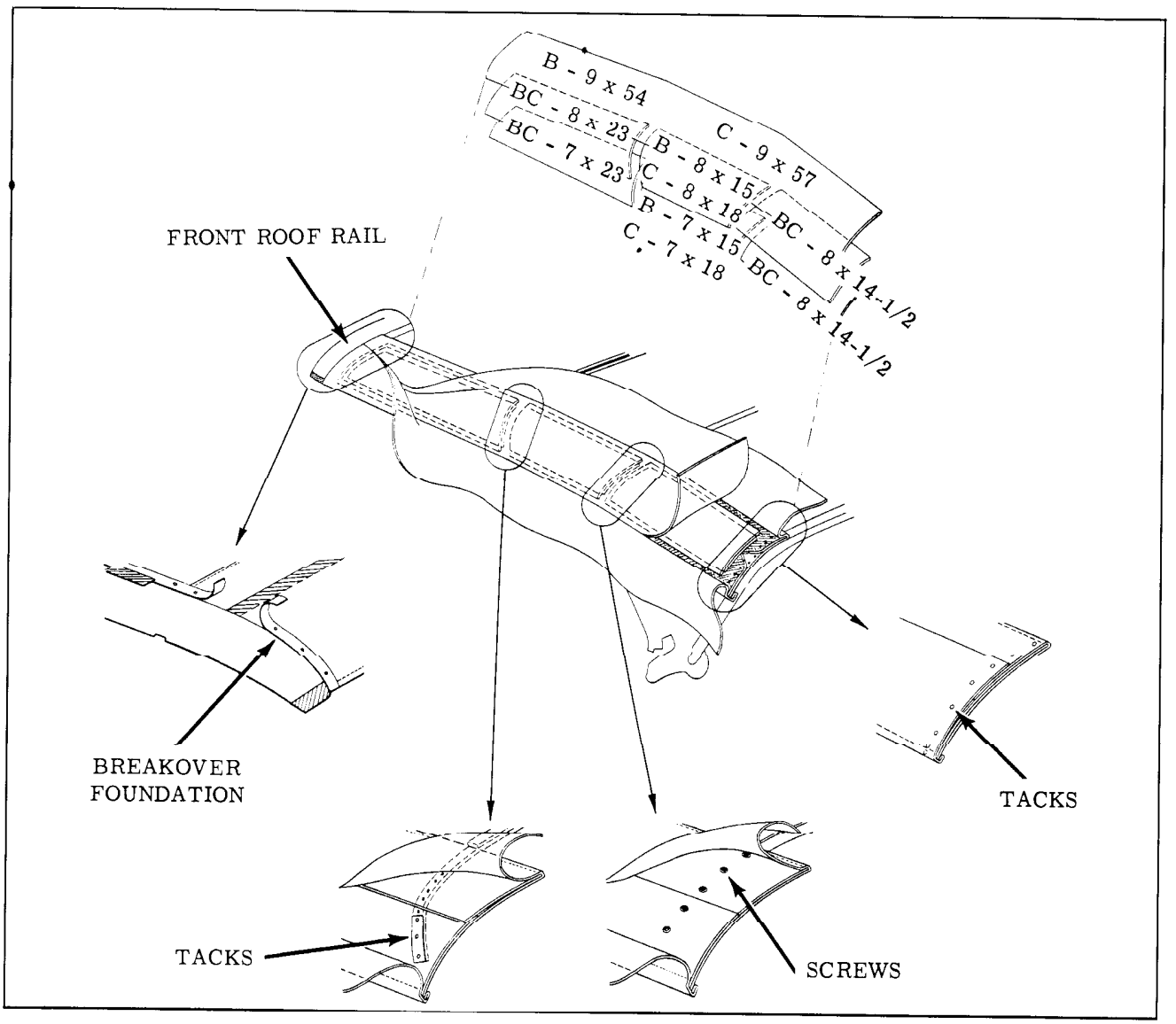


Fig. 17-28 Tacking Stay Pads

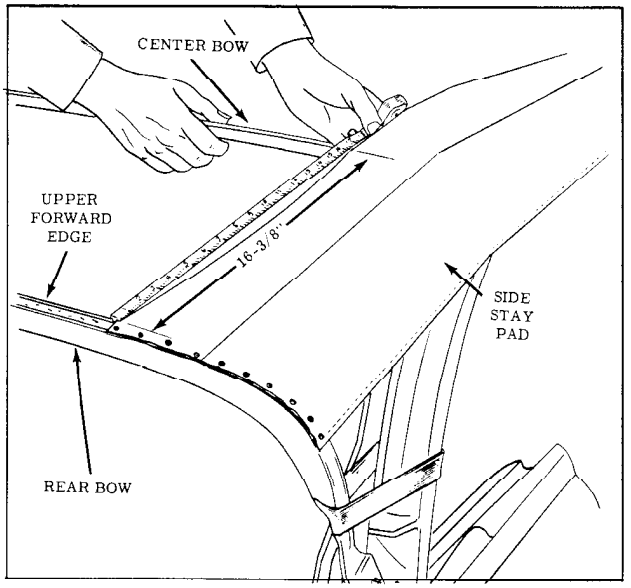


Fig. 17-29 Position of Rear Bow

forward upper edge of rear roof bow is 16-3/8" ± 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 (Part No. 1098737) along lower edge of back curtain material in area which will be tacked to rear and rear quarter trim stick. (View "A-A", Fig. 17-30)

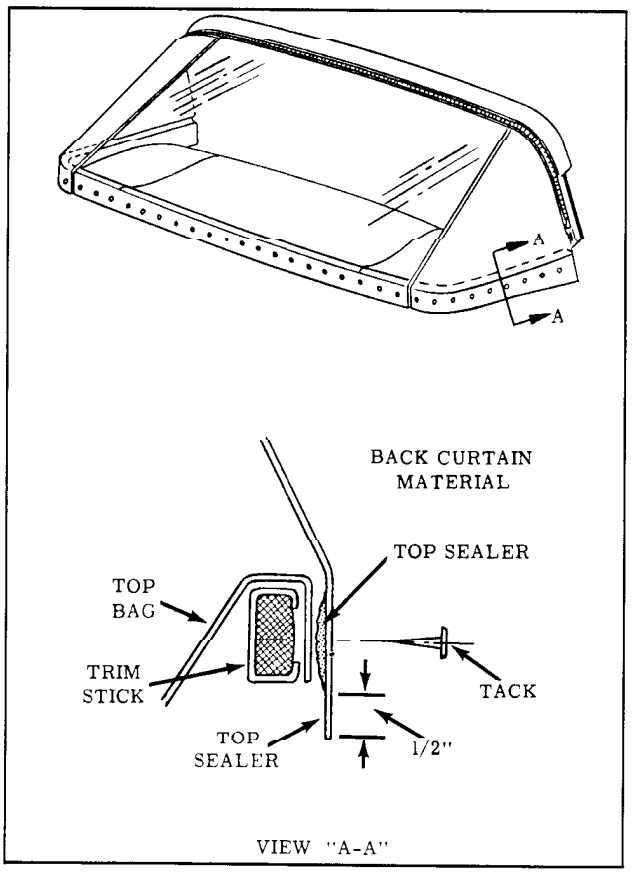


Fig. 17-30 Back Curtain Sealing

7. Apply bead of convertible top sealer along lower selvage edge of back curtain material. (Fig. 17-30)

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.

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. (Fig. 17-31) In addition, back curtain lower edge should extend 1/2" below lower edge of trim sticks as shown in View "A-A", Fig. 17-30.

10. Tack curtain to rear and rear quarter trim sticks. On right side, tack zipper tape to forward edge of rear quarter trim stick. ("A" in direction of arrow, Fig. 17-31)

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 properly installed.

11. Tack remainder of back curtain material to rear quarter trim stick, turning forward edge of material rearward to form a water barrier. (Fig. 17-31)

12. Tacks securing back curtain assembly to trim sticks should be placed close to each side of every bolt hole in trim sticks. 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

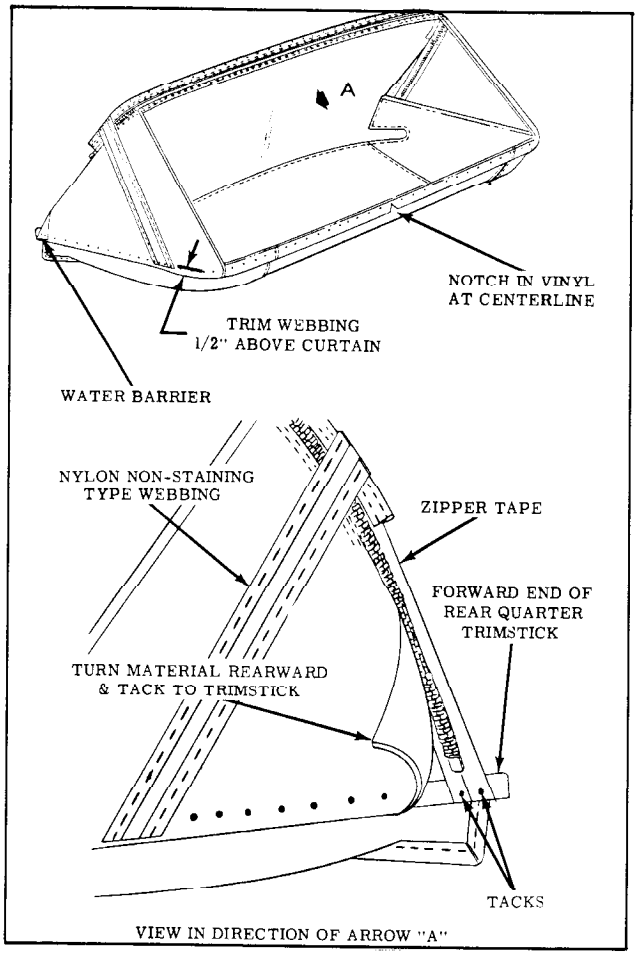


Fig. 17-31 Back Curtain Installation

off at rear trim stick, 1/2" above back curtain lower edge. (Fig. 17-31)

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. Recement if necessary. (Fig. 17-32)

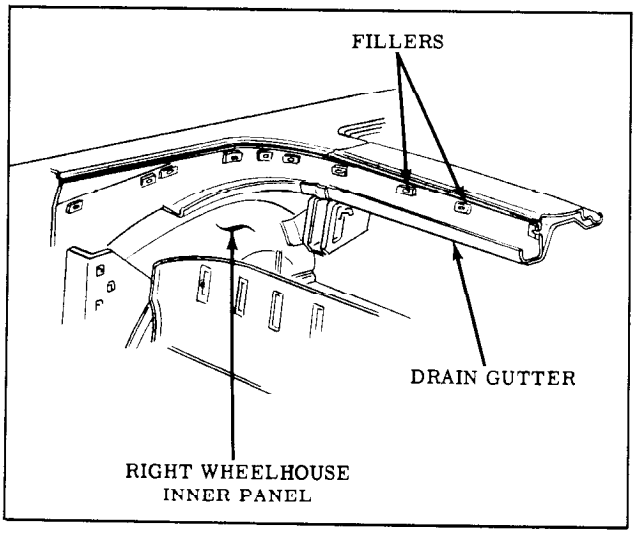


Fig. 17-32 Checking Trim Stick Fillers

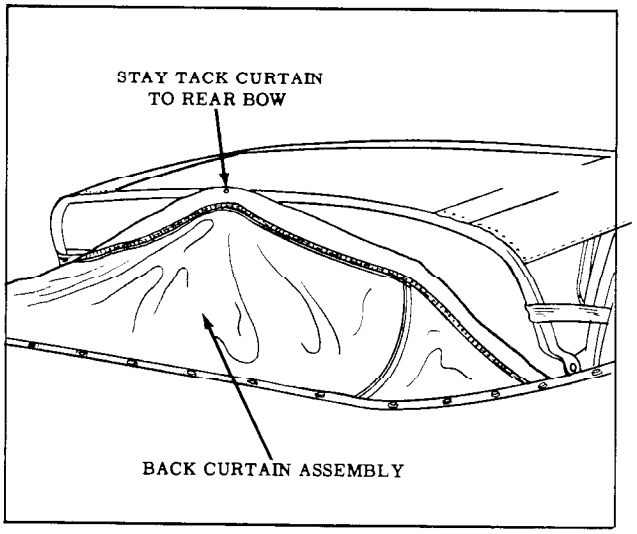


Fig. 17-33 Tacking Curtain at Rear Bow

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.

16. Secure back curtain assembly with one tack to rear bow to prevent damage to plastic sheet. (Fig. 17-33)

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 curtain before trimming off excess at rear bow. (Fig. 17-34)

CAUTION: Trim forward edges of back curtain just rearward of front rolled edge of rear roof bow. Do not cut side stay pads.

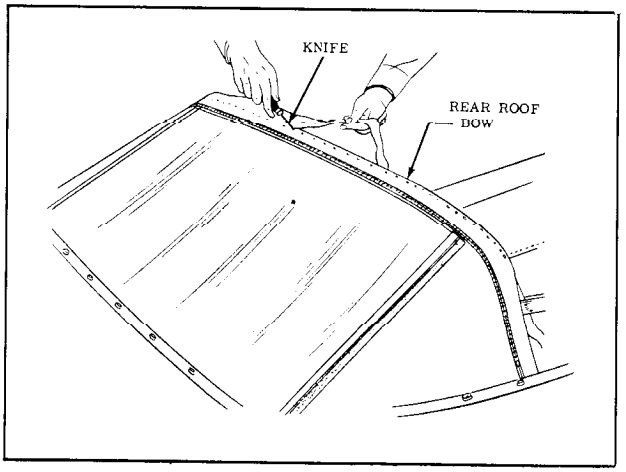


Fig. 17-34 Trimming Material at Rear Bow

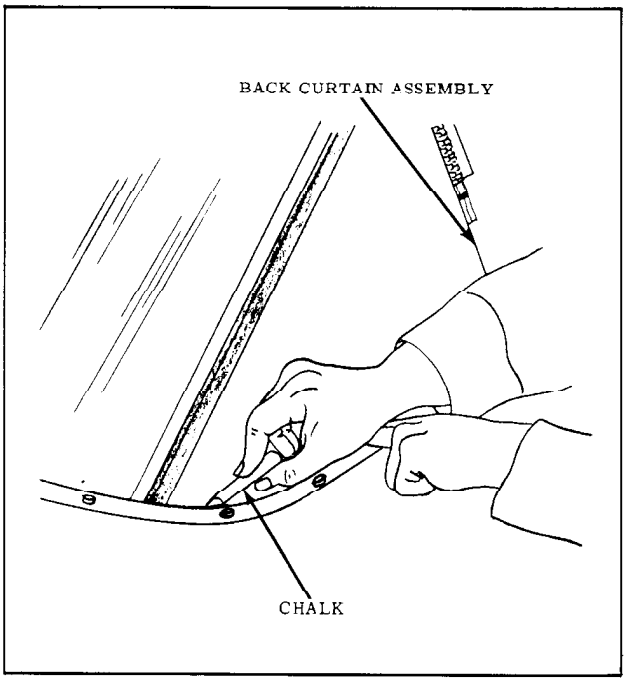


Fig. 17-35 Marking Back Curtain

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. Readjust back curtain assembly as required. (Fig. 17-35)

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 front rail with screws. Trim selvage end of side stay pads at front roof rail. Install stay pad covering material in conventional manner using trim cement.

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.

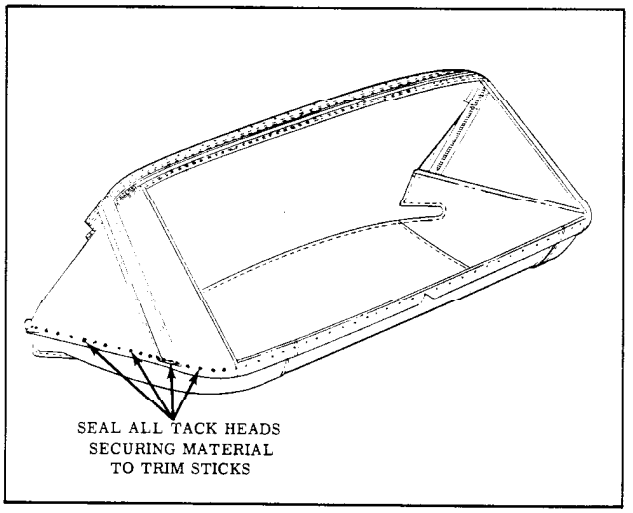


Fig. 17-36 Back Curtain Sealing

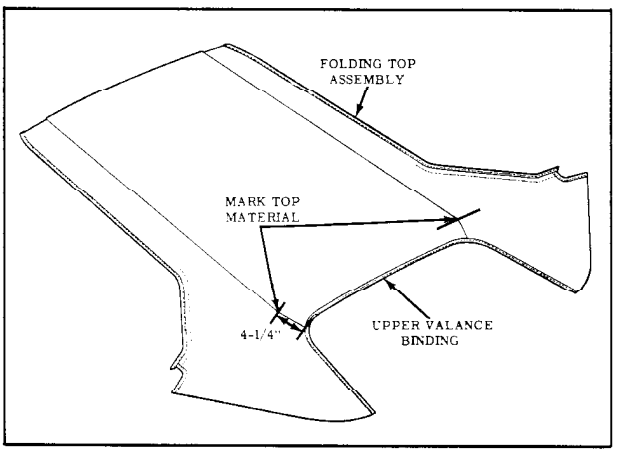


Fig. 17-37 Marking Top Material

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 around each tack head used to secure back curtain material and webbing to rear and/or rear quarter trim sticks. (Fig. 17-36)

IMPORTANT: It is not necessary to seal tacks which secure back curtain vinyl to rear trim stick.

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. 17-37)

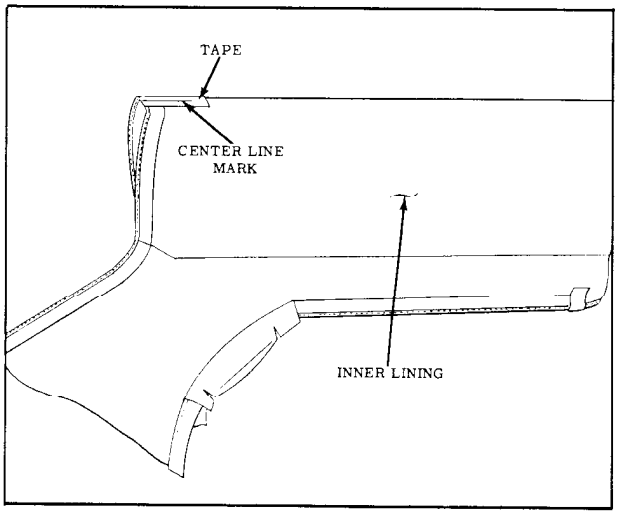


Fig. 17-38 Marking Folding Top Assembly

26. Fold new top material in half so that inner lining of top material is exposed. (Fig. 17-38) Install a 6" piece of tape on inner surface at centerline fold of new top material. (Fig. 17-38) Using a pencil, mark the approximate centerline of new top material along entire length of tape.

    IMPORTANT: 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. 17-39)

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 (± 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 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.)

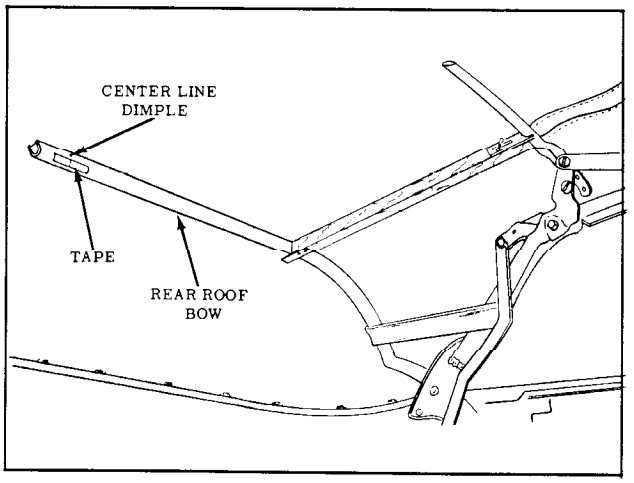


Fig. 17-39 Marking Rear Roof Bow

32. Apply bead of convertible top sealer 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. (Fig. 17-20)

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 (± 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. (Fig. 17-39)

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.

37. Using previously marked lines (ends of trim stick) as locating reference, tack top material to rear and rear quarter trim stick. ("A", Fig. 17-40 shows top material installed to rear trim stick at inboard edge.)

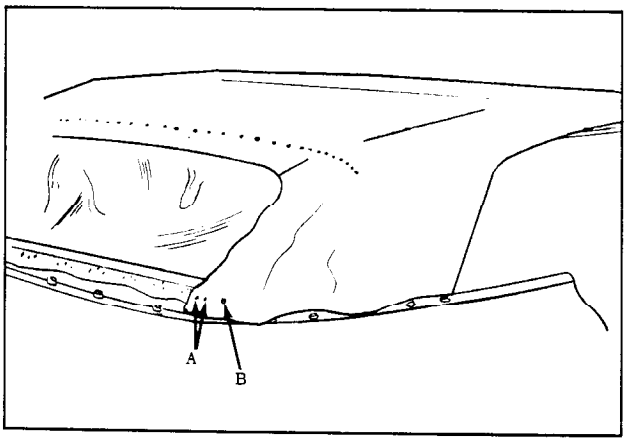


Fig. 17-40 Tacking Top Material

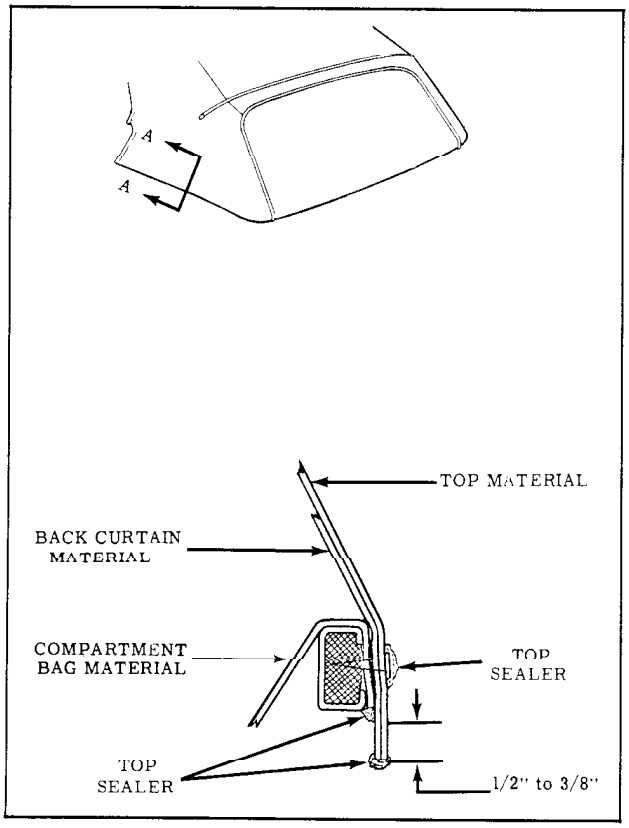


Fig. 17-41 Sealing at Trim Sticks

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 repositioning 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 must extend 1/2" to 5/8" below trim sticks to minimize water wicking on inner lining of back curtain material. (View "A-A", Fig. 17-41) Trim top material as required.

43. Apply convertible top sealer onto all trimmed edges, around each tack head and around each trim stick attaching bolt hole. (View "A-A" Fig. 17-41)

    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. Recheck side roof rail flaps. Make sure mark at deck seams is in center of rear bow. Also recheck 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. (Fig. 17-42) 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. 17-42)

48. Unlock top from windshield header, apply neoprene-type weatherstrip adhesive to front flaps and to corresponding areas on side roof front rails. Fasten flaps to side roof front rails. (Fig. 17-21) 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. 17-43)

50. Unlock top from windshield header and apply

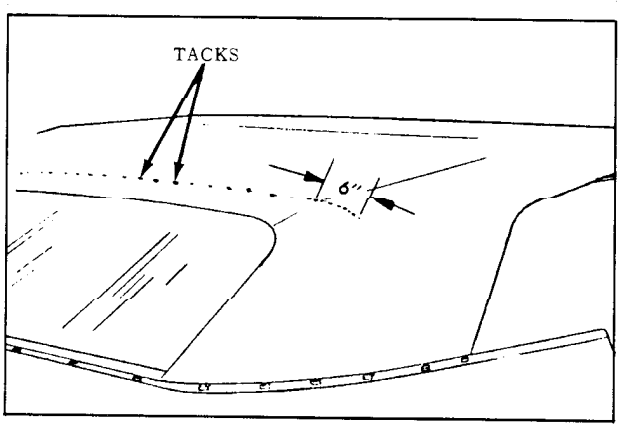


Fig. 17-42 Tacks Outboard of Seam

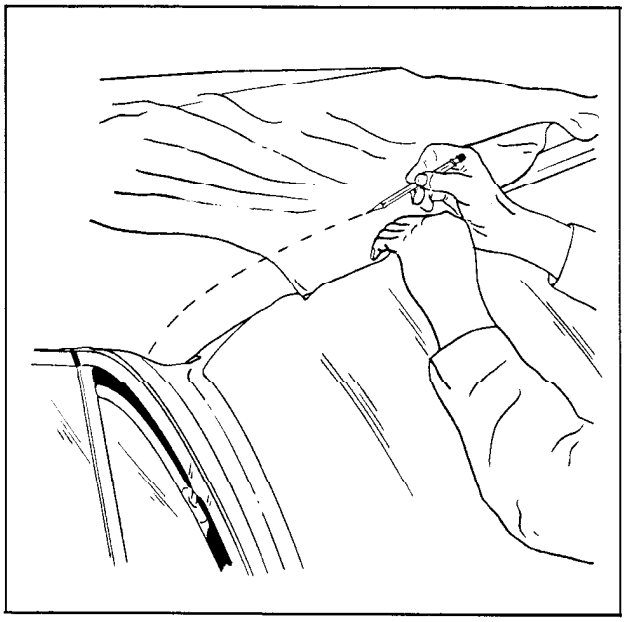


Fig. 17-43 Marking Top Material at Front Roof Rail

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. 17-44)

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 recheck 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.

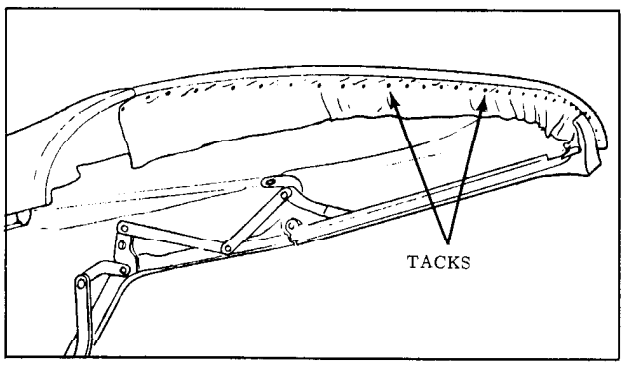


Fig. 17-44 Tacking Trim to Rail

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).

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 and 10 as described in REMOVAL OF FOLDING TOP TRIM ASSEMBLY (COMPLETE).
2. Remove wire-on binding and escutcheons from rear roof bow.
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)

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. 17-24) Reference marks should be transferred to new back curtain when Step 5 of installation procedure is performed.

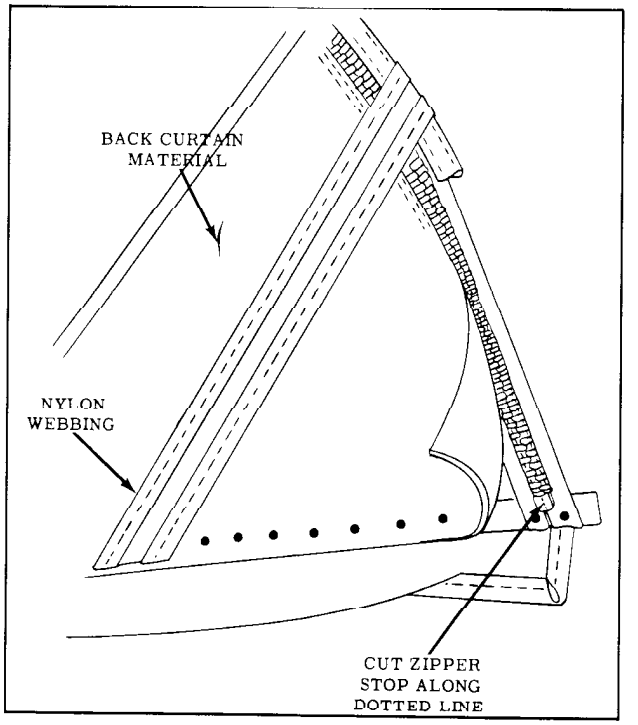


Fig. 17-45 Back Curtain Vinyl Replacement

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 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, cut zipper stop along dotted line and remove both halves of stop from zipper. (Fig. 17-45)
10. Operate slide fastener off of zipper assembly.
11. Detach nylon webbing from rear trim stick.
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, mark ends of rear and rear quarter trim sticks on vinyl surface of back curtain material. (Fig. 17-25) Reference marks for trim sticks should be transferred to new back curtain material when Step 5 of installation procedure is performed.
14. Using chalk, mark zipper tape at upper edge of vinyl. (Fig. 17-46)
15. Remove back curtain assembly from rear and rear quarter trim sticks.
16. 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 along lower edge of back curtain material in area which will be

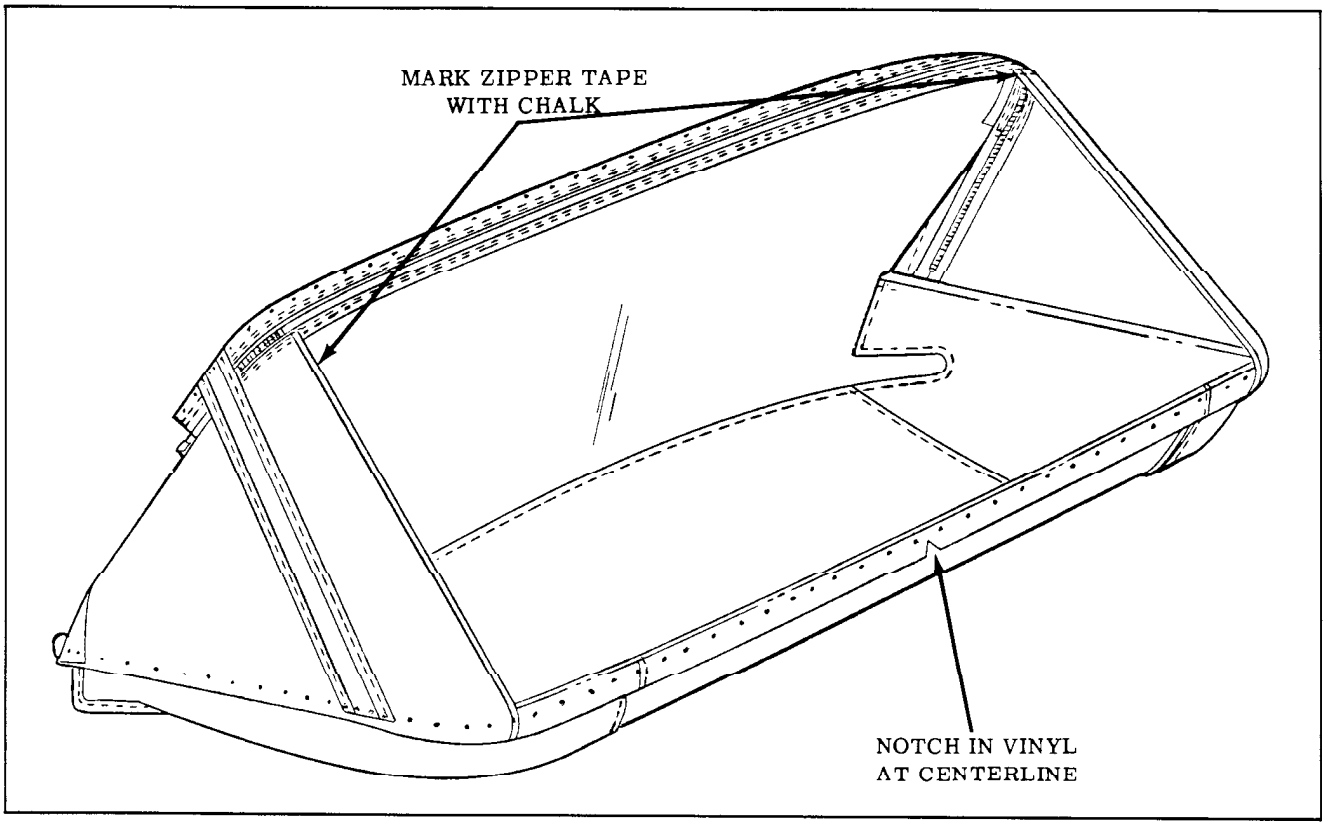


Fig. 17-46 Marking Zipper Tape

tacked to rear and rear quarter trim stick. (View "A-A", Fig. 17-47)

4. Apply bead of convertible top sealer along lower selvage edge of back curtain material. (Fig. 17-47)

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. 17-47) In addition, back curtain lower edge should extend 1/2" below lower edge of trim sticks. (Fig. 17-47)

7. Tack curtain to rear and rear quarter trim sticks. Turn forward edge of material rearward to form a water barrier. (Fig. 17-47)

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. Recement 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. 17-48)

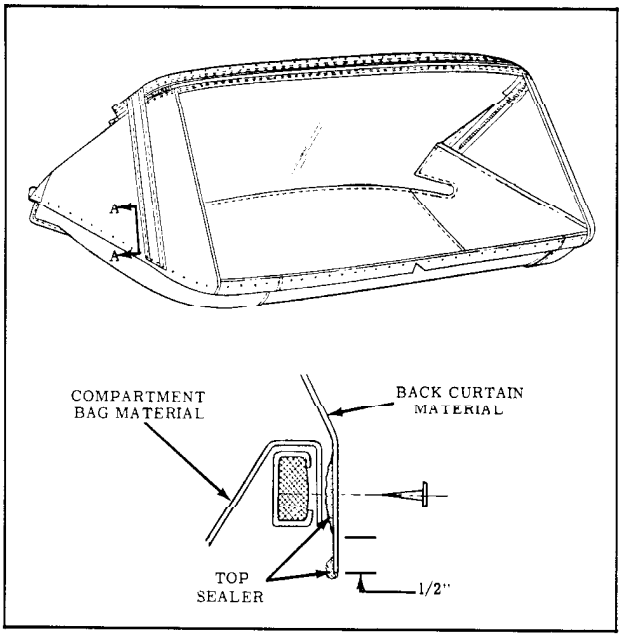


Fig. 17-47 Back Curtain Sealing

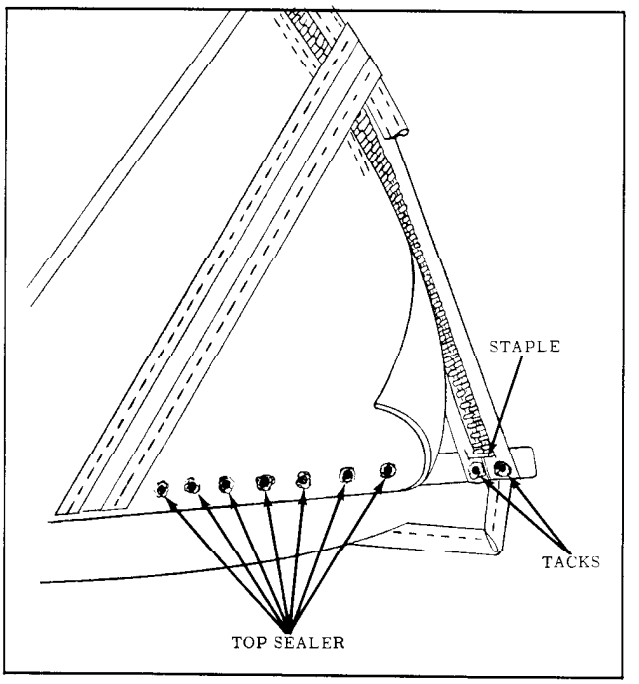


Fig. 17-48 Sealing at Rear Quarter Trim Stick

13. Operate slide fastener to closed position.

14. Tack zipper tape to rear quarter trim stick. (Fig. 17-48) 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 pinchweld 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 around each tack head used to secure back curtain material and webbing to rear and rear quarter trim sticks. (Fig. 17-48)

    IMPORTANT: 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 rear 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. (Fig. 17-47)

26. Apply convertible top sealer onto all trimmed edges, around each tack head and around each trim stick attaching bolt hole. (View "A-A", Fig. 17-41)

    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.

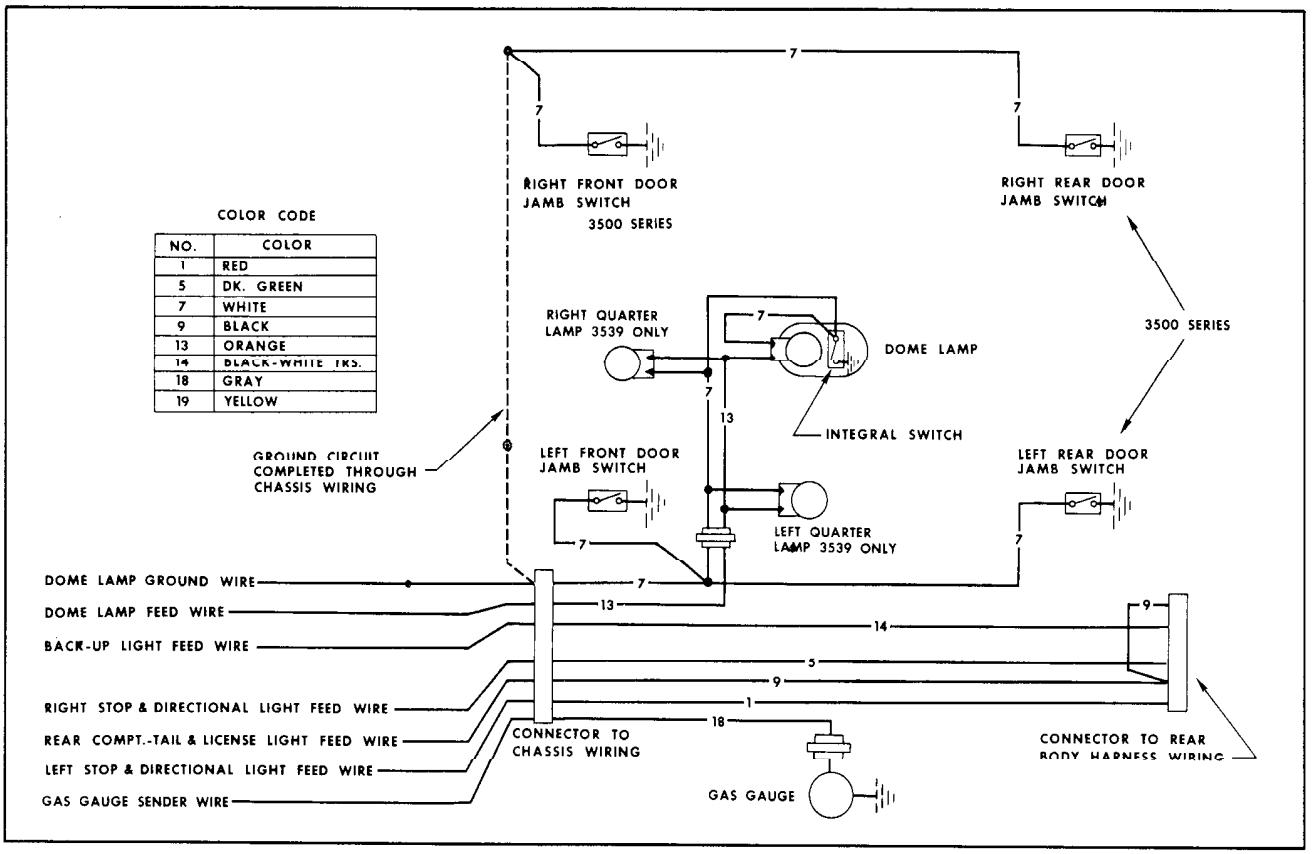


Fig. 17-49 Front Body Wiring Harness ("47", "39", "69", 3539, "69" Styles)

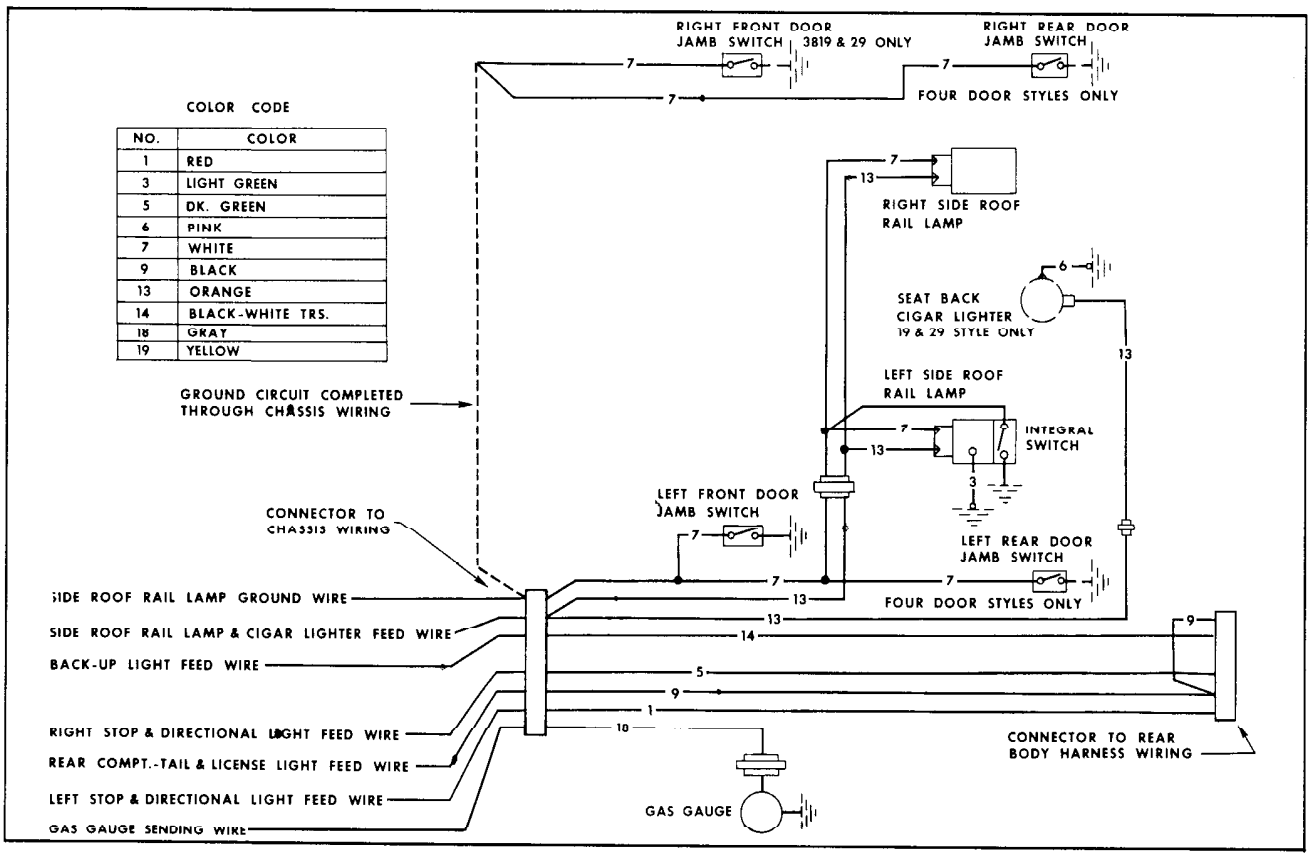


Fig. 17-50 Front Body Wiring Harness (3819, "29", 3547 Styles)

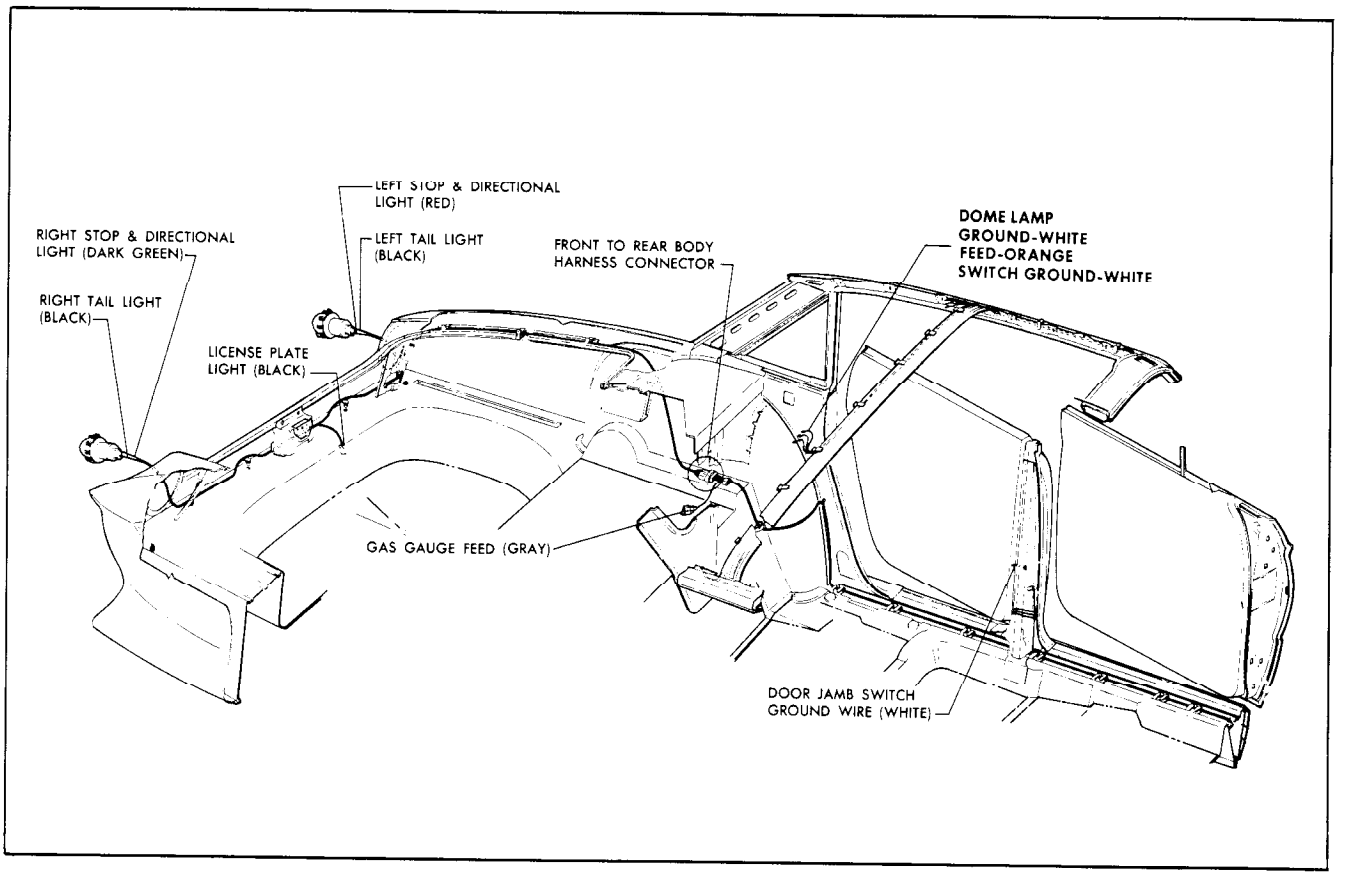


Fig. 17-51 Rear Body Wiring (32 and 35 Series)

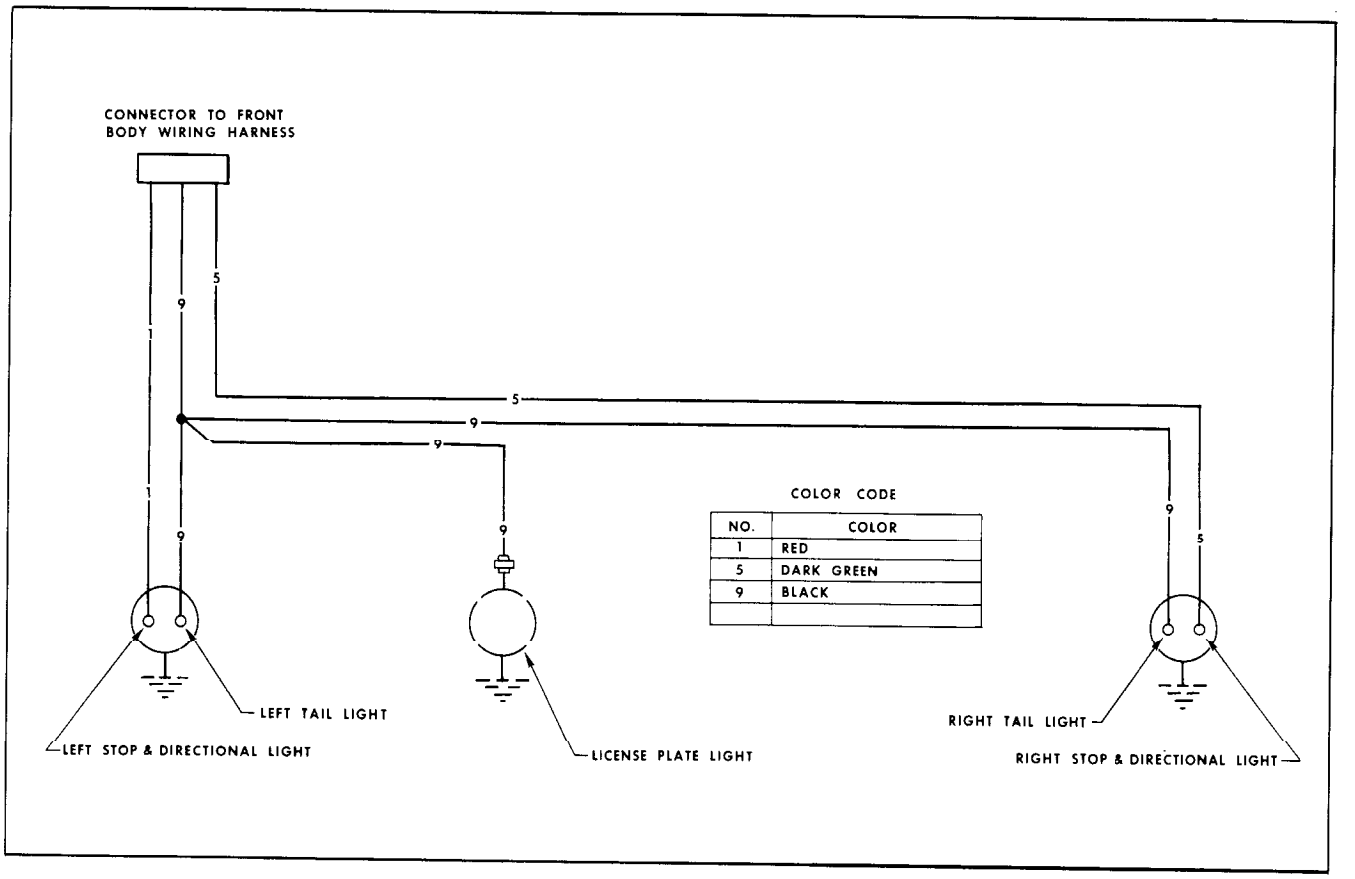


Fig. 17-52 Rear Body Circuit Diagram (32 and 35 Series)

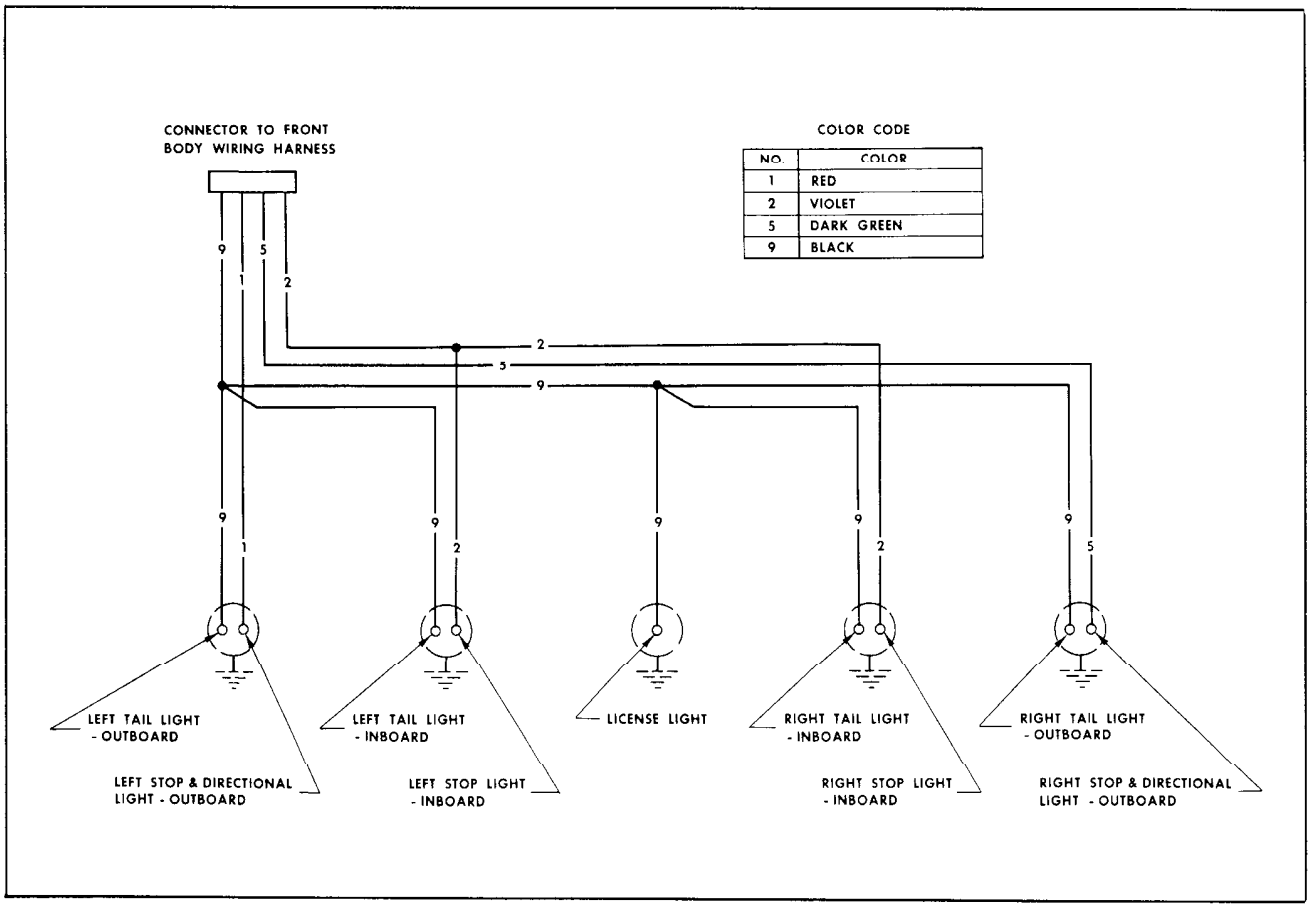


Fig. 17-53 Rear Body Harness Circuit Diagram (36 and 38 Series)

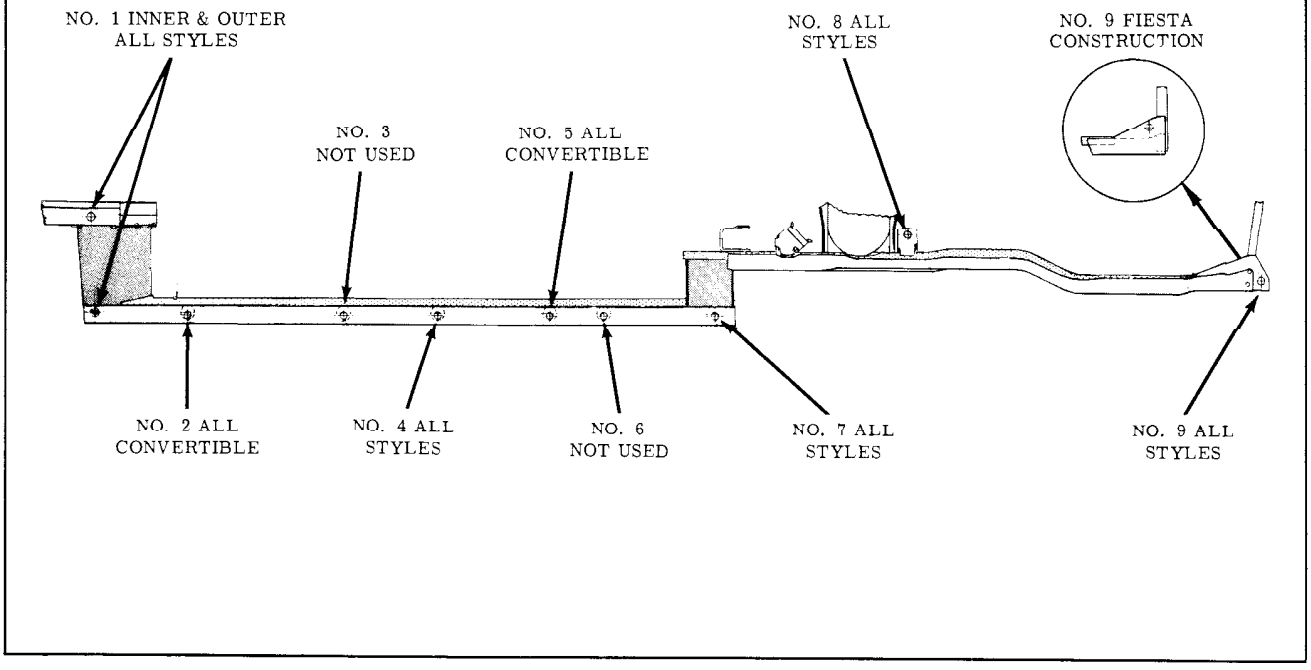


Fig. 17-54 Body Mount Locations

1962 PAINT SERVICE NUMBERS
EXTERIOR COLORS

Comb. Code	Color Name	R.M. Stock No.	DuPont Stock No.
A	Ebony Black	A-946	88-L
B	Heather Mist	A-1479	4218-L
C	Provincial White	A-1199	4024-L
D	Sheffield Mist	A-1477	4247-L
F	Wedgewood Mist	A-1481	4250-L
H	Cirrus Blue	A-1480	4249-L
J	Willow Mist	A-1485	4255-L
K	Surf Green	A-1484	4254-L
L	Garnet Mist	A-1221R	4031 LH
M	Cameo Cream	A-1390	4151-L
N	Royal Mist	A-1489G	4260-LH
P	Pacific Mist	A-1476	4253-L
R	Sand Beige	A-1486	4256-L
T	Sahara Mist	A-1478	4257-L
X	Sunset Mist	A-1488R	4259-LH

INSTRUMENT PANEL AND INTERIOR LACQUER COLORS

Color	DuPont Stock No.	Rinshed-Mason Stock No.
Silver	95552	62011
Medium Green	95481	62034
Medium Blue	95480-H	62024
Medium Fawn	95478	62082
Medium Aqua (88, S88 & 98)	95479-H	62036
Medium Red	4066-H	62053
Medium Gray (S.W. Floor)	95554	62012
Dark Gray	95553	62013
Dark Green	95556	62032
Dark Blue	95555-H	62025
Dark Fawn	95561	62083
Dark Aqua (88, S88 & 98)	95559-H	62031
Dark Red	94969-H	62051

GLOSS AND FLAT*

Color	DuPont Stock No.	Rinshed-Mason Stock No.	
Dark Red	4063-H		*To derive flat paint from gloss paint add R-M Universal Flattening Concentrate Code No. 850 or DuPont No. 4258 Flattening Concentrate to gloss paint.
Dark Blue	4328-H		
Dark Gray	4329-H		
Dark Aqua	4330-H		
Dark Green	4333-H	62035	
Dark Fawn	4334-H	62084	
Medium Red	4066-H