

GROUP 12 SHEET METAL

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SERVICE BULLETIN REFERENCE

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12-1 DESCRIPTION OF SHEET METAL

a. Front End Sheet Metal Assembly

The front end sheet metal assembly consists of front fenders and skirts, radiator grille frame, radiator mounting strap and radiator core, radiator pan, outside air intake ducts which are attached to the fender skirts, and attaching parts. The parts of the front end sheet metal assembly are joined together in such manner that the entire assembly may be removed and installed as a unit, or the separate parts may be replaced without difficulty.

The front end of the entire sheet metal assembly is supported by the radiator mounting strap which is mounted at one point on a support bracket extending forward from the center of the frame front cross member. In addition, the front end of the sheet metal assembly is stabilized by attaching the fender skirts to the front ends of the frame side rails by means of bolts provided with rubber shims similar to body mountings.

On *Series 40*, the fender skirts are bolted to the frame side rails and the rear ends of fenders are attached directly to the body cowl. A stamped steel support is welded into the rear end of each fender to provide stiffness and a means of bolting to the cowl. The top bolt may be reached by raising the hood, and the side bolts

may be reached from inside the cowl after removing the trim (kick) pad. A molded rubber seal is cemented to each fender support to seal the joint between the support and the cowl.

On *Series 50-70*, the fender skirts are bolted to the frame side rails and the rear ends of fenders are attached to the body cowl through adjustable fender supports.

b. Hood, Hinges, and Fasteners

The hood panel is of one-piece construction which is strengthened and held to shape by two transverse reinforcements of channel section. On *Series 40* the hood panel is flanged to provide structural stiffness along the sides. On *Series 50-70*, separate side rails are welded to the reinforcements and panel to provide stiffness.

In addition to the rubber bumpers in the cowl ledge lacing, the hood is supported by four goose neck hinges (two on each side) which are mounted on the front fenders. The hood fastener mechanism on each side locks the hood to front and rear hinges simultaneously. With opposite side locked to hinges, either side may be raised, and may be supported in raised position by a support which is hinged to center of cowl. With both sides unlocked from hinges, the hood may be lifted off the car.

The hood fastener mechanism is incorporated in the hood hinges. A hood fastener mounted in each hinge engages the hood reinforcement pilot

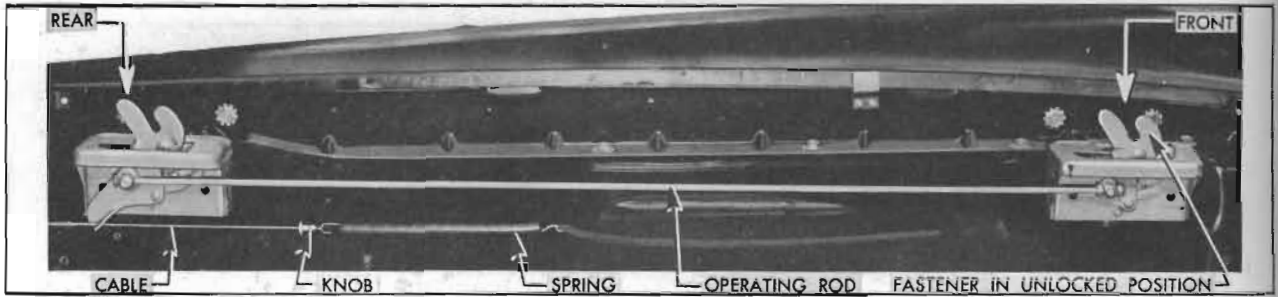


Figure 12-1—Hood Hinges and Fastener Mechanism

plate when hood is lowered, and as side of hood is pressed down the fasteners rotate to securely lock the hood to the hinges. A pilot pin on reinforcement pilot plate engages a hole in each hinge pilot plate to hold the hood in proper relation to fenders and cowl.

When either side of hood is to be unlocked the hood fastener mechanism is operated by a cable attached to a control knob located inside the body at lower edge of instrument panel. The forward end of release cable is connected to a coil spring attached to fender skirt; the spring holds the cable and knob in forward position. When knob is pulled rearward to unlock hood, a knob on end of cable pushes against an arm of rear hinge fastener to rotate fastener to the unlocked position. The front hinge fastener is rotated to unlocked position by a rod which connects the front and rear fasteners. See figure 12-1.

c. Outside Air Ventilator Ducts

A tubular outside air ventilator duct is mounted on each side of the sheet metal assembly, against the fender skirts. The screened front end of each duct projects through the front fender skirt to take outside air from behind the radiator grille bars, and the rear end is connected by a flexible hose to an outlet mounted in the cowl front panel. A fly valve located in each outlet is manually controlled by a sheathed wire connected to a "VENTILATION" knob on the radio speaker grille. The right hand duct also supplies air to the defroster when this unit is installed in car. Ventilation with outside air may be obtained by pulling out either or both "VENTILATION" knobs. The heater temperature control lever should be at "OFF" position and the "DEFROSTER" knob should be pushed all the way in when the right ventilator is used. For additional comfort in summer weather while car is stopped or moving slowly, forced ventilation may be obtained by turning on the defroster blower.

NOTE: *To keep out offensive traffic odors and exhaust gases when traveling in congested traffic or when parked behind a car having its engine running, all ventilator and defroster control knobs must be pushed forward to close the valves, and the defroster blower must be turned off.*

d. Rear Fenders

On *Series 40* the rear fenders are an integral part of the car body. On *Series 50-70*, the rear fenders are separate units which are bolted to the body, with finishing welts placed in the joint between fender and body.

12-2 FENDER AND HOOD ALIGNMENT INSPECTION

The hood and front fenders must be aligned with each other on every car to take care of slight variations in form and dimensions of the individual parts. Sheet metal parts stamped in a given set of dies will vary somewhat in form and dimensions due to variations in the hardness of different batches of sheet metal, which cause the stampings to spring in varying amounts when released from the dies.

The hood and front fenders are properly aligned during the installation at the factory; however, some readjustment may be required after a car has been shipped or has been in service for some time. This is because sheet metal parts may take a different "set" as a result of vibration and shock incident to shipping or operation during the break-in period. In judging the need for readjustment it must be understood that exactly uniform fit and spacing cannot be obtained on all cars of a given model.

IMPORTANT: *After any work on front end sheet metal assembly which changes fender position, be sure to check aiming of headlamps as described in paragraph 10-55.*

a. Hood Noises or Panel Flutter

Squeaks or grunting noises in the hood when driving over rough roads do not necessarily indicate misalignment of hood and fenders. These noises may be caused by metal contact at some point where clearance should exist or by worn or dry hood bumpers.

If the hood squeaks, check with $\frac{1}{16}$ " thick feeler all around the hood for clearance at radiator grille frame, fenders and cowl. If an edge of metal is making contact at any point where clearance should exist a bright metal spot will usually be found. Such spots may be depressed by spring hammering to provide clearance.

A grunting noise in the hood is usually caused by dry rubber bumpers or cowl ledge lacing. Lubricate all rubber bumpers on fender rails and cowl with Lubriplate (Finch Refining Co., No. 110). To correct a persistent case of squeaking or grunting where hood top panel contacts ledge lacing, even when lubricated, cement a $\frac{1}{16}$ " thick strip of felt to panel where the lacing makes contact.

Felt insulating pads should be located between hood top panel and the rear reinforcement on each side just above the bend in reinforcement. If these pads are missing, hood flutter may result. Install new pads, using trim cement to hold pads in place. One pad folded double is usually required at each point, but an additional pad may be required to support hood panel and prevent flutter. Do not install too much material or jam it in so tightly that hood panel is bulged upward.

To prevent hood panel flutter, the rear end of hood panel must have firm contact with the rubber lacing attached to cowl ledge. This lacing contains small cylindrical bumpers which have pointed and grooved lower ends to engage in holes in cowl ledge. The bumpers must be securely attached and sealed at the holes in cowl, to prevent leakage of water into front compartment of body.

If cowl ledge lacing is loose, coat cowl and lower side of lacing with weatherstrip cement and let dry until tacky. Press lacing into place and install all bumpers by inserting a small punch with rounded end in holes in top and pressing pointed lower ends of bumpers through holes in cowl until bumpers are held by groove in lower ends.

b. Preliminary Tightening

Before deciding upon any adjustment to correct hood or fender misalignment it is advis-

able to check tightness of all attaching screws and bolts, since a true picture of correction requirements cannot be obtained when the sheet metal is loose and free to shift. Check attachments at the following points:

1. Radiator mounting strap to mounting bracket on frame.
2. Front fender skirts to front ends of frame side rails.
3. Fender skirts to grille frame and radiator mounting strap.
4. Fender skirts to frame.
5. Fenders to grille frame, fender skirts, and supports at cowl.
6. Hood hinges to fenders.

After all parts are properly tightened inspect fender and hood alignment at front doors (subpar. c) and hood alignment (subpar. d). Make all inspections before performing any adjustments because an adjustment at one point will usually alter alignment at other points. The preliminary inspection should determine the adjustments that will produce the best overall alignment of hood and fenders at all points.

c. Fender and Hood Alignment at Front Doors

With front doors closed there should be no metal-to-metal contact between doors and rear ends of front fenders. Check for clearance at frequent points, using a strip of fibre or other soft material $\frac{1}{32}$ " thick.

The spacing between rear end of front fenders and the shoulder on front edge of doors should be approximately $\frac{1}{8}$ ", and fairly uniform from top to bottom. The spacing between rear end of hood and front edge of doors should be fairly uniform on both sides, and sufficient to prevent contact as door is opened. *

Before making any adjustment of sheet metal to provide necessary clearance at points mentioned, first make sure that front doors are properly aligned in the body openings as described in paragraph 13-7.

Improper spacing or interference between hood and doors may be corrected by adjustment of hood hinges (par. 12-3).

On *Series 40*, if fender and door panel surfaces are not reasonably flush correction may be made by adding or removing plain washers between the fender support and the cowl panel. On *Series 50-70*, adjustment of fender with reference to door panel may be made by loosening the fender attaching bolts at fender support and rocker panel. This will permit movement of fender in or out, forward or rearward. Fenders

must not be moved so much that proper alignment of hood is affected.

Where spacing between end of front fender and edge of door is objectionably uneven from top to bottom it may be necessary to adjust the shims under the radiator mounting strap and between fender skirts and frame (par. 12-4).

d. Hood Alignment Inspection

When closed and locked, the hood should bear firmly against the three rubber bumpers on radiator grille frame and the rubber lacing attached to the cowl ledge. Along the sides, the hood and fender contours should be in reasonably close horizontal alignment. Misalignment at these points may be corrected by vertical adjustment of hood hinges (par. 12-3).

A clearance of approximately $\frac{1}{8}$ " should exist between each side of hood and the fender, and the spacing should be fairly uniform from front to rear. Improper spacing along sides of hood may be corrected by lateral adjustment of hood hinges (par. 12-3).

A clearance of approximately $\frac{1}{8}$ " should exist between the rear edge of hood and the shoulder of cowl panel, and the spacing should be fairly uniform from side to side. Improper spacing at this point may be corrected by fore and aft adjustment of hood hinges (par. 12-3). In exceptional cases of uneven spacing it may be necessary to adjust the shims under fender skirts (par. 12-4).

With opposite side of hood locked, raise and lower one side of hood several times to check alignment of pilot pins with holes in pilot plates. The direction of misalignment may be determined by a cleaning grease from pilot pins and holes and coating pins with chalk; a chalked pin will be heavily marked on one side if it is not aligned with pilot hole. A marking on the inner side of pin is not undesirable, provided that unlocked hinge does not bind and raise with the hood. Check opposite side in same manner.

Misalignment of pilot pins with holes may be corrected by adjustment of hood hinges; however, if only the lower end of a pilot pin on hood reinforcement is sprung out of alignment the pin should be straightened instead of adjusting the hinge.

Alignment of pilot pins with holes in pilot plates is very important. If there is misalignment, the hinges will bind on pilot pins and hood will be hard to open. If the pilot pins spread the front and rear hinges apart this may prevent

proper locking of the hood fasteners when hood is closed.

12-3 HOOD HINGE AND FASTENER ADJUSTMENTS

The hinge mounting bracket has horizontally slotted bolt holes which permit fore and aft adjustment on the fenders. Bolt holes in fenders are not slotted for adjustment of hinge in any direction, therefore the vertical setting of hinge is not affected when hinge bolts are loosened.

The hinge fastener and housing assembly is bolted to the gooseneck hinge strap and the bolt holes in strap are slotted to permit vertical adjustment of the fastener housing only. See figure 12-2. This arrangement permits vertical adjustment without changing the pivot point of the hinge, and without changing the fore and aft setting.

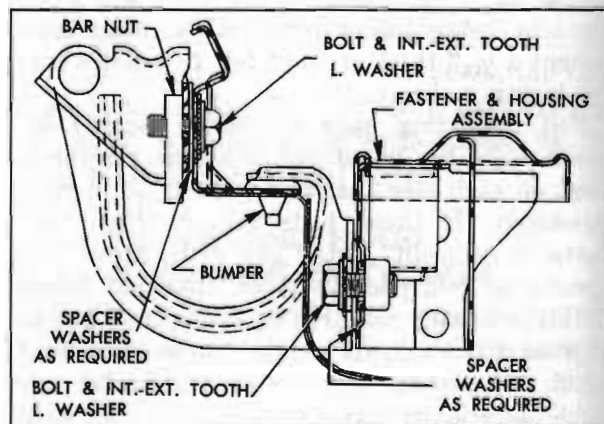


Figure 12-2—Hood Hinge Mounting

Lateral adjustment of hinge to change hood-to-fender clearance is obtained by U-shaped spacer washers which can be removed or installed without removing hinge bolts. These washers are furnished under Group 8.014 in thicknesses of .030" and .120".

To move hinge fastener and housing assembly outward to decrease hood-to-fender clearance, either remove spacer washers from between fastener housing and hinge strap or install washers between hinge mounting bracket and fender rail. To move parts inward to increase clearance, either remove spacer washers from between hinge mounting bracket and fender rail or install washers between hinge strap and fastener housing. See figure 12-2. An equal total thickness of washers must be used on both bolts at either point of adjustment.

When adjusting hinges it is important to

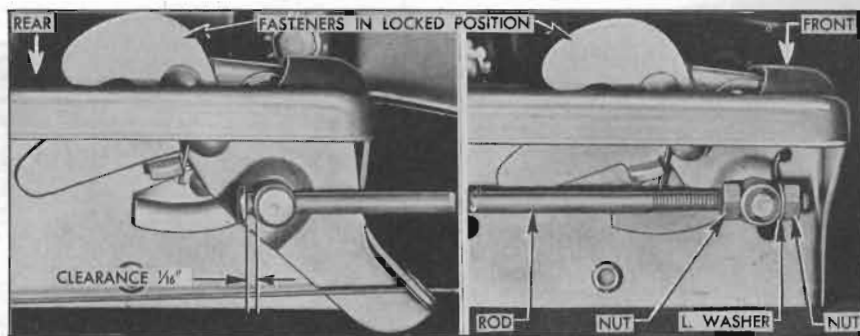


Figure 12-3—Adjustment of Hood Fastener Operating Rod

keep all four pilot plates level and on a common plane. Use a straight edge to check for level between front and rear hinge pilot plates on each side and readjust hinges as required to obtain full bearing of both plates against straight edge.

A rubber bumper is mounted in fender rail under the upper inner end of the hinge strap. Make sure that this bumper is in place and is in good condition. If this end of hinge strap is bent so that the hinge pilot plate is not level, laterally, carefully bend the strap to level up the pilot plate.

The hood fastener tension is non-adjustable as the latches are spring loaded to make them automatically seek a firmly locked position. After adjustment or replacement of a hood hinge the adjustment of the hood fastener operating rod should be checked. First make certain that hood pilot pins are properly aligned

with holes in hinge pilot plates. Push both fasteners down to the locked position and have both hinges resting on bumpers on fender rail. Check the clearance between the shoulder on rear end of operating rod and the trunnion of rear fastener; clearance should be approximately $\frac{1}{16}$ ". Adjust the nuts on each side of front fastener trunnion to obtain this clearance, if necessary. See figure 12-3.

Whenever it becomes necessary to remove the hood fastener control cable, disconnect the return spring, pull control knob out and remove it from cable end by unscrewing the fluted head set screw in knob. After removal of control knob the cable assembly can readily be removed by disconnecting at bracket clamp and pulling it forward through arm of rear hinge fastener.

c. Adjustment of Hood Width

The hood panel reinforcements are of channel section and welded to hood side rails to provide an assembly of fixed width at all points. Adjustment for width should not be necessary except when hood has been distorted due to accident. If alteration of hood width becomes necessary,

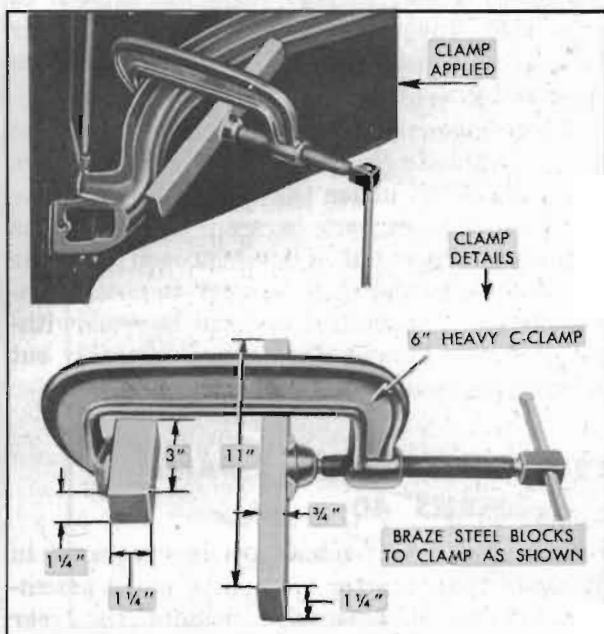


Figure 12-4—Straightening Hood Panel Reinforcement to Spread Hood

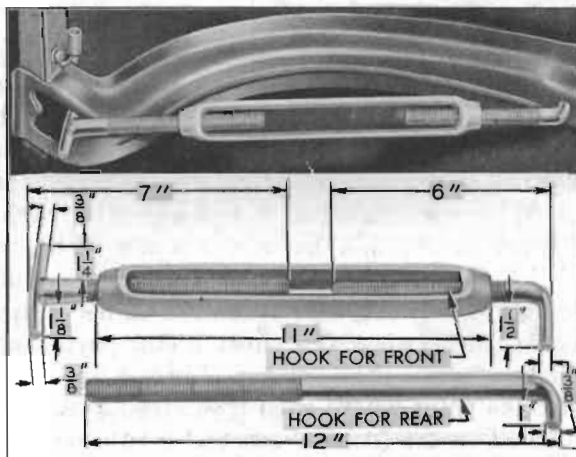


Figure 12-5—Bending Hood Panel Reinforcement to Reduce Hood Width

however, it may be accomplished by carefully bending the reinforcements with proper tools.

The hood may be made wider by straightening the reinforcement with a C-clamp prepared and applied as shown in figure 12-4. The hood may be reduced in width by bending the reinforcement with a large turnbuckle prepared and applied as shown in figure 12-5. Both tools illustrated may be made locally from details shown.

12-4 RADIATOR MOUNTING STRAP AND FRONT FENDER SKIRT MOUNTING ADJUSTMENTS

If the front end of the sheet metal assembly is too high or too low, resulting in objectionably unequal vertical spacing between front fenders and doors, it will be necessary to change the shims located under the radiator mounting strap and the fender skirts. If the front end of sheet metal assembly is tilted to right or left so that proper alignment of hood and fenders cannot be obtained by adjustment, it will be necessary to change shims under the fender skirts. These shimming adjustments should only be necessary to offset misalignment resulting from an accident.

Under normal conditions, steelbestos shims having a total thickness of $1\frac{1}{32}$ " are placed between the radiator mounting strap and the mounting bracket on the frame. This thickness is obtained by using two shim assemblies consisting of three .056" shims stapled together. The total thickness may be changed as required by adding or removing single shims. When the total thickness required exceeds $\frac{1}{2}$ ", however, a steel shim .180" thick is placed next to the mounting bracket to keep the total build up of steelbestos shims to $\frac{1}{2}$ " or less.

Excessive shimming under radiator mounting strap should be avoided as the stability of the front end sheet metal assembly will be affected. Reduction in shim thickness below $1\frac{1}{32}$ " must be made with caution, unless the reduction is caused by the bracket on frame being too high. If reduction is due to other causes there is danger of interference between engine fan and radiator inlet hose, also reduction of necessary clearances between the sheet metal parts and chassis.

At the point where each front fender skirt is attached to the frame front end a rubber shim is placed on each side of the frame rail top flange, with a steel washer, $\frac{1}{8}$ " steel shim and

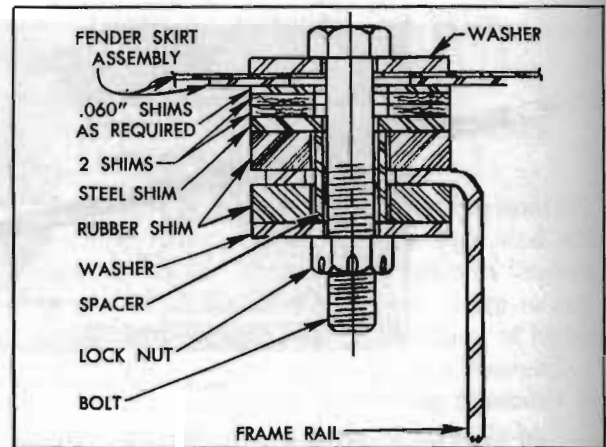


Figure 12-6—Fender Skirt Bolt and Shims

tubular spacer placed to control compression of the rubber shims as the bolt is tightened. Two steelbestos shims are placed between the $\frac{1}{8}$ " steel shim and the fender skirt. When additional shimming is required one or more extra steel shims .060" thick are placed between the steelbestos shims and the fender skirt. See figure 12-6.

Correct thickness of extra steel shims at each fender skirt mounting is determined after proper shimming of radiator mounting strap has been established. The extra shims should be installed as required to level up the sheet metal as viewed from in front of car. It is not necessary to have an equal number of extra shims at both mountings as some variation in sheet metal may exist. Improper leveling at this point may result in poor hood fits as well as noticeably unequal spacing between bumper guards and grille frame or between bumper face plate and grille frame outer ends.

When unequal spacing exists at either point it is advisable to check the front bumper before changing shims under the fender skirts. Make sure that bumper back bars are not bent so as to throw bumper out of level. Loosen back bar to frame bolts and shift bumper to obtain reasonably equal spacing if this can be done without throwing bumper face plate noticeably out of level; tighten bumper bolts securely.

12-5 REAR FENDER REPAIRS— SERIES 40

Series 40 rear fenders are incorporated in the body rear quarter side outer panel assemblies. A panel assembly includes the rear quarter side outer panel, wheelhouse, gas tank filler cover (left side), side outer extension

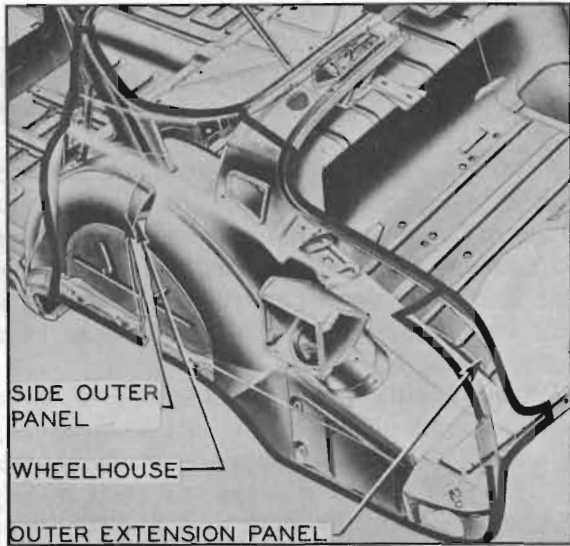


Figure 12-7—Rear Quarter Side Outer Panel Assembly—
Series 40

panel, and miscellaneous small parts all welded together. See figure 12-7.

When a rear quarter side outer panel (fender section) is damaged by accident the usual

metal bumping, straightening, and refinishing procedures may be used in some areas after removal of adjacent trim. If the damage is in the area adjacent to the wheelhouse it will be necessary to cut an opening in the wheelhouse through which to apply the spoons, jacks, etc., which have been developed for this type of sheet metal construction. After the sheet metal parts have been properly reshaped, the opening in wheelhouse must be closed with a suitable metal plate which is securely attached and sealed to exclude water.

When damage to the side outer panel is such that reshaping is impracticable it will be necessary to replace the damaged area. The damaged area should be cut from a new rear quarter side outer panel. When damage is too extensive for patch replacement the entire outer panel should be replaced.

From lower edge to crown and to a vertical line approximately 11" forward of rear wheel centerline the contours of all Series 40 rear quarter side outer panels are identical. A section cut from this area of any available

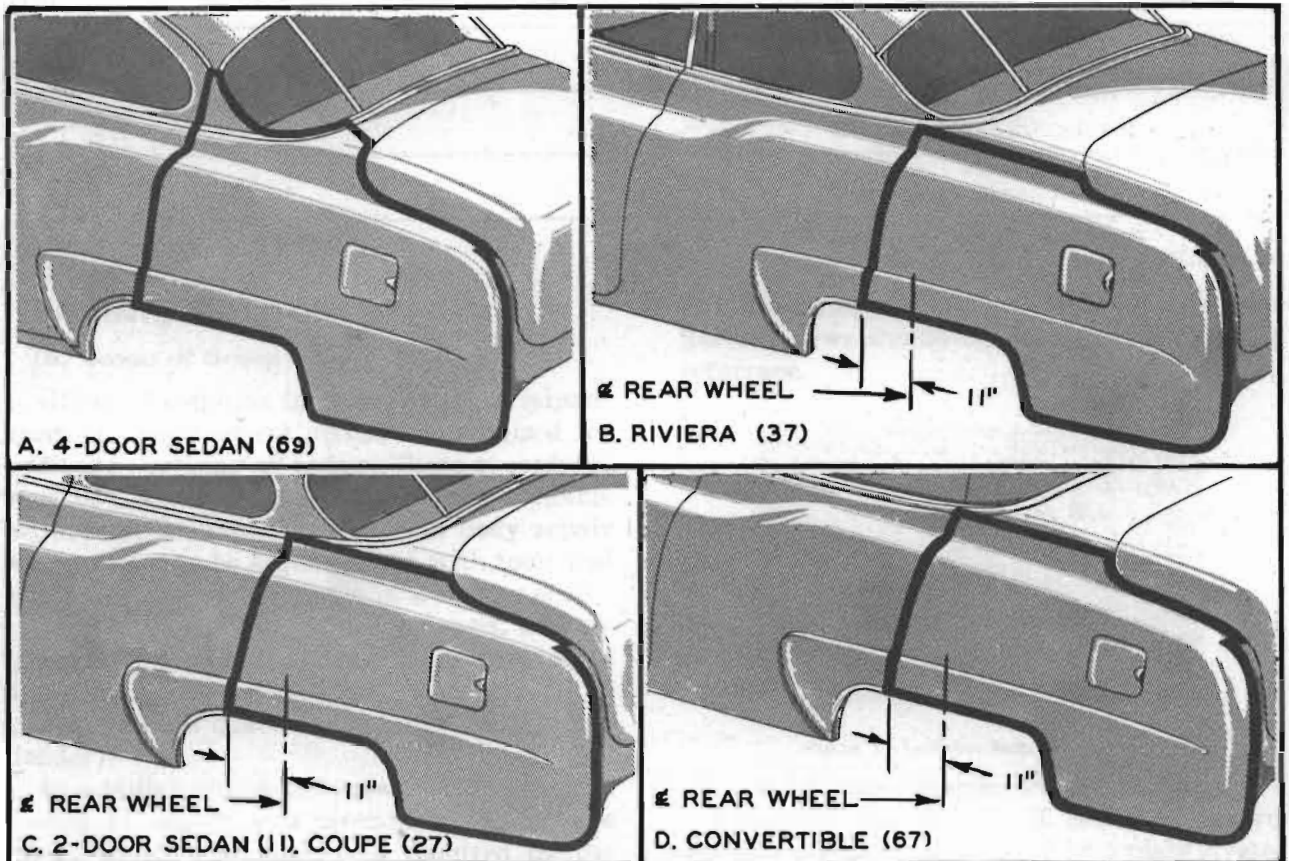


Figure 12-8—Four-Door Rear Quarter Side Outer Panel Application to Two-Door Models

outer panel may be used for replacement of the corresponding section of panel on any *Series 40* model.

The 4-door sedan (Style 69) rear quarter side outer panel is the most economical panel to use for replacement in the indicated area on any model. This panel is shown in figure 12-8, view A. Views B, C and D show the application of the interchangeable portion of this panel to the 2-door models. It is not necessary to replace the entire area indicated—only the damaged area need be replaced.

From lower edge to crown and for full length, the contours of all 2-door rear quarter side outer panels are identical; therefore all 2-door panels are interchangeable in this area. When the 4-door panel cannot be used, it is most economical to use the *Riviera* (Style 37) outer panel for patch replacement in this area of any 2-door model.

The rear quarter side outer panel does not include the area covered by the side outer extension panel shown in figure 12-7. The extension panel is also available for service replacement.

Since the wheelhouse is covered it is not necessary to completely restore its shape when damaged; however, it must be reshaped enough to insure that it will not interfere with the rear tire and adjacent sheet metal parts. It is very important that the wheelhouse be completely sealed to exclude water.

When making patch replacement of outer panel sections either lap or butt welding may be used. In either case, care must be used to insure a continuous weld as any joint merely filled with solder may work back and forth and crack the solder. Welds must be sunk sufficiently to permit proper solder filling and finishing to conceal the joint and restore panel contours.