AIRFLOW
CHRYSLER
BODY SERVICE
MANUAL

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MAY, 1934

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DETROIT, MICHIGAN

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AIRFLOW CHRYSLER
(CODE CU-CV)
BODY SERVICE MANUAL

• FOREWORD •

Many new and revolutionary principles of design, which heretofore have never been applied to the manufacture of automobile bodies, are encompassed in the new Airflow body.

These improvements are such that they reduce body service to a minimum by increasing the natural rigidity of the all-steel unit to a point far beyond that considered possible in the past. At the same time, should body repairs become necessary due to collision or other abnormal causes, the ease with which such damage may be repaired has been greatly increased.

As an example, whole body sections fractured beyond the point where they may be economically repaired, may be cut out with a torch and a complete new section welded in its place, not affecting any other part of the body structure and restoring the all-steel unit to its original state of incomparable rigidity. Small punctures in any part of the body metal may likewise be repaired by merely cutting out the metal around the fracture and welding a small piece of sheet steel in its place.

As a result of these fundamental advancements in construction, the methods employed in servicing Airflow bodies will differ in a great many respects from those with which the average body mechanic is familiar.

It is the purpose of this Body Service Manual to cover in as much detail as possible the servicing of each individual part of the Airflow Body, starting with maintenance items such as lubrication and tightening, and progressing to major body repairs involving the straightening and replacing of body braces and pillars.

The procedures described in this Body Service Manual for the servicing of Airflow bodies are not presented in elementary form and are not intended to constitute a textbook for those who have not had previous experience in this class of work. It will, however, prove to be a valuable guide when servicing bodies of the Airflow type and, consequently, should be carefully studied by all those engaged in work of this nature.

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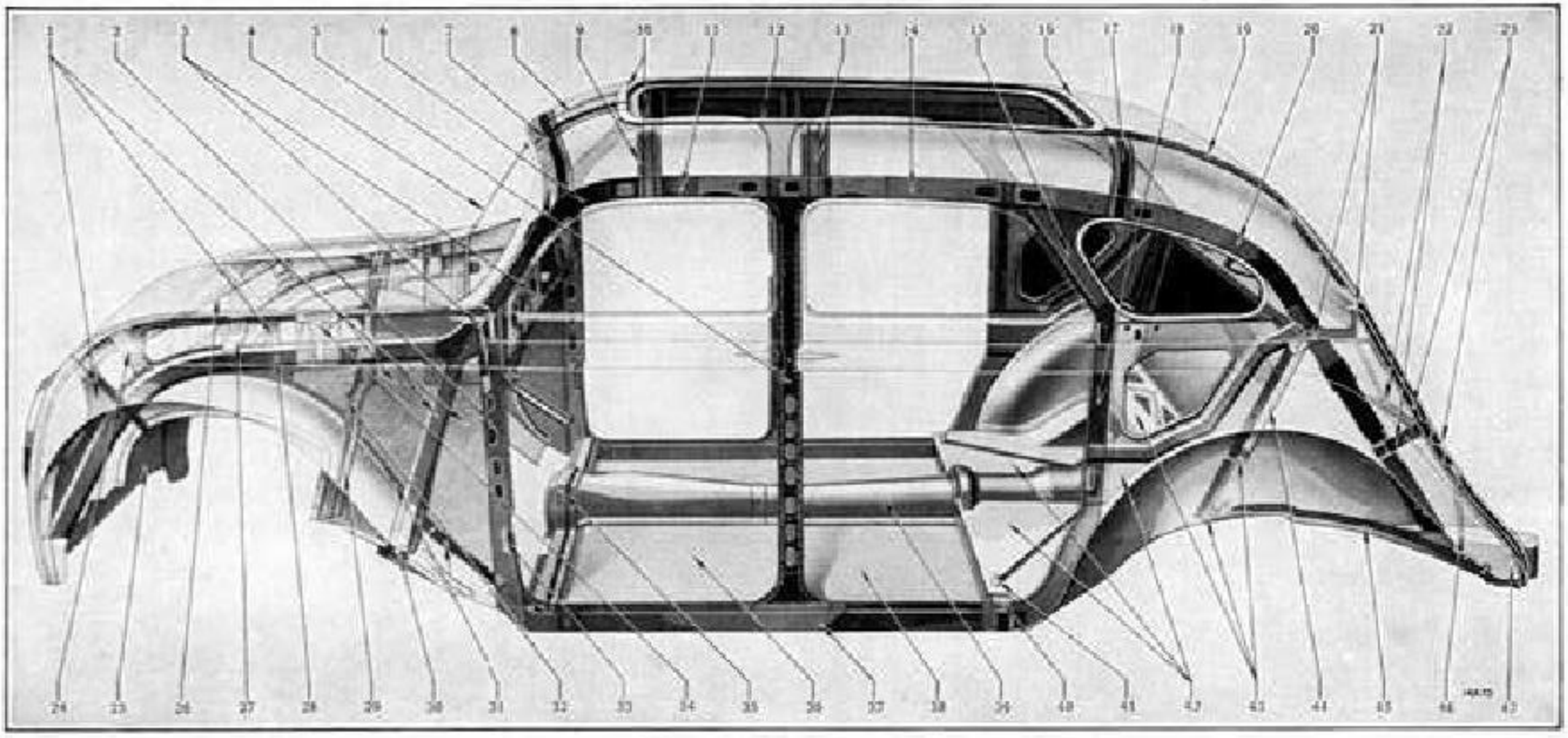


FIG. 1—Airflow Body Construction

1—Cowl inside panel assembly—not serviced
2—Front pillar and reinforcement
3—Instrument panel
4—Windshield center post
5—Center pillar and reinforcement—not serviced
6—Front pillar rail—serviced with front pillar and reinforcement
7—Windshield header rail—not serviced
8—Windshield header to roof brace
9—Roof strainer—front
10—Roof frame support—front
11—Front door header rail and reinforcement
12—Roof frame support—side
13—Roof strainer—center
14—Rear door header rail and reinforcement—not serviced
15—Rear hinge pillar rail and reinforcement—upper—not serviced
16—Roof frame support—rear
17—Roof strainer—rear
18—Rear hinge pillar rail and reinforcement—lower—not serviced
19—Rear window to roof strainer
20—Rear quarter rail and reinforcement—not serviced
21—Rear shelf assembly
22—Tire carrier channel assembly
23—Tire carrier brace and plate assembly
24—Cowl tie brace bracket
25—Cowl front lower tie bar
26—Cowl tie brace
27—Hood top to body bracket
28—Cowl inside panel strainer—not serviced
29—Dash to chassis frame bracket
30—Cowl inside panel to motor support bracket
31—Toe board support—not serviced
32—Dash panel—not serviced
33—Door hinge
34—Body hood hinge support bracket
35—Body front cross sill assembly
36—Floor board assembly—front
37—Body side sill—not serviced
38—Floor board assembly—rear
39—Propeller shaft cover
40—Body rear cross sill assembly
41—Seat cushion dowels
42—Rear seat pan
43—Partition panel
44—Shelf support
45—Rear compartment floor pan
46—Tire carrier to pan brace
47—Bumper to body bracket assembly

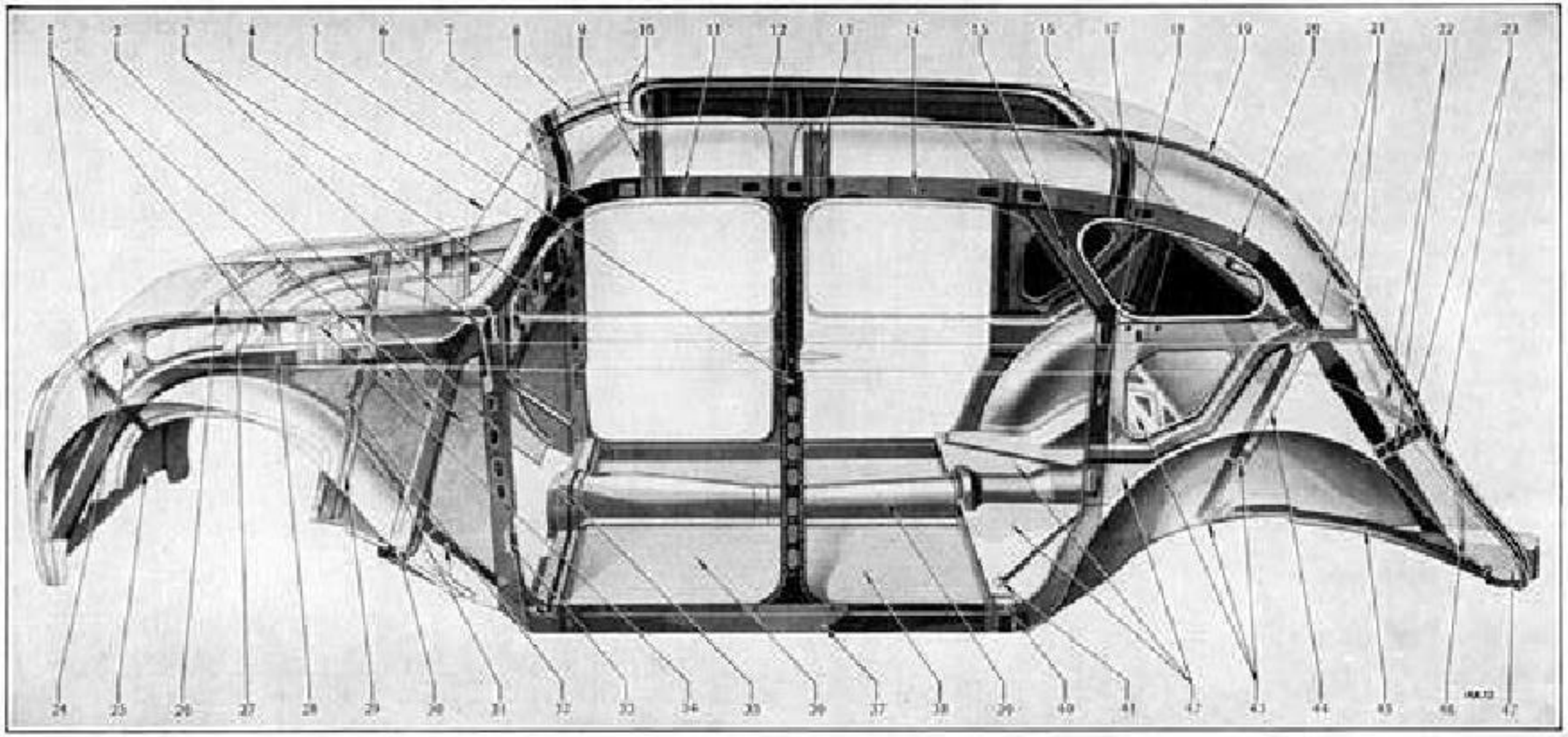


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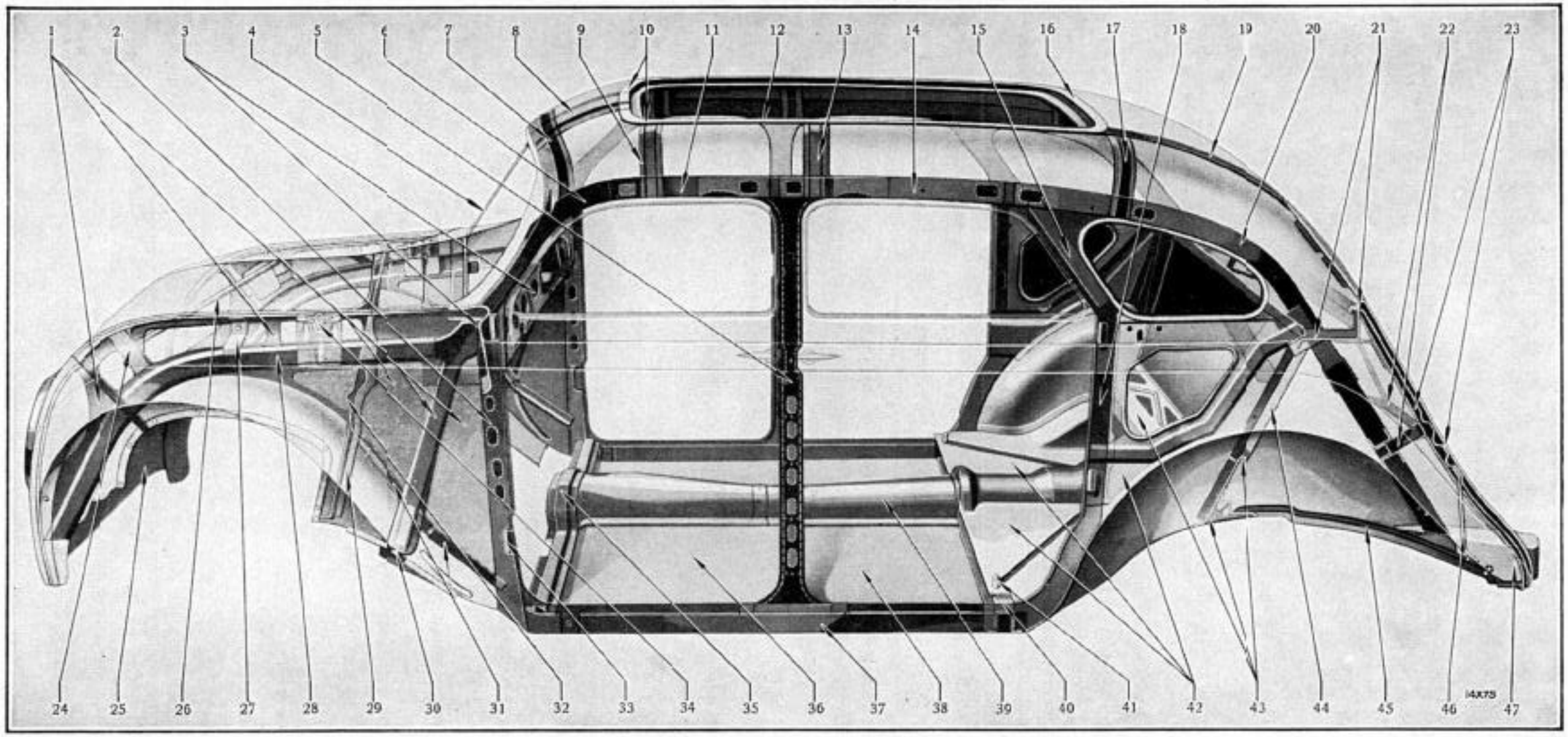


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AIRFLOW BODY SERVICE MANUAL

CONSTRUCTION

The Airflow body is of all-steel unit construction, fabricated from steel panels and pressed steel rails, channels and braces welded and riveted into one solid, rigid structure of incomparable strength and durability. Beyond this one fundamental similarity to other all-steel body designs the construction of the Airflow body differs in practically every respect from anything heretofore applied to automobile body design.

Were it possible to remove the outer shell, the braces, channels and rails, some of which are integral with the outer panels, would appear as illustrated in Fig. 1. As will be seen by referring to this phantom view, the Airflow body requires no chassis frame for rigidity but the body structure is augmented by an additional lower body frame, upon which the various parts of the chassis are mounted, bolted with from 22 to 40 body bolts to the lower contour of the body itself.

A rail extends from the extreme rear corners of the body up each side of the sloping rear quarters and along the inside of the roof panel to join box-like steel body door hinge pillars above the corners of the windshields. By placing an inverted pressed steel channel or reinforcement in the corners of the sloping windshield stanchions a rigid brace is provided which ties the top of the body door hinge pillar to a solid steel flanged plate, constituting the cowl inner panel.

This plate is welded in one solid piece from the line of the base of the windshield, the full depth of the engine compartment, forward to the front bumper bracket. Vertical and lateral members, also of pressed steel, tie the entire assembly together, with the lower box-like body rails into a most rigid, durable and serviceable unit.

It is quite apparent from the foregoing brief description of the construction of an Airflow body that the methods to be employed for servicing it will differ in a great many respects from those employed on other all-steel bodies.

These bodies are built to withstand tremendous strains and stresses without requiring any attention, therefore the necessity for service has been reduced to a minimum. Should servicing become imperative due to collision or other abnormal causes, however, the Airflow body is so designed that it may be repaired and restored to its original state of rigidity and durability with comparatively little labor expense. This feature has been obtained as mentioned in the "Foreword" to this manual by so constructing the body that whole or partial body sections may be cut out with a torch and a new section welded in as a unit, or plates of sheet metal of approximately the same thickness as the original panel may be cut out of sheet steel, formed to follow the contour of the body shell and welded into place after cutting out the damaged piece.

INSPECTION

Any automobile body, regardless of its natural rigidity, must be periodically inspected for settling. This is particularly important during the first thousand miles of service of a new car. The following points should be carefully checked and adjusted for maximum body service and quiet operation:

1. Check all body bolts to be sure they are tight.
2. Check floor-board screws and tighten if necessary.
3. Inspect all door hinges, locks, window regulators and remote controls and tighten.
4. Check door lock striker plates and adjust.
5. Check all window glass for side play and metal contact with garnish mouldings and reveals. Eliminate side play by shimming runs with cardboard and eliminate metal contacts by moving glass roller or weatherstrip.
6. Road test car and enumerate points requiring adjustment. Refer to proper section of this Body Service Manual for suggestions on method of making any necessary corrections.

LUBRICATION

Door hinge pins should be lubricated with a drop or two of light machine oil periodically, to insure quiet and smooth operation and also to prevent the hinge pins and hinges from galling at the bearing surfaces, resulting in excessive clearances at these points and causing objectionable door rattles which can only be completely eliminated by replacement of parts. Excess oil on the outside of the hinge should be removed immediately, to prevent dust from collecting and damaging the lacquer finish.

Door latches may be lubricated with a light application of vaseline or similar lubricant. Soap may be applied to all points of friction, with marked success.

Do not apply oil or grease of any kind to rubber weatherstrips, anti-rattle buttons, etc. Castor oil is not only an exceptional lubricant but also a rubber preservative and should be employed at all such points.

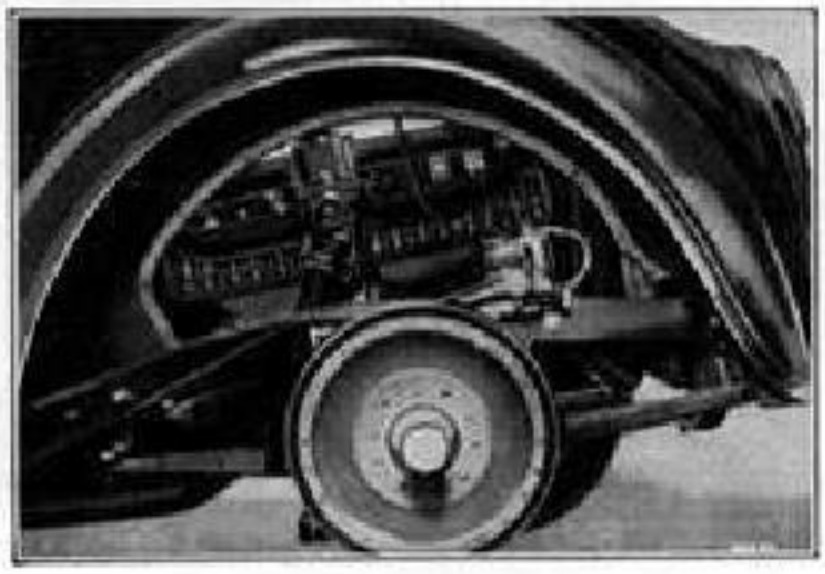


FIG. 2—Accessibility to Side of Engine

Window regulator, door ventilator regulator and door latch shafts should be sparingly lubricated as frequently as possible, or whenever it becomes necessary to remove the door trim panels for any reason.

Leather-bound weathercord, around the door frames, may be lubricated to prevent possible squeaks from developing by making a light application of tan paste shoe polish to the leather, wiping off the excess polish with a clean cloth. One application of this nature should suffice for at least six months.

TIGHTENING

Annoying rattles, difficult to locate, might develop around the floor-boards, door hinges and body to assembly member bolts unless these are periodically tightened.

It is advisable to give preferred attention to these bolts and screws during the first 1000 miles of operation of a new car, tightening them as frequently as possible during the breaking-in period.

ALIGNMENT

The Airflow body being rigid in construction, and its component parts having been welded together in a state of alignment, is therefore in correct alignment when manufactured, and will remain so unless subjected to a severe blow or twisting strain, such as might be experienced in an accident. Any condition of misalignment which may develop will, in a majority of instances, be only visual in the body, or apparent on the road by the front and rear wheels not following in the same track. This can result from a broken spring, bent axle or spring hanger, and can be corrected by straightening or replacing the affected part.

Misalignment of the body itself can be isolated by comparing diagonal dimensions taken from the interior of the car body at different heights and different angles.

For example, the distance from a point on the front of the left body door hinge pillar to a point on the right rear body hinge pillar should be exactly equal to the distance from the corresponding point on the right front body hinge pillar to the corresponding point on the left rear body hinge pillar. Similar measurements may be taken from other angles where the misalignment is suspected to exist on some other plane.

Once located, it is only necessary to straighten the bent or sprung brace or cross member. In extreme cases, it may be necessary to remove the affected cross bracing, align the body, straighten the brace and gas weld it back in place, or replace the entire part. This will depend upon the nature of the damage which must be repaired.

The Airflow body cannot be sprung or twisted by placing shims under body bolts. Such practice might result in seriously distorting the lower body frame side members subjecting them to unwonted strains and stresses.

ACCESSIBILITY

The Airflow body and chassis are designed to afford the utmost in accessibility from a service standpoint.

As an example of the consideration given to this most important service problem refer to Fig. 2 illustrating the manner in which the side of the engine is exposed for adjustments or replacements. To obtain ready access to the sides of the engine it is only necessary to remove one front wheel, the front wheelhouse panel studs from the clinch nuts and the wheelhouse panel.

By permitting the mechanic to work in the position illustrated, the necessity of removing the manifold is obviated when grinding valves, etc., and either side of the engine may be clearly exposed for making the most exacting inspections and adjustments.

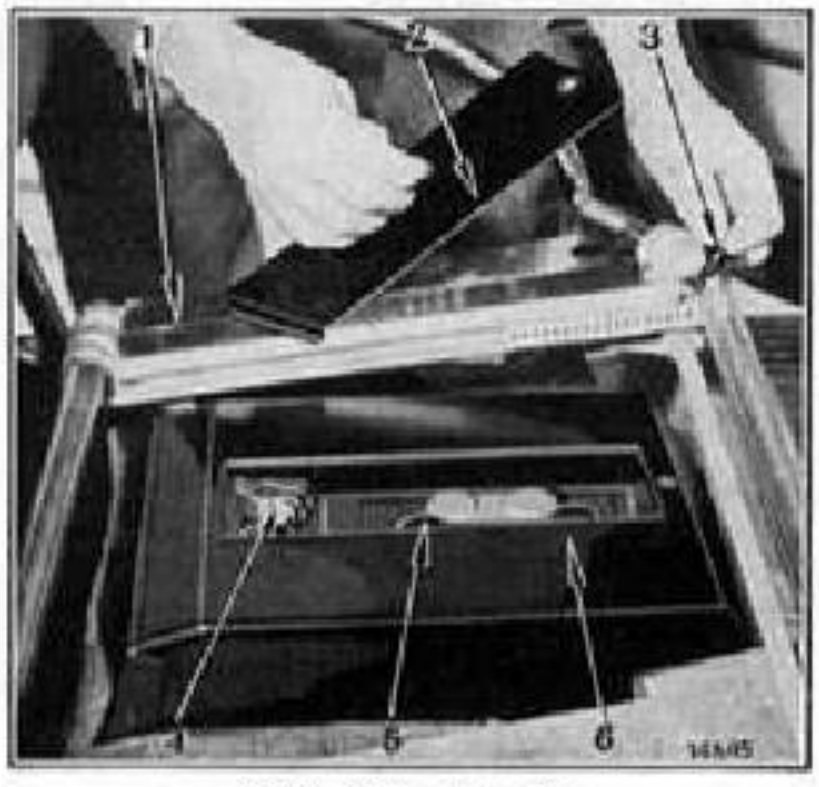


FIG. 3—Battery Inspection

1—Front seat cushion support
2—Battery cover lid
3—Battery cover lid thumb screw
4—Battery cable terminal (negative)
5—Battery filler cap
6—Battery cover assembly

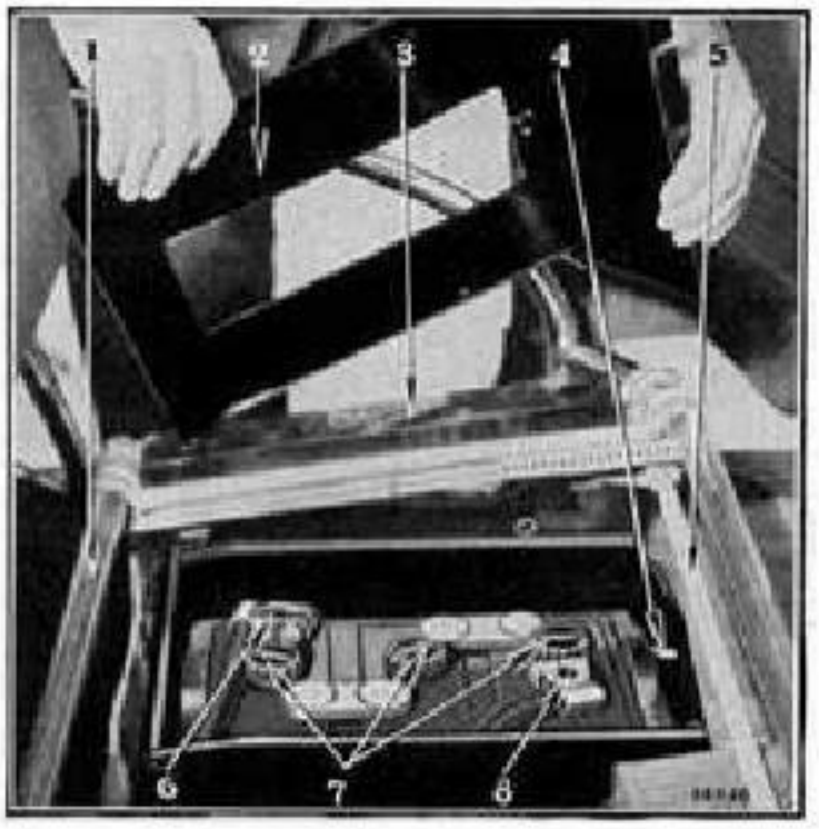


FIG. 4—Battery Removal

1—Front seat frame rear cross tube
2—Battery cover assembly
3—Front seat cushion support
4—Battery hold down clamp
5—Front seat guide tie rod assembly
6—Battery cable terminal—negative
7—Battery filler caps
8—Battery cable terminal—positive

A further example is offered in Figs. 3 and 4 showing the accessibility of the storage battery for the replacement of distilled water, the testing of specific gravity or cleaning of battery terminals; operations which must be performed at comparatively frequent intervals. The front seat cushion may be removed from the seat cushion supports. (1, Fig. 3) the battery cover lid thumb screw (3) unscrewed and the battery lid (2) lifted off for the replacement of water or testing of electrolyte through the battery filler caps (5) or if it is desired to replace the battery or clean the battery terminals (6 and 8, Fig. 4) the battery cover assembly (2) may be removed exposing all necessary parts, including the battery hold-down clamp (4).

Throughout the entire vehicle, it will be found that the same thoughtful solicitude has been given to the design of the body minimizing the inconvenience to the mechanic and reducing the labor expense to the owner when it is found necessary to perform any class of repair or adjustment whether it apply to body or chassis.

UPHOLSTERY AND TRIM PANELS

All trim panels below the line of the belt moulding are mounted on padded wood or heavy fibreboard foundations, and are secured to the Airflow body by means of expanding fasteners. This construction permits the trim to be disassembled from any part of the body in units without the possibility of damage.

Removal of trim panels is accomplished by sliding a thin bladed instrument such as a screw driver between the back of the panel foundation and body metal (Fig. 5) gently prying outward until the expanding fasteners are extracted from the hole in the body.

Should a trim panel be accidentally damaged a replacement unit trimmed to match the original may be procured from the Chrysler Motors Parts Corporation (See Ordering Body Parts) and snapped into place without cutting, fitting or cementing.

The entire interior of the Airflow four-door sedan body is shown in Fig. 6 in such a manner that every trim panel, garnish moulding, or piece of hardware may be instantly identified along with its correct name, as indicated in the figure reference.

Seat cushion and back upholstering is procurable in ready cut and padded assemblies. These may be installed by stretching them over the springs, tacking the edge of the material to the back of the frame of the cushion or seat back. Care must be exercised when replacing cushions to evenly distribute the padding over the coil springs before applying the material.

CLEANING UPHOLSTERY

Mohair or broadcloth upholstery may be readily cleaned by rubbing the soiled spot with the approved cleaner obtainable from the Chrysler Motors Parts Corporation or a similar dry cleaning fluid of comparable quality. Complete instructions for using this cleaner appear on the label of each container. The nap on mohair upholstery may be reset and shiny spots removed by applying live, dry steam to the affected part, brushing briskly with a stiff brush against the grain of the cloth.

The special coated trim material used above the belt moulding on Airflow bodies can be washed with a damp cloth and Castile, Ivory or similar mild soap, followed by a clean cloth dampened in clear water and polished by rubbing vigorously with a soft, dry flannel. CAUTION: DO NOT APPLY ANY KIND OF CLEANING SOLUTION TO COATED TRIM MATERIALS

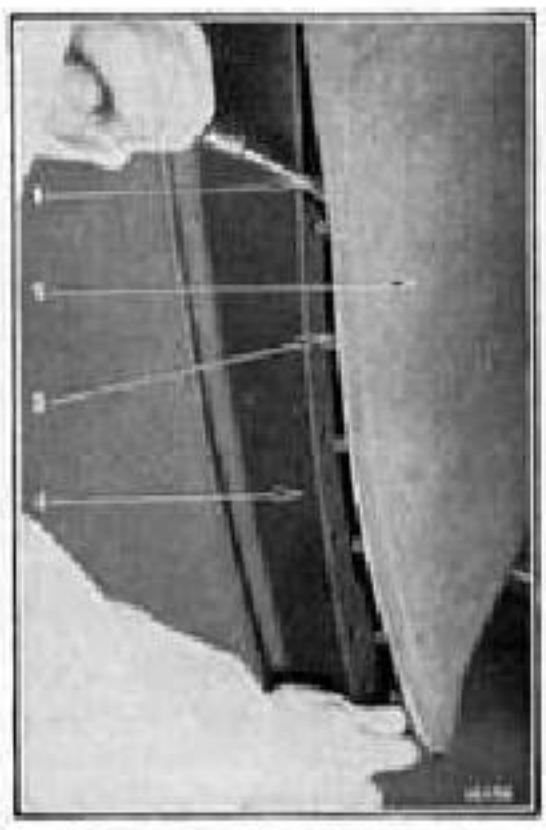


FIG. 5—Removal of Trim Panels

1—Screw driver
2—Door trim panel assembly
3—Door trim panel fastener
4—Door inside panel (metal)

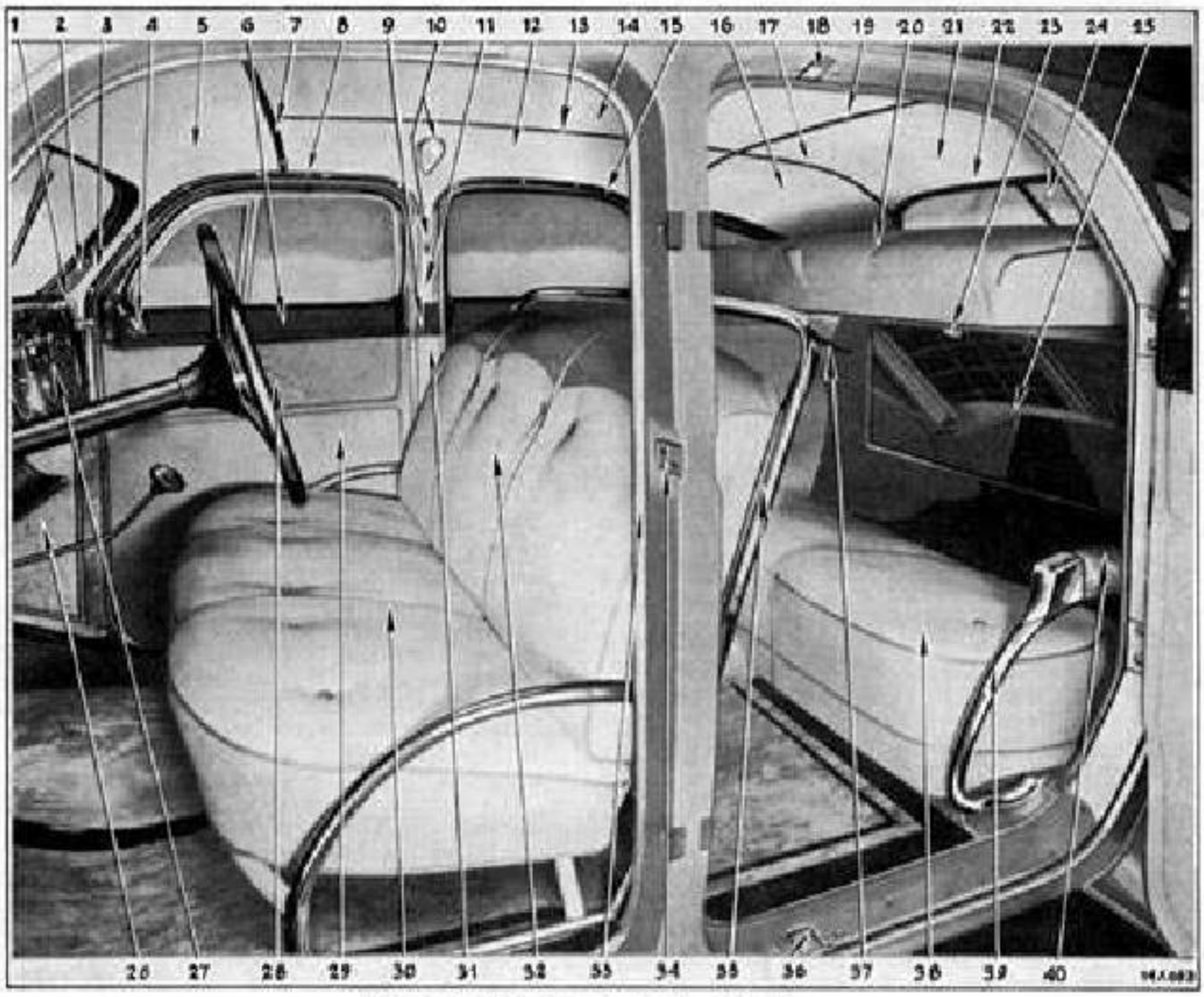


FIG. 6—Body Interior, Trim Panels and Hardware

1—Windshield regulator handle
2—Windshield garnish moulding
3—Front door hinge pillar trim panel
4—Ventilating window adjusting handle
5—Windshield header trim panel
6—Front door garnish moulding
7—Headlining front garnish moulding
8—Front door opening garnish moulding
9—Center pillar garnish moulding
10—Pillar light and switch.
11—Center pillar trim panel—upper
12—Door body header trim panel
13—Headlining side garnish moulding
14—Headlining center trim panel
15—Rear door opening garnish moulding
16—Upper quarter trim panel
17—Upper quarter garnish moulding
18—Door header dovetail—upper
19—Headlining rear garnish moulding
20—Rear seat back assembly
21—Over rear window trim panel
22—Rear window garnish moulding
23—Luggage compartment light
24—Rear window glass
25—Luggage compartment
26—Cowl trim panel
27—Glove compartment door
28—Remote control handle
29—Front door trim panel
30—Front seat cushion assembly
31—Center pillar lower trim panel
32—Front seat back assembly
33—Front door weatherstrip assembly
34—Front door lock striker
35—Front seat frame
36—Rear door lower wedge
37—Rear seat back frame sector
38—Rear seat cushion assembly
39—Rear side arm rest support assembly
40—Rear side arm rest cover assembly

SINCE COMPLETE DETERIORATION WILL RESULT. USE ONLY CASTILE, IVORY OR SIMILAR SOAP.

The instructions for cleaning coated trim materials also apply to the cleaning of leather or imitation leather. Under no circumstances must a cleaning fluid be used on materials of this nature.

POLISHES, CLEANERS AND SEALING COMPOUNDS

APPROVED LIQUID POLISH has been developed by factory engineers and may be used to restore the lustre without harming the finish. To obtain the best results this polish should be applied about every two weeks. Use of this polish is recommended when frequent polishing can be done. This must not be used on a surface which has been previously waxed, unless the wax has been removed with paste cleaner. Otherwise a gummy surface will result.

APPROVED POLISHING WAX may be applied, after the surface has been thoroughly cleaned, with Approved Paste Cleaner, to protect the finish. This wax must not be applied over chalked surfaces or over liquid polished surfaces. Liquid polish or Saxon Glaze are recommended because of the ease of application. However, for those who desire a waxed surface, this wax is recommended. Extreme care must be used to apply only a very thin coating of wax. The thinner

the wax coat the better will be the finish. A thick coating of wax, caused by heavy applications or repeated thin coats, should be avoided. Best results will be obtained by cleaning the surface with paste cleaner before applying wax at any time.

APPROVED SAXON GLAZE which produces a wax-like finish, is in liquid form and can be applied to a new car in much less time than wax. It produces a very hard, mirror finish which lasts considerably longer than wax. It is especially serviceable on the sea coast where salt air and fog prevail. Saxon Glaze applied three times a year will check color bleeding and will maintain that new car appearance. In cases where the car has been previously waxed, it is necessary to thoroughly clean the body, removing all old wax with approved paste cleaner before applying Saxon Glaze. However, successive treatments of the Glaze take from one-third to one-fourth the time normally required for a waxing operation.

APPROVED PASTE CLEANER should be used only on surfaces that are extremely dull or heavily chalked. This cleaner contains a stronger abrasive than the liquid polish and Saxon Glaze, therefore should be used sparingly. Care should be exercised when applying paste cleaner over stripes as they are applied over the lacquer finish and will rub off with less rubbing than will the main body finish. After cleaning the surface with the paste cleaner, and wiping it clean with a polishing cloth, polish with either Liquid Polish or Saxon Glaze.

APPROVED FABRIC CLEANER has been developed for the purpose of cleaning upholstery. This cleaner may also be used for removing tar and oil from the fenders and body without harming the finish of either. Fabric cleaner must not be used for cleaning the coated headlining material in the Airflow bodies.

AUTO TOP SEAL is a top dressing which renews the life of the car top, and prevents deterioration, from the effects of sun, snow, sleet and rapid changes in temperature.

It is scientifically prepared to dry slowly and will remain pliable and elastic over a long period.

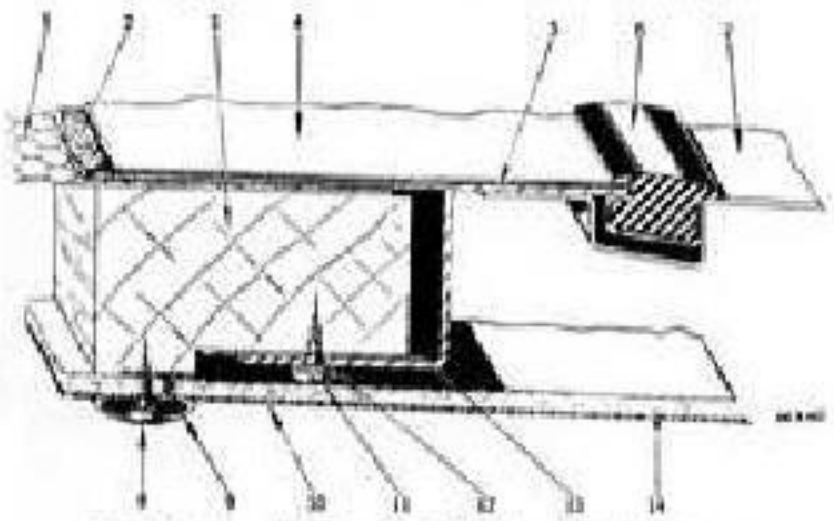


FIG. 7—Cross Section of Top Deck and Headlining

1—Roof screen (antenna)
2—Wadding
3—Roof rail
4—Deck material
5—Roof rail support
6—Roof seal
7—Roof panel
8—Trim panel garnish moulding screw
9—Trim panel garnish moulding
10—Trim panel material
11—Roof rail screw
12—Roof rail screw lock washer
13—Roof rail anti-squeak
14—Trim panel foundation

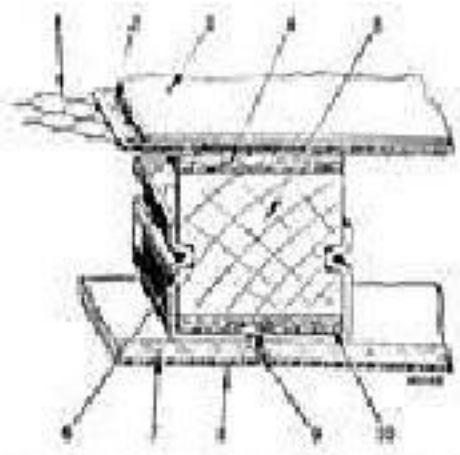


FIG. 8—Cross Section of Headlining Panel Installation

1—Roof screen (antenna)
2—Wadding
3—Deck material
4—Silencer
5—Roof bow
6—Fastener
7—Head lining foundation
8—Head lining material
9—Head lining rivet
10—Silencer

It gives the top a smooth, brilliant finish and thoroughly waterproofs and preserves as well as beautifies the top material.

APPROVED RUBBER CEMENT. In the performance of various body repair operations it is necessary to bond rubber or felt to metal. This is particularly true when installing weatherseals around the cowl ventilators, windshield frames, and door openings, replacing running board mats or installing felt pads to panels or floor mats.

Approved rubber cement has been selected by the engineers, after painstaking research, as the most satisfactory product available for all around usage. It forms a permanent union between the rubber or felt and steel faces which "sets" or dries in a few seconds and is absolutely impervious to the actions of the elements.

Complete instructions for the application of Approved Rubber Cement appear on the label of each container which should be carefully read before using.

GLASS CLEANER instantly and thoroughly removes grease, grime, bugspatters, and road stains from windshield, windows, headlamp and tail lamp lenses. Polishes chromium. A necessity for clear vision after rain, snow or sleet. Simply spray on and wipe off with clean rag or newspaper.

These items are all distributed by CHRYSLER MOTORS PARTS CORPORATION.
Division of Chrysler Corporation

TOP DECK

The top deck is so designed that it is stretched tightly and sealed completely against water leakage without the use of sealing compounds, tacks or screws and may be replaced in a fraction of the customary time without the necessity of removing the top deck frame or headlining.

Removal is accomplished by prying up the end of the roof seal (6, Fig. 7) at the point in the center of the rear quarter where the two ends meet, pulling this moulded rubber strip out of the channel formed by the roof panel (7) and roof rail support (5).

Installation of a new top deck is made in the following manner:

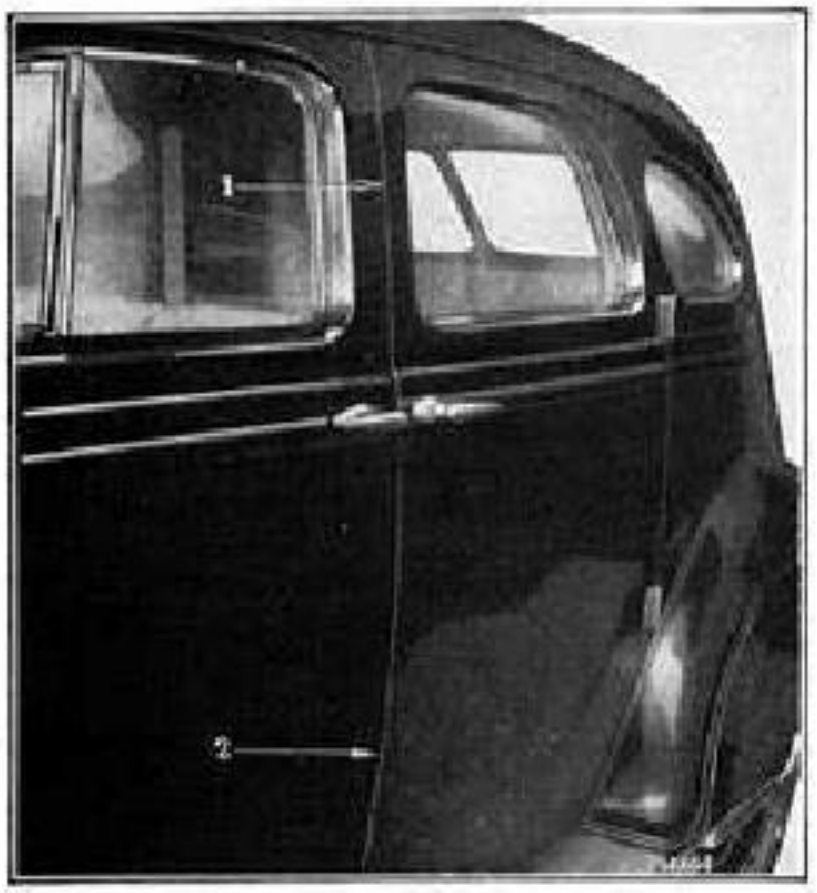


FIG. 9—Rear Door Sprung and Out of Alignment

1. Cut top deck material (4) the shape of the channel in the roof panel (7) leaving a two inch margin on all sides.
2. Press the material (4) into the channel between the roof support (5) and roof panel (7) in the exact center of the front section of the roof opening for a distance of one foot.
3. Insert the center of the roof seal (6) into this portion of the channel locking the material into place as shown in the illustration.
4. Starting from the aforementioned point work the top deck into the channel towards each side alternately, stretching it as tightly as possible and firmly locking it in place by means of small sections, approximately one or two inches in length, cut from a discarded roof seal (wooden blocks may be fashioned to take the place of these locking strips) until the entire top deck is locked in place.
5. Starting from the point where the top deck is anchored with the roof seal at the front of the body force the seal down into the channel progressing down each side evenly and removing the installation blocks as they are reached until the two ends meet at the center of the rear end of the roof opening.
6. Trim the overlapping ends of the seal until they form a tight joint.
7. Pry the roof seal out of the channels at the four corners only, just sufficiently to expose the vertical surfaces of the moulded rubber and apply a coating of Approved Rubber Cement (Page 7) to seal them in place.
8. Using a lignum vitae or wooden mallet tap the roof seal (6) down into the channel starting at the center of the front of the roof opening and progressing down each side to the middle of the back.
9. Raising the protruding margin of the top deck (4) insert a sharp knife between it and the roof panel (7). Holding the blade horizontal and pressing the sharp edge against the roof seal (6) trim the excess material from around the roof opening.
   This cutting should start at the center of the front section and proceed to the center of the rear opening in one continuous operation on each side.

The top deck material used on Airflow bodies is a special coated fabric requiring very little attention outside of a periodic washing with a good grade of mild soap and water to retain its original lustre and weatherproofing qualities. In the event that the finish becomes dull and faded requiring the application of a dressing, extreme care must be exercised to select one which will not be deleterious to this type of material. Only approved Top Dressing as described on Page 7 and procured through the Chrysler Motor Parts Corporation should be employed.

HEADLINING

The headlining (8, Fig. 8), composed of a heavy coated fabric of a neutral color to harmonize with the balance of the interior trim is cemented to a fibre board foundation (7). The assembly is held in place by means of fasteners (6) riveted to the foundation which clip over the center roof bows (5) engaging the grooves cut in the sides of the bows as shown in the illustration. The edges of the headlining panel are tacked to the roof side rails with small upholstering tacks spaced approximately four inches apart. A headlining garnish moulding (9, Fig. 7) is applied over the seam between the edge of the center panel and the edge of the door body header trim panel (12, Fig. 7).



FIG. 10—Straightening a Sprung Door



FIG. 11—Door Properly Straightened and Aligned

This moulding is held in place with wood screws and washers (8, Fig. 7).

DO NOT APPLY CLEANING SOLUTIONS OF ANY NATURE TO SPECIAL COATED HEADLINING—SEE SPECIAL INSTRUCTIONS FOR CLEANING ON PAGE 5.

The headlining trim panel is supplied by the Chrysler Motors Parts Corporation for replacement purposes approximately one-half inch larger in all dimensions than the opening in the roof. It is important that these panels be carefully marked and cut to exactly fit the opening in the body into which it is to be installed, inasmuch as they are not interchangeable from one body to another.

UPPER BODY TRIM PANELS

All trim material above the line of the belt moulding, consisting of the following:

Windshield header trim panel (5, Fig. 6)
Front door hinge pillar trim panel (3, Fig. 6)
Door body header trim panel (12, Fig. 6)
Center pillar trim panel upper (11, Fig. 6)
Upper quarter trim panel (16, Fig. 6)
Over rear window trim panel (21, Fig. 6)

are fabricated in the same manner as the headlining, namely, a special coated fabric (10, Fig. 7) is cemented to a fibre board foundation (14, Fig. 7).

All of these panels are held in place, for assembly, by means of small tacks driven into trim sticks after which the garnish mouldings (9, Fig. 7) are applied with garnish moulding screws (8, Fig. 7).

The various mouldings are indicated very clearly in Fig. 6 at (7), (8), (9), (13), (15), (17), (19) and (22).

DO NOT APPLY CLEANING SOLUTIONS OF ANY NATURE TO SPECIAL COATED TRIM MATERIAL — SEE SPECIAL INSTRUCTIONS FOR CLEANING ON PAGE 5.

DOORS

The correct position of a door is determined by the alignment of the moulding on the body with that on the door (Fig. 9 illustrates a door which has become sprung throwing the moulding out of alignment) and by the uniformity of the clearance between the door frame and door on all four sides when closed. The door must not interfere with the metal of the door frame at any point.

The doors on Airflow bodies are quite rigid structures, but if they become warped or sprung, may be straightened by applying the following methods:

CAUTION: Lower the glass as far as possible.

1. Lateral adjustments of the door may be made by loosening the screws in the body pillar half of the hinge plate and sliding them "in" or "out" on their elongated holes.
2. The lock side of the door may be raised or lowered by placing the end of a wrench or suitable flat tool between the hinge leaves, closing the door carefully until the hinge is sprung sufficiently to move the door into its desired position. This operation will also adjust the door closer to the lock pillar.
3. To adjust the door closer to the hinge pillar, bind the protruding leaves of the door hinge as close to the door frame as possible, securely together with a "C" clamp, first protecting the finish on the hinge plates and body from scratches. Slowly open the door until the hinge is sprung sufficiently to close up any excessive gap which may exist between the back of the door and the door hinge pillar post. It is recommended that the hinge plate screws be loosened one turn and the door opened and closed several times after performing operations 2 or 3, tightening them without disturbing their natural position. This will permit the hinge pins to seek their own alignment and prevent undue binding, wear and objectionable noises.

WARPED DOORS

To correct a warp in a door such as that indicated by the excessive gap between the door and door frame at (2, Fig. 9) as compared to the opening at (1, Fig. 9), lower the door glass, place a padded block of wood (1, Fig. 10) between the door frame and latch pillar post at the top and apply pressure to the door at (2, Fig. 10). It is possible to obtain perfect alignment of the opening in this manner if care is taken when performing this operation to not spring the door any more than necessary to obtain a perfect fit.

An excessive gap at the top of the door may be corrected by placing the padded block at the bottom of the door latch pillar applying pressure at the top of the door.

After springing a door in this manner it is necessary to readjust tension on the door weatherstrip (1, Fig. 12) by resetting the door latch plate (34, Fig. 6). (See instructions for Adjusting Door Bumpers and Strikers.)

A perfectly fitting door with the mouldings correctly lined-up is shown in Fig. 11.

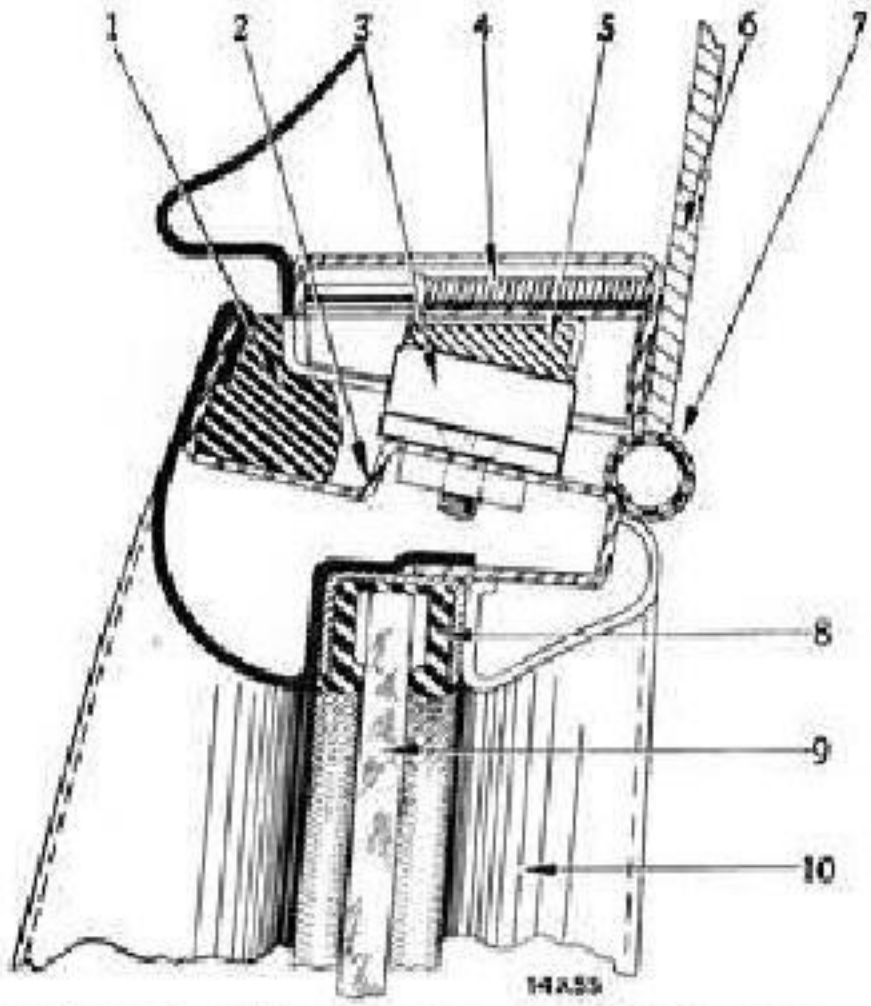


FIG. 12—Cross Section Showing Installation of Door Header Dovetail—Upper

1—Door upper weatherstrip
2—Door top rail panel
3—Door header dovetail (male)
4—Door header dovetail (female) spring
5—Door header dovetail assembly (female)
6—Door body header trim panel
7—Door weathercord
8—Door window glass run assembly
9—Door window glass
10—Door window garnish moulding

ADJUSTING DOOR BUMPERS AND STRIKERS

The doors on the Airflow body are supported at the lock side by a dovetail at the top (Fig. 12) and a wedge plate (Fig. 13) at the bottom. The female dovetail (5, Fig. 12) located in the roof rail slides in a box against spring pressure (4, Fig. 12), providing an automatic take-up of all slack which might result in door rattles or pounding. These two bearing plates (5, Fig. 12, and 9, Fig. 13), are of "Oilite" material, requiring no lubrication. With the door closed, the wedge striker plate (9, Fig. 13) should tightly contact the lower wedge (8, Fig. 13) on the bottom of the door, and the sliding dovetail (5, Fig. 12) in the roof rail should be approximately half-way through the limits of its travel. The position of the sliding dovetail may be determined by coating the channel, in which it slides, with heavy cup grease or similar plastic material, noting the travel after reopening the door by the path left in the soft film, by the dovetail. Spacers (3 and 4, Fig. 13) are available, of special design, to shim the lower wedge up or down, to produce the correct wedge plate contact.

A convenient means of determining bearing condition is to insert a piece of paper between the bearing surfaces, closing the door and gauging the pressure required to extract the paper. If it can be removed without tearing, the bearing is too loose.

A strip of sponge rubber (1, Fig. 12) is cemented around the flange on the outer door panel (2, Fig. 12) and seats in the door frame on all four sides when the door is closed. Tension on this rubber weatherstrip should be uniform at all points and unless the door is sprung, may be satisfactorily increased or decreased by changing the location of the door striker plate (34, Fig. 6) on the body lock pillar. Moving the striker plate into its slot on the pillar post increases this tension and moving it out decreases it. Be sure the striker plate screws are securely tightened after making this adjustment.

DOOR LATCH AND REMOTE CONTROL

The door lock (latch) and remote control assembly is located between the door lock and regulator panel (3, Fig. 15) and the outer door panel. Three screws (1, Fig. 15) are used to secure the assembly to the door.

The door lock is operated from the outside by an ornamental handle and shaft (4, Fig. 14) of one piece construction, mounted onto the door by means of two screws placed through the escutcheon plate. The heads of these screws, as well as the escutcheon plate, are concealed by a cap (3, Fig. 14) held against the door by an internal spring. This cap may be slid back on the handle shaft against spring pressure and rotated one-half turn to expose the escutcheon plate and mounting screws.

The door lock is operated from the inside of the car by means of a remote control handle (9, Fig. 16) of ornamental design keyed to the serrated

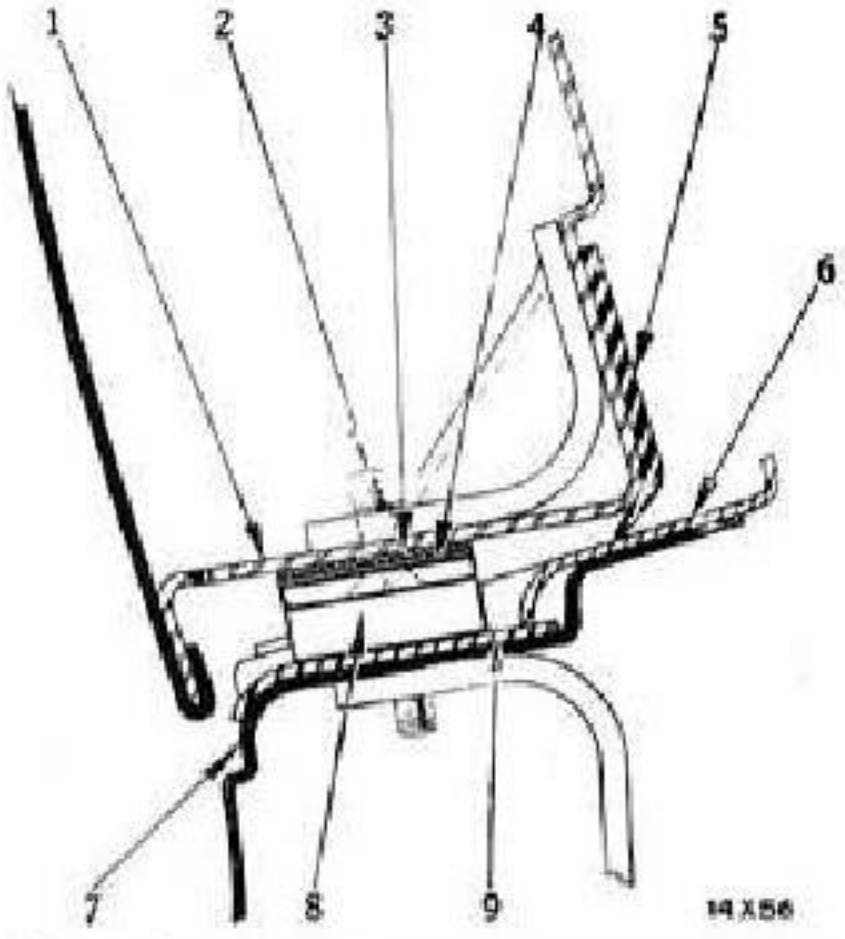


FIG. 13—Cross Section Showing Installation of Door Lower Wedge and Striker Plate

1—Door bottom rail
2—Door lower wedge to door stud
3—Door lower wedge spacer—thick
4—Door lower wedge spacer—thin
5—Door bottom weatherstrip
6—Door lower sill
7—Body sill
8—Door lower wedge
9—Door lower wedge striker plate

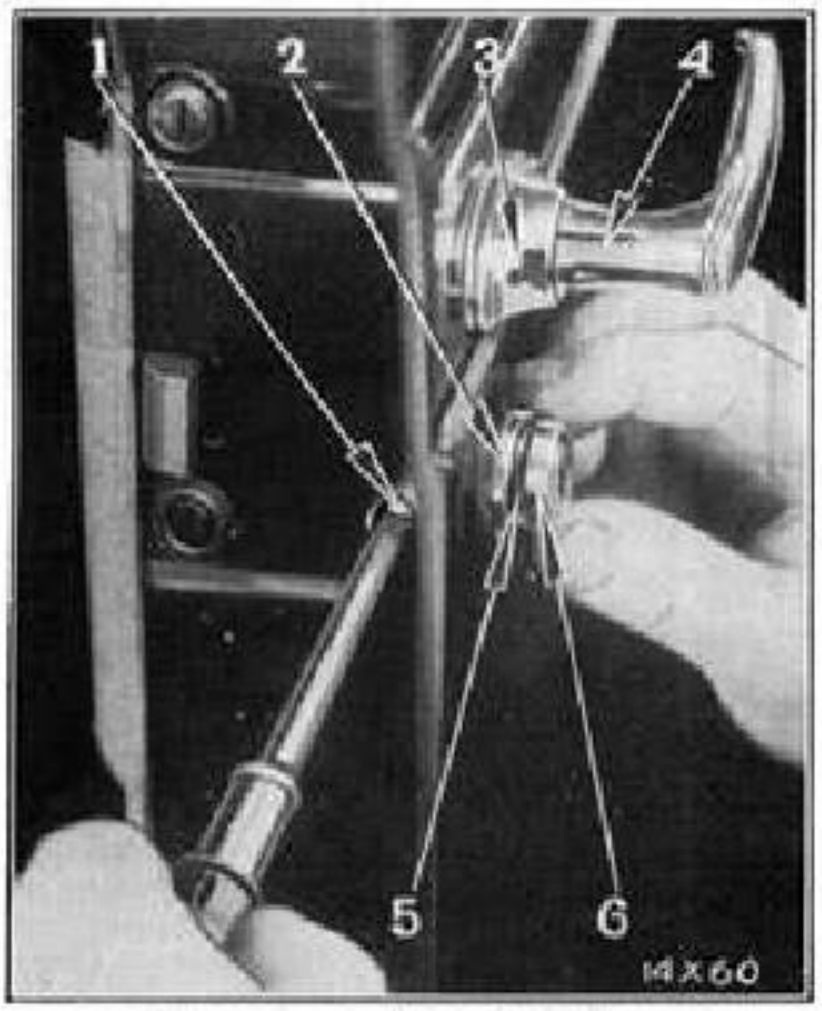


FIG. 14—Door Lock Cylinder Installation

1—Set screw
2—Door lock cylinder escutcheon plate
3—Outside door handle escutcheon cap
4—Door outside handle
5—Door lock cylinder escutcheon spring
6—Door lock cylinder

remote control handle spindle (4, Fig. 15) with a small key concealed by the remote control handle escutcheon plate (10, Fig. 16). This escutcheon plate is held under tension against the remote control handle with an internal spring. The handle may be placed in any position by merely placing it on the spindle at the desired angle.

Removal is accomplished by pressing the escutcheon plate (10, Fig. 16) "in" against the door trim panel (13, Fig. 16) thus exposing the key which may be readily lifted out with an awl or other pointed tool.

To service the door lock and remote control assembly, remove the remote control handle (9, Fig. 16), window regulator handle (7, Fig. 16), window garnish mouldings, garnish moulding support and detach the upholstered door panel from the sides and bottom of the door by inserting a thin bladed instrument, such as a screw driver, between the trim panel foundation and the inner door panel, gently prying outward until the expansion fasteners are extracted from their holes (Fig. 6). Remove window runways and window glass with lower glass channel (see Replacement of Glass). Remove the window regulator assembly (5, Fig. 15) by extracting the screws from the mounting holes (6, Fig. 15), pulling the assembly out of the door through the cut-outs in the regulator panel (3, Fig. 15) with a "zig-zag" motion to work it around the cross-brace in the door panels.

Reaching in through inner door panel cut-outs, as shown in Fig. 15, after removing the three machine screws (1, Fig. 15) with a screw driver, extract the lock and remote control assembly.

Lubricate all moving parts of the lock and remote control assembly before reinstalling.

Installation is accomplished by reversing the order of the above operations.

DOOR LOCK CYLINDER

A cylindrical lock (6, Fig. 14) is provided in the frame of the right front door of special burglar proof design so constructed that it cannot be damaged by applying pressure to the outside door handle when locked.

This cylinder (6) may be removed when unlocked and with the door open, by loosening the lock cylinder set screw (1). The lock cylinder escutcheon plate (2) is held under tension against the outer door panel by means of an escutcheon plate spring (5).

When replacing lock cylinders, the cylinder and remote control handle must be in the unlocked position. The lock cylinder is unlocked when the small projecting boss on the end opposite the key hole is off center. It is locked when this boss is in the center of the cylinder.

WINDOW REGULATOR

The door windows on Airflow bodies are regulated by cranks (7, Fig. 16) keyed to the regulator spindle in the same manner as the remote control handle, namely, by means of a small key concealed behind the escutcheon plate (8, Fig. 16). This handle or crank is also adjustable for position.

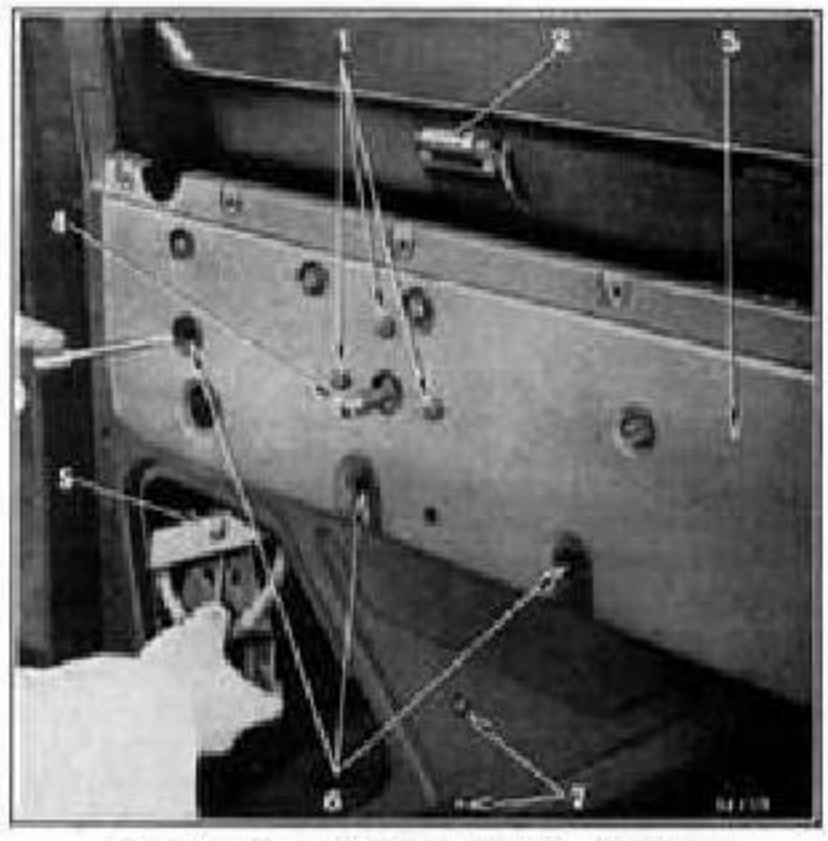


FIG. 15—Removal of Door Window Regulator

1—Remote control mounting screws
2—Door glass roller assembly
3—Door lock and regulator panel
4—Door remote control handle spindle
5—Door window regulator
6—Door window regulator mounting screw holes
7—Door window stop bracket screws

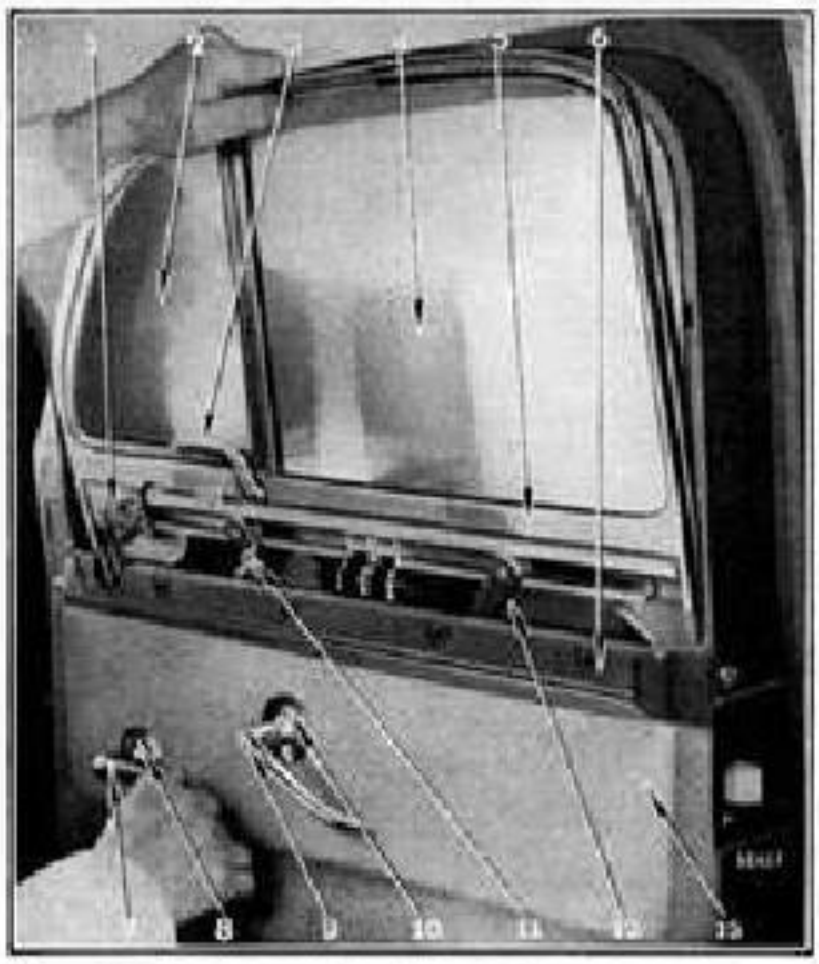


FIG. 16—Removal of Door Window Assembly

1—Ventilator operating shaft
2—Ventilating window glass
3—Ventilating window lock handle
4—Front window rear glass
5—Front door window frame assembly
6—Door inside panel (metal)
7—Door window regulator handle
8—Door window regulator handle escutcheon plate
9—Door remote control handle
10—Door remote control handle escutcheon plate
11—Door regulator arm
12—Door regulator arm
13—Door trim panel

The front door window regulator operates independently of the ventilator adjustor, raising the door glass and frame assembly, or the door rear glass only, at the discretion of the operator. With the ventilating window lock handle (3, Fig. 16) in the horizontal position, as illustrated, the ventilator glass (2) door window rear glass (4) and window frame (5) are raised or lowered as an assembly by the window regulator. Moving the locking handle to its vertical position, however, permits the door rear glass (4) to be lowered independent of the frame or ventilating glass, allowing the ventilator to be adjusted to any desired angle by means of the ventilator adjustor handle on the ventilator adjustor shaft (1, Fig. 16).

The window regulator requires very little attention, but should it become necessary to remove it for adjustment of the clutch (22, Fig. 17) and sector gear teeth (20, Fig. 17) or lubrication, disassembly from the regulator panel (3, Fig. 15) may be accomplished by removing the window garnish moulding, garnish moulding support, glass runways, glass and frame assembly (Fig. 16), door trim panel (Fig. 5) and regulator assembly (5, Fig. 15), after extracting the mounting screws, (6, Fig. 15) in the order named. The regulator can be worked into a position where it can be readily extracted through a cut-out in the inner panel by following a "zig-zag" course around the door braces.

Installation may be made by reversing the order of these operations.

The rear door window regulator is removed and installed in the same manner as the front.

Whenever it is necessary to remove a window regulator, be sure to lubricate it sparingly with machine oil before installation.

DOOR WINDOW VENTILATORS

The door window ventilator glass (2, Fig. 16) may be raised or lowered with the door window glass (4, Fig. 16) by locking the two control mechanism together with the locking lever (3, Fig. 16) located at the joint between the window glass and ventilator glass, or it may be left in its fully raised position while the window is lowered independently.

With the locking lever in its forward or horizontal position, as illustrated (Fig. 16), the two regulator mechanisms are coupled together, providing the ventilator is tightly closed. Moving the lever to its vertical position permits the window to be lowered and the ventilator swung open on its pivot base by means of the ventilator adjustor handle (1, Fig. 19). The only adjustment necessary on the ventilator control mechanism is the mesh of the teeth on the ventilator driving disc (4, Fig. 19) and driven disc (5, Fig. 19). These should interlock approximately $\frac{1}{8}$" and may be adjusted by springing the garnish moulding support to which the operating shaft (3, Fig. 19) bracket is riveted.

The ventilator adjustor mechanism should be lubricated sparingly with engine oil each time the garnish moulding support is removed for any reason.

QUARTER VENTILATING WINDOW

The quarter ventilating window is controlled by a handle (19, Fig. 21) set into the quarter window lower garnish moulding (14, Fig. 21).

The exact manner of mounting the quarter ventilating window adjustor varies in different body models but regardless of whether the adjustor is mounted at the top or bottom, the construction, as illustrated in Fig. 21, is identical.

A worm on the worm shaft meshes with a worm wheel (15 and 21, Fig. 21) connected through the worm wheel collar to the square lower pivot shaft (22, Fig. 21) on the base of the quarter ventilating window frame (1, Fig. 21) at the frame clip (23, Fig. 21).

Removal of the quarter window glass and frame assembly is accomplished by removing the garnish moulding (14, Fig. 21) and adjustor handle (19, Fig. 21), loosening the set screws in the adjustor worm wheel collar, removing the upper pivot plate screw (4, Fig. 21) and plate (3, Fig. 21). Pressing the top of the glass and frame assembly "in" at the top, lift the lower pivot shaft out of the collar.

The quarter ventilating window adjustor (1, Fig. 20) should require very little service outside of an occasional application of light oil to all

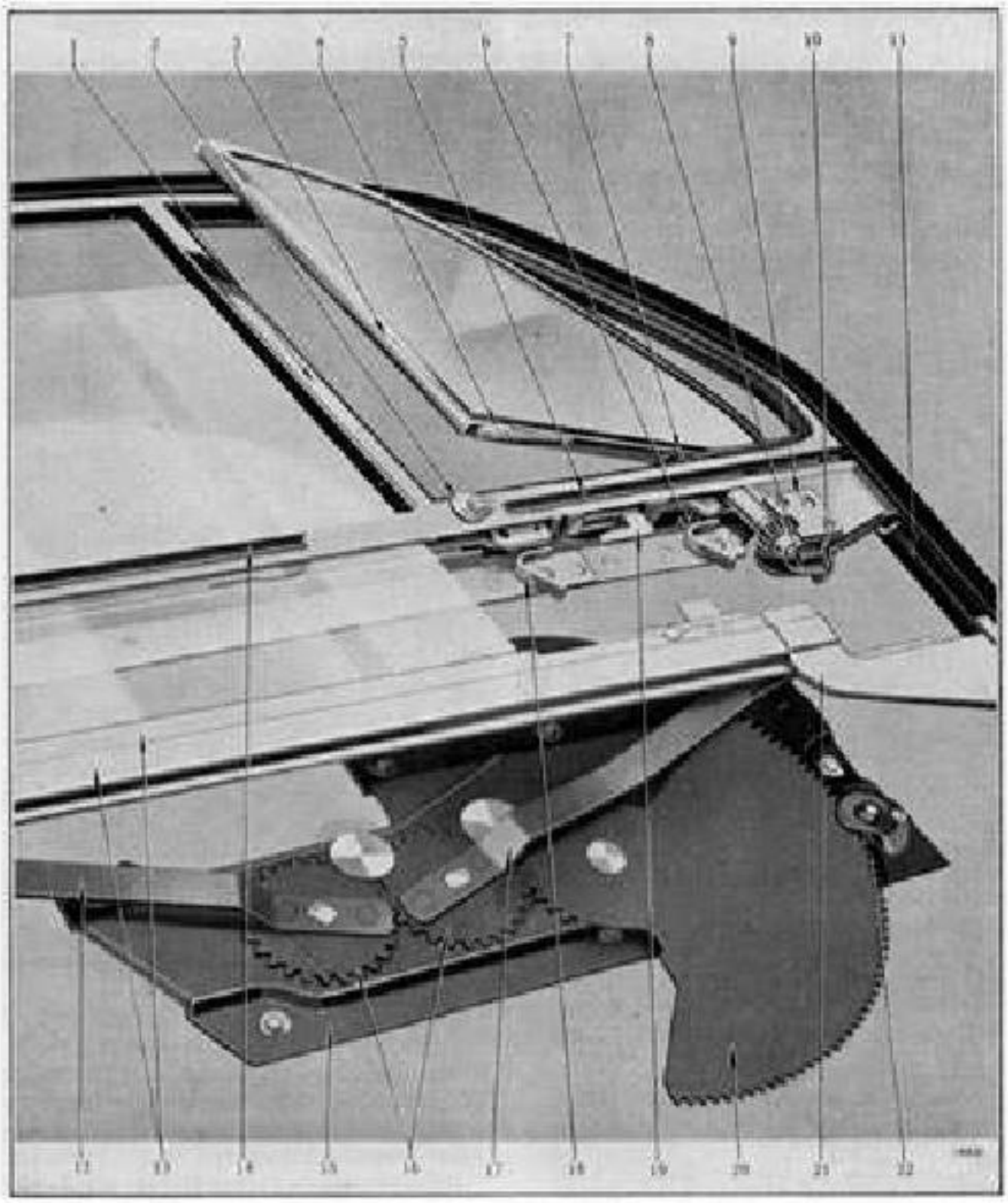


FIG. 17—Front Door Window Regulator and Ventilating Operating Mechanism

1—Window frame
2—Ventilating window locking cam
3—Ventilating window frame
4—Ventilating window locking cam striker plate
5—Ventilating window weatherstrip
6—Window support
7—Ventilating window lower pivot assembly
8—Ventilator driven disc
9—Ventilator worm retainer plate
10—Ventilator driving disc
11—Window frame channel
12—Window regulator assembly
13—Window lower glass channel and bracket assembly
14—Window weatherstrip
15—Window regulator plate
16—Window regulator gears
17—Window regulator arm
18—Window support
19—Ventilating window latch bar
20—Window regulator sector
21—Window lower glass channel bracket
22—Window regulator clutch

bearing and gear tooth surfaces. Should it become necessary to remove this assembly, however, it is only necessary to remove the rear quarter lower trim panel foundation, at the end of the rear seat cushion, after loosening the arm rest support assembly, unscrewing the studs (2, Fig. 20) and loosening the worm wheel shaft collar set screws.

To install, reverse the order of these operations.

WINDSHIELD

The windshields are mounted on two adjustable hinges, as illustrated in Fig. 22, on the inside of the windshield header bar.

Slots are provided in the windshield hinge brackets (1, Fig. 22) at the windshield bracket to header screws (9, Fig. 22) and in the windshield hinge-female (3, Fig. 22) at the windshield hinge to bracket screws (8, Fig. 22), permitting the windshield glass and frame assembly to be adjusted to any position.

A sponge rubber weatherstrip is cemented into the windshield opening to prevent the entrance of water or dust into the car interior.

Tension on this weatherstrip should be uniform on all four sides and corners of the windshield frame. Adjustment is accomplished by loosening the screws which secure the hinges to the header board, sliding the hinge plates on their elongated

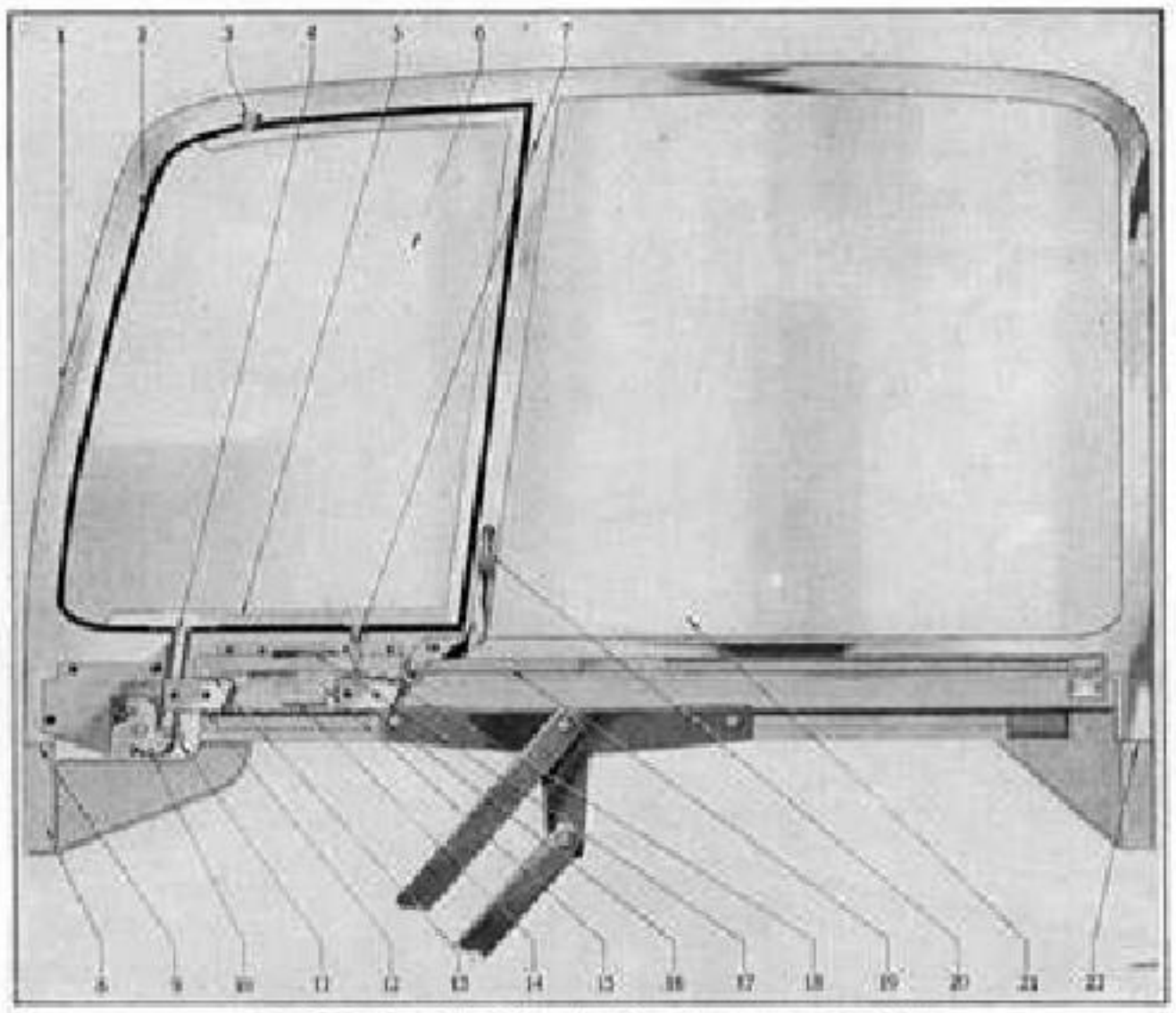


FIG. 18—Front Door Ventilator and Adjustor Assembly

1—Window frame
2—Ventilator weatherstrip
3—Upper pivot
4—Lower pivot assembly
5—Ventilating window frame
6—Ventilating window glass—front
7—Ventilating window locking plunger
8—Channel guide
9—Joint between window frame and channel guide
10—Ventilator driven disc
11—Ventilator worm wheel
12—Window support
13—Latch bar pin
14—Front and rear ventilator glass latch bar
15—Latch bar pin
16—Window support
17—Latch bar spring
18—Latch bar pin
19—Window support rear connecting link
20—Ventilator lock handle
21—Window glass—rear
22—Joint between window frame and channel guide

slots until the desired position is obtained.

Vertical adjustment is accomplished by sliding the glass frame up or down on the slots in the female hinge plate (3, Fig. 22) and horizontal adjustment, controlling the tension of the windshield against the weatherstrip at the top of the frame, by sliding the top in or out on the slots in the hinge bracket plates (1, Fig. 22). Be sure to tighten all hinge plate screws securely after completing adjustments.

Hard rubber inserts are moulded into the lower weatherstrip in the vicinity of the control strap bracket to prevent the windshield from being closed too tightly, resulting in distortion of the glass frame or glass breakage. When installing weatherstrips, be sure that the portions containing these inserts are in their proper location.

Should a water leak develop around the windshields, the natural tendency on the part of the operator will be to cramp the glass closed as tightly as possible with the windshield regulator handles. This will undoubtedly seal the glass effectively, but will not correct the cause of the leak and will place the glass under a strain which might result in breakage.

In all such cases the windshield frame must be aligned by readjusting or, if necessary, reshimming the hinge plates as described in the preceding paragraphs so that the frame contacts the weatherstrip evenly and simultaneously at all four sides and corners.

Windshield weatherstrips are held in place in the windshield opening in the body with a good grade of rubber cement. To insure permanency of the installation, use Approved Rubber Cement (see Page 7), following the instructions contained on the label of the container when applying.

WINDSHIELD WIPERS

Individual windshield wiper motors (4 and 12, Fig. 22) operated by the vacuum in the intake manifold (or fuel pump vacuum booster) mounted on the inside of the windshield header rail and concealed by the windshield header trim panel (5, Fig. 6), actuate independent windshield wiper blades on each windshield. The motors are controlled by separate control knobs (18, Fig. 22) which protrude through the header trim panel in accessible positions over the top of the windshields. Pulling the knobs "out" energizes the motors with a vacuum carried through the wiper tube (22) to the wiper tube "Y" connection (13) and individual wiper motor tubes (5 and 11).

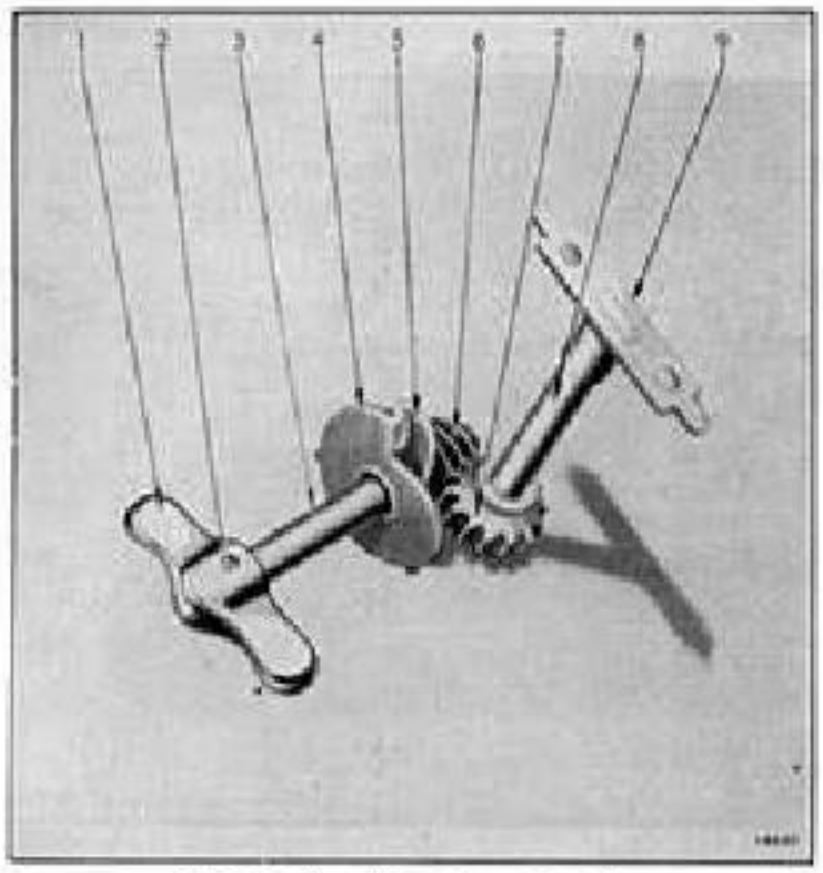


FIG. 19—Door Ventilator Control

1—Ventilator adjustor handle
2—Ventilator adjustor handle set screw
3—Ventilator window operating shaft
4—Ventilator driving disc
5—Ventilator adjustor driven disc
6—Ventilator worm gear
7—Ventilator worm wheel
8—Ventilating window lower pivot
9—Ventilating window lower pivot base

Windshield wiper motors require but very little attention other than a periodic lubrication to maintain the original speed of operation. Lubrication may be accomplished without removing the motors from the header by disconnecting the tubes (5 and 11) from the nipples on the motors, attaching a short piece of tubing in their stead, immersing the open end in a cup of very fine vegetable machine oil, or, preferably "Windshield Wiper Motor Oil." (Do not use a mineral oil or immediate deterioration of the motor pistons will result). With the tube submerged in the lubricant, manually operate the windshield wiper blade from side to side until the oil is drawn up into the motor. Taking the tube out of the oil, again move the blade back and forth until all oil is expelled out of the motor. Remove the lubricant tube and connect motor to vacuum tubes (5 and 11, Fig. 22).

The windshield wiper motors may be exposed by removing header trim panel (see Page 9).

WINDSHIELD CONTROLS

Each windshield on the Airflow body is controlled by an independent operating crank, or handle (17 and 20, Fig. 22, and 18, Fig. 23), mounted on the instrument panel. Turning the regulator handle operates a drum-like sprocket (10, Fig. 23) the teeth (11, Fig. 23) of which engage with holes cut in the windshield regulator tape (16 and 19, Fig. 22, and 8, Fig. 23). This tape, the free-end of which is secured to the base of the windshield frame by means of a yoke, or bracket (5, Fig. 23), and pin (6, Fig. 23) is curved in cross-section. This curvature imparts ample strength to the tape to force the windshield open.

The windshield control assemblies are bolted to brackets welded to the back of the instrument panel and may be removed readily by disconnecting the tape at the point where it is secured to the windshield frame and removing the two cap screws by which it is mounted on the bracket.

Removal of the speedometer head from the instrument panel will, on certain body types, greatly facilitate replacement of the control assembly by permitting the cap screws on one side to be removed through the speedometer head cut-out in the panel.

Each regulator handle is provided with serrations which mesh with like serrations on the end of the regulator worm shaft (16, Fig. 23).

A set screw (17, Fig. 23) permits the handle to be removed and adjusted to any angle when the windshields are closed so as to not obstruct the operator's vision of instruments or road.

COWL VENTILATORS

Cowl ventilators are fitted into the body cowl on each side of the center line of the windshield with independent control handles (8, Fig. 24) extending back into the driver's compartment in an accessible position below the edge of the instrument panel (3, Fig. 24). These ventilators control the circulation of air around the toe and floorboards, dissipating any excess heat which might accumulate at this point. The ventilator door is adjustable to two open positions, as indicated in Fig. 24, the lock ball (7) seating in the grooves in the top of the handle to hold it in the desired position.

Each ventilating opening is fitted with a fine wire mesh screen (11, Fig. 24) to filter foreign particles, such as insects, etc., out of the air. When

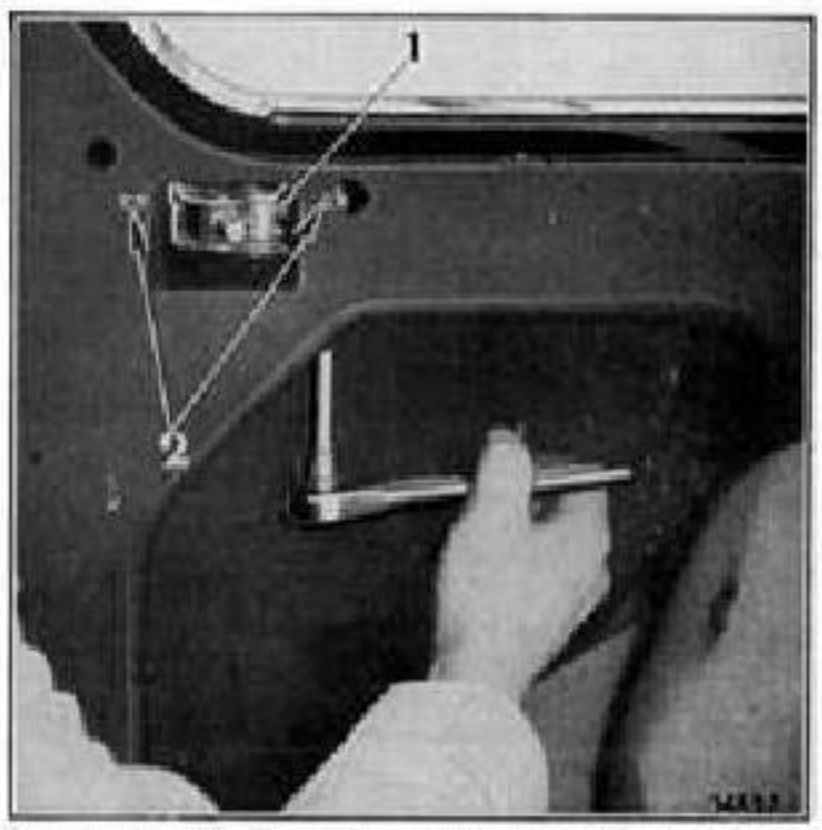


FIG. 20—Removing Rear Quarter Ventilating Window Adjustor

1—Quarter ventilating window adjustor
2—Quarter ventilating window adjustor studs

operating in extremely dusty localities or driving through territories infested with flying insects, these screens should be thoroughly cleaned to ensure proper unobstructed air circulation.

Drain troughs, on the inside of the channel in which the sponge rubber weather strip seats (9, Fig. 24) are fitted with drain tubes (10, Fig. 24) to provide an adequate safeguard against water entering the car interior under the most extreme climatic conditions.

The drain troughs must be kept clean and the drain tubes (10, Fig. 24) free from kinks or obstructions.

Water leakage around the ventilator is caused in practically every instance by improper adjustment of the ventilator door on the weatherstrip (9, Fig. 24).

SEAT REGULATORS

The front seat frame is adjustable for position in relation to the steering wheel and control pedals. The seat cushion and back slide, as an assembly, on rollers (4 and 17, Fig. 25) in guides (15, 18 and 28, Fig. 25) and is locked in the desired position by front seat lock (24, Fig. 25) meshing with the teeth in the front seat lock retainer, or plate (21, Fig. 25). Front seat lock spring (22 and 27) holds the lock in engagement with the retainer unless manually released by raising lock handle (23 and 25).

The front seat guide compensating spring (16) acts as an aid to the operator when moving the seat forward on its guides.

A front seat guide tie rod (20) having a guide gear (7) riveted to each end which mesh with the

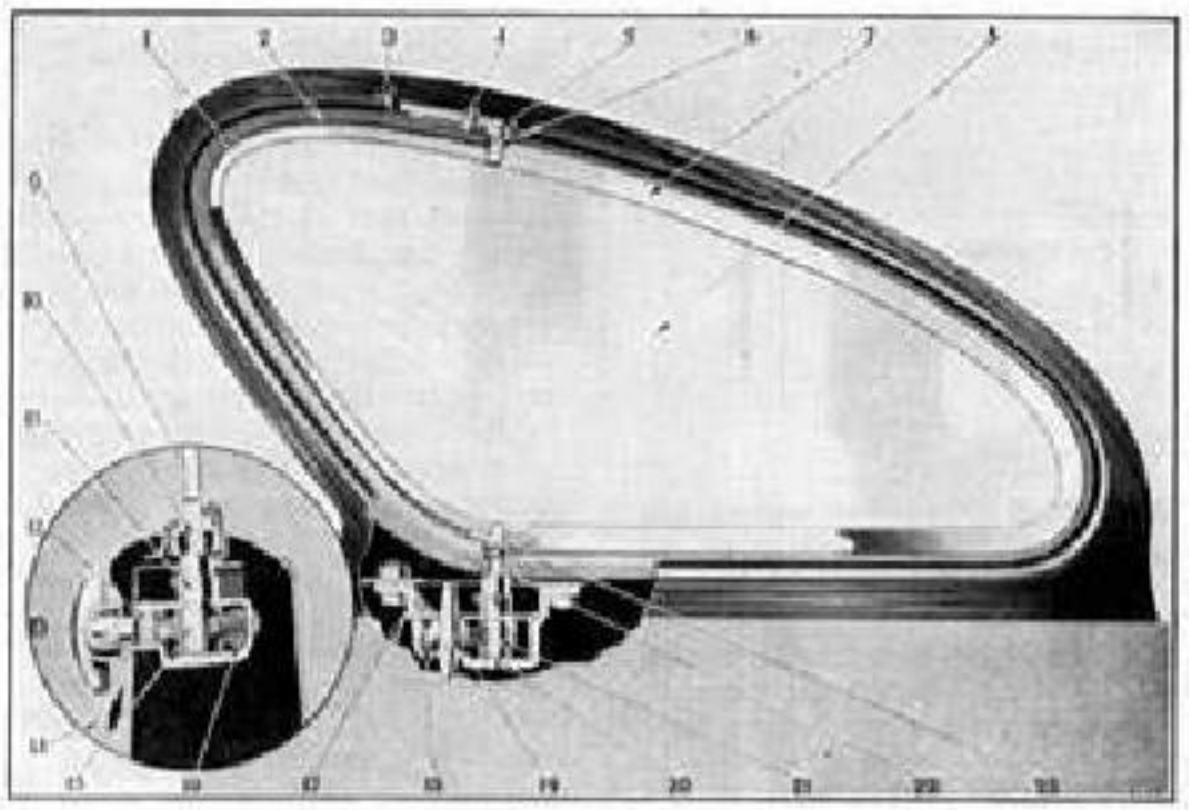


FIG. 21—Rear Quarter Ventilating Window

1—Quarter ventilating window frame—front
2—Quarter ventilating window weatherstrip
3—Quarter ventilating window upper pivot plate
4—Quarter ventilating window upper pivot plate screw
5—Quarter ventilating window upper pivot
6—Quarter ventilating window frame clip—upper
7—Quarter ventilating window frame—rear
8—Quarter ventilating window glass
9—Quarter ventilating window weatherstrip assembly
10—Quarter ventilating window lower pivot
11—Adjustor worm wheel collar
12—Adjustor handle shaft support
13—Adjustor handle set screw
14—Quarter window garnish moulding
15—Adjustor worm wheel
16—Adjustor worm shaft pressure plug
17—Adjustor housing
18—Adjustor worm shaft pressure plug
19—Adjustor handle
20—Adjustor worm wheel shaft
21—Adjustor worm wheel
22—Quarter ventilating window lower pivot shaft
23—Quarter ventilating window frame clip—lower

To align the door so that it will contact the weatherstrip evenly and simultaneously, as it is lowered, at all four sides and corners, loosen the screws which secure the cover to the cowl ventilator hinge and bracket assembly (2, Fig. 24) and tilt ventilator door on its slotted mountings until it touches the weatherstrip at all points evenly, after which the screws must be tightened without disturbing the position of the cover.

The sponge rubber weatherstrip (9, Fig. 24) is cemented to the channel around the ventilator opening. When reinstalling or replacing these weatherstrips, use Approved Rubber Cement, as mentioned on Page 7, to ensure a perfect bond between the strip and metal channel.

slots in the front seat guide gear racks (6), keeps the front seat in perfect alignment at all times.

REPLACEMENT OF GLASS IN REAR DOORS

The lower ends of the window runways are held in place by snap fasteners, the upper portion where it follows the contour of the window frame by metal screws and the garnish moulding. The runway may be readily removed by extracting these metal screws, removing the garnish mouldings, garnish moulding supports and lifting upward, at the same time tilting the top towards the inside of the door.

Rear door glass (and rear quarter window glass which may be raised or lowered) is removed by

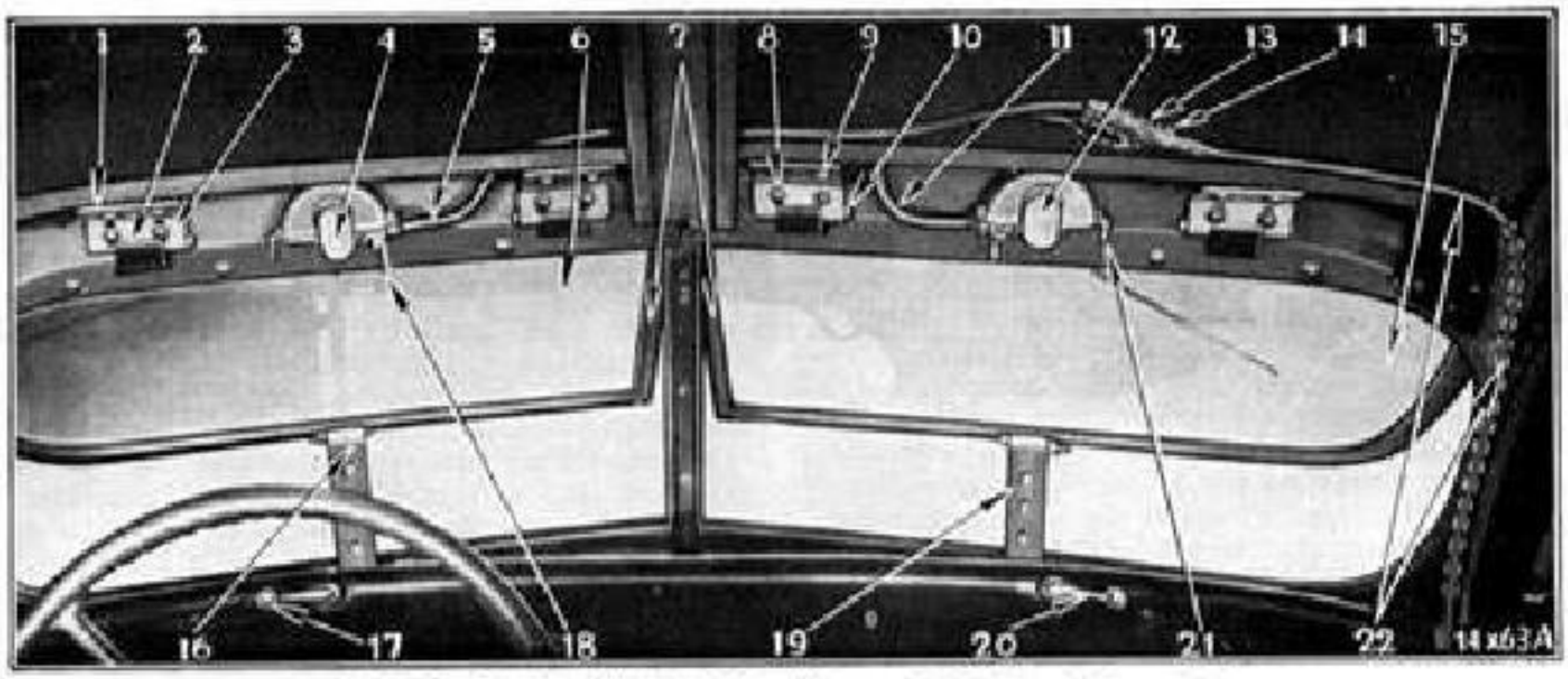


FIG. 22—Complete Windshield Installation, with Trim Panels Removed

1—Windshield hinge bracket
2—Windshield hinge male outer
3—Windshield hinge female
4—Windshield wiper
5—Windshield wiper tube
6—Windshield glass
7—Windshield side channel
8—Windshield hinge to bracket screw
9—Windshield bracket to header screw
10—Windshield hinge pin
11—Windshield wiper tube
12—Windshield wiper
13—Windshield wiper tube "Y" coupling
14—Windshield wiper tube "Y" coupling nipple
15—Windshield glass
16—Windshield regulator tape
17—Windshield regulator handle
18—Windshield wiper control knob
19—Windshield regulator tape
20—Windshield regulator handle
21—Windshield wiper bracket
22—Windshield wiper tube

first removing the garnish moulding, garnish moulding support and window runways after which the glass should be slowly raised by means of the regulator handle (7, Fig. 16) and tilted in at the top, as indicated in Fig. 16.

When the window is completely raised, the regulator arms (11 and 12, Fig. 16) will meet, as shown by the dotted lines in the center of the lower channel, permitting the glass and frame assembly to be lifted out of the door.

Installation of the glass in the lower channel is accomplished by supporting the channel (6, Fig. 26 on wooden blocks (7, Fig. 26), laying a sufficient number of layers of anti-squeak (5, Fig. 26) along the top of the glass channel. Lay the lower edge of the glass along the groove in its proper position and applying a wooden block (3, Fig. 26) with a padded groove (1, Fig. 26) along the upper edge, tap lightly with a lignum vitae or wooden mallet (2, Fig. 26).

The glass should be tight enough so that the lower channel cannot be removed by hand. It is important that the groove in the block (3, Fig. 26) be of approximately the same contour as the top of the glass, and that sufficient padding be used to absorb the shock of the mallet blows.

It is also possible to drive the glass into the channel by laying the block (3, Fig. 26) on the bench with the groove up, putting the top of the glass into the padded slot and driving the channel onto the glass with a mallet. Care must be exercised, however, in doing so to keep from damaging the channel with the force of the blows.

REPLACEMENT OF GLASS IN FRONT DOORS

The door glass assembly, including the ventilator, should be removed from the door in the same manner as the glass assembly for rear doors after placing the ventilator locking lever (20, Fig. 18) in a horizontal position. The ventilator glass, (6,) is removed from the complete double glass assembly, as follows:

1. Move locking lever to vertical position and rotate ventilator glass to the wide open position by turning the driven disc (10).
2. Remove two screws which attach the lower pivot (9, Fig. 19), and spring the outside glass frame slightly so as to release the glass frame from the pivot plate.
3. Slide the glass frame off the glass, using care to not break the frame at the corners. Springing the vertical portion of the frame aids in this operation and relieve strain at the corners.

The large glass (21, Fig. 18) is removed from the complete double glass assembly, as follows:

1. Move the locking lever to vertical position.
2. Pull the upper and lower channels apart at the joints (9 and 22, Fig. 18). The glass will follow the lower channel and slide out of the upper section, as shown in Fig. 17.

The rubber weatherstrip (2, Fig. 18) may be removed, after the ventilator glass has been removed, by pressing the lower pivot shaft (4, Fig. 18) out of the gear (11, Fig. 18). Use of a suitable gear puller on this operation will avoid damage to the parts. The weatherstrip may then be pulled out of the window frame channel. When installing this weatherstrip, soapy water serves as a good lubricant for the rubber and facilitates assembly.

REPLACEMENT OF GLASS IN REAR QUARTER WINDOWS

The rear quarter window glass in four-door sedans operates on a pivot, as illustrated in Fig. 21.

Removal of the glass and frame assembly may be made by completely opening this ventilating window and removing the two lower pivot plate screws. Tilting the glass in the window opening will permit the upper pivot (5, Fig. 21) to be extracted from its bearing plate (3, Fig. 21).

The frame is separated at the frame clips (6 and 23, Fig. 21). Removing these clips will facilitate the removal of the front frame (1, Fig. 21) after which the glass may be pulled out of the rear frame (7, Fig. 21).

On Airflow coupes and two-door sedans, the rear quarter window glass is in two sections. The front half raises and lowers with a regulator mechanism identical to the rear door glass regulator and the rear half opens the same as the four door sedan rear quarter window glass.

To remove the front section with its lower channel proceed in the manner recommended for the removal of rear door glass, and for the rear ventilating section, follow the instructions for replacing glass in the four-door sedan rear quarter windows.

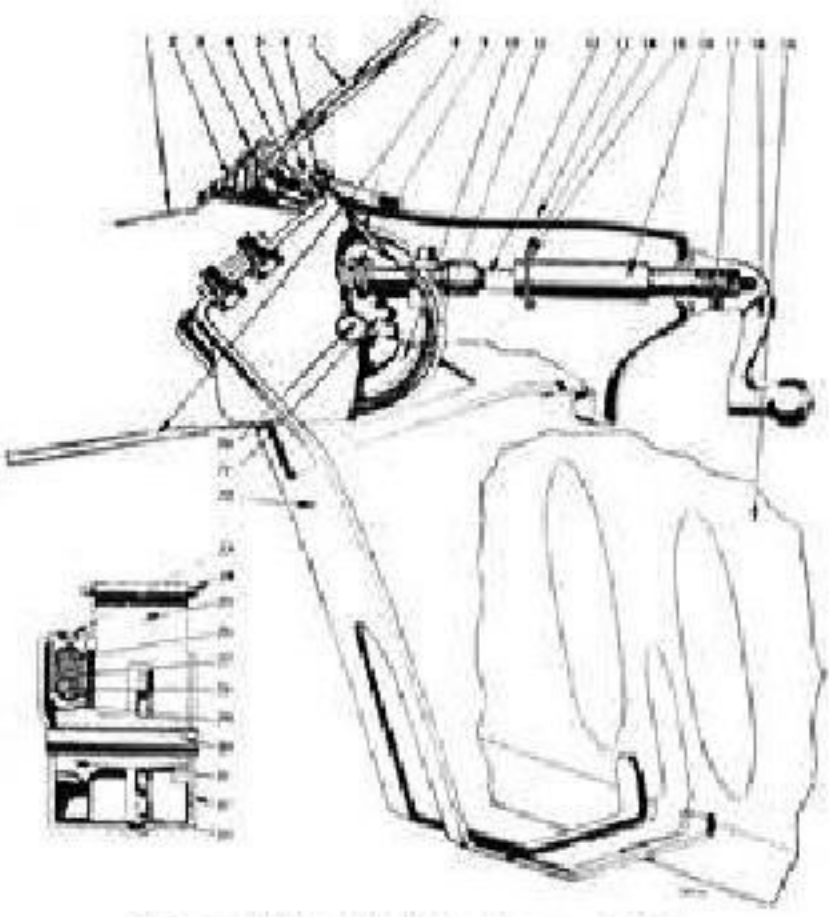


FIG. 23—Windshield Regulator Installation

1—Cowl upper panel
2—Windshield frame weatherstrip
3—Windshield frame
4—Windshield opening weatherstrip
5—Windshield regulator tape frame bracket
6—Windshield regulator tape bracket pin
7—Windshield glass
8—Windshield regulator tape
9—Windshield regulator worm
10—Windshield regulator sprocket
11—Windshield regulator sprocket teeth
12—Windshield regulator connecting pins
13—Instrument panel
14—Windshield regulator shaft latch
15—Windshield regulator shaft spring
16—Windshield regulator worm shaft
17—Windshield regulator handle set screw
18—Windshield regulator handle
19—Instrument panel
20—Windshield regulator worm gear shaft
21—Worm gear
22—Windshield regulator bracket support
23—Windshield regulator pressure spring retainer
24—Windshield regulator tape bracket pin
25—Windshield regulator tape
26—Windshield regulator worm pressure spring
27—Windshield regulator worm pressure spring shoe
28—Windshield regulator worm shaft
29—Worm
30—Sprocket shaft
31—Sprocket
32—Housing
33—Sprocket teeth

WELDING AND SOLDERING

Welding and soldering constitute one of the most important phases of body maintenance, being involved in the majority of all body repair work. Every body shop, therefore, should not only have the necessary equipment available for performing this highly important type of work, but should also employ an experienced welder familiar with all-steel body welding and soldering, providing it is desired to handle this class of service in its own shop.

In the limited space available in this Body Service Manual, it is not possible to present instructions for welding or soldering in any other than an elementary and very general form. Complete and thorough text books, however, for welding and soldering, covering in minute detail every phase of this work, are published by welding equipment manufacturers and are available at little or no cost to the novice who is desirous of becoming proficient as a welder.

GAS WELDING

Of the many types of welding employed in Airflow body manufacture, only one, the oxy-acetylene process, need interest the repair man.

Generally speaking, oxy-acetylene welding consists of uniting pieces of metal by means of a flame of high temperature with the addition of metal of the same composition or one which will fuse to form a better bond between the two sections. The gas welding torch is the tool by which this is accomplished, using acetylene and oxygen gases as heating agents. In making a gas welded joint, the operator applies the tip of the white cone in the center of the torch flame to the edges of the two pieces of metal that are to be fused. The intense heat generated at this point gradually heats up the local surfaces to a point where fusion begins. A suitable welding stock consisting of a metal rod, usually of the same material as the surface to be welded is then skillfully applied along with the welding flux to assist the metal surfaces of the joints to intermingle.

BRAZING

Brazing, or welding with brass rod instead of iron, may be employed on sheet metal which has been filed so thin that a flame hot enough to weld would burn the panel. This is a process which will prove particularly valuable when repairing damage to the metal over the corners of the windshield, door frames, etc. A very "soft" flame, much less intense than that required to weld with iron, can be used due to the lower temperature at which brass will flow. With a good grade of brazing flux, a joint may be formed which, while not as strong as a welded seam, can be smoothed down to form an exceptionally fine surface for refinishing.

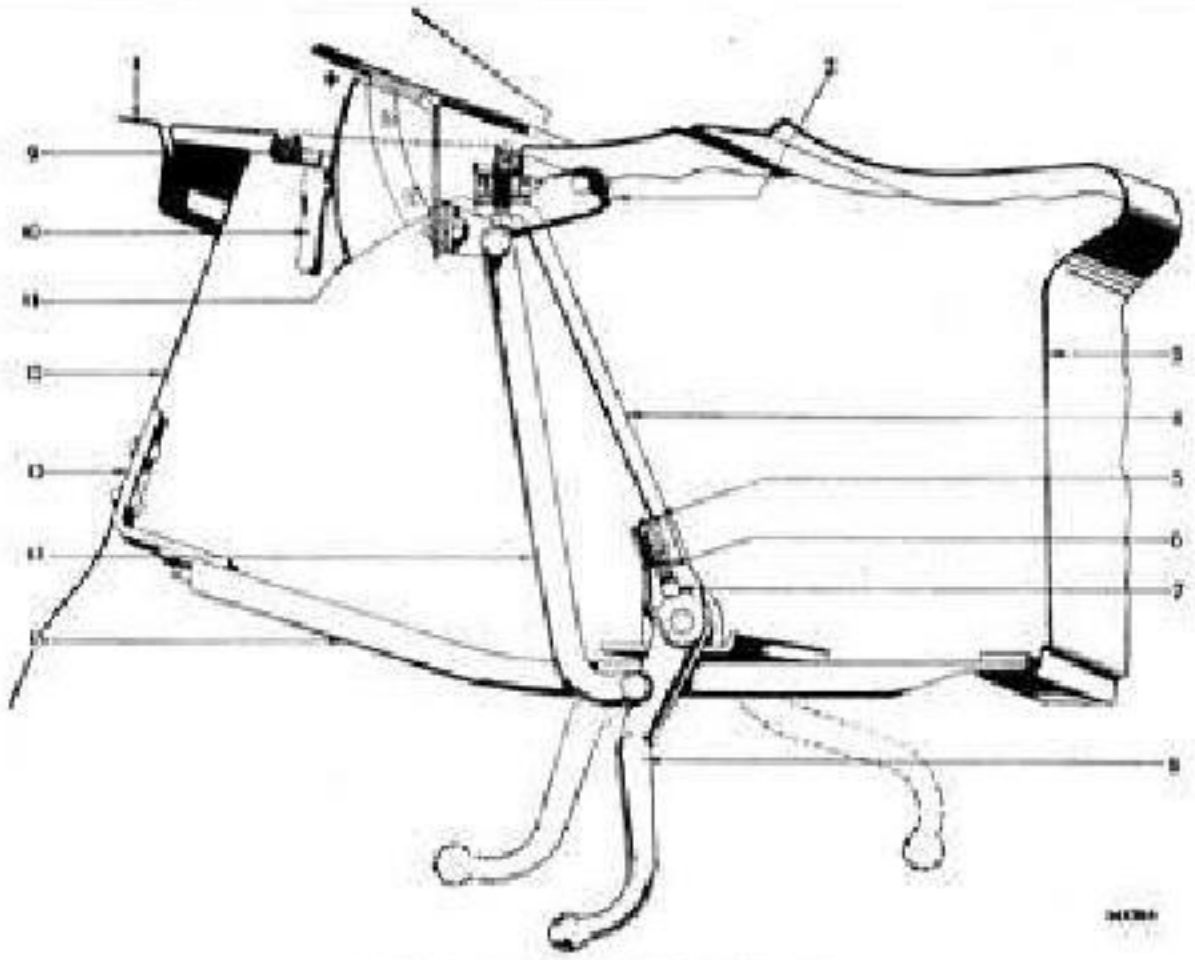


FIG. 24—Cowl Ventilator Installation

1—Cowl
2—Cowl ventilator hinge and bracket assembly
3—Instrument panel
4—Cowl ventilator brace
5—Cowl ventilator lock ball spring set screw
6—Cowl ventilator lock ball spring
7—Cowl ventilator lock ball
8—Cowl ventilator handle assembly
9—Cowl ventilator lid weatherstrip
10—Cowl ventilator drain tube
11—Cowl ventilator screen
12—Dash panel
13—Cowl ventilator to dash brace bracket
14—Cowl ventilator link
15—Cowl ventilator to dash brace

WELDING STOCK

In repairing Airflow bodies, a filler rod or stock of the best grade of iron must be used. For general body repair work rods 36" long and $\frac{1}{32}$" or $\frac{1}{16}$" in diameter are the most popular sizes. For brazing, a No. 8 brass rod will prove the most satisfactory in body repair work.

FLUX

A welding flux or chemical, usually in powder form into which the hot welding rod is dipped for application to the joint, must be used to produce a perfect union of the molten metal. It is the purpose of this flux to reduce oxidization to a minimum and to assist the metal in flowing. The instruction book which accompanies all welding equipment will not only give a list of the best flux to be used, but will also describe in detail the methods of application of their particular apparatus. It must be borne in mind that a different grade of flux must be employed for brazing than that recommended for welding.

WELDING SUGGESTIONS

1. The metal surface to be welded must be free of all grease, paint, rust or other impurities. It is advisable to polish the metal down with a polishing wheel to insure removal of all scale.
2. Pile wet flake asbestos around the weld to protect painted parts in the region of the repair and to keep the metal from buckling due to expansion.
3. Upholstery panels are very easily removed from an Airflow body. Do not take any chances of damaging trim by not removing it from the vicinity of the weld.
4. For general body repair work, do not use a torch nozzle larger than a No. 3. A No. 2 nozzle should be employed on very fine work.
5. With a No. 2 or No. 3 nozzle ten pounds of pressure is sufficient on both acetylene and oxygen. In extreme cases, however, where major repairs necessitate the use of a No. 4 or No. 5 nozzle, 30 pounds will be found to give more intense heat.
6. When welding metal which has been tinned for soldering, all traces of solder must be removed by burning with a torch and scrapping with a wire brush. It will be necessary to heat the metal to a cherry red to insure complete oxidization of the solder film.
7. The two sides of the seam and filler rod should be the same temperature so they will reach the molten stage simultaneously.
8. Avoid formation of tacks when welding a seam by gradually moving the flame forward until a continuous weld is formed. Good welding on body or fenders is largely a matter of adjusting the torch, lining up the two parts to be welded and holding the molten heat evenly so the metal will flow together.
9. Eliminate unnecessary smoothing off work prior to painting by being careful not to pile up welding rod.
10. In smoothing up it is always advisable to hammer down the weld into a V-shaped groove and flow solder into the depression rather than weaken the joint by filing.

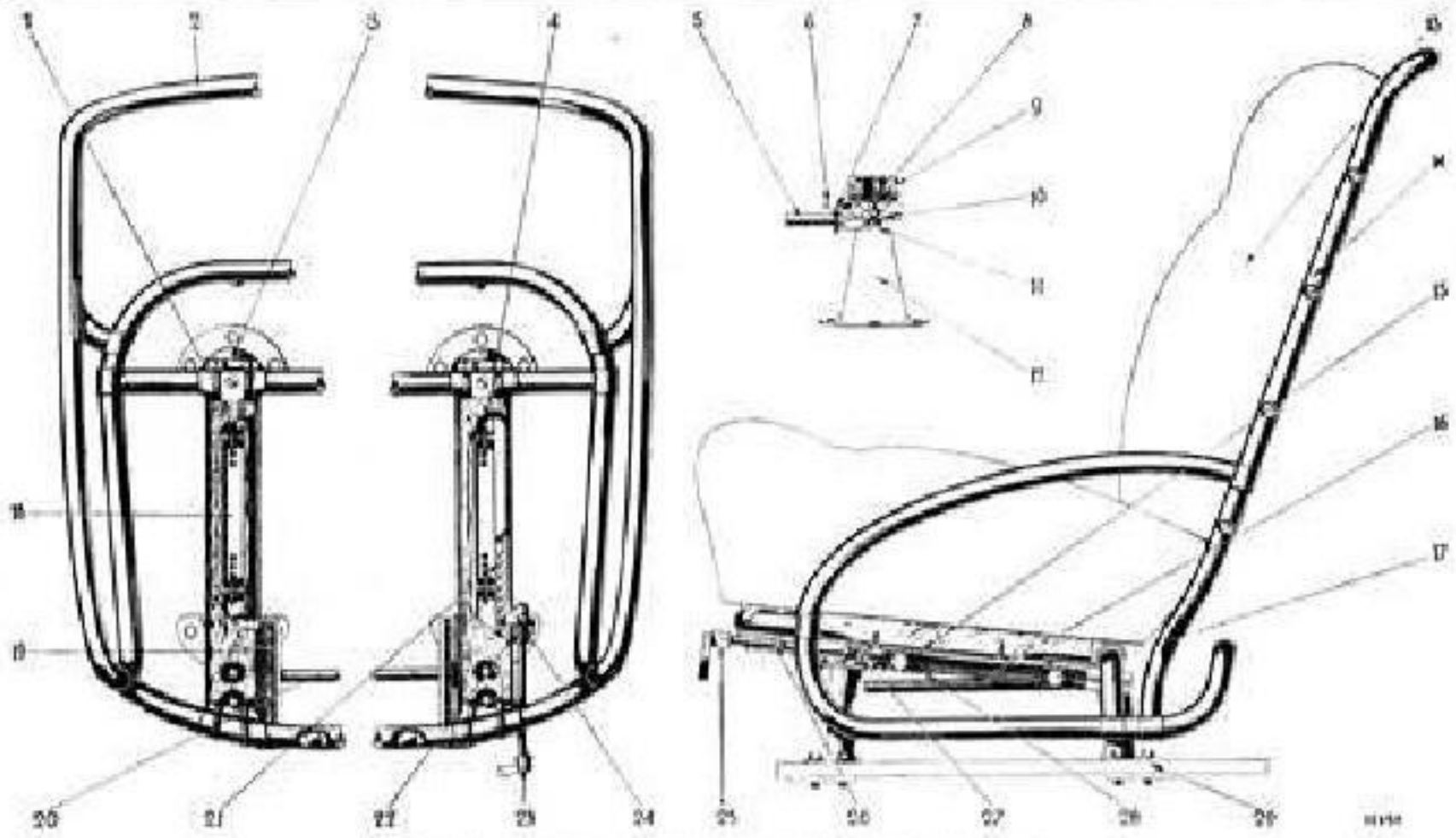


FIG. 25—Front Seat Frame and Adjustment Mechanism

1—Front seat cushion support assembly
2—Front seat frame
3—Front seat support rear
4—Front seat guide roller assembly
5—Front seat guide tie rod assembly
6—Front seat guide gear rack assembly
7—Front seat guide gear
8—Front seat guide—upper
9—Front seat cushion support
10—Front seat guide roller
11—Front seat guide—lower
12—Front seat guide front support
13—Front seat back cushion
14—Front seat back frame
15—Front seat guide—upper
16—Front seat guide compensating spring
17—Front seat guide roller assembly
18—Front seat lower guide
19—Front seat gear rack
20—Front seat tie rod assembly
21—Front seat locking retainer
22—Front seat lock spring
23—Front seat lock handle
24—Front seat lock
25—Front seat lock handle
26—Front seat guide lock shaft
27—Front seat guide lock spring
28—Front seat lower guide
29—Floor board

11. Pillar posts or braces may become so badly bent that straightening would be impossible without weakening the structure. In any such case it is advisable to cut the damaged portion of the post out with a hack saw or torch and weld a new piece into place fabricated from metal of approximately the same thickness.

12. If it is necessary to straighten the body at a point where the metal has become thin, cut out the weakened section and weld into place a sheet steel plate of approximately the same thickness. In fitting the plate to the opening, allow a clearance on all sides equal to the gauge or thickness of the metal. Secure the plate in place before welding around the edges by tacking at the four corners with torch and welding rod. A section of rod may be welded onto the center of the sheet by which to hold it while making these tacks.

13. To break a spot weld, drill a hole approximately $\frac{3}{16}$" in diameter through the center of the weld, prying the two pieces of metal apart with a cold chisel.

To reunite these panels, drill additional holes along the point of the union, gas welding the edges of each aperture and filling them with welding stock.

HEATING AND SHRINKING

To remove a ding or low spot from a panel where it is impossible to get at it from the inside, weld a piece of welding wire to the center of the ding and form a handle in the free end of the rod. Heat the area on and around the low spot to a cherry red, pulling the ding or low spot out to the contour of the body.

To heat shrink a panel, heat a small area in the center of the buckle to a cherry red. Holding a dolly block underneath the heated portion, hammer lightly with a wooden mallet until the metal is cool.

In welding steel bodies, it is found that the contraction of the metal is far greater than the expansion. This detail should be considered when laying out or planning any repairs requiring the use of a torch.

TORCH SOLDERING

Torch soldering is a process by means of which uneven surfaces or deep, sharp indentations in automobile bodies may be filled with solder so as to have clean cut contours. The solder is heated to the proper temperature by means of a gas or blow torch, applied to the depression in the body panel and the heated metal paddled to an even surface with wooden paddles or blocks.

TINNING

Before sheet metal can be torch soldered, it must be tinned. In order to tin welded, painted or corroded surfaces, a polishing wheel must be used to cut down to the virgin metal. The surface to be soldered should then be lightly heated and washed with uncut muriatic acid after which the soldering flux may be applied. Molten solder should next be wiped over the surface of the heated metal with heavy burlap or cloth.

SUGGESTIONS FOR TORCH SOLDERING

1. To cold shrink a panel, if the area to be shrunk is comparatively small and the point can be reached from the opposite side, reverse the high spot by driving it into the end of a piece of pipe or block and fill the depression with solder. Smooth the soldered surface to conform with that of the body panel with a hardwood paddle lubricated in palm oil, linseed oil, etc.
2. To cold shrink a large area of the body panel, depress a V groove or series of grooves through the section to be shrunk, filling the depressions with solder, applied by means of a torch.
3. In smoothing a welded seam, hammer the weld into a V groove, filling the depression with solder.
4. Rather than attempt to straighten grooves or deep indentations in beading or embossed moulding, fill with solder and work the molten metal to the shape of the moulding. A file can be used to trim excess solder down to the exact contour of the beading.
5. In some instances it may be necessary to drill holes in the body panel through which to insert hooks for the purpose of pulling out dings which cannot be reached from the inside. These holes may be effectively sealed up by using solder.
6. It is very seldom necessary to smooth up with solder any unevenness due to patching or dinging. A smooth surface, however, must be obtained before re-painting and if the part cannot be hammered into shape, smooth enough for painting, then fill in with solder

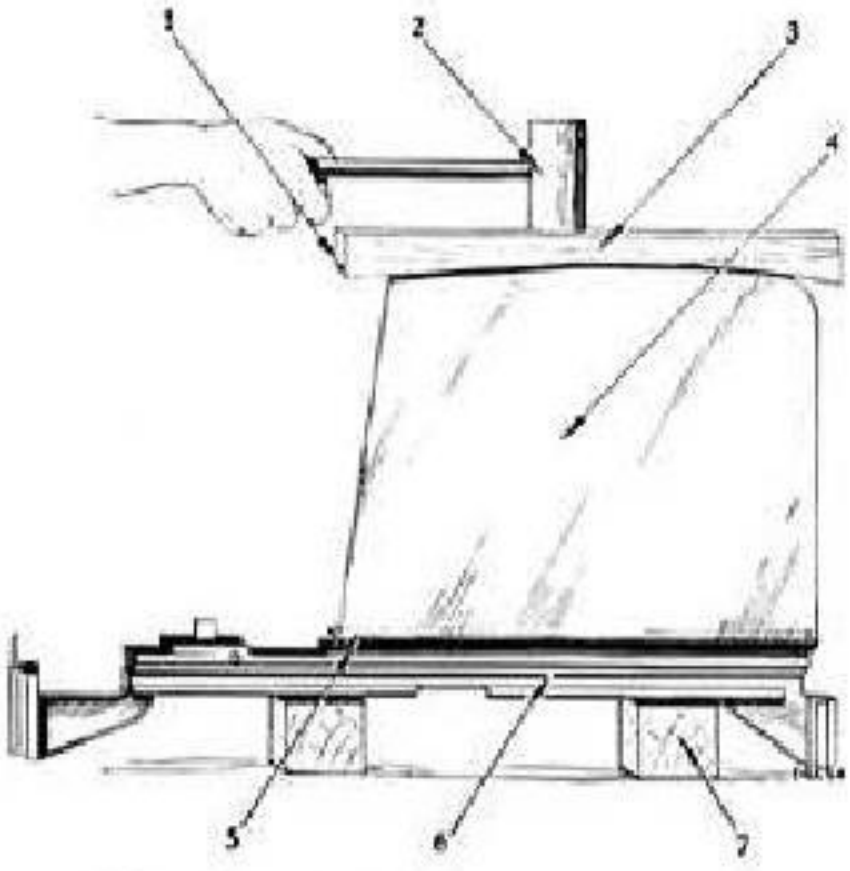


FIG. 20—Assembling Door Glass to Lower Channel

CAUTION

It must be borne in mind that solder does not add strength to the body panel, but merely acts as a filler to form a smooth base upon which to apply paint. All soldering flux must be removed from the area of the repair before refinishing. It is advisable to wash the surface to be refinished after soldering with a solution of bicarbonate of soda and water to neutralize any acid which may be present on the surface of the metal.

METAL BUMPING

Metal bumping is an art which can be mastered by any mechanic with a complete set of body bumping tools, a working knowledge of their application and a little practice. There are several good makes of tools of this nature on the market which can be purchased very reasonably and included with each set are detailed instructions for the use of each individual tool. By carefully reading these instructions, the mechanic can obtain the necessary ground work to permit him to satisfactorily repair minor damage to sheet metal parts and with a few months practice should be able to handle the most difficult repair.

A few suggestions which will prove of value to novice and expert alike in repairing Airflow bodies follow:

1. Study the damaged panel and select the tool designed specifically for the job at hand. The surface of the dolly block selected must have the same contour as the metal to be smoothed out.
2. Lubricate the painted surface with light oil to protect the finish and clean the underneath side of the panel or fender before placing a dolly block against it.
3. Do not strike panels with a heavy hammer. Use as light a hammer and as light sharp blows as possible.
4. Before starting the metal bumping job locate the point on the sheet metal panel where the strain is the greatest. By straightening this point first the strain on surrounding panels will be eliminated, greatly simplifying the removal of the metal buckles.
5. Do not attempt to straighten the center of the damaged panel first. Avoid stretching by working from the outer edges of the ding towards the center.
6. To raise a low spot guard against stretching the metal by placing the anvil face of a spoon over the low spot striking the inside of the spoon with a hammer.

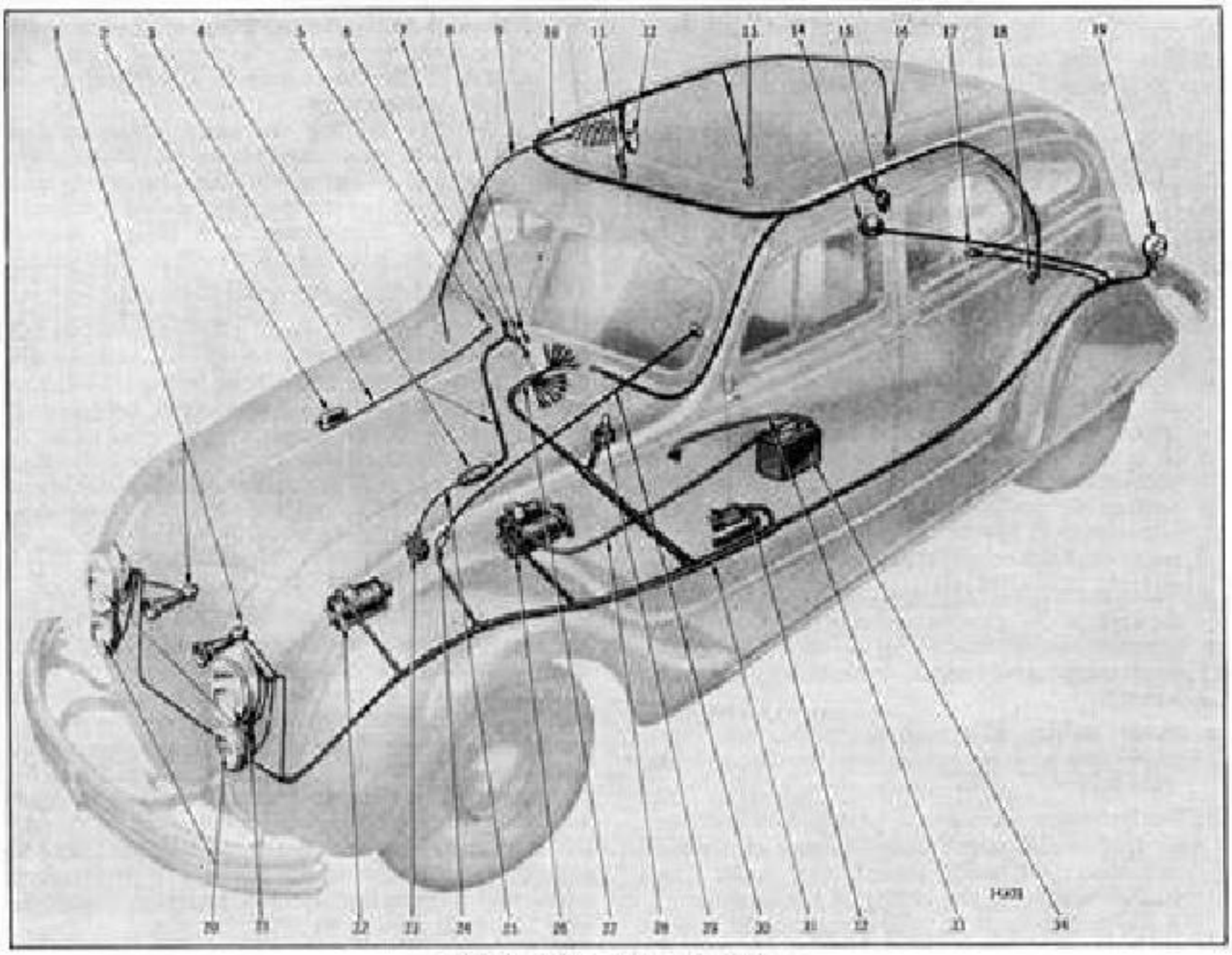


FIG. 27—Wiring of Electrical System

1—Horn assemblies
2—Automatic choke assembly
3—Automatic choke to switch cable assembly
4—Ignition coil and lock cable assembly
5—Automatic choke switch assembly
6—Ignition coil lock cylinder
7—Fuel gauge feed cable
8—Ignition switch feed cable
9—Radio aterma lead in cable assembly
10—Body wiring assembly
11—Reading lamp switch
12—Reading lamp assembly
13—Door switch assembly
14—Tail and signal lamp assembly—right
15—Reading lamp assembly
16—Rear compartment lamp
17—Fuel gauge (tank unit)
18—Door switch assembly
19—Tail and signal lamp assembly—left
20—Headlamp assemblies (parking lamps)
21—Headlamp assemblies
22—Generator and relay assembly
23—Ignition distributor assembly
24—Connector
25—Coil primary and secondary cable assemblies and housing
26—Starter motor and solenoid assembly
27—Chassis wiring assembly
28—Battery to starter motor cable assembly
29—Foot dimmer switch assembly
30—Horn button cable assembly
31—Chassis wiring assembly
32—Stop lamp switch assembly
33—Battery to ground cable assembly
34—Battery

7. A canvas glove should be worn to "feel" the accuracy of the metal surface.
8. In roughing out body panels, press the bump out by prying with a spoon on the deepest part of the indentation, spring hammering the outside of the panel with a rawhide or lignum vitae mallet.
9. Smooth the job out with a hammer, spoon or dolly. Do not file down high spots; either spring hammer them down or use hot shrinkage.
10. Small dings or depressions may be removed by holding a dolly block against the high point of the ding, paddling the low side with a heavy mill file or hammer.
11. Where an inside panel prevents using the dolly block or hammer, drill a hole through the inner panel and raise the ding with a lifter.
12. Where it is impossible to get at the other side of the damaged panel from the back, drill a hole through the outer panel and insert a hook, pulling the low spot out to the contour of the body, torch soldering the hole after completion of the job.
13. In extremely inaccessible places such as around the top of the body door hinge or door lock pillar, outer door panels, etc. it may become necessary to cut out portions of the post or inner panel, with a torch, to provide sufficient clearance for shrinking, metal bumping or straightening.
14. Chrome plated parts may be straightened by using a solid mallet or very light hammer. Do not strike the chromium plated surface but work from the opposite side of the metal.

15. A square faced hammer with a very slight convex surface will be found to provide the easiest method of removing small depressions such as hammer marks, etc. when finishing up the metal bumping job. A convex surface when applied to the metal with light sharp blows has what might be termed "power hammer drawing power" requiring much less effort on the part of the operator to obtain a smooth even surface without unnecessary filing or soldering to smooth it up for refinishing.

16. Difficulty might be experienced when removing deep indentations in the body metal around the narrow part of the cowl panel at the extreme front of the body.

    The ease with which the metal will respond to bumping will be greatly facilitated if the inner cowl panel (1, Fig. 1) is detached at the top from the outer panel and rewelded back into place after the repair has been completed.

REFINISHING

It is practically impossible to bump out a body panel without the necessity of partially refinishing the damaged spot. It is therefore, as important for the body mechanic to understand refinishing and have a spray finishing outfit available as it is to have body bumping tools and be able to use them.

Complete instructions for partial or complete refinishing is a subject which should be treated in a book by itself, consequently only a resumé of the more important steps involved in repainting an automobile body will be given in this Body Service Manual. Automobile lacquer manufacturers issue very complete treatises on this most important subject all of which contain detailed instructions for preparing the car for refinishing, spraying, masking, striping, rubbing out, polishing and touching up.

A few suggestions which will prove beneficial when refinishing follow:

1. Before repainting any surface make sure it is absolutely free from all dirt, grease or wax. Unless the old surface is to be completely removed, wash the portion to be sprayed on an automobile that has been waxed with turpentine or similar wax solvent.
2. Where the old surface is to be completely removed it is advisable to use a paint and varnish remover. The virgin metal, after stripping with varnish remover, must be rubbed down with steel wool dipped in high test gasoline, turpentine, etc. to remove the wax in all such preparations before spraying.
3. The surface must be given a final cleaning with a waterproof abrasive dipped in gasoline.
4. Rust spots must be sanded out or removed with a deoxidizing agent.
5. For partial refinishing and touch-up work, a matching cabinet, containing the sixteen basic colors and formulae for mixing them to obtain any desired shade or tint, will be indispensable.
6. It is extremely difficult to refinish a spot on a polychromatic or opalescent painted panel. It is suggested that entire panels only, be repainted.

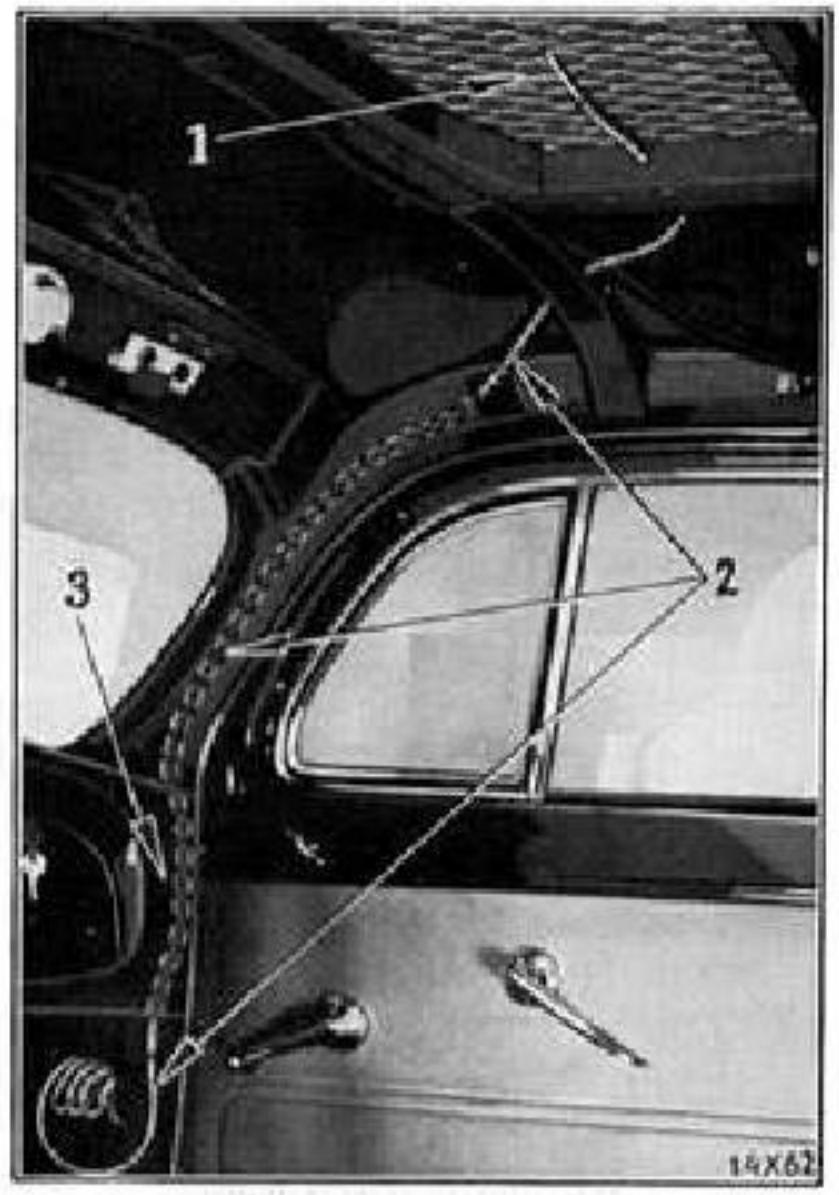


FIG. 28—Antenna and Lead-In

1—Roof screen (antenna) 2—Antenna lead-in wire 3—Instrument panel

BODY WIRING

All Airflow body wiring is carried in heavy insulating looms through the box-like body rails and in clips across the top deck framework. The relative positions of these cables are shown in Fig. 27.

For purposes of identification, all individual wires are enclosed in a colored braid, the color scheme prevailing throughout the entire length of each wire.

The various leads terminate at a point behind the instrument panel in the vicinity of the ammeter fuse block and gasoline gauge, to which they are connected.

The rear compartment light (14, Fig. 27) is operated by the reading lamp switch (9, Fig. 27), being connected into the same electrical circuit.

The antenna lead-in wire (2, Fig. 28) is soldered at one end to the roof screen (antenna) (1, Fig. 28); the other being coiled up behind the right cowl kick pad, unless the vehicle is equipped with a radio, as special equipment, in which case it is connected directly to the antenna binding post on

the receiver. This wire is concealed under the windshield header trim panel, passing down behind the instrument panel (3, Fig. 28) through the front pillar rail (6, Fig. 1).

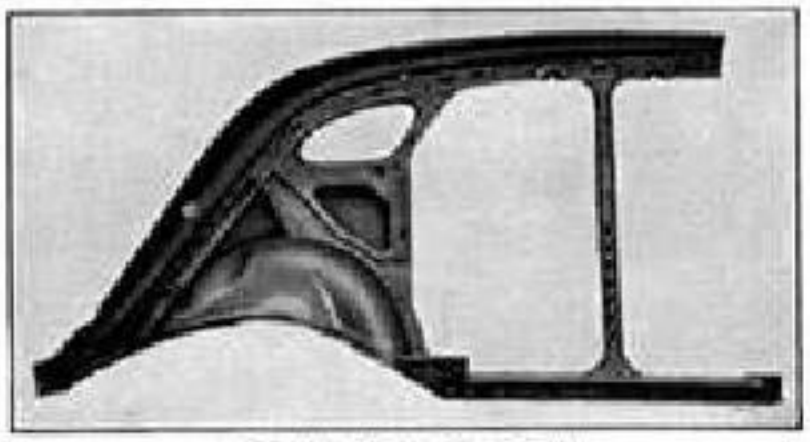


FIG. 29—Body Side Panel (Inside View)

BODY SECTIONS

Various complete body sections, including all rails, braces, pillars and reinforcements are serviced by the Chrysler Motors Parts Corporation for replacement purposes as an assembly where the damage is so extensive that replacement of individual pieces, as designated in Figure 1, would be inadvisable.



FIG. 30—Body Front Section

Figures 29, 30, 31, 32 and 33 illustrate those body sections obtainable from the Chrysler Motors Parts Corporation. When ordering, be sure to specify whether right or left side is desired (unless the front or rear section is ordered) and in all cases specify body number, body type and serial number.

Suggestions for cutting out the damaged section and welding in the replacement will be found on page 18, "Welding and Soldering."

When ordering the Body Front Section (Fig. 30), or Body Side Panel (Fig. 29), be sure to include in the order a front door header rail reinforcement



FIG. 32—Body Rear Panel (Inside View)

(11, Fig. 1). This reinforcement will be destroyed when cutting out the damaged section and a new one is not included with either one of these panels since its purpose is to tie the front section to the side section.

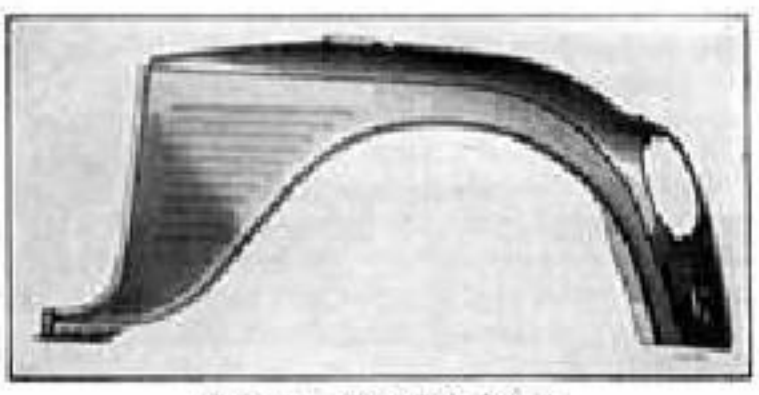


FIG. 31—Cowl Side Panel (Inside View)

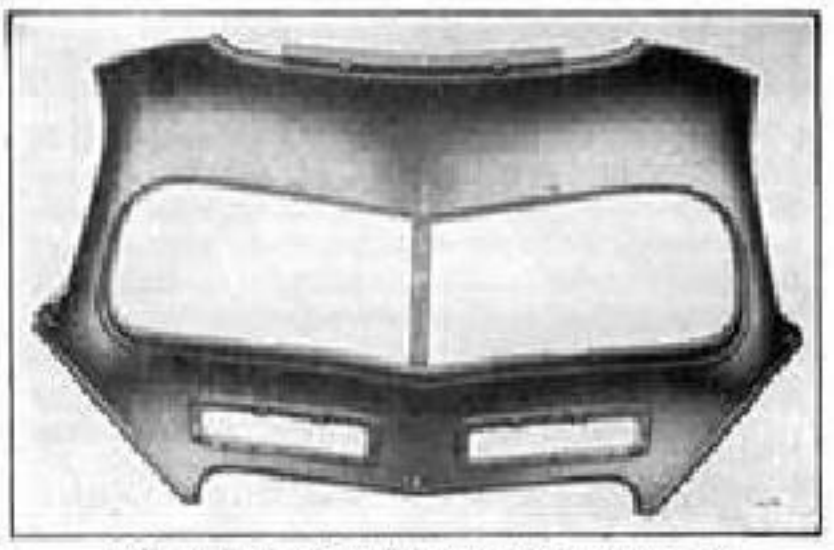


FIG. 33—Front End Windshield Cover Assembly (Inside View)

When welding a new section in place, align the body perfectly and clamp the lower sills in as many places as possible to lower body frame or a level table with "C" clamps. Instructions for aligning body appear on page 4.

Instructions for Ordering Body Parts

BY AUTHORIZED DEALERS

ALL body parts should be ordered from the Chrysler Motors Parts Corporation. Consult parts books for correct names and part numbers. These parts should be ordered on the standard parts order form No. 4615 (part No. D-134), which is supplied gratis upon request by the Chrysler Motors Parts Corporation. Instructions for the use of this form will be found printed on same.

Please give car serial number and body number when ordering trim or top material, and if possible, submit a sample of the material to be matched. Orders for trim or upholstery fasteners should be accompanied by samples, if possible.

It is also necessary to give car serial number and body number when ordering painted parts.

BY SERVICE STATIONS, GARAGES, ETC.

It has been found impracticable to provide other than our authorized dealers with copies of body parts books or catalogs which will be complete and up-to-date at all times. Therefore, it is requested that all orders and inquiries for body parts be referred to an authorized dealer or a parts Depot of the Chrysler Motors Parts Corporation.

When ordering body parts from your dealer, be sure to give the model, car number and description of the parts required, or deliver to your dealer the old parts for duplication.

Orders for body cloth, upholstery, etc., should be accompanied by a sample. Describe the trim and also state the part of the body on which it is to be used. If unable to identify a part, describe it fully or supply a sketch to the dealer.

All matters relating to claims or returned parts should be handled through the dealer located in your vicinity.

The Chrysler Sales Corporation reserves the right to make changes in design or to make additions to or improvements in its product without imposing any obligation upon itself to install them on its product previously manufactured.