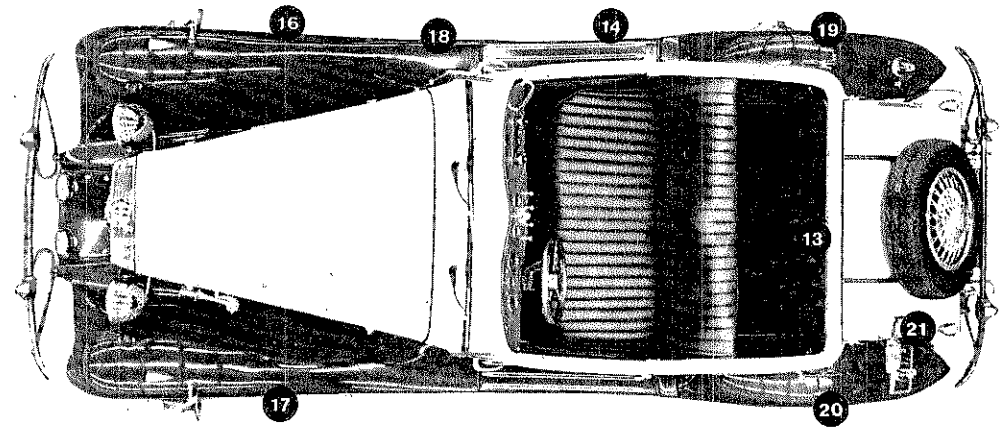
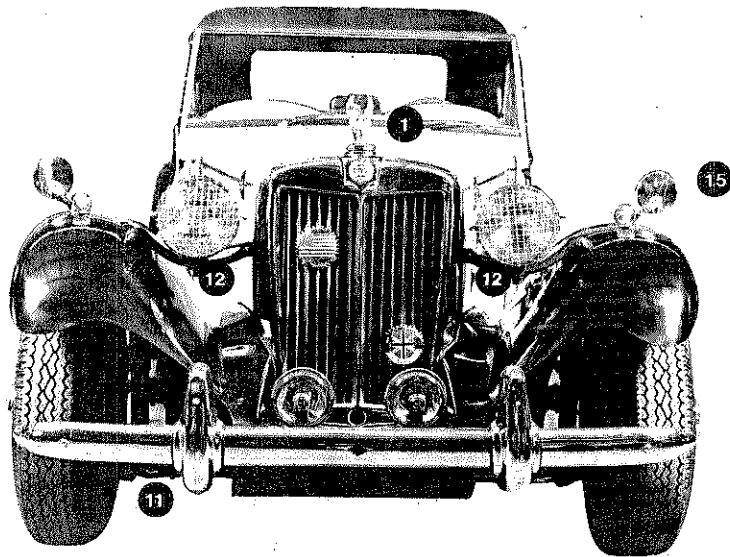
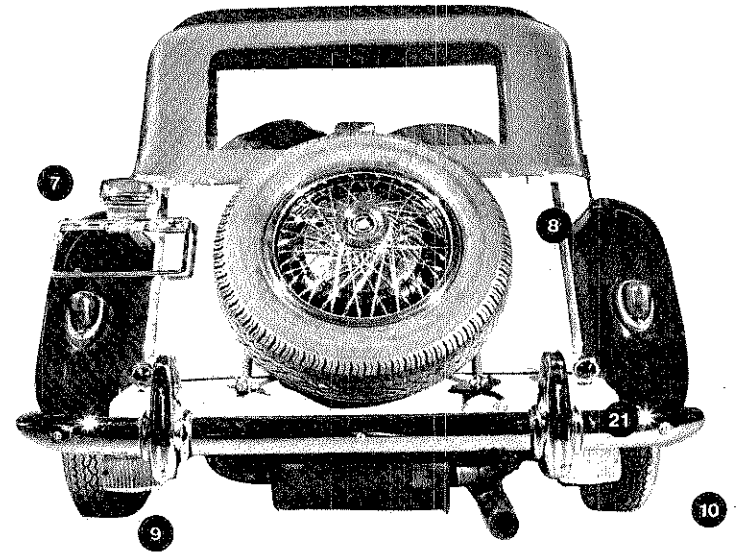
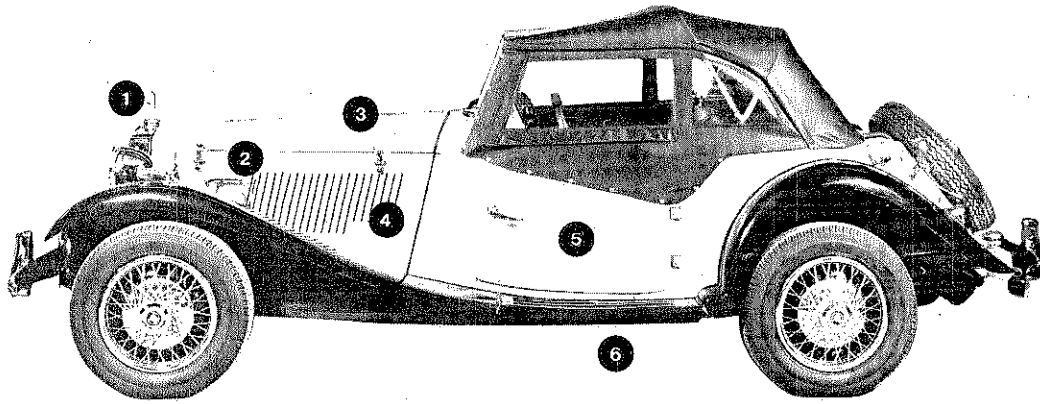


# Part Identification



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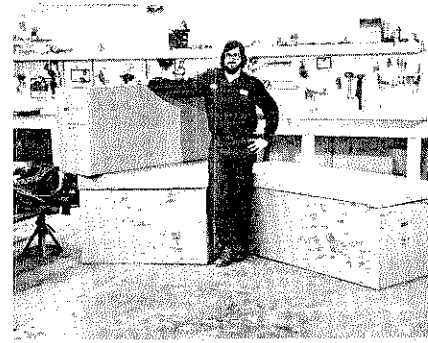
## Parts Identification

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- 1 — Gas Cap
- 2 — Dual Chrome Air Horns
- 3 — Hood
- 4 — Front Side Panel
- 5 — Left Door
- 6 — Running Boards
- 7 — License Bracket with Light
- 8 — Engine Cover
- 9 — Bumper Overriders
- 10 — Rear Bumper
- 11 — Front Bumper
- 12 — Headlight Cradles
- 13 — Rear Tie-in Section
- 14 — Right Door
- 15 — Fender Mirrors
- 16 — Right Front Fender
- 17 — Left Front Fender
- 18 — Antenna
- 19 — Right Rear Fender
- 20 — Left Rear Fender
- 21 — Rear Subframe Cover

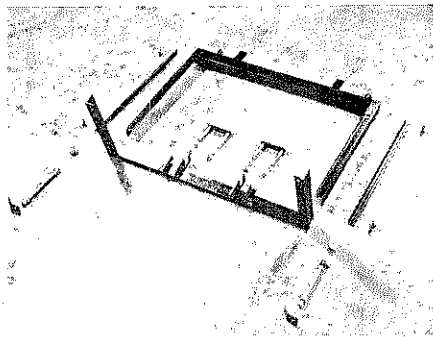
(Note: see packing lists on individual boxes for exact part location.)

owner's photo



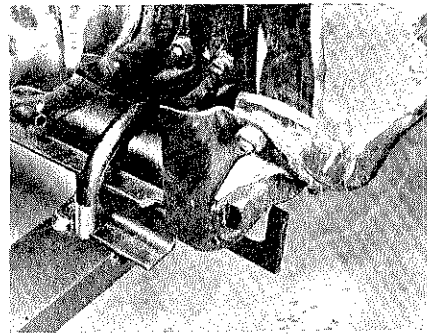
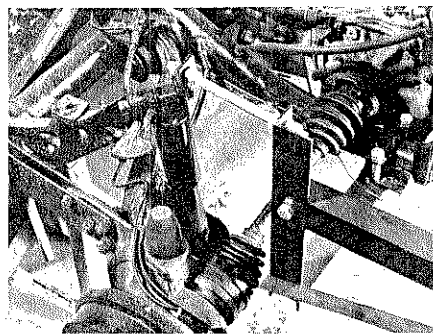
Prior to opening the Duchess boxes, make sure that the chassis is totally complete. We recommend a minimum of 4' clear around all sides of the chassis. The remaining area in your garage should be cleaned and clear of all obstruction leaving at least 8' x 16' free space to work. The work bench should be on one end and the Duchess boxes on the other end of the free space.

(Note: Use lock washers and nuts in all locations, except where locktite is specifically noted. Use flat washers whenever appropriate.)



## 1. ASSEMBLE REAR SUBFRAME. 15 min.

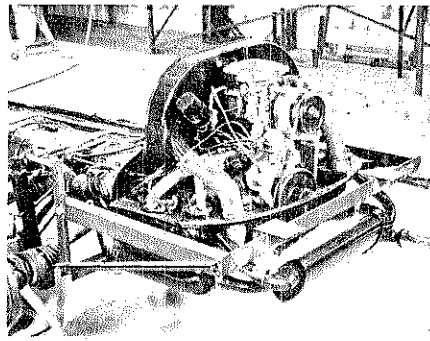
Open Box 2 of 100X and remove the steel sub box. Remove the steel for the subframe and lay out all parts. Assemble the horizontal member to the vertical member with  $\frac{1}{2}$ " x 1" hex head bolts. Complete the subframe triangulation by connecting an angle iron brace to each side of the subassembly with  $\frac{5}{16}$ " x 1" spin lock. Make sure you measure a 90° angle between the vertical and horizontal members of the subframe.



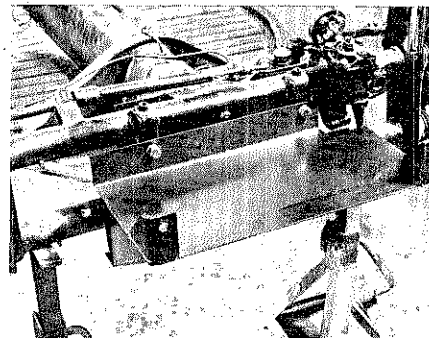
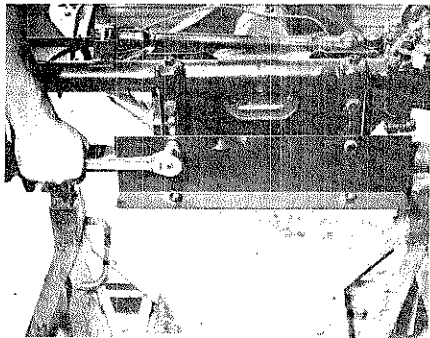
## 2. MOUNT REAR SUBFRAME. 30 min.

Remove the top bolt from the shock tower and install an adjuster tab to the shock tower on each side. Install mechanical adjuster (threaded rod) through the adjuster tabs, with lock washer and nut on each side of the tabs.

Place the subframe in place with special "U" shaped locator catching the back end of the transmission mount. Insert "U" bolts over the engine mounting legs and through the bottom channel of the rear subframe. Secure, using lock washers, locktite, and nuts. Torque nuts evenly. Install nuts and lock washers on each side of the mechanical adjusters where they fasten to the vertical member of the subframe.



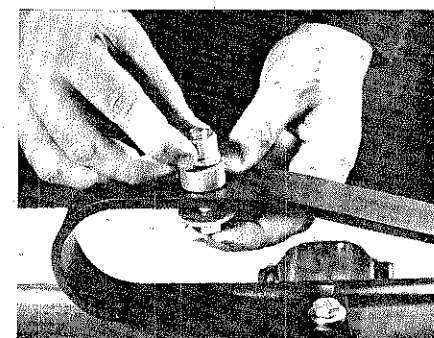
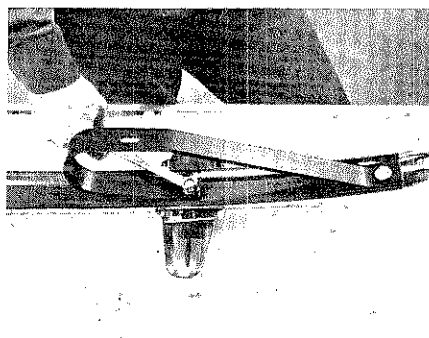
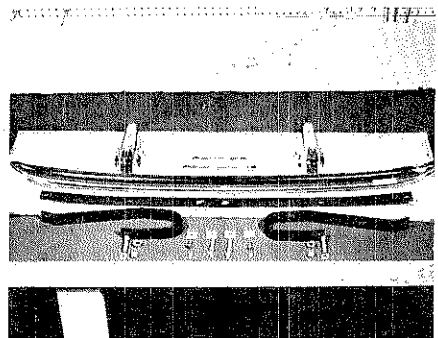
Tighten the nuts on the forward end of the mechanical adjuster very tight. Level the subframe with the rear nuts but leave the rear nuts on the adjuster loose until the body is mounted.



### 3. INSTALL FRONT BUMPER SUPPORT. 15 min.

Take the bolts out of the support, separate the two pieces. Remove the bottom two bolts of the four which mount the front torsion tubes to the chassis. Install the bottom member of the support by reinstalling the bottom torsion tube bolts and torque securely.

Remove the top two torsion tube mounting bolts. Insert these bolts into the top member of the bumper support and install loosely to the torsion tubes. Secure the top support section to the bottom section with the bolts previously removed. Tighten securely. Torque the top torsion tube mounting bolts.



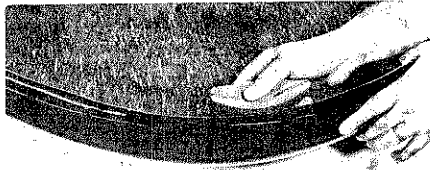
### 4. ASSEMBLE FRONT AND REAR BUMPER SUBASSEMBLIES.

Lay out pieces for the front bumper subassembly. Lay four aluminum round/flat spacers into the bumper face. Lay in the flat reinforcement bar (with center hole). Install chrome bolts in the outside holes, through the spring steel member, (note: front and rear springs are different, they will not fit if reversed) and secure with lock washers and nuts. Install the hex head

bolt through the remaining holes in the bumper and through the hole in the spring member. Place rubber extrusions on each side of the bumper overrides and slip the override onto the hex bolt head. Secure with lock washer and nut. Place the body mounting bolt, spacer, and nut into the bumper spring and set the entire assembly aside. Assemble rear bumper using the same procedure.

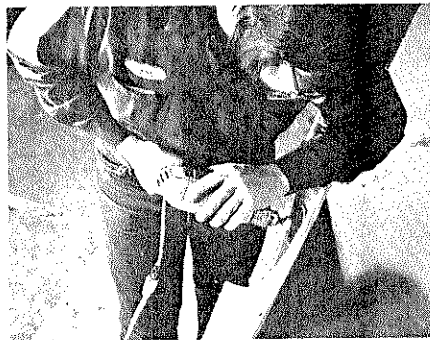
20 min. per

# Assembly

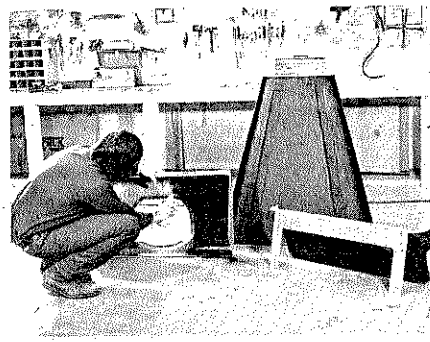


## 5. PREPARE GLASS PARTS. 2 hrs.

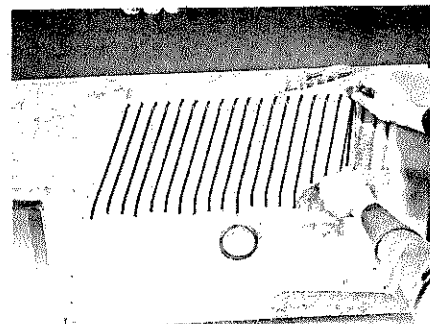
- (A) Sand all outer edges of both front and rear fenders, and the running board so that the edge is visually clean and smooth to the touch. (Use flat and round surfaced sanding block, be careful on contours to retain the curvature.)
- (B) Repeat the sanding procedure with all edges of the rear subframe cover.
- (C) Sand all edges of the engine cover.
- (D) Sand all exposed edges of the rear tie-in.



- (E) With the hood on a soft surface, carefully grind and remove the front and rear flanges from the hood. (Note: It is very important not to gouge the finished edges of the hood. You may desire to hand file the sharp radius to insure a neat edge.) File from the finished surface toward the unfinished surface or you may chip the edge.
- (F) Check and sand the top/inner edges of the rear side panel to insure that the inner liner surface and the outer panel edge are flush for neat upholstery installation. Not until the rear tie-in is installed will you be able to complete the glass edges, prior to installing the upholstery.



- (G) Paint the inside of the engine cover, hood, and rear tie-in with flat black paint.

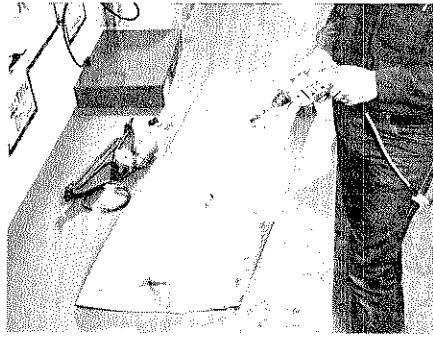


- (H) Place the front side panels on a bench. Clean the louvre surface with acetone so that the louvre tape will stick. Install the tape on the backside of each louvre opening. You will find installation easier if you leave about  $\frac{1}{2}$ " extra tape on each end of the louvre.

Place a straight edge across the louvre tops and bottoms, mark a line with a grease pencil.

Use a razor blade knife and cut the extra tape away on a curved line to simulate an actual louvre cut.

# Assembly

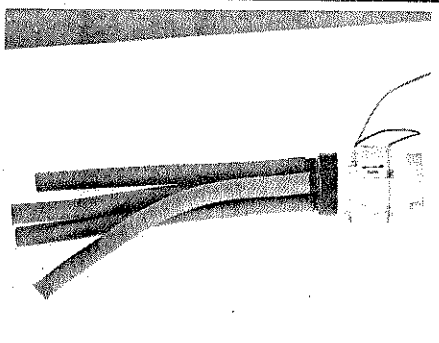
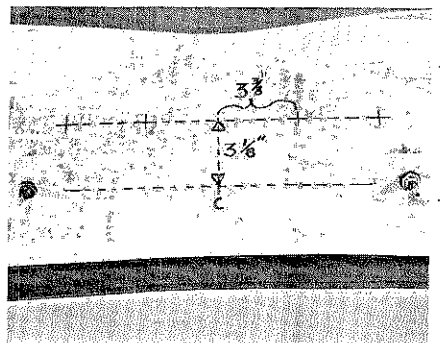
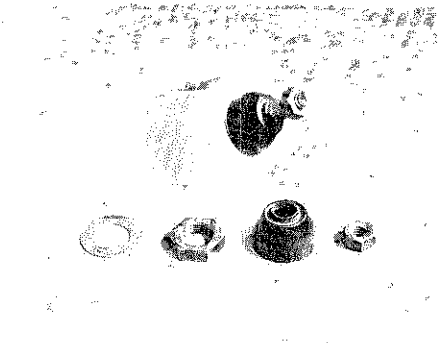
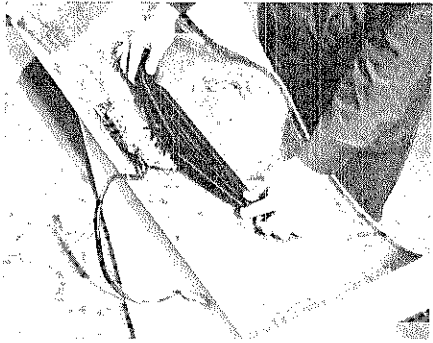


## 6. INSTALL WIPER MOTOR, DEFROSTER PORTS AND MIRROR HOLES IN DASH COWL 30 min.

Locate the countersunk reference bobs on the dash cowl. Drill a  $\frac{1}{4}$ " pilot hole through each reference bob. Using your tapered rotary rasp, enlarge each hole until the wiper assembly slides snugly into position. Fasten motor securely to the dash cowl with VW fastening hardware. (Note: Make sure rubber grommets make a good seal with the fiberglass or use a small amount of clear silicone to complete the seal.)

Per picture, drill the four 1" defroster port holes. (Note: firmly mark the glass with a sharp scribe before drilling.) Push the ports in with left louvres pointing  $45^\circ$  left and right louvres pointing  $45^\circ$  right.

Place dash mirror in position  $2\frac{1}{2}$ " back from the dash face and precisely in the middle. Mark holes and drill. Mirror will be installed after the windshield is secured.



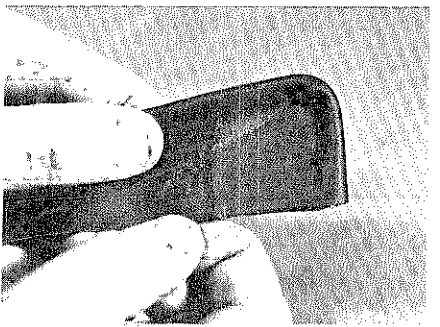
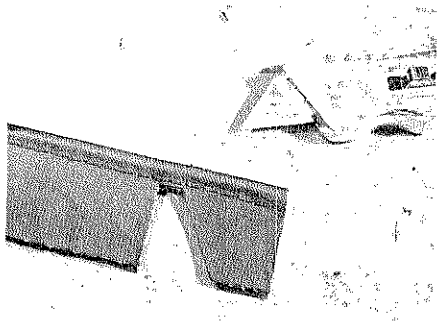
## 7. CUT WELTING. 20 min.

Find a roll of welting in Box 3. (i.e., a cord sewn into a piece of top fabric with approximately a 1" flange remaining after the cord stitch.) Cut two 26" lengths of this welting free from the roll. Two inches from the end of this welting, cut out a "V" and using Fast Tac adhesive, form a square corner. Set the welting piece against the rear end of a front side panel to insure that the welting fits neatly. (Note: Be careful when making welting cuts not to cut the cord stitch.)

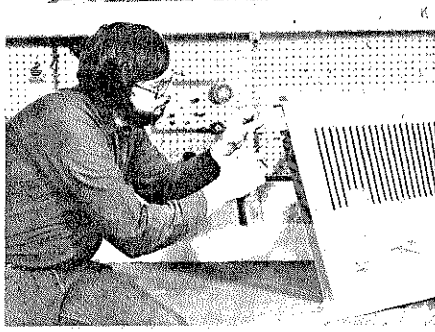
Also cut two pieces of welting 14" long to repeat the previous procedure for the front end of the front side panels in a later step. Measure back 2" from an end and cut the same "V" from the fabric.

Cut two additional pieces of welting 9 ft. long to be eventually attached to the combination running board/front fender after their subassembly, prior to final assembly.

Also cut two pieces of welting  $5\frac{1}{2}$  ft. long to be attached to the perimeter curvature of the rear fender wells.



# Assembly



## 8. GLUE SURFACES FOR WELTING AND APPLY WELTING. 1 hr.

Run a  $\frac{1}{8}$ " bead of Fast Tac around the perimeter of the rear end of the left and right front side panels. Apply the adhesive  $\frac{1}{8}$ " in from the outside surface of the panel. Using a disposable piece of cardboard, spread the adhesive away from the outside surface. Set aside to dry five minutes or until tacky.

(Note: At any time a previously glued surface should start to set up, stop gluing and apply welting to the surface before it dries.)

Apply Fast Tac around the dash cowl welting surface, and on each end of the running boards. Also apply Fast Tac around the rear fender wells in the rear side panels. Stop gluing just above the torsion tube access radius.

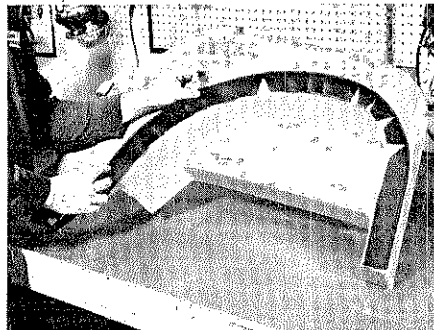
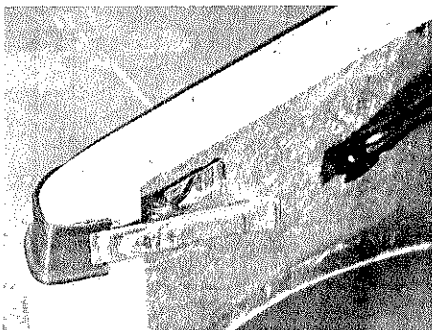
(Note: Keep adhesive at least  $\frac{1}{8}$ " away from the outside surface to eliminate the chance of getting adhesive on the exposed welting.)



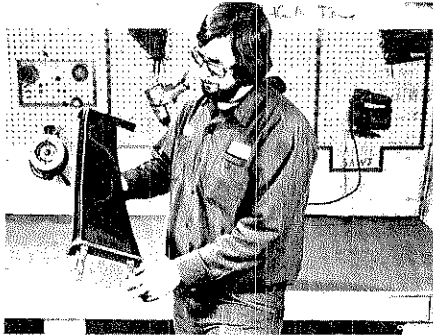
## 9. APPLY WELTING.

Prior to the Fast Tac setting up, (still tacky) apply welting to the rear of the front side panels. (Note: It is very important to keep the welting in tight to the leading edge of the side panels so that when front and rear side panels are attached there remains a tight, neat welting line.)

Locate a curved end welting piece, approximately 44" long. Starting at the middle and working to each end, attach welting to the dash cowl folding the remaining ends on each side under the dash cowl. Install welting around rear fender wells.

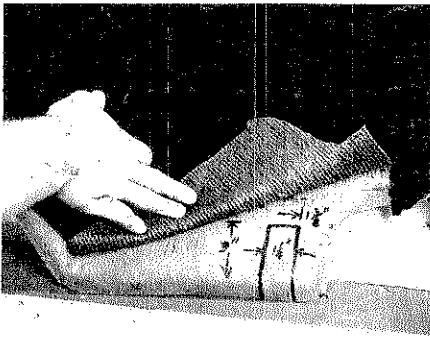


# Assembly



## 10. APPLY RUBBER EXTRUSION. 5 min.

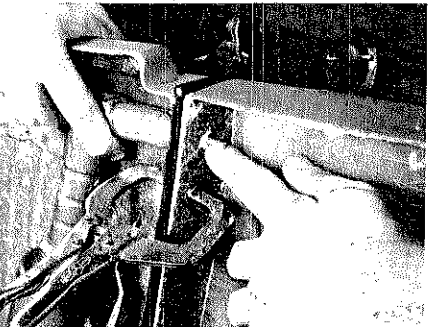
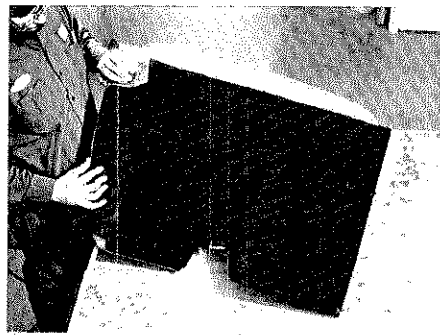
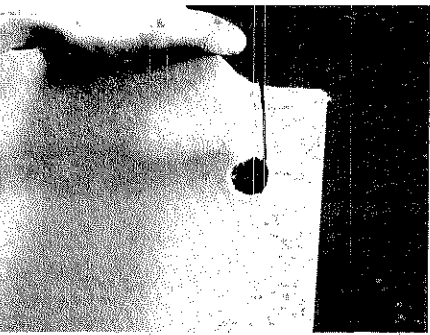
Attach rubber running board extrusions to each end of both left and right running boards. Be sure that each rubber extrusion is pushed tight against the top surface of the running boards. When the adhesive has had time to set up, use a razor blade knife to remove the extrusion end that may hang over the running board. (Note: Place a piece of welting against the running boards to determine what length to cut the extrusion to have a neat fit with the welting.)



## 11. PREPARE FIRE WALL AND CARPET. 30 min.

Using your sabre saw, cut access for the brake rod per picture dimensions. On the driver's side, drill a 1" hole for the wiring harness, and slit both sides for flexibility when installing the dash cowl.

Apply a coat of Fast Tac adhesive to the passenger side of the fire wall. Attach and trim fire wall carpet to fit. Do not secure carpet firmly to the outer two inches of the fire wall sides as the fire wall will mate up to the side panel flanges at this point.



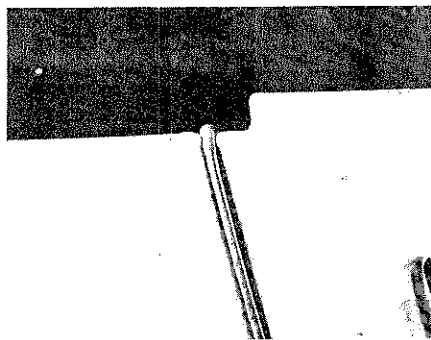
## 12. ATTACH THE FRONT SIDE PANEL TO THE REAR SIDE PANEL. 25 min. per side

Set the front side panel on the chassis and slide it back until the front flange stops against the tunnel frame. Holding the left side panel firmly against the chassis, use two vise grip 11R type clamps and clamp the front side panel to the chassis.

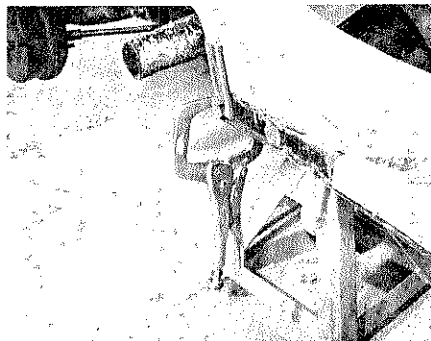
Set the left rear side panel on the chassis and fit it up snugly to the front side panel. Using two vise grip "C" clamps, clamp the front side panel to the rear at the mating flange.



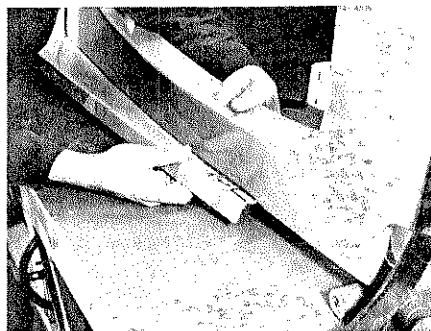
# Assembly



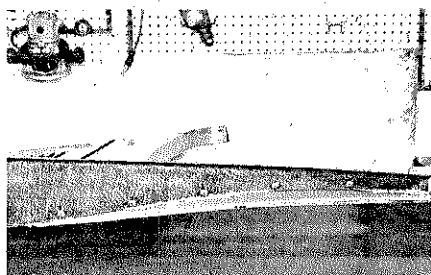
Line up both top edge surfaces and vertical side surfaces. Drill a  $13/64''$  hole through the double flange connection approximately  $2''$  down from the top edge and  $2''$  up from the chassis. Insert from the front towards the back a  $3/16'' \times 1''$  long steel rivet and fasten both top and bottom together. (Use a  $3/16''$  flat washer on the backside of the rivet.)



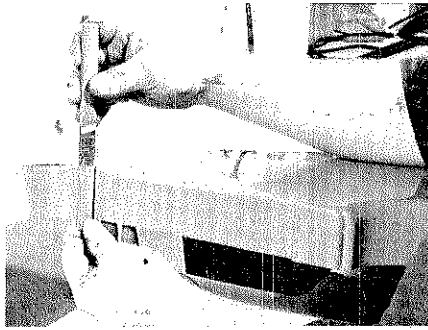
Just forward of the rear torsion tube, clamp a piece of flat bar to the pan, holding the rear side panel flush with the outer edge of the pan. Push the trailing pan cover section of the front side panel tight against the pan and under the rear side panel.



Mark the pan cover with a magic marker at the mating line with the rear side panel. This mark is usually  $1/2''$  from the outside edge of the pan cover.



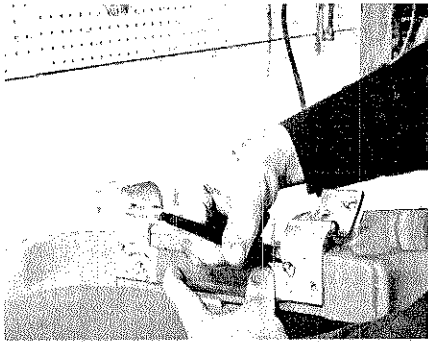
Remove the side panel subassembly from the chassis and lay on your bench. Holding the front side panel pan cover in place relative to the rear side panel drill a  $13/64''$  hole through the bottom of the pan cover and up into the rear side panel bottom. Insert a  $3/16''$  rivet and secure. Repeat every  $6''$  until the pan cover is fully secured to the rear side panel.  
Complete the right side panels in the same manner as the left.



### 13. INSTALL DOOR HINGES TO REAR SIDE PANELS. 25 min. per side

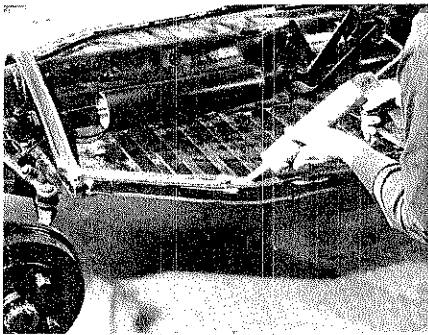
Use a sharp file to level the surface where the hinge will mount to the jamb. Square off the fiberglass in the corner of the upper hinge stop to allow the hinge to fit as tight as possible against the top stop.

Lay your square on the outside surface of the rear side panel, measure in  $\frac{3}{8}$ " and mark the jamb. Draw a straight line between the hinge stop per your mark. Set your hinge in place with the outer edge of the center bar (bar between hinges) in line with your marked line. Slide the hinge up to the hinge stop where you have previously filed a square corner.



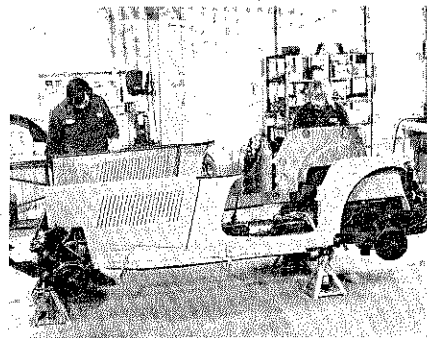
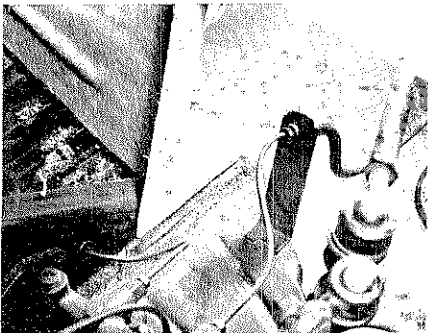
Mark one of the holes both top and bottom. Drill out the holes with a  $\frac{1}{4}$ " bit. (Leave one of the holes, both top and bottom, undrilled in the event you wish to adjust the hinge. When you are sure no further adjustment is required, then the other holes will be drilled.) Secure both top and bottom with a  $\frac{1}{4}$ " x  $1\frac{1}{2}$ " flat head slot drive bolt, flat washer, locktite and nut. (Note: If there is a gap between the side panel inner liner and outer liner at the hinge mount, the gap must be filled with a rigid material, i.e., fiberglass resin or a metal spacer. If the space is not filled, the door jamb will distort when the hinge bolts are tightened.)

Complete all the previous steps with the right side panel.



### 14. BODY TO CHASSIS GASKET PREPARATION. 20 min.

Check the chassis gasket for damage. If in good shape and firmly fastened to the chassis proceed with the caulking. If the chassis gasket is damaged or missing, repair with a heavy amount of butyl or silicon caulk, replace with high density foam or with a new rubber extrusion. (At your discretion you may run a bead underneath the gasket and on top.) Run a heavy bead of caulk on the top of the gasket around the entire perimeter of the pan.



### 15. MOUNT SIDE PANEL SUBASSEMBLIES. 10 min.

Set the side panels on the chassis and slide the assembly back to the pan stops and in as far as possible. Clamp the side panel pan cover to the pan edge with several "C" clamps.

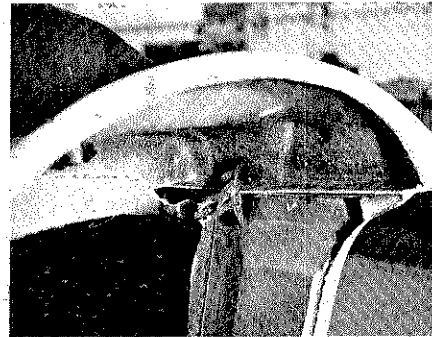
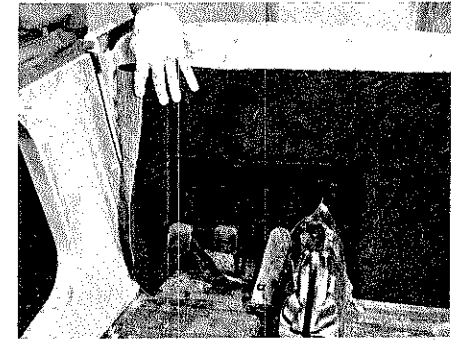
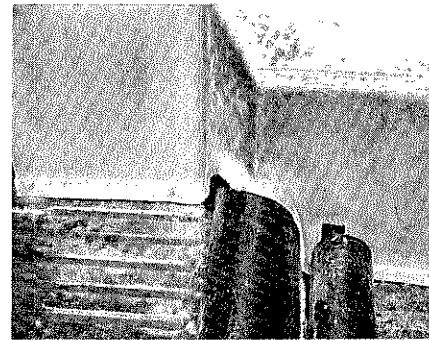
# Assembly

owner's photo

## 16. INSTALL THE FIRE WALL. 30 min.

Place the fire wall between the side panel subassemblies in front of the rear flange of the front side panels.

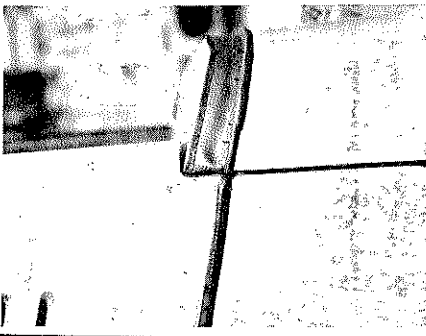
Push the fire wall against the rear flange of the front side panels and down against the center of chassis tunnel. While holding the fire wall in place, drill  $13/64$ " holes into the bottom flange of the fire wall through the top of the chassis tunnel, and into the pan on both sides of the tunnel. Insert  $3/16$ " x 1" steel rivets up from below the pan, then fasten securely with a washer. We will secure the fire wall to the side panels and dash cowl in a later segment. (Make sure the carpet is not caught between the side panels and the fire wall.)



## 17. INSTALL THE DASH COWL. 20 min.

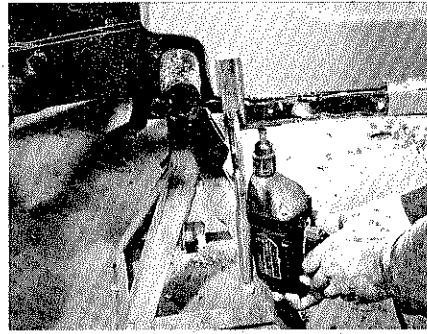
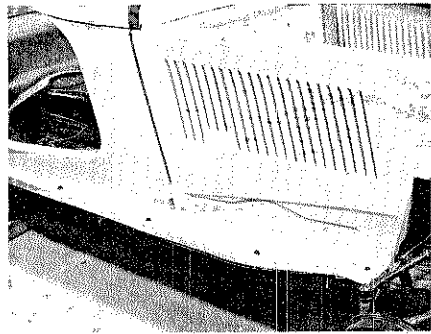
Place a piece of rubber weather strip adhesive ( $1/4$ " thick) on the top surface of the dash cowl ledge. Caulk the inside edge of the weather strip for additional water tightness.

Place the front of the dash cowl over the top edge of the fire wall. Make sure that the welting is tucked tightly underneath the edge of the cowl and push the cowl down. Start on the left side and line up the mating lines. (Note: The rear end of the dash cowl will generally overlap the rear side panel by approximately  $1/16$ " at the front and  $1/4$ " at the rear.)



With one side in place, use 7R vise grip type "C" clamp to secure the inside flange of the dash cowl to the rear side panel top front flange. (Keep clamp far enough back from the front edge to leave room to drill a  $5/16$ " hole in the front of the flange.) Repeat procedure for the left side.

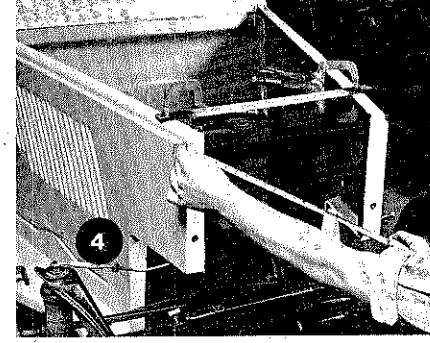
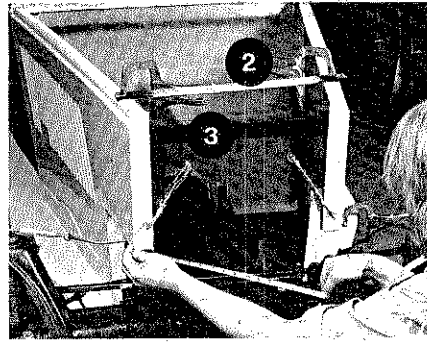
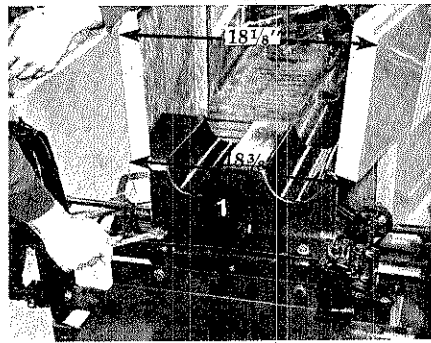
# Assembly



## 18. SECURE THE SIDE PANEL SUBASSEMBLIES TO THE PAN. 35 min.

Using the VW body mounting holes in the pan as a guide, drill  $5/16''$  holes from below. Start with the far forward hole, second one in, and drill every other hole, until you have drilled four holes on each side. In the front hole, insert a  $5/16'' \times 1\frac{1}{4}''$  spin lock bolt from the top down. Secure, using a VW body mounting washer, lock washer, and nut. Repeat the process for the remaining holes using a  $5/16'' \times 1''$  spin lock bolt and secure the same as above.

Drill the last chassis hole up into the rear side panel. Secure through the access hole in the inner liner.



## 19. INSTALL THE CORE SUPPORT AND FRONT TIE-IN. 1 hr. 35 min.

Slot the front tie-in (1) where the tie-in top may conflict with the side panel front flange. Set the front tie-in loosely in position. Temporarily clamp the headlight cradle tie-in bar (2) across the top of the front side panels. Measure  $18\frac{3}{8}''$  from the outside of the hood ledge to outside hood ledge. While holding the front tie-in tightly forward, drill through the front flange and locate with a  $1/4''$  bit the two body mount pegs. Using a rasp, center the two holes over the body mount locations. Secure the front tie-in to the body mounts with the original metric bolts from the VW, using a large flat washer on both top and bottom of the glass. (Note: The tie-in side edges may require trimming for a perfect fit.) Center the core support (3) behind the front

flanges of the front side panels with the core support legs approximately  $1/4''$  off the horizontal bottom flange. (The horizontal member of the core support should be on the top.) Clamp the leg bottom of the core support to the left flange. Measure  $18\frac{3}{8}''$  from outside bottom of the front flange to the outside bottom of the other side and clamp the right leg of the core support securely to the front side panel flange.

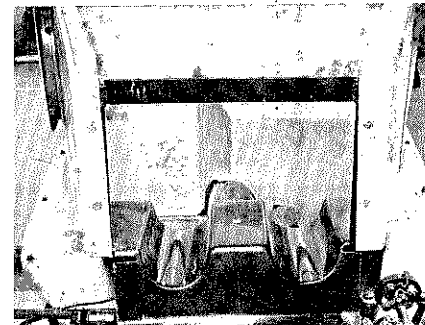
Using the two front body mount bolts as chassis reference points, measure diagonally from the left bolt to the outside bottom of the right side front flange. Compare this measurement to the measurement from the right bolt across to the left side flange. Push the front end over until you read equal distances.

Secure the front end in position, square with the chassis, by twisting wire or turnbuckle (4) between the shock tower and the bottom front flange.

Check the  $18\frac{3}{8}''$  dimension, if correct, drill through the core support at the second hole up from the bottom, each side. Insert a  $3/16''$  rivet, from the front, and secure.

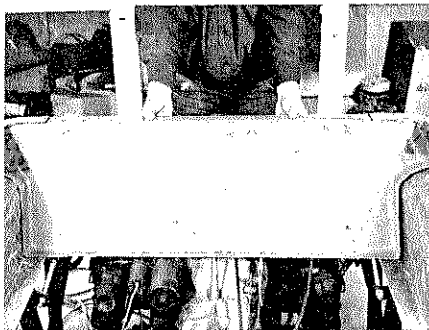
Measure diagonally from lower left side front flange to the opposite upper right side front flange. Move the top of the front end until you obtain equal diagonal measurements.

Check the squareness of the front end to the chassis, then drill the fourth hole up from the core support bottom, insert two rivets from the front, and secure.



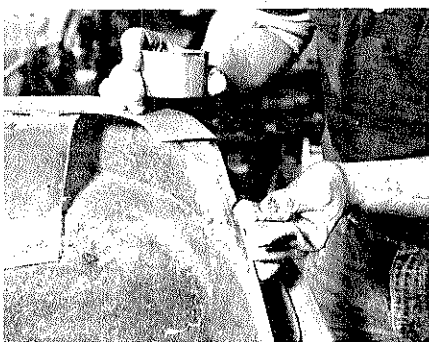
The core support is now square to the chassis and square to the front end. Push the rear of the front tie-in tightly downward; drill two  $13/64''$  holes and secure the front tie-in to the chassis with  $3/16''$  rivets. Drill a  $13/64''$  hole through the forward flange of the front tie-in, and into the front side panel flange. Insert a  $3/16''$  rivet on both sides and secure. The front end should now be square and solid.

## Assembly

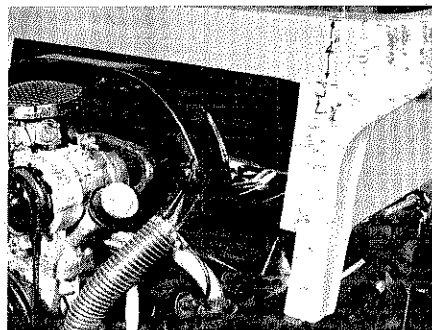
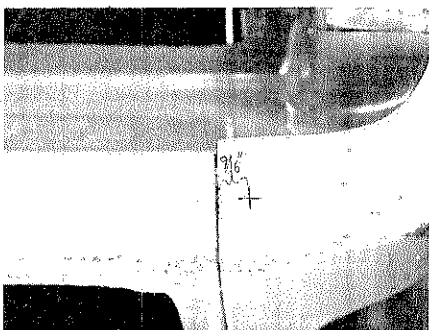


### 20. INSTALL THE REAR TIE-IN. 1 hr. 5 min.

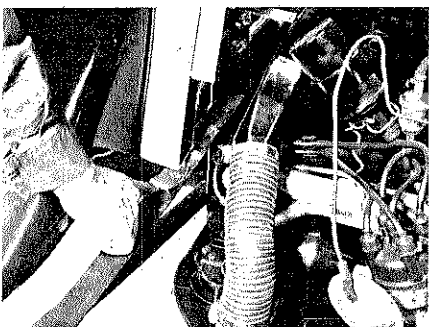
Set the rear tie-in into position under the top flange of the rear side panels and as far back as space will allow. (This step may require custom fitting as you are securing a finished surface to an unfinished surface. The glass thickness may vary, requiring grinding or sanding, especially at the fender wells, to allow the side panel to join tightly to the countersink in the rear tie-in.)



After the rear tie-in has been fit, remove the tie-in and sand and paint black, the unfinished rear side panel edge. (Note: With the rear tie-in properly fit, the boot bottom tie-in may be set in place prior to securement of the rear tie-in. The boot bottom can be installed after the rear tie-in is secured, however, you should experience a tight fit.)



Clamp the rear tie-in securely back in position, drill and install a 3/16" rivet at the center top connection point of the rear side panel and rear tie-in. Install three rivets each side, 4" below the top edge on the back surface, 1" up from the bottom edge of the rear tie-in and one midway between the previous rivets. When the rear rivets have been installed, remove the first top rivet and replace with a 1/4" x 1" carriage bolt.



### 21. ATTACH REAR SIDE PANEL LEGS TO THE SUBFRAME. 30 min.

Center the entire rear of the body relative to the subframe. Clamp a leg to the subframe using a "C" clamp. The inside of the leg should run close to the inside edge of the subframe member.

(Note: The rear subframe should be adjusted up to the leg at this point so that in securing the leg to the subframe you do **not** cause stress in the fiberglass. Both sides of the subframe should be equal.)

Drill up through the subframe into the leg bottom with an 11/32" drill. Also drill a 1/2" hole in a piece of 1/4" belting material which will be a buffer pad between the leg and the subframe when securing. Insert a 5/16" x 1" spin lock bolt with a large flat washer through the belting and the subframe from the top down. Secure with lock washer and nut.

Push the opposite leg in slightly if necessary for line-up, clamp and repeat the process of securing for this leg.



## 22. CHECK FOR LATERAL SQUARENESS. 20 min.

Just behind the shift lever, scribe a line at the center of the chassis tunnel. Measure from the rear outside edge of the dash cowl to the scribe line. Adjust the body until both sides measure equal distances.

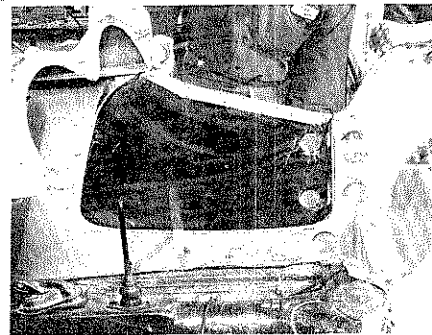
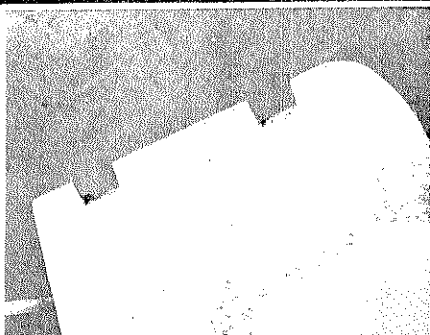
Drill a 13/64" hole through the bottom front edge of the dash cowl, 1/2" up and centered, insert a 3/16" rivet and secure.



## 23. SECURE BOOT BOTTOM TIE-IN TO THE CHASSIS. 20 min.

The boot bottom should slide under the rear tie-in front flange.

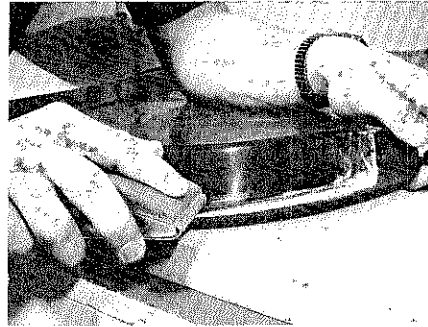
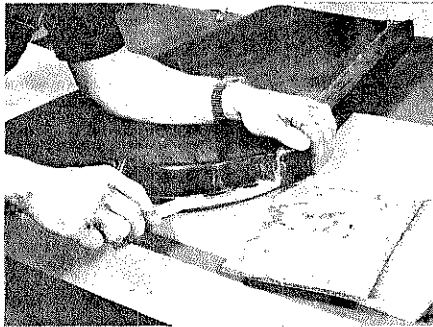
Center the boot bottom, push it back hard and down firmly. In this position, use a 13/64" bit and drill through the boot bottom front flange and into the chassis hump. Secure with at least four 3/16" x 1" rivets. Secure the boot bottom to the rear tie-in with two centrally located rivets. (Note: Do not secure the boot bottom to the side panels at this time.)



## 24. PREPARE DOORS. 45 min. per door.

Using a file, square off the hinge openings in the outer door skin. Set the door into the side panel and continue filing until the door fits cleanly over the hinges and tightly against the side panel. (Note: The door can be adjusted up slightly by your filing, this may be required for the door overlap to clear the rear side panel at the top hinge stop. Also insure that the front of the door is spaced up slightly off the jamb when adjusting for hinge fit. A paint stir stick works nicely.)

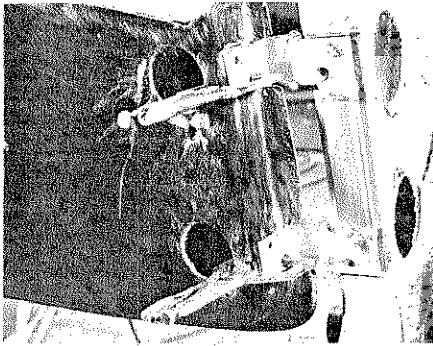
## Assn\_bly



Mix up several ounces of body filler per instructions. Smooth into the door overlap edge with a spatula or knife. (Note: The set-up time of your filler depends on the mixture. It is better to mix smaller quantities and do a nice job on the doors than to hurry because the filler is setting up. Scrape off any excess from the door prior to the filler setting up.)

After the filler has dried, sand the surface smooth in preparation for painting.

Set the door in the jamb and visually inspect for a good fit. Sand any high spots, then paint the edge flat black.



### 25. MOUNT THE DOORS. 15 min. per door

Set the door in place slightly off the side panel at the rear of the door. Use a playing card as a spacer. Mark around the hinge on the inner door liner with a felt marker. Open the door, line up the hinge relative to your marks, and clamp the hinge to the door. Drill a top and bottom hole and secure tightly in place with hex head slot drive  $\frac{1}{4}$ " x  $1\frac{1}{2}$ " bolts, washers, and lock nuts.

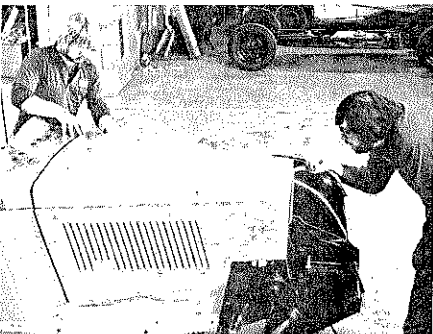
You may elect to install  $\frac{1}{8}$ " x  $\frac{3}{8}$ " black foam weather sealer around the door overlap perimeter, or you may install the provided nylon stop. If you install the stop, drill a  $\frac{5}{32}$ " hole and press the stop into the hole. If your climate is seasonally below  $40^\circ$ , we recommend the weather strip. The nylon stop is then not necessary. You may wait on the weather strip installation; however, protect the side panel edge with tape until you have installed the weather strip. Also, when installing the latch, space the door out at least  $\frac{1}{16}$ " to leave room for the foam.

Close the door and inspect how the front of the door fits relative to the dash cowl and the side panel.

Ideally the top outside edge of the door should line up in as continuous extension of the outside edge of the dash cowl. A gap of  $\frac{1}{8}$ " is desired between the bottom of the dash cowl and the top of the door.

Repeat the above process for the other door.

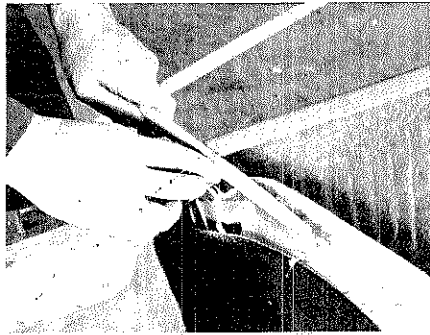
The doors should now swing freely underneath the dash cowl. (You may have to shim up the dash cowl or the door hinge.)



### 26. ADJUST BODY FOR HOOD AND DOOR FIT. 1 hr.

At this stage the front tie-in should be secured to the chassis but not to the body, the fire wall is fastened to the chassis and with one rivet to the dash cowl, the boot bottom tie-in is secured to the chassis and to the rear tie-in, and the dash cowl is clamped to the side panels. Because of the slight differences in chassis, in the body fit-up, and the body parts, we have purposely left the decisions for the final position of the above mentioned pieces to your eyes.

# Assembly



(Note: Moving the body left or right at the fire wall will affect hood and door fit, moving the rear side panel tops in or out at the hinge line will affect the door angle in the same manner. If it is necessary to pull a rear side panel inward with a bar clamp, pull the side panel in slightly more than desired. Rivet the boot bottom tie-in to the rear side panel. When the clamp is removed, the side panel will return to the desired position. Pushing the rear end of the dash ledge outward [just below the dash cowl] will affect door fit. Clamping the dash cowl further ahead or back will turn the hood relative to the grill. The object is to keep all pieces as square as possible with the chassis, moving them individually as little as is possible to insure a good fit of all parts without distorting any one area too greatly.)

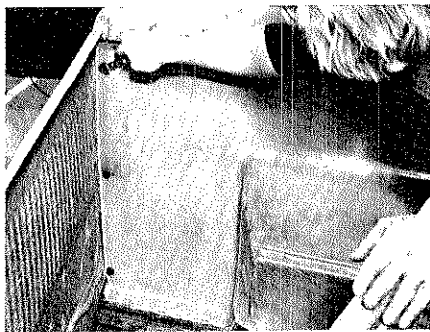
Place the hood on the front side panels and push back against the dash cowl and down on the cowl welting. On the front side of the dash cowl, measure up  $\frac{1}{2}$ " from the bottom edge and mark a straight line across the entire cowl surface. Mark two more points on each side of the center rivet, making a total of five places to fasten the dash cowl to the fire wall.

(Note: For neatness, space each rivet equal distance from each other.) If the front of the hood does not center, consider moving one side of the dash cowl back or forward slightly. You may need to drill out the cowl rivet and the front side panel to move the cowl forward. Reclamp the cowl in position and rivet to the fire wall making sure that the hood edges are equal distance off the front side panels from left side to right. When the hood fits correctly, connect the dash cowl to the fire wall by drilling the remaining mark, insert rivets, and secure. (The hood on the driver's side should be slightly shorter than the side panel. Center hood on this side leaving an equal gap both front and back to minimize welting wear from closing the hood.)

Push the rear side panels in or out until the doors mate with the side panel neatly. Measure  $44\frac{1}{4}$ " across the body. (Just above the door hinge, from inside surface to inside surface.)

If you do not have this measurement, it may affect your seat fit. If you are required to move the rear side panels out slightly; do so, but check door fit. Slight adjustments to front door fit can be made by moving the under dash cowl portion of the rear side panel and clamping it into position.

Only if necessary, use the adjustor on the rear subframe to tip the door up or down and increase or decrease the door opening dimensions.



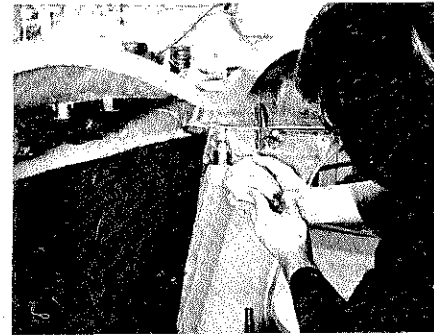
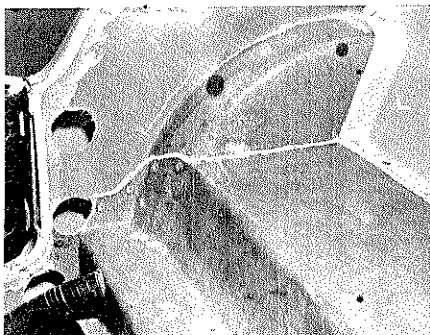
## 27. FINAL COMPONENT SECUREMENT. 2 hrs. 10 min.

When you are satisfied with the hood, door, and general body fit-up, you are ready for final securement (Remember, up to now, it is very easy to drill out a few rivets and readjust. Therefore, be satisfied.)

Complete the securement of the boot bottom tie-in to the rear tie-in flange, with a rivet every 4" to 6". Adjust the rear side panels in or out and drill and rivet the boot bottom tie-in to the side panel every 4".

At the fire wall, drill  $\frac{5}{16}$ " holes on each side, 4" down from the dash cowl and up from the pan and in the middle, through the three thicknesses of glass. Insert a  $\frac{5}{16}$ " x  $1\frac{1}{4}$ " spin lock bolt with a large washer, lock washer, nut, and tighten securely.

Drill a  $\frac{13}{64}$ " hole through the front tie-in 2" in back of the front side panel front flange, close to the outside edges, and into the side panel flange. Insert a rivet up from below, washer and secure.



Drill a  $\frac{5}{16}$ " hole straight up into the rear side panel under the dash cowl (it should be clamped into proper position) and through the dash cowl flange. Insert a  $\frac{5}{16}$ " x 1" spin lock bolt with large flat washer and secure with a lock washer and nut. Adjust the rear of the dash ledge for correct door fit, clamp into position, drill and secure with the same bolts and nuts. (Note: A small pneumatic drill or angle head drill is very handy here.) If your holes are drilled at too much of an angle, when the bolt is tightened the glass pieces will be forced to move out of alignment, be careful! Torque the remaining nuts on either side of the rear subframe. All four nuts on each mechanical adjustor should now be tight.



# Assembly

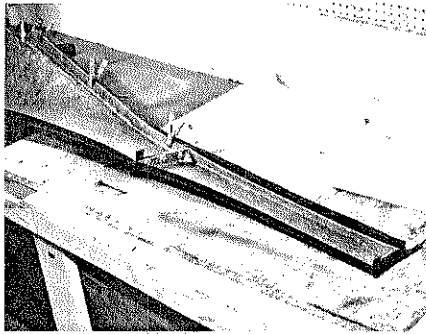


## 28. WEATHER SEAL THE PASSENGER COMPARTMENT. 10 min.

Using a silicon caulk, run a heavy bead in the seam line between the long pan flap of the front side panel and rear side panel. Come up the welting line between the front and rear panels at least 2" with the caulk. Caulk at the rear torsion tube where the fiberglass does not cover the pan line, being generous with the caulking.

Repeat the process on both sides.

Caulk the fire wall both at the sides, the bottom to pan, and at the mate line of the dash cowl. Caulk the entire perimeter of the boot bottom where it connects to the chassis, side panels and rear tie-in.

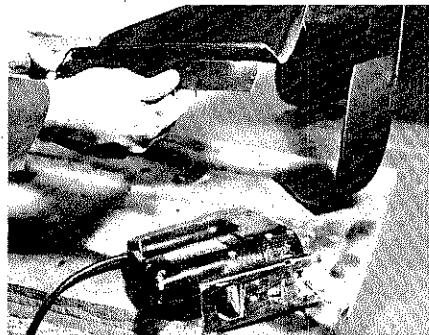
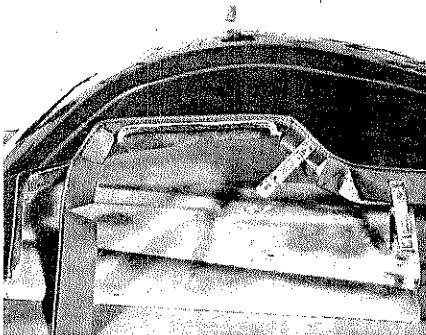


## 29. MOUNT THE RUNNING BOARDS TO THE FENDERS. 15 min. each

With the help of a friend, hold the running board up to the fender and line up with the outside edge and the top surface. With rubber extrusions looking tight and neat, clamp two "C" clamps in place on the mating flange approximately 1" in from each side. (Note: After clamps have been secure, check the line to insure that the pieces did not move when they were clamped.)

Drill a 9/32" hole in the flanges near the body side clamp. Insert a 1/4" x 1 1/4" spin lock bolt, install a flat washer, lock washer, and secure. Check the lines to insure straightness. If correct, drill the outside and center hole, secure as before.

Repeat the process for the opposite side.

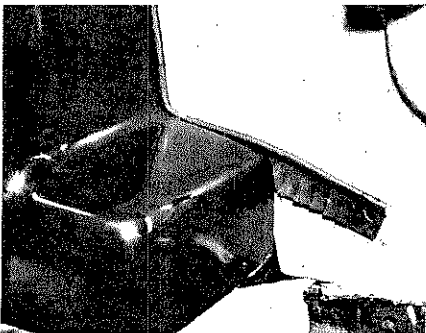


## 30. APPLY WELTING TO THE FENDER/RUNNING BOARD SUBASSEMBLY. 15 min. each

Use the same technique as before to neatly apply a 1/8" bead of Fast Tac on the fender/running board flange to the point where the grill starts.

Starting from the rear attach the welting to the running board. When you reach the front fender horizontal flange, (this will install under the front side panel) you must use a scissors to cut the welting flange down to a width that will not reach the connection surfaces of the front side panel and front fender flange.

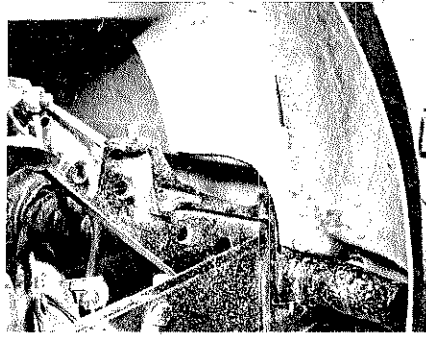
Cut the mold removal flange from the front fender.



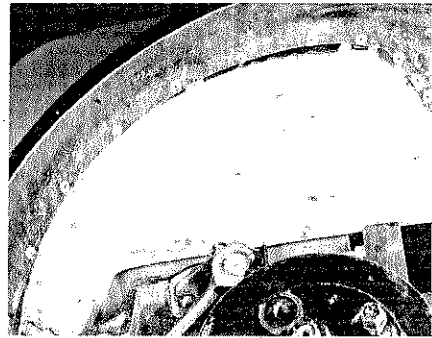
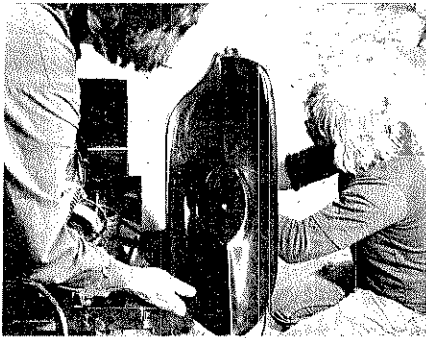
## 31. MOUNT THE REAR FENDERS. 35 min. each

(Note: On the forward end of the rear fender you will find the torsion tube cover. On the inside edge of this cover is a critical flange that must be rotated up tightly against the rear side panel to be in proper position. You may have to grind off a portion of this catch flange so that it does not hit the torsion tube mounts.)

# Assembly

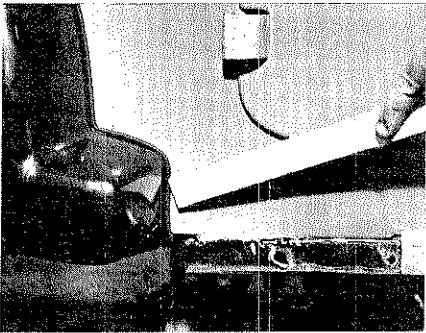


Push the fender into the side panel and rotate until tight. Check the welting so that it fits into the mating recess neatly. The welting should be loose over the torsion tube cover at this time. Drill a  $13/64''$  hole inside the fender well, through the fender and into the rear side panel just above the torsion tube. Insert a  $3/16'' \times 1''$  rivet and secure. With help, work your way from the front to the rear drilling and riveting every  $4''$  to  $6''$ . (Note: Continuously check the welting on top for neatness, underneath to insure that the fender does not jump over the side panel recess, and from behind so that the fender does not tip in or out. The rear taillight mounting point must remain square with the chassis.)



Back away from the installed fender and visually inspect your work. If you have not installed the fender correctly, drill out as many rivets as is necessary to adjust the fender into position. You may have to drill new holes to rivet tightly again. Remember, fiberglass is flexible and can be made to move into position.

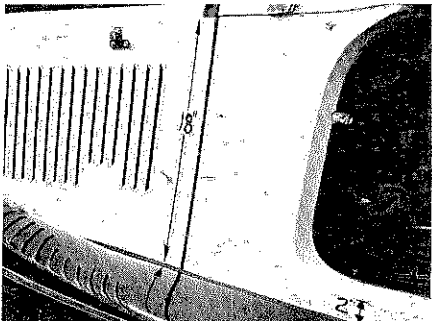
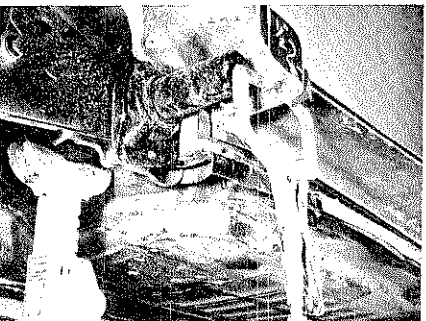
Repeat process for the opposite fender.



## 32 INSTALL THE DRIVER'S SIDE FENDER/RUNNING BOARD SUBASSEMBLY. 1 hr.

On the lower front end of the rear fender, you will find the torsion tube cover; measure up  $1/2''$  from bottom of the cover and mark a line. This is the line that the bottom of the running board should line up with.

Tuck the welting in place around the rear fender. Clamp the running board in place, tight against the body, with a "C" clamp. Clamp the front fender to front bumper mount. Drill a  $9/32''$  hole (inside fender well) through the torsion tube cover, into the running board, on the outside of the torsion tube. Insert a  $1/4'' \times 1 1/4''$  spin lock bolt, washer, and secure.

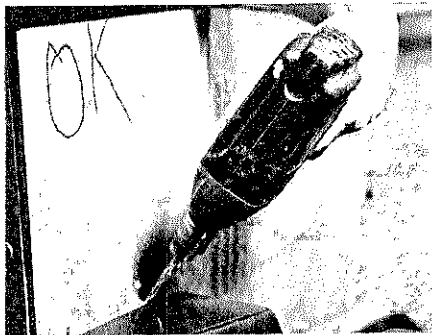


Drill two more  $9/32''$  holes from the inside of the running board through to the torsion tube cover, (making sure running board is level). Insert bolts, washer, and secure.

At the mate line of the front and rear side panel, measure down  $18''$  from the dash cowl. Mark a reference line on the side panel for the fender.

At the fender to running board extrusion, measure down  $2''$  from the door jamb edge and mark a line.

# Assembly

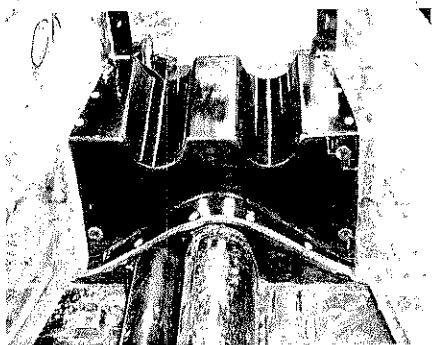


Bring the fender up to the marks, drill a  $\frac{1}{4}$ " hole through the fender flange into the body, on each side of the welting line, insert a  $\frac{1}{4}$ " x  $1\frac{1}{4}$ " spin lock bolt, washer and secure.

Return to the torsion tube and drill/rivet every 4" up to the front/rear side panel mate line.

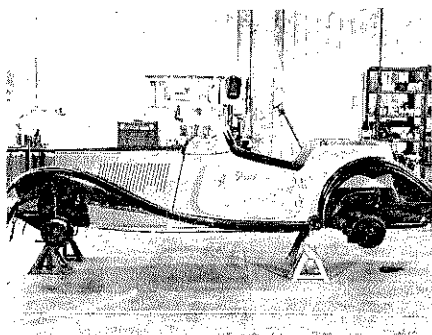
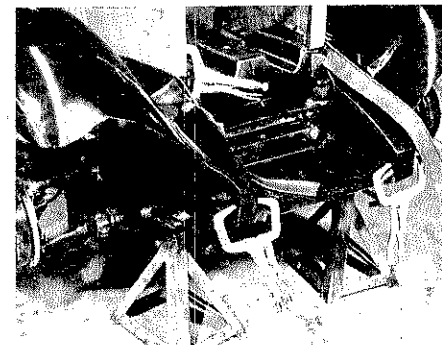
Push the horizontal front fender flange tight into, and up under, the connection point to the front side panel. Drill a  $\frac{1}{4}$ " hole at a 45° angle into the inside radius of the front side panel and into the front fender flange. (Note: Be sure the fender is pushed up tight or you may break through on the finished fender surface.)

Insert a  $\frac{1}{4}$ " x  $1\frac{1}{2}$ " carriage bolt from the inside toward the outside. Install a washer and nut. Using a screwdriver draw the fender tightly into position.



Return to the last installed rivet on the front fender. Drill, rivet, and washer every 4" to approximately 4" from the horizontal mating flange. Drill a  $\frac{1}{4}$ " hole and secure with another  $\frac{1}{4}$ " x  $1\frac{1}{4}$ " spin lock bolt.

Rivet every 2" until you reach the core support. Drill three  $\frac{7}{8}$ " holes and install grommets for the fuel line and the lower left and right wiring.

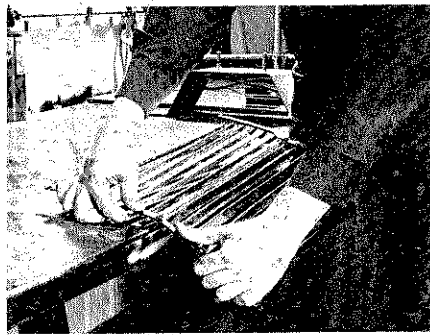
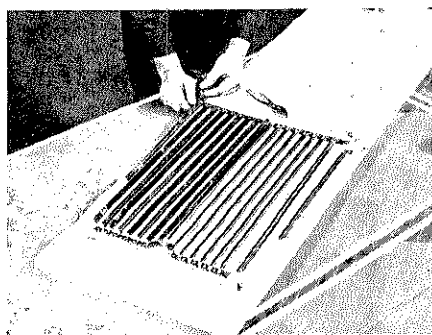


### 33. INSTALL THE PASSENGER SIDE FENDER/RUNNING BOARD SUBASSEMBLY. 1 hr.

Using the driver's side front fender as a reference, clamp the front fender to the bumper mount (Note: To build symmetrically, measure down from the dash cowl 18" at the welting line. Drill a  $\frac{1}{4}$ " hole on each side of the welting line and secure the fender to the side panels with two spin lock bolts as before.)

Drill the 45° hole in the forward flange, install a carriage bolt, and secure into position as on the driver's side. Rivet from the mate line every 4" within 4" of the horizontal flange on the front fender. Install a  $\frac{1}{4}$ " spin lock bolt. Rivet every 2" to the core support.

Clamp the running board into position  $\frac{1}{2}$ " up from the bottom of the torsion tube cover. Bolt to the rear fender, and rivet to the rear side panel. (Remember to secure with a washer whenever possible.)



### 34. PREPARE THE GRILL. 2 hrs. 30 min.

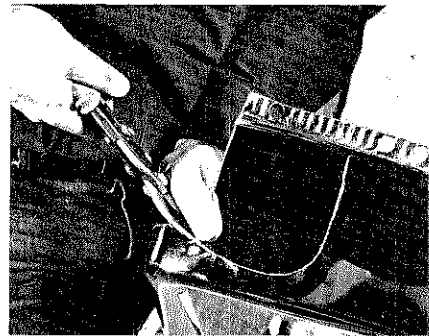
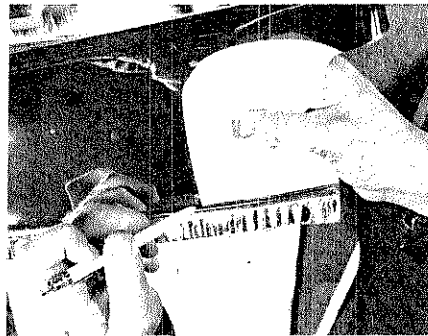
Remove the four corner carriage bolts from the grill slats. Place the short slats aside for the moment and save the four chrome carriage bolts.

Bend the top and bottom slat retaining bar slightly, in the middle only, to conform to the curvature of the grill.

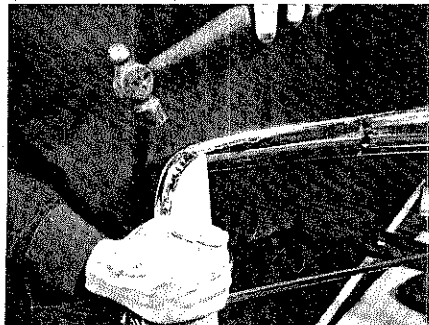
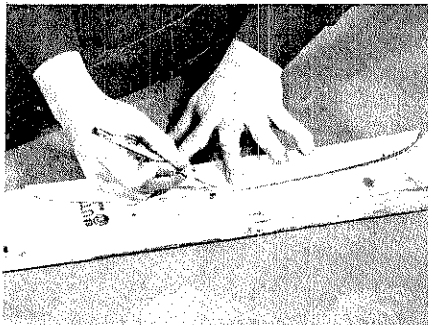


Place the slats into the grill loosely to check the compatibility of the slats to the grill. Occasionally the grill pegs do not conform exactly to the slat requirements. You may notch the bottom holes with a hacksaw in order to fit the pegs. Remove the slats and set aside.

Attach template number 3 to both sides of the grill bottoms and mark. Using a left or right hand aviation snips, cut away this portion of the grill to allow room for the steering gear box and the torsion tubes.

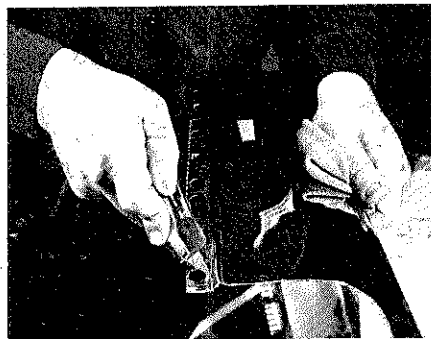
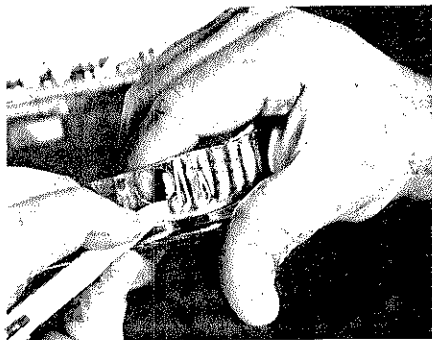


owner's photo

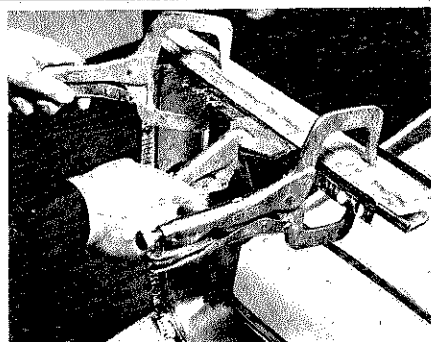
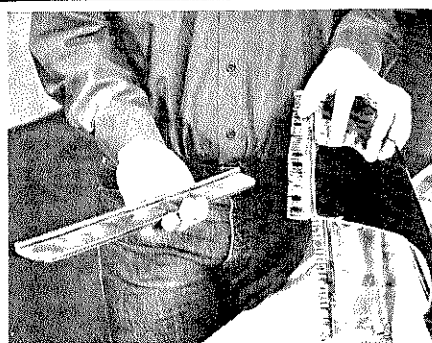


Find template number 4 and fasten to a 2" x 4" x 18" wood piece and cut out with a sabre saw (or you may have purchased our wood group). Fasten this grill bridge to the grill using two small wood screws, inserting them through two holes in the grill at the crown of the top grill flange and into the 2" x 4". Make sure that the outside surface of the 2" x 4" lines up to the edge of the grill flange. Also using the punched holes in the grill flange as reference points, make sure that the grill bridge is equal distance on both sides. With a hammer, make the grill conform smoothly to the grill bridge at the corners.

# Assembly

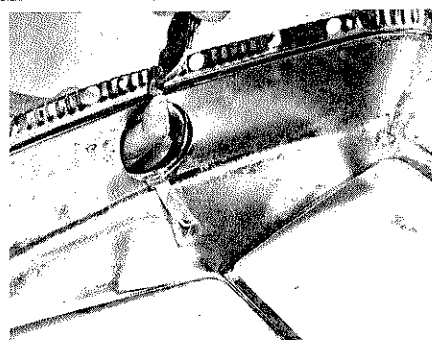


Holding the wood bridge tight against the top of the grill flange, mark the grill flange just at the bottom of the wood bridge. Use the snips and cut straight to the grill's chrome bead that is part of the grill stamping. (Hand brakes: A flat jawed vise grip with jaw plates, approximately 3" wide, these are for bending sheet metal at a 90° angle.) Mark every 3¼" or the width of the "hand brakes," from the cut you have made, to the bottom of the flange. After you have marked both side flanges of the grill, snip each mark to the grill bead. With your razor blade knife, scribe a line from the first cut you made, to the bottom of the flange.



When bending the flange, clamp a ¼" x 15" rod into the flange groove on the inside of the grill. Clamp, using a vise grip 11R type "C" clamp and pieces of 1" x 2" to help sandwich the rod in place and to protect the exterior chrome finish. This procedure is to help bend the flange back without pulling the chrome bead out of shape. If you do not attempt to keep the shape of the edge bead, the bead will collapse and the chroming may crack and peel off.

Using your hand brake, bend the side flanges of the grill inward at a 90° angle to its present position. You may use a standard vise grip, however, many more cuts will have to be made.

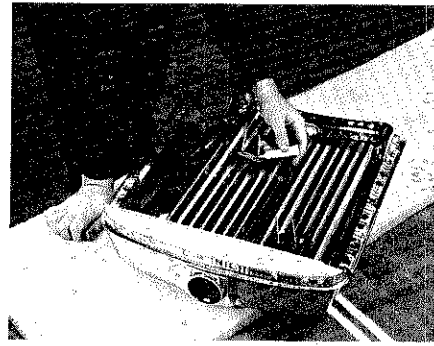
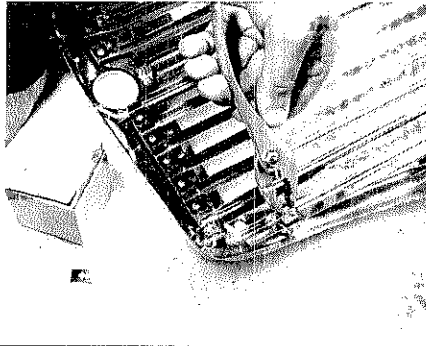


Locate the grill nose and bend both tabs of the nose tightly down and parallel with each other. Set the nose in place on the grill with both tabs inserted through the radiator fill hole. Press the nose down tightly, and bend the tabs back firmly against the grill.



Insert the medallion through the nose, grill, and the inner nose tabs. Apply locktite to the threads and secure with a nut. Install the grill bridge over the nose tab, and secure the bridge firmly to the grill with bevel headed screws. (Note: Screws must be installed so that the grill flange is left relatively flat.)

# Assembly



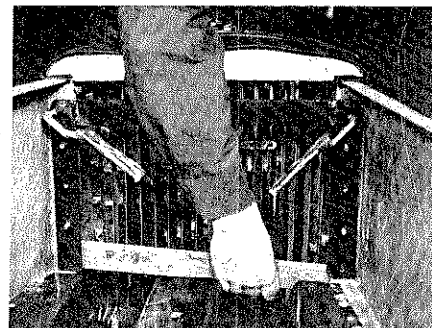
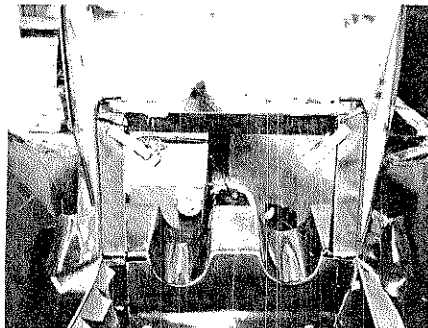
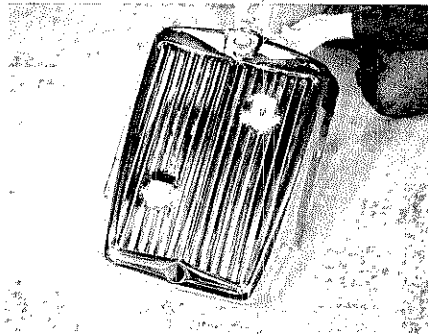
Place the grill slats in place including the short edge pieces and secure with compression pin clips provided. An open plier is a good tool for pressing the clips on.

If you wish to mount automobile club badges on the grill, now is the time. You may mount them on a badge bar later.

Spread Fast Tac around the top flange of the grill and underneath on the bottom of the wood bridge in about 2". When tacky, apply the specially stitched welting to the grill flange using the same technique as before, wrap the excess equally under the grill bridge on both sides. (Welting has cord stitched into both sides.)

The grill is a beautiful part of your Duchess which everyone will notice. Let's compare and see how you've done.

owner's photo



## 35. INSTALL THE GRILL AND CHECK HOOD FIT. 30 min.

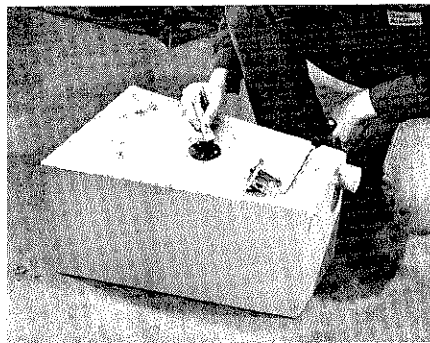
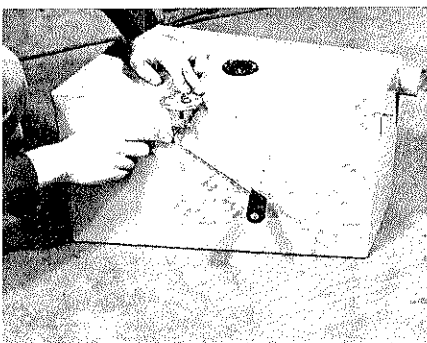
Apply Fast Tac to the front flanges of the front side panel. When tacky, install the previously prepared 14" welting pieces.

Place the finished grill against the front side panel flanges and slide it down between the front fender ends and over the torsion tube. When the grill bridge touches the front side panel top flange, line up the outside surfaces then clamp the grill flange to the front side panel at the top with a "C" clamp. Repeat this process for the opposite side.

# Assembly

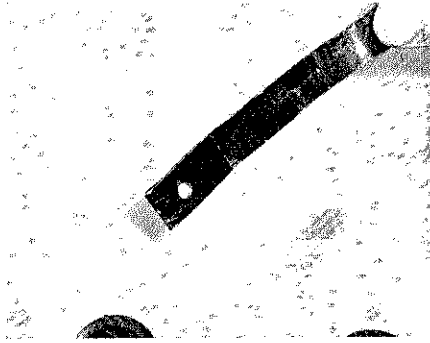


In order to line up the grill surface with the side panel, at the bottom, carefully wedge a  $17\frac{3}{4}$ " piece of  $1" \times 2"$  to push both sides of the grill against the fenders. Brass will dent so keep the  $1" \times 2"$  as low as possible. Stand back from the grill and visually check the grill for squareness. Set the hood in place and make sure the hood fits properly. Make any necessary adjustments. If all looks well, drill through the remaining core support holes into the grill flange. Insert  $3/16" \times 1"$  rivets, washer and secure. Bolts with larger flat washer may also be used. Rivet the front tie-in securely to the front side panels with a rivet every 4". Do not install a rivet where the steering column penetrates the tie-in, see Section 42.

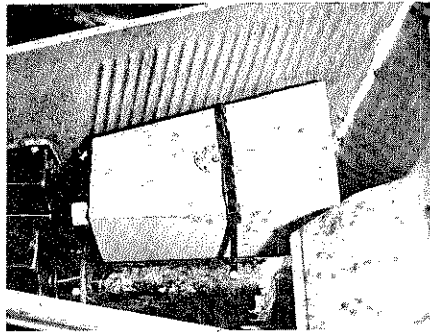
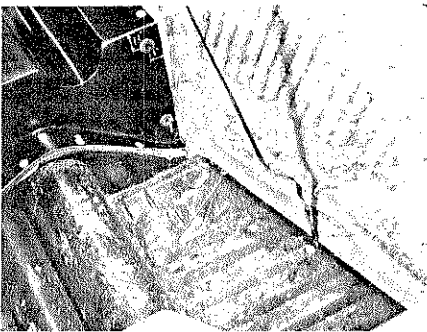


## 36. INSTALL THE GAS TANK. 20 min.

(Use sending unit from the VW gas tank.) Straighten the float arm on the sending unit leaving approximately 1" clearance from the tank bottom. Inspect the sending unit gasket to insure its quality. Apply a good gasket sealer (made for use with gasoline) on both sides of the gasket and install on the tank.

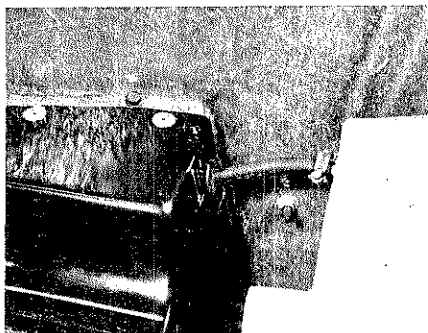


(Note: The sending unit will go on in only one way as one of the holes in the sending unit is offset.) Secure with new nuts and locktite. Double over a piece of banding and drill a  $13/64"$  hole. Rivet the steel banding material to the floor (stick rivet up from below) as close to the center line of the tank, and as close to the front side panel as possible. Lay several pieces of foam tape, or strip of innertube on the passenger side floor area in front of the fire wall.

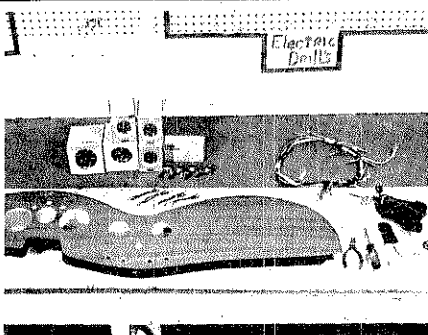


Set the gas tank into position on the rubber strips, back against the fire wall floor flange (compressed not to exceed  $1/8"$ ). Lay another piece of rubber, or foam across the gas tank in the correct position to cushion the hold down banding. Pull the steel band tightly over the tank and down to the chassis tunnel. Drill a  $13/64"$  hole into the tunnel top and another hole in the overlapped banding material, at least  $1/4"$  short of meeting up with the hole in the tunnel. Insert a  $3/16" \times 1"$  rivet into the band and insert it into the tunnel. Push the rivet in as far as possible then secure. The rivet should pull the banding very tight around the tank and then secure the tank firmly to the chassis.

# Assembly



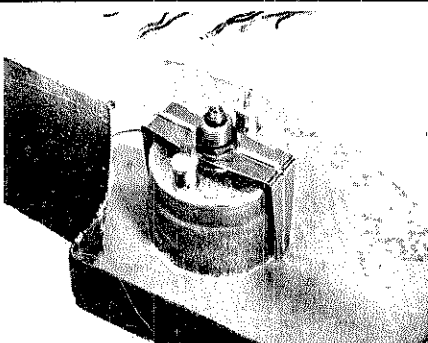
Install a piece of  $\frac{1}{4}$ " gas line to connect the chassis line to the gas tank and clamp both ends securely.



## 37. PREPARE THE DASH. 2 hrs.

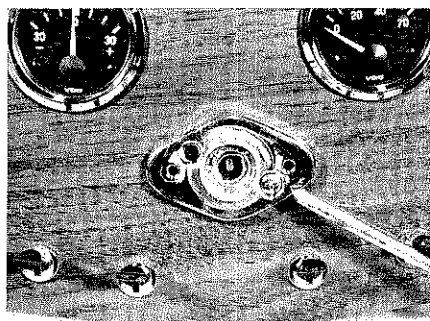
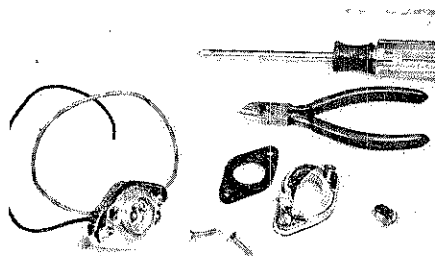
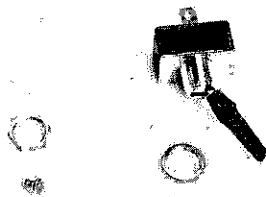
(Move to the next step if you have ordered a prewired dash.)

Lay out your soft surface and locate all gauges, switches, dash lights, and the dash wiring harness.



Install each gauge securely per enclosed instruction. The wiring harness has been designed with the following sequence: Speedometer, gas tachometer, amp, and oil. (Note: Be careful to keep all gauges level.)

Remove the fasteners from behind each switch. (Discard the wire securement screw and the back nut on toggle switches.) Install each switch with the writing on the back of the switch, down.



When the deluxe dash light is ordered (optional), disassemble the light. Drill a  $\frac{3}{4}$ " hole in the center of the dash. Center the light on the dash and drill a pilot hole through the lower right hand hole in the light frame. Install a screw.

Check the light for squareness then drill the upper left hand hole. Secure with a finishing screw.

Install and secure the left and right amber turn signal indicating lights and the red center generator light. The high beam indicator light is located on the dash or on the top surface of the driver's side headlight shell.