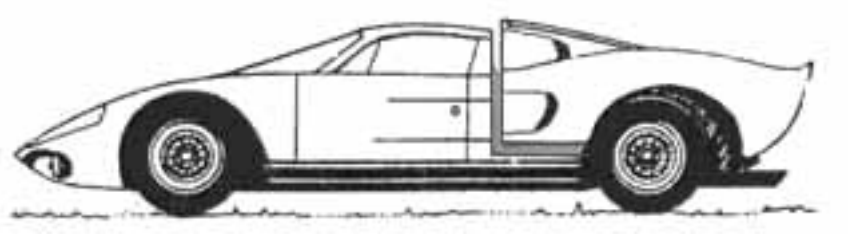
INTRODUCTION TO THE SECOND EDITION

The first edition of these mounting instructions has been and is being used successfully by hundreds of builders and from our own construction facility indicates, however, several "thin" areas in the first edition, viz.,the areas of door mounting and roll-up window installation. Supplimenting the first editions in these areas is, by itself, sufficient incentive for creating a second edition.

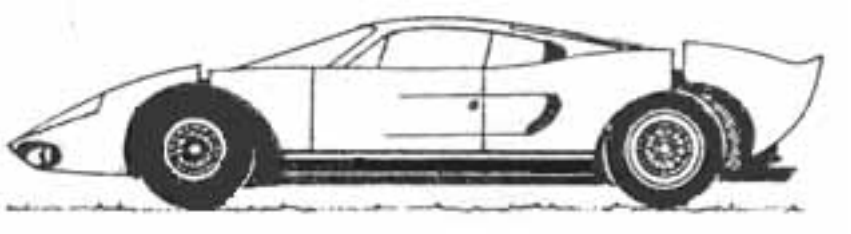
Additional incentive was produced by Fiberfab's new three-piece GT body configuration (see drawing below) which generates unique mounting, hinging/latcing and wire-routing requirements not covered in the first editions which concerned itself only with the two-piece body.

This second editoins, therefore, essentiall duplicates the first edition with the exception that there are more comprehensive instructions for door and side window mounting and assembly. The sections on the three-piece body mounting are entirely new. This edition also contains a more extensive recommended parts list and options/accessories list.

TWO-PIECE



THREE-PIECE



INTRODUCTION

The following pages contain instructions for mounting the 1967 AZTEC AVENGER GT-12 fiberglass body on a volkswagen floorpan. The instructions are intended to cover every phase of preparation and assembly required to bring your car-building project to a successful conclusion.

Building your own car is a project that can be rewarding -- both financially and emotionally. Itis difficult to describe the thrill the first time you fire the engine up or the excitement of the first road test.

There is immense satisfaction in knowing this is truly your car. You have built this car and each admiring and envious look is a compliment to you. Your though, your planning and your effort have produced a car that stands out from the crowd.

It is also satisfying to know that your work can create something worth far more than just the raw materials that went into it. Very few of us can afford to go out and buy a Farrari or a Ford GT. Now it is possible for a minimum investment to build a car like the GT-12 whose styling is superior to many expensive imports.

The most important quality for the builder to possess is imagination. Imagination more than compensates for a lack of money or experience. Almost anyone can build a SPECIAL. With the Aztec Avenger GT-12 you can build a CAR.

These instructions concern themselves primarily with the Aztec-Volkswagen conversion using the Deluxe Body Kit. Although the Volkswagen floorpan must be used, there are other engine options such as Porsche or Corvair which result in a car with more "go" than the stock Aztec-Volkswagen.

The Aztec-Volkswagen conversion is still our favorite. It is simple and inexpensive to build. You wind up with a car that is economical on gas, handles well, runs about 100 mph (stock), and looks like it could out-drive any porsche ever made.

Fiberfab is continually "testing" it products by constructing completely finished, street-ready Aztecs. The experience gained through such construction activity leads not only to an ever-improving line of fiberglass body kits and accessories, but to the set of proven procedures outlined in this manual.

OUTLINE OF CONTENTS

1/ CONSTRUCTION MATERIALS -- Tools and Supplies

2/ WHAT TO LOOK FOR WHEN ACQURING A WRECKED VW

3/ REMOVING THE VOLKWAGEN BODY

4/ PREPARING THE VOLKSWAGEN FLOORPAN

5/ MOUNTING THE AZTEC BODY

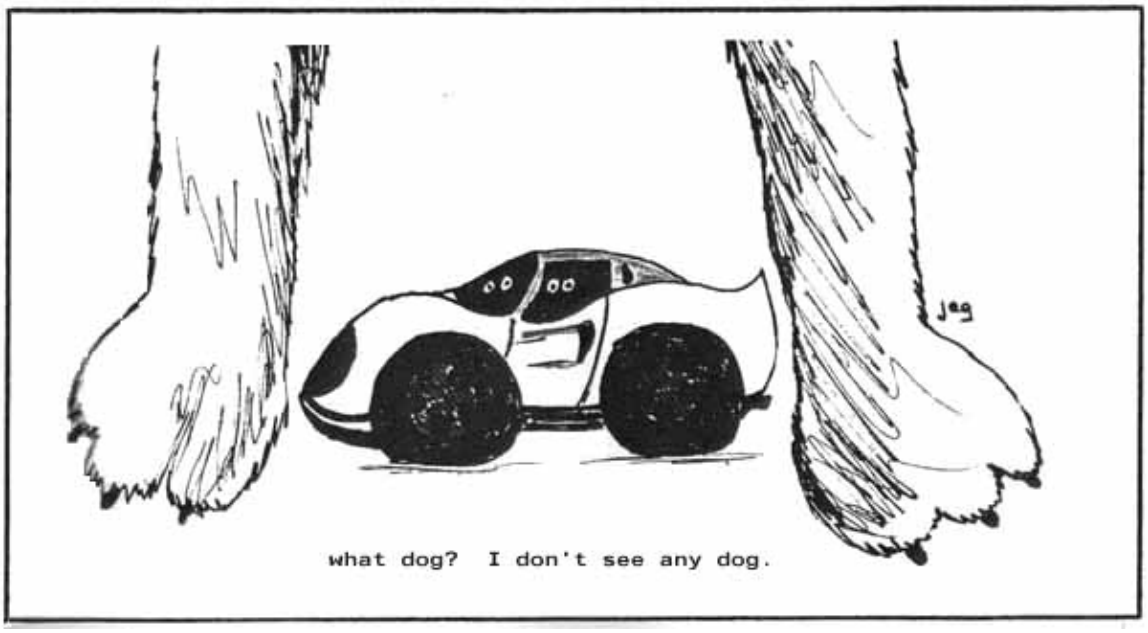
6/ INSTALLING THE WINDOWS AND WINDSHIELD

7/ WIRING AND INSTRUMENTS

8/ UPHOLSTERY -- Interior

9/ FINISHING -- Exterior

10/ CORVAIR POWER OPTION



1. CONSTRUCTION MATERIALS

The typical inventory of tools found in most home garages or basements will probably more than suffice to complete your AVENGER GT-12. In reality, very few tools are absolutely essential to the conversion.

The following breakdown of tools/materials is based on Fiberfab factory experience. Items that are considered essential are listed. Another list is also provided of items which are quite helpful and serve to make certain construction tasks significantly easier.

HAND TOOLS

Essential

- 5/16", 3/8", 7/16", 1/2", 9/16", 5/8" sockets with a 3/8" DRIVE
- 3/8" DRIVE rachet handle
- Standard screw-driver -- medium blade
- Phillips screw-driver -- medium blade
- Straight-edge

Helpful

- 3/8" DRIVE 3" and 6" extensions
- 3/8", 7/16", 1/2" and 9/16" combination (open-end and box-end) wrenches
- "Pop" rivet gun -- home workshop variety
- Steel rule (72")
- Wire terminal crimping tool
- Hacksaw
- Knife
- Assorted rasps, files, drills and taps
- Set of wood-working hole-saws

POWER TOOLS

Essential

- Electric drill -- 1/4" capacity

Helpful

- Electric drill -- 1/2" capacity
- Sabre saw
- Rotary sander/grinder
- Hydraulic floor-jack and jack stands

1. CONSTRUCTION MATERIALS -- CONTINUED

CONSTRUCTION MATERIALS

Essential

Assorted machine bolts and nuts: 1/4", 5/16", and 3/8" with washers and locking washers
Assorted sheet metal screws
Sandpaper
200'-300' #16 AWG wire: 100'-150' #10 AWG wire
Silicone seal (Common types are rubber Sealant by the Macklenburg-Duncan Company of Oaklahoma City, Dow-Corning DC 750, and General Electric)
Paint, primer, etc.

Helpful

Epoxy adhesive kit (high-grade epoxy, not body filler)
Epoxy putty/filler
Crimp-on wire terminals
Assorted "pop" rivets

2. ACQUIRING A USED/WRECKED VOLKSWAGEN

Many persons purchasing an Avenger GT-12 body wish to replace the travel-worn (and not very exciting!) shell of the "beetle" they already own. Other builders plan to acquire a wrecked Volkswagen from a salvage yard and refurbish this "out-cast" with a new GT-12 body and perhaps some new mechanical parts. In either instance, this brief section should be of interest to all prospective builders.

For our purposes, the "VW family" can be divided into two parts -- post-1960 and pre-1960. The earlier cars are all 36 horsepower and use 4-speed, non-synchromesh-first-gear transaxles. The later models have 40 horsepower engines and a 4-speed, all synchromesh transaxles of somewhat "beefier" design than the pre-1960 version. With the body removed, there is little else to mark the difference between an early and late chassis except the inevitable wear-and-tear characteristic of the more aged vehicles.

It should be noted, however, that the post 1960 group of VW's now contains a variety of Volkswagen "VARIANTS" and the new VW-1300. These new cars can be fitted with the Aztec Avenger GT-12 body, but a limited amount of re-shaping of the inner-panels is required.

The Ghia series can also be used with the GT-12 body although some modification must be made to the metal floorpan in order to allow the use of Fiberfab frame rails. Additional information on the Ghia-Aztec conversion is available upon request.

When browsing through the wrecking yards, remember that what you need consists of four major pieces:

1. Floorpan -- the VW "underbelly"
2. Front suspension/steering unit
3. Transaxle -- gearbox, differential and axles
4. Engine

You can buy all four pieces in one wreck or buy them seperately from individual wrecks. Some minor compatability problems arise when pre-1960 and post-1960 parts are pieced together, but these can generally besolved with little difficulty.

It is extremely hard to estimate prices for the required Volkswagen components as they vary greatlyfrom one part of the country to another. Sources of Volkswagen parts other than wrecking yards are sometimes cheaper. Insurance companies, local newspaper want ads, and Volkswagen repair shops are other potential sources of the parts you need.

We have seen 1954-56 Volkswagens sell for $25-50, complete and running (not <u>well</u>, maybe, but running). 1958-60 floorpans with running-gear sell for $100 to $250. Complete post 1960 wrecks run from $200 to $650, depending on age and condition.

2. ACQUIRING A USED/WRECKED VOLKSWAGEN - CONTINUED

Unless you are equipped with metric tools or special VW tools (and like to tinker with engines), it is probably advisable to pay a little more for a low-milage wreck. In any case, when buying a chassis with engine (or an engine alone), have the wrecker run the engine before you complete the purchase.

Always keep in mind that, IF THE FOUR ITEMS LISTED ABOVE ARE INTACT, THE WRECK IS USABLE -- DON'T LET A MANGLED BODY FOOL YOU. It is what is underneath that counts!

MOUNTING FIBERFAB BODIES ON THE KARMANN-GHIA AND VARIANT CHASSIS

GT-12-As stated on page 6 of the Avenger GT-12 Mounting Instructions the Karmann-Ghia (K-G) and Variant(VAR) chassis can be fitted with GT-12 bodies but not without modifications. The GT-12 body and fraim-rails are made especially for the VW"Beetle" chassis through 1966 models. The K-G chassis is very similar to the Beetle inasmuch as the wheelbase and track dimensions are the same and both use equivalent front and rear suspensions. The important difference between Beetle and K-G is the floorpan width. The Beetle 'pan is about 4-feet wide at the rear whereas the K-G 'pan is about 8-inches wider. The GT-12 body is wide enough to fit on either Beetle of K-G. The frame-rails, however, are designed expressly for the Beetle. To accomodate these rails the area of the K-G pan under the seats must be notched so that the rails project up through the floor -- weather sealing between 'pan and rail can be accomplished via welding, fiberglassing, etc.

In addition, the outer seat-rail must be removed from both sides of the K-G pan so that it does not interfere with the body mounting flange. The body is mounted to the 'pan with a piece of 1"x3" wood sandwiched between the mounting-flange and the 'pan.

The VW VAR chassis is not recommended for use with the GT-12 because of insufficient for and aft stiffness. Unlike the single-unit Beetle and K-G pans the VAR chassis is two pieces bolted together with rubber separators between (used for vibration dampening). When the VW steel body is removed the chassis becomes relatively "limp". If provisions are made to stiffen the chassis it can be used but only after extensive modification of the GT-12 inner-panel.

JAMAICAN - Same as GT-12.

VAGABOND - The Vagabond body is designed expressly to mount on a beetle floorpan. A K-G chassis cannot be used unless it is narrowed to exactly duplicate the dimemsions of the beetle 'pan.

note; In mounting the one-piece pre-assembled body to a K-G pan, the tube housing the wiring, running from front to rear on passenger side, will have to be repositioned. . . .

3. REMOVING THE VOLKSWAGEN BODY

If you acquired a wrecked Volkswagen without the body, you can skip this section. If not, read on;

Before you start to unbolt the body, remove the front and rear seats, disconnect and remove the battery and drain the gas tank. Next, remove the left front tire/wheel in order to unbolt the steering shaft by removing two bolts from the steering shaft universal joint. Now disconnect the horn wire.

Now disconnect the manual choke cable or the wire from the electrically operated choke. Disconnect the wires (to the coil and voltage regulator) and accelerateor cable from the engine.

Remove the choke from the dashboard (no dashboard control exists for the electrically/thermostatically operated choke) and pull for the cable through to remove it. Disconnect the gas lines to the gas tank and remove the tank by unbolting (see Figure 1) and lifting it up and out. Don't forget the reserve fuel switch-over valve in the cockpit.

You are now ready to unbolt the body. First, remove the bolts located along the outside edges of the underside of the floorpan (see Figure 1). Next, remove the several bolts remaining at the front underside of the floorpan -- just inside the front wheel-wells.

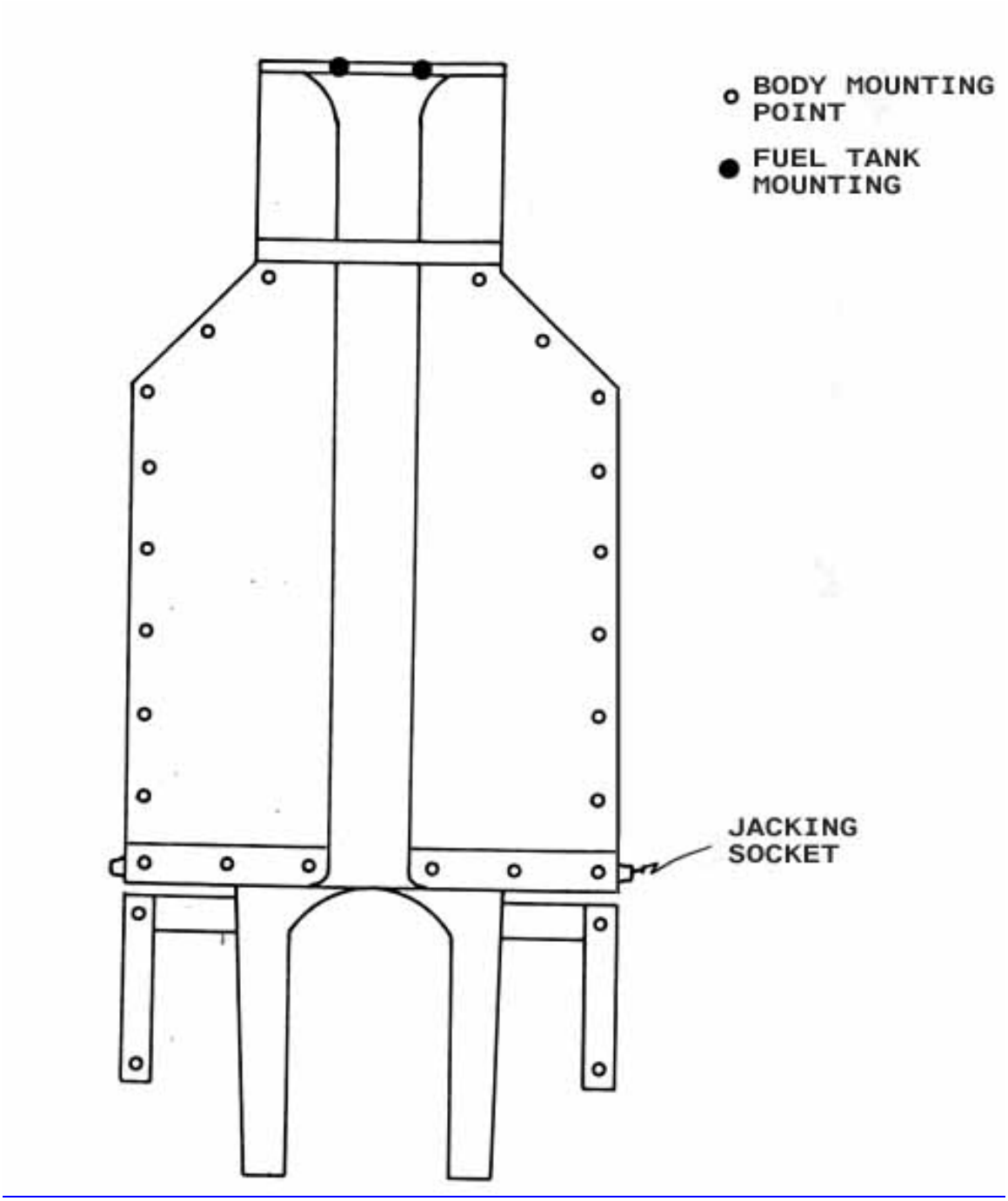
Remove the four bolts exposed when the rear seat was taken out. Finally, remove the rear tires/wheels and unbolt the body bolts in the wheel-wells. SAVE THESE BOLTS!

The body should now be free to be lifted off via block and tackle, chain-hoist, or yourself and "several strong and willing helpers." CAUTION: The Volkswagen body is extremely heavy! It is because of this weight loss, incidently, that you may expect better-than-Volkwagen performance in your completed Avenger GT-12.

Care should be exercised when lifting off the Volkswagen body in order to preserve the body-to-floorpan rubber seal. It can be used to "weatherstrip" your new GT-12 body.

It is advisable to save all the undamaged parts you can such as instruments, windshield wiper motor, window-lift mechanisms, mirrors, etc., inasmuch as many of these items cam be used in the completion of your Aztec.

FIGURE 1

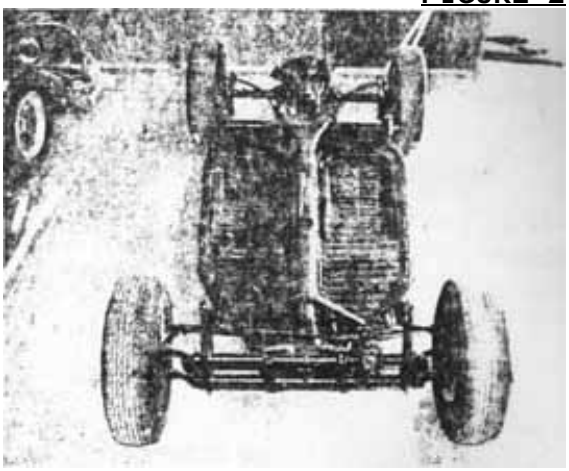


SKETCH OF VW FLOORPAN
(not to scale)

4/ PREPARING THE VOLKSWAGEN FLOORPAN

Following the removal of the VW body, the floorpan should be subjected to a general clean-up. Bits and pieces of torn floor covering and weatherstipping should be removed; stones, dust, etc., swept or vacuumed away: rust spots sanded and covered with rust inhibiting paint. When the cleanup is complete the VW jacking sockets (see sketch of floorpan, Figure 1) are removed either by chi-selling-off or drilling through the attaching spot welds. (The jacking sockets are removed because they in-terferes with the installation of the Irwin frame-rails which serve to stiffen the floorpan edges). It is recommended that immediatly following the clean-up operation and the removal of the jacking sockets, the entire floorpan be painted with a dark colored rust inhibiting paint. A typical floorpan ready for construction to begin is shown in Figure 2.

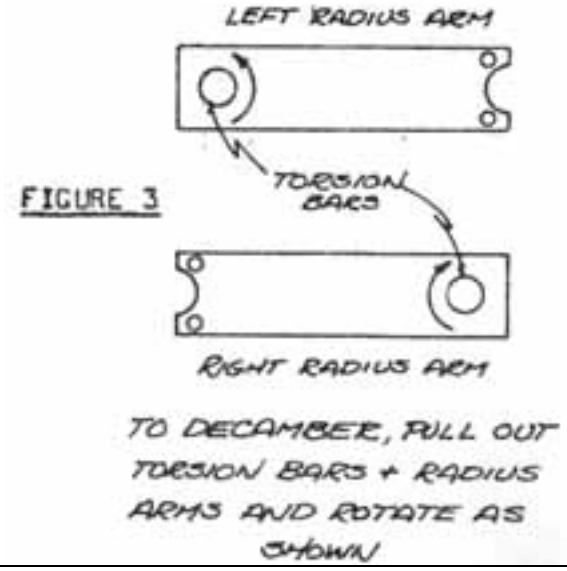
FIGURE 2



The frame rails are installed next. Remove the dust covers (4 bolts each) from over the ends of the rear tortion bars (coveres on early chassis fit around the end of the tortion bar leaving it exposed ,while coveres on late chassis completely cover the end of the bar).

NOTE:Now is the best time to decamber the VW rear suspension. Decambering is required to compensate for the reduced weight of the IRwin GT fiber-glass body relative to the significantly heavier steel Volkswagen body. Without decambering, the GT. will ride several inches too high in the rear. Decambering is usually not required if the Volkswagen engine is replaced by Corvair power.

FIGURE 3



Decambering is accomplished by disengaging the tortion bar (in-cluding radius arm) from the splines at the center of the floorpan, ie., "pull out" the bar and radius arm. Now rotate the bar and radius arm as shown in figure 3, several "notches" and re-engage in splines. Af-ter both bars have been rotated equivalently, the setting is checked by rolling the floorpan,

4/ PREPARING THE VOLKSWAGEN FLOORPAN -- CONTINUED

on wheels, back and forth with two people standing on the rear of the floorpan -- the rear wheels should be verticle when viewed from the rear.

To install the frame-rails, as shown in Figure 5, modify the dust covers as indicated in Figure 4 and replace them on the floorpan with the upper two bolts (don't forget to put the "rubber doughnuts" back under the covers). Bolt the end-plate of the frame rails to the floorpan over the dust covers using the bottom two dust cover retaining bolts -- leave the bolts loose. Lift the front end of the frame rail and secure it under the lower, front tortion bar housing (tube) using the U-bolts provided with the rame rails. Position the U-bolts about 13 inches either side of the floorpan center line as shown in Figure 6 -- leave the U-bolts loose.

FIGURE 4.

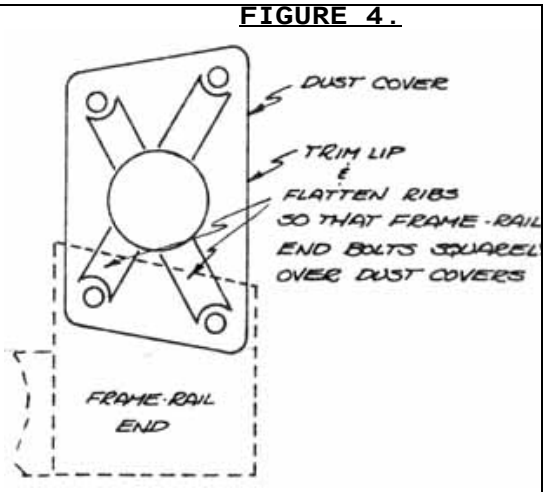


FIGURE 5

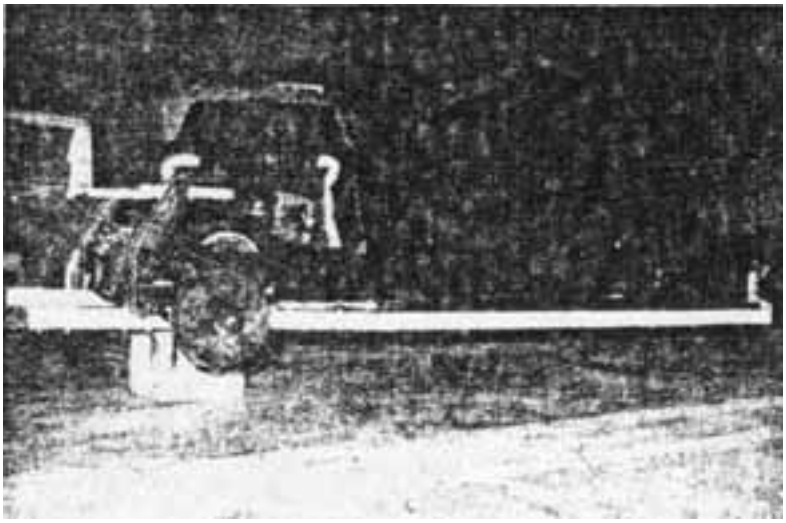


FIGURE 2

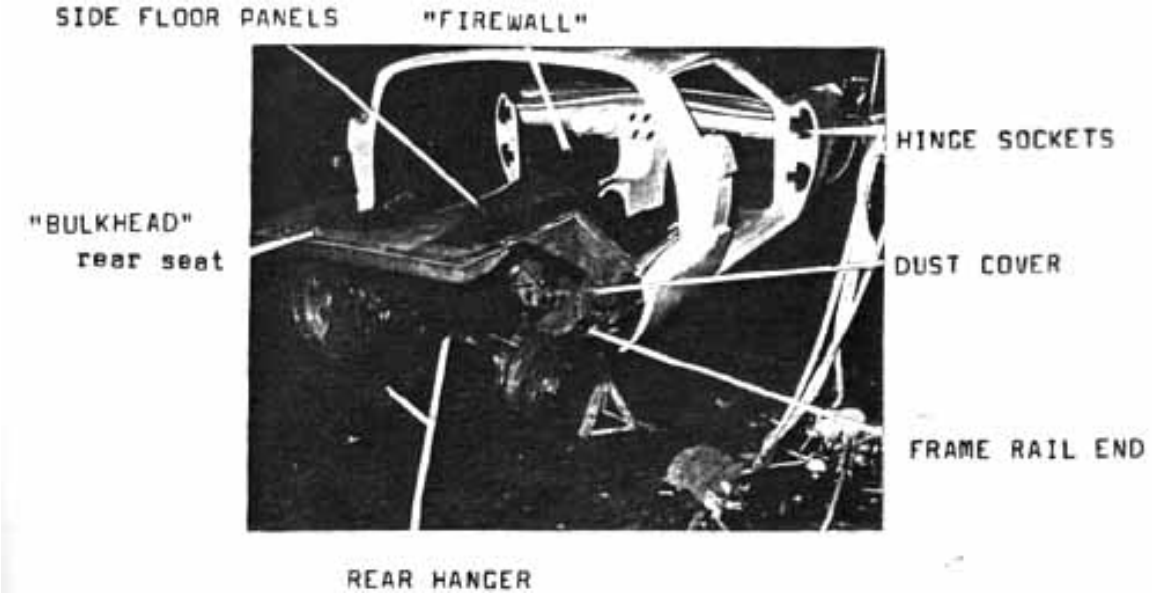
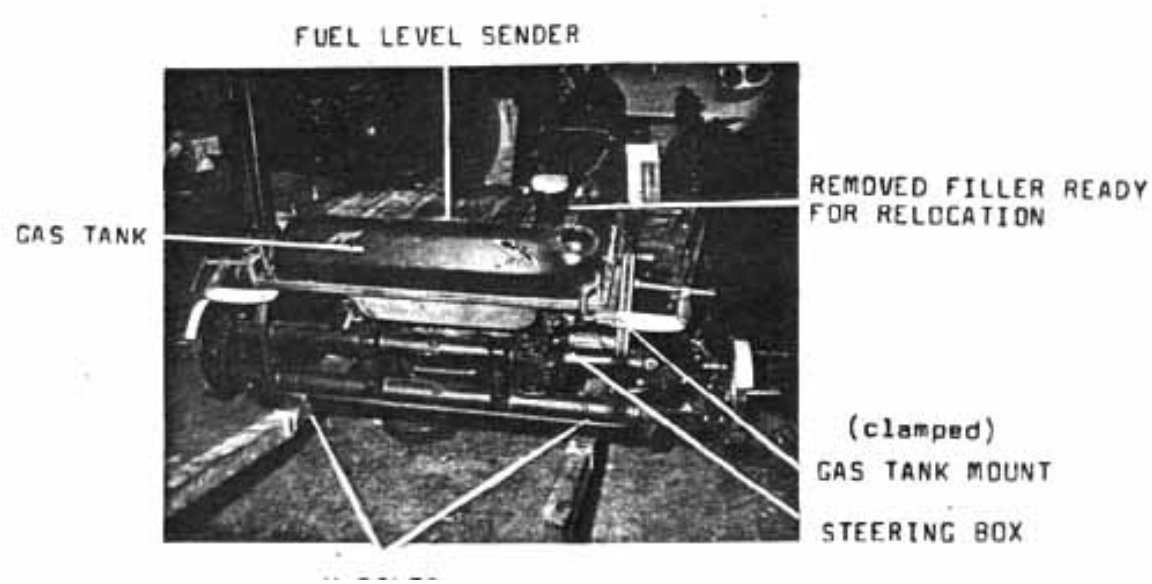


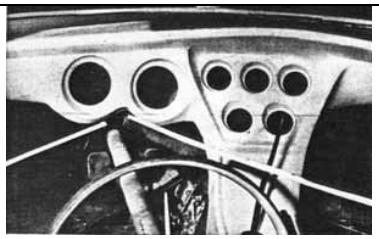
FIGURE 3



4. PREPARING THE VOLKWAGEN FLOORPAN - CONTINUED

the contours of the dash and a cast aluminum through-bushing for the firewall are available at extra cost from Fiberfab.

FIGURE 4

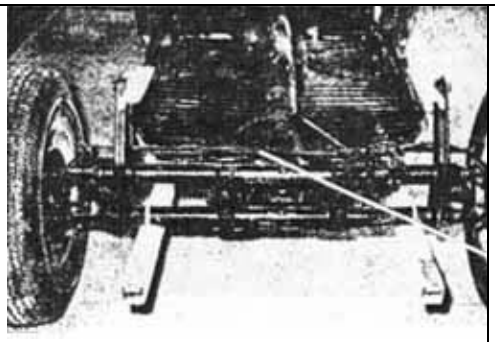
HOLE IN FIRE-WALL --loca-tion of through-bushing support for steering column	 FLOORPAN CROSSBRACE	STEERING COLUMN IS CLAMPED BE-TWEEN INSTRUMENT WELLS

The final step in preparing the floorpan is the placement of a gas tank. Many tanks -- such as the MG-Midget or Austin healey Sprite -- will fit but the easiest to use is the Volks-wagen tank itself. Figure 3 shows the gas tank supports (1-1/2" x 1-1/2" x 1/8" steel angle) inposition on the inside surface of the shock absorer tower. It is welded (or bolted) to the tower such that the flat portion of the tank is level and about 1" above the tops of the towers. The rear edge of the tank should be about 1/2" forward of the front edge of the floorpan crossbrace (see Figure 4). If the angle iron is bolted to the towers rather than welded, be certain to use large back-up wash-ers to avoid crushing the shock absorber tower.

The gas tank itself is framed atthe seam with 3/4" x 3/4" x 3/32" steel angle which is, in turn, bolted to the tower sup-ports. Do not bolt the tank in position until the body is in place.

Figure 5, looking through the "nose" of the Avenger GT-12 body,shows the final location of the gas tank. Note the filler cap position.

FIGURE 6

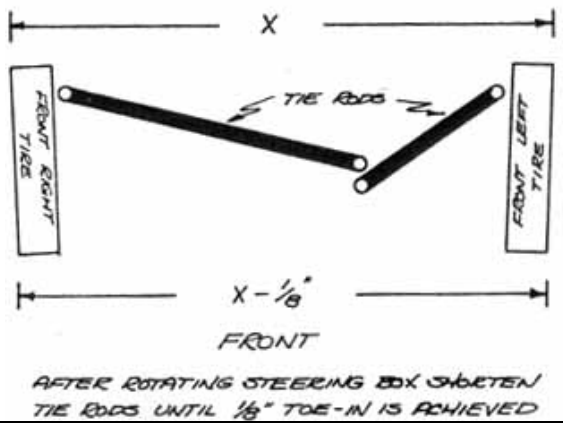


STEERING BOX

ALLOW LINKAGE CLEARANCE HERE

The GT body configuration requires that the steering column be loweres fromm its "stock" position. The required lowering is quite simple. The VW steering box is only clamped on the upper front tortion bar housing (see figure 6). It can be rotated on the housing just by loosening the clamps. With the clamps loosened, the steering box should be rotated such that the steering linkage just clears the "hump" in the center of the floor pan when the weels are turned from lock-to-lock. (lowering the steering box alters the toe-in adjustment of the steering geometry. Proper toe-in is re-established by ad-justing the tie-rods until the fronts of the front tires are about 1/8" closer together than the backs -- refer to Figure 7. Make sure the adjust-ment isw divided equally between the tie-rods).

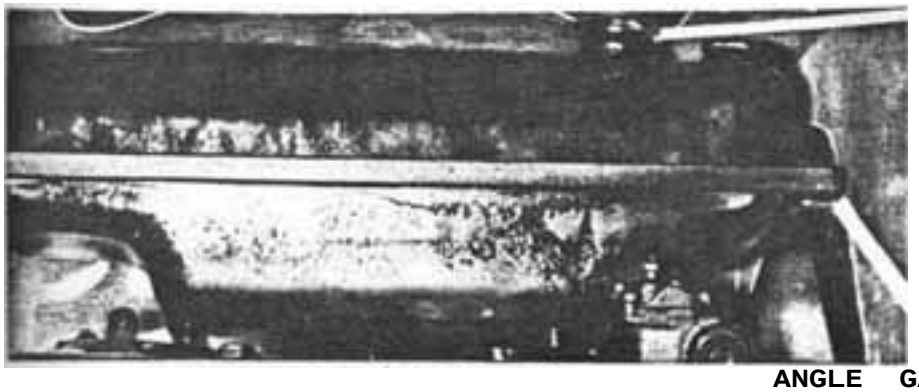
FIGURE 7



4. PREPARING THE VOLKWAGEN FLOORPAN - CONTINUED

FIGURE 5

FILLER CAP



ANGLE GAS TANK SUPPORT

In preparation for wiring attach 12" of #16 AWG wire to the fuel level sender -- it will be relatively inaccessible after the body is mounted.

Unlike most body conversions, it is NOT necessary to re-position the pedals and shift lever in the volkswagen floorpan. The shift lever should be bent back, however.

The last step in preparing the floorpan is to mount the metal rear hangers for the tail-section of the gt-12 body. Figure 2 shows the right-hand hanger bolted in place on the rear shock absorber tower. (When the fiberglass tail-section is installed shims may have to be placed under front, rear, or both hanger mounting feel to precisely align the tail section with the main body section.

the gas tank itself is framed at the seams with 3/4" x 3/4" x 3/32" steel angle which is, in turn, bolted to the tower supports (see Figure 10). Do not bolt the tank in place untill the body is in place. IF special gas tank filler caps are to be used, now is the time to cut the filler neck, if cutting is required. Now is also the time to install any new fuel level sender unit -- if a Volkswagen unit is not going to be used -- and to attach several feet of #16 AWG wire to the sender -- the filler and the sender will be relatively inaccessible after the body (2-piece) is mounted.

Unlike most body conversions, it is NOT necessary to re-position the pedals and shift lever in the Volkswagen floorpan.

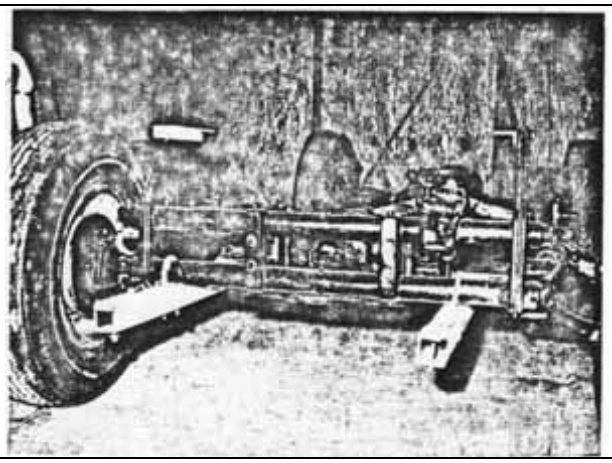
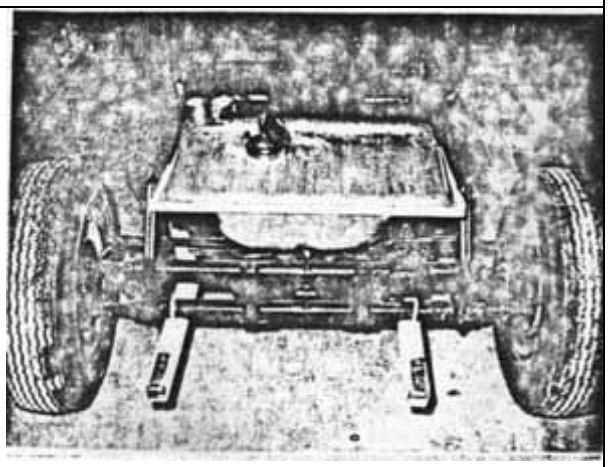


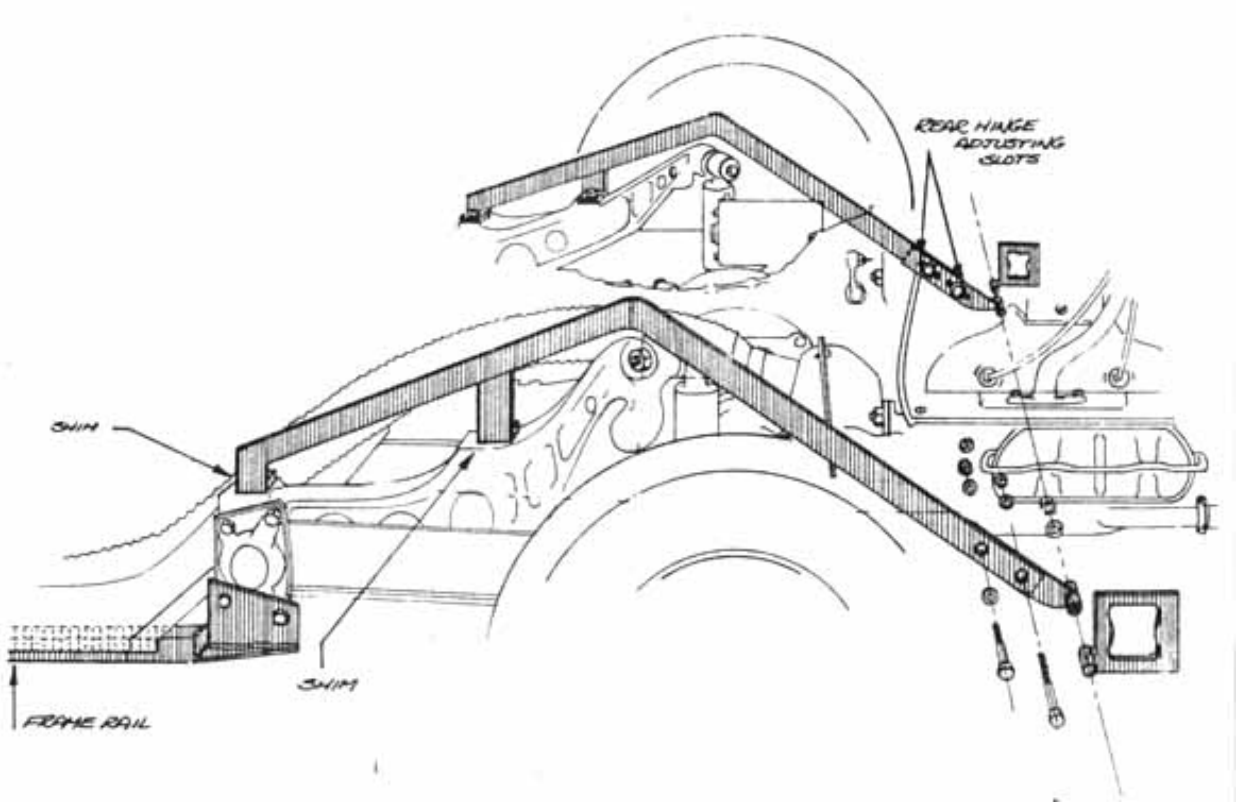
FIGURE 9

FIGURE 10



The next step in preparing the floorpan is to mount the rear hangers for the tail section of the GT body. Figure 8 shows both hangers in place on the mounts formerly used to secure the Volkswagen body. When the fiberglass tail section is installed, shims (washers) may have to be placed under the front, rear, or both hanger-mounting feet (see Figure 8) to precisely align the tail section with the main body section.

FIGURE 8



The final step in preparing the floorpan is the placement of a gas tank. Many tanks -- such as the MG-Midget or Austin Healey Sprite -- will fit but the easiest to use is the Volkswagen tank itself. Figure 9 shows the gas tank supports (1-1/2" x 1-1/2" x 1/8" steel angle) in position on the inside surface of the shock absorber tower. IT is welded (or bolted) to the tower such that the flat portion of the tank is level and about 1" above the top of the towers. The rear edge of the tank should be about 1/2" forward of the front edge of the floorpan crossbrace (see Figure 10). If the angle iron is bolted to the tower rather than welded, be certain to use large back-up washers to avoid crushing the shock absorber tower.

In the following instructions, the "firewall" is the fiberglass section forming the front wheel-wells and the wall just ahead of the driver's and passenger's feet.

The "bulkhead" is the rear fiberglass well formed by the rear jump-seats and the fiberglass panelling in the tail section of the Avenger formed into your Aztec when you recieve it.

Figure 2 shows the main body section in place on the floorpan. Note its position is just ahead of the torsion bar dust covers and directly between the tail-section hangers. Figure 4 shows the position of the firewall on the flooepan crossbrace.

Prior to putting the main body section on the floorpan. the hole for the steering column should be cut. the position of this hole is cast into the firewall and is an easily identifiable indent. Cut through the indent with a 2" to 2-1/2" diameter hole saw.

After cutting the hole, place the body on the floorpan with the firewall directly on top of the front floorpan crossbrace (the brace to which the brake master cylinder is bolted). Use the rubber weatherstripping saved from the Volkswagen (or new stripping) between the body and the floorpan along the edges. Silicone seal can be used to weatherproof the joint between the firewall and crossbrace.

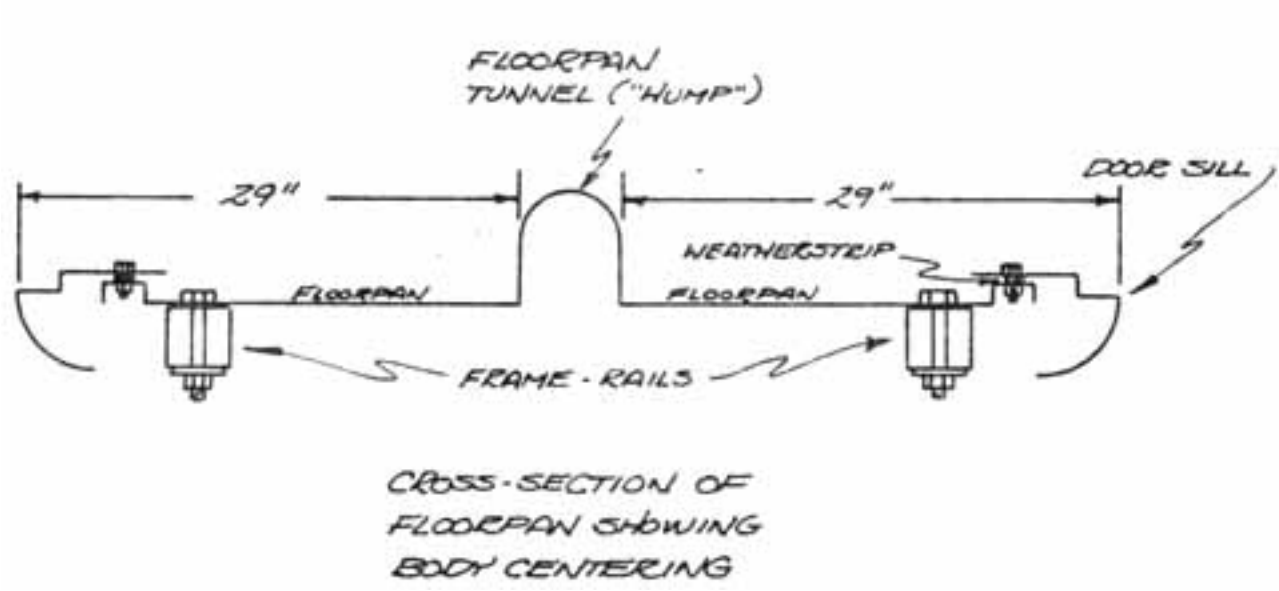
Drill the holes in the side-floor-panels. These holes should coincide with the original Volkswagen body mounting holes. Use as many of the original holes as possible -- 5/16" bolts, nuts and washers should suffice. Fasten the firewall to the crossbrace with sheet metal screws -- and in the same manner fasten the bulkhead to the floorpan and tunnel.

The most satisfactory method for mounting the tail section is to put it in position behind the main body section and clamp it in place, along its leading edge, just behind the side window openings. Suppoort the tail section just behind and below the rear window opening with a 1/2" thick block placed between the lip of the bulkhead.

With the tail-section temporarily secured in the manner described above, adjust the rear hangers with the shims and/or adjust the hinge pin collar (by means of the slotted bolt holes) untill the hinge pin can be freely inserted through both the hinge pin collar and the collar laminated into the tail section. With the hinge pins inserted, the temporary clamps can be removed.

Corvair rubber pads (#3732247) are used to cushion and help align the rear section against the main body section. The receptacle for the pad is already formed into your Avenger.

Figure 11



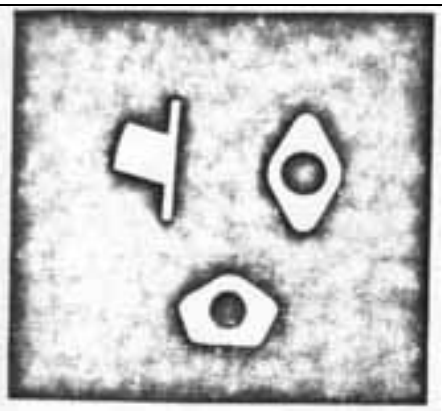
CROSS-SECTION OF FLOORPAN SHOWING BODY CENTERING

When the body is finally located fore and aft and side to side, it can be bolted into place. Drill holes for bolts through the side-floor-panels using the original VW body-mounting holes in the floorpan as a guide. Use as many of the original holes as possible. 5/16" bolts, nuts, washers and lockwashers should suffice. Fasten the firewall to the crossbrace as-ing sheet-metal screws. Now, the frame-rails are moved apart at the front untill they contact the inner surface of the fiberglass stiffening panels in the nose section. Tighten the U-bolts (use 2" diameter by 1/8" thick washers under the nuts to avoid crushing the frame rail tube) and the bolts at the rear torsion bar dust covers.

Drill through the stiffening panels into the frame rail ends and attach the panels to the rails using sheet metal screws and large fender-washers. This will support the front of the body. Drill through the frame-rails into and through the floorpan at four or five points along each of the rails starting about one foot ahead of the rear edge of the floorpan -- use 3/8" hardware to bolt through these holes to secure the rails to the pan (don't forget the washers to keep the rails from crushing). If any of the rail attachment holes pass through the fiberglass side-floor-panels, open the holes in the fiberglass with a 1" hole saw to clear the bolts -- the body should bolt to the floorpan only, not to the floorpan plus frame-rails (see Figure 11).

The installation of the steering column is accomplished by passing the column/shaft assembly through the firewall. The shaft engages the flex-ible joint on the steering box and is bolted in place. The column (ie., the tube surrounding the steering shaft) is clamped at the firewall and

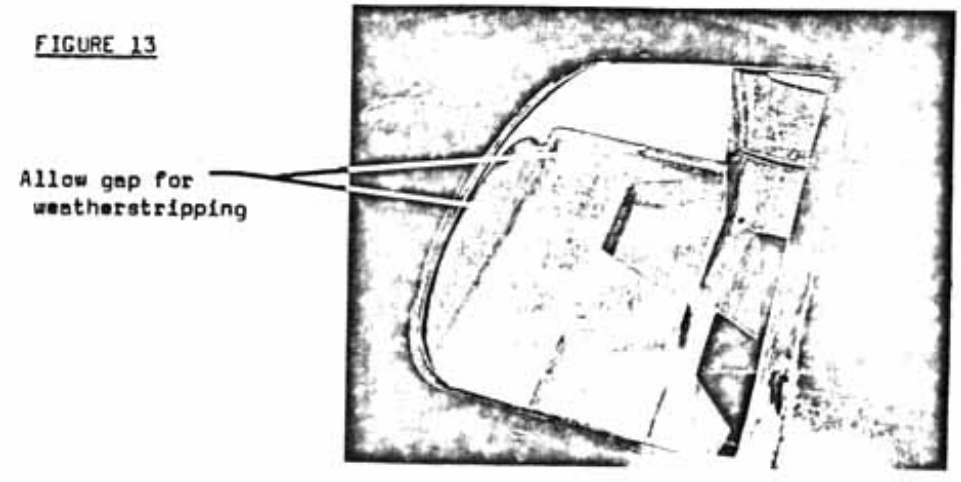
FIGURE 12



under the dashboard between two large instrument openings -- typical mounting hardware is represented in Figure 12, showing the fiberfab steering bracket kit.

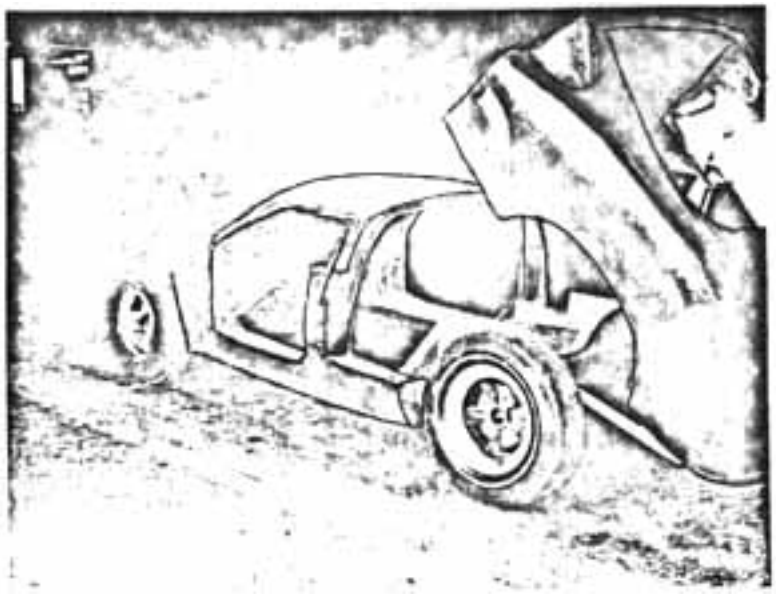
Now, place the fiberglass jup-seat/rear bulkhead part on the floorpan behind the front body section. Put the rear body section in position behind the front section and over the jump seats. Clamp the rear section temporarily into place along its leading edge, just behind the side window openings and just ahead of the rear window opening. With the rear section temporarily secured, adjust the rear hangers with shims and/or adjust the hinge pin collar (by means of the slotted bolt holes) -- see Figure 8 -- untill the hinge pin can be freely inserted through both the adjustable hinge pin collar and the collar laminated into the rear section. With the hinge pins inserted, the temporary clamps can be removed. The jump seats are moved on the floorpan untill the portion of the bulkhead attached to the jumpseats is aligned with the portion of the bulkhead laminated to the rear section just behind the rear window opening. A slight gap between the uper and lower portions of the bulkhead should be allowed to accomodate weatherstripping. Vertical adjustment of the jump-seats is accomplished by inserting plywood between the seats and the floorpan. The seats are secured in place by bolting to the floorpan (5/16)" hardware) and bolting or pop-riviting to the front (or main) body section. Figure 13 shows the jump seats in position and figure 14 shows a complete two-piece body installated on a floorpan.

FIGURE 13



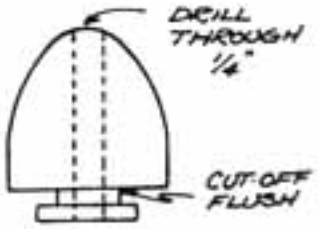
5(a) - MOUNTING THE AVENGER GT-12 -- TWO PIECE BODY -- CONTINUED

FIGURE 14



To complete the installation of the rear section, rubber pads (Corvair part #3732247) are used to cushion and help align the rear section against the front section. The pads are bolted to the rear section and receptacles for the pads are formed into the front body section.

A 1/4" round-head stove bolt is used to bolt the pad to the rear body section. The flange on this body section is marked where to drill for approximate positioning. We suggest drilling the hole large enough to allow you to move the pad slightly for perfect adjustment. The receptacle for the pad is designed that the pad must be swollen by tightening the stove bolt. Be sure to use a washer under the nut. We also sugggest double-nutting the stove bolts to insure that your adjustments once made will remain in place. The drawing at the right shows how to drill (and cut) the Corvair rubber pad for mounting.

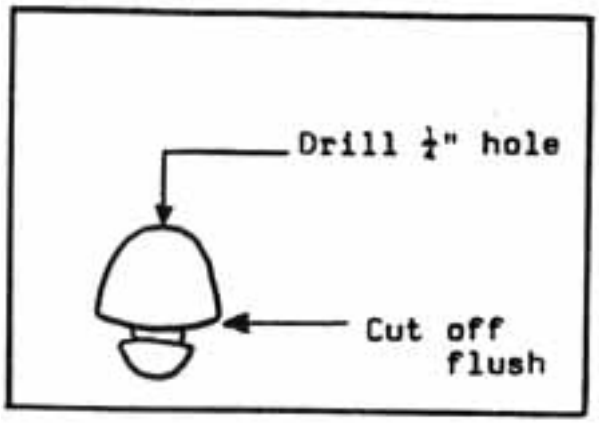


The mounting of the GT-12 body is completed by installing the doors. The steps to be takes to install the Avenger doors are:

1) Attach the hinges to the doors. Drill the hinge mounting holes through the guide-marks cast on the edge of the doos. The doors can be simply bolted in place by passing 5/16" bolts through the holes in the forged section of the hinge, then through the holes in the door: add a washer, lockwasher and nuts on each bolt; and tighten.

5. MOUNTING THE AVENGER GT-12 BODY - CONTINUED

A1/4" round-head stove bolt is used to bolt the pad to the rear body section. The flange on this body section is marked where to drill for approximate positioning. We suggest drilling the hole large enough to allow you to move the pad slightly for perfect adjustment.



The receptacle for the pad is so designed that the pad must be swollen by tightening the stove bolt. Be sure to use a washer under the nut. We also suggest double-nutting the stove bolts to insure that your adjustments once made will remain in place.

The drawing at the left shows how to drill (and cut) the Corvair rubber pad for mounting.

To complete the mounting of the Avenger GT-12 body. the doors must be installed. Figure 2 shows the hiinge sockets laminated into your Avenger GT-12 body at the factory (and pre-drilled). Figure 7 shows the hinges attached to the doors.

The hinges that are used on the GT-12 doors are obtained from your local Ford parts dealer as 1965 Ford passenger car or station wagon, front door hinges. Note in Figure 7 that the Avenger uses the Ford right hand hinges on the left door and vice-versa. Also the top Ford hinges are mounted at the bottom of the Avenger doors.

The doors are fitted simply by placing them in the door openings and temporarily seciureing the m
with clamps -- the hinges are tightly bolted in the hinge sockets and the clamps released.

FIGURE 7

We have found at the factory that the door mounting operations are expidited considerably by using nut-plates and "horseshoe shims" as shown in figure 8. Four nut-plates per door are required along with an assortment of shims (a dozen of each thickness should be sufficient). The nut-plates are installed in the same manner as nuts but do not require a wrench for tightening -- all shimming, fitting and tightening can be done by one person working in the wheelwell.

5(a) - MOUNTING THE GT -- TWO PIECE BODY -- CONTINUED

FIGURE 15

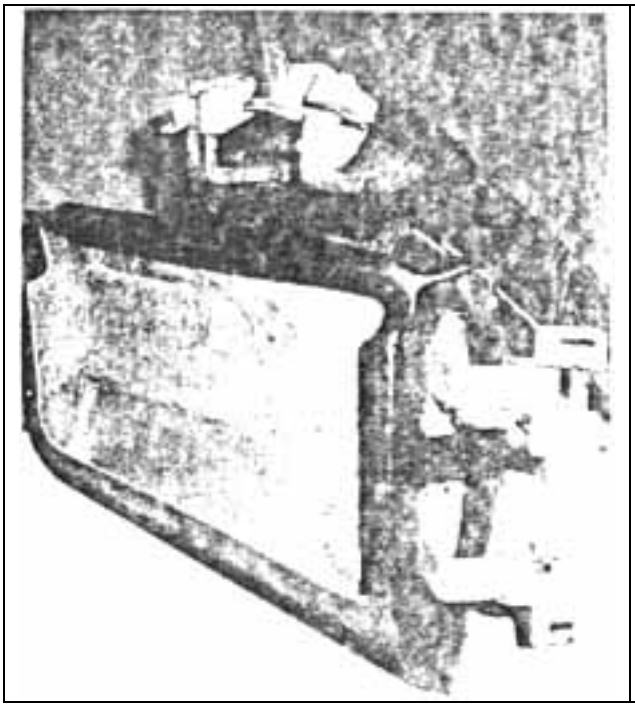
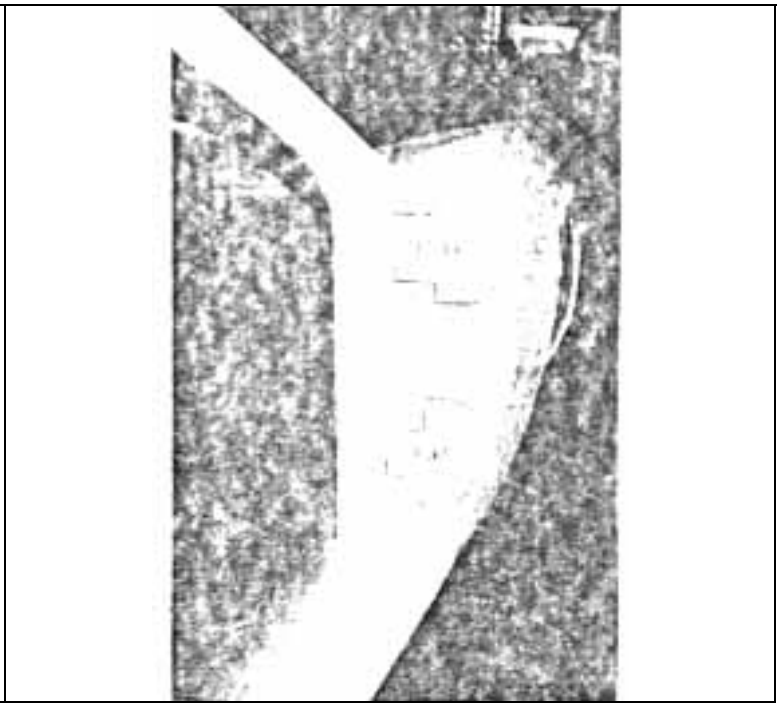


FIGURE 16



1) For door fitting purposes, however, it is convenient if the bolts stay-put in the hinge even when the nuts inside the dor are loosened, ie., the nuts can be loosened or retightened without having to open the door to put a wrench on the bolt heads. The bolts can be secured in the hinge by tack-welding, epoxy or tapping the hole in the hinge.

   Figure 15 shows the hinges mounted on the doors.

2) Cut-out the hinge socket openings as shown in figure 16. The outline of the cut-out is inprinted in the door jamb as a guide for cutting.

3) Slot the pre-drilled holes in the hinge sockets. The slots should be about 1" long running horizontally.

4) Position the doors in the door openings. Clamp temporarily into place.

5) Attach the hinges to the hinge sockets in the body -- use shims, if required.

6) Secure all bolts -- in the door and in the hinge sockets -- and release the clamps.

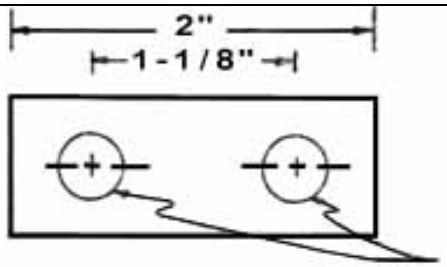
5(a) - MOUNTING THE GT -- TWO PIECE BODY -- CONTINUED

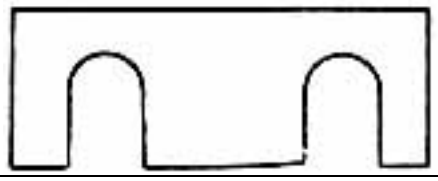
7) Any further minor adjustments of the door position should be made by loosening the nuts in the door. shiftinging the door position as required, and retightening the nuts.

The hinges that are used on the GT doors are obtained from your local Ford dealer (see parts list for part numbers) or a wrecking yard as post-1965 Ford passenger car, front-door hinges. Note in Figure 15 that the GT used the Ford right-hand hinges on the left door and vice-versa. Also the top Ford hinges are mounted at the bottom of the GT doors.

We have found at the factory that door mounting operations are expedited considerably by using nut-plates and "horseshoe shims" (see Figure 17). in the hinge sockets. Four nut-plates per door are required along with an assortment of shims (a dozen of each thickness should be sufficient). The nut plates are installed on the outside of the hinge sockets. in the same manner as nuts but do not require a wrench for tightening. Once the hinge mounting bolts are engaged in the nut plates, all shimming, fitting and tightening operatioins can be achieved by one person working in the wheel-well. Additionally, the nut-plates provide a better "bite" on the fiber-glass then do plain nuts -- this reduces the possibility of the hinges slipping once they are installed.

FIGURE 17

Material: 1/4" steel		Drill and tap
	NUT PLATE	5/16--18

Material: 1/32" aluminum 1/16" aluminum 1/8" aluminum	

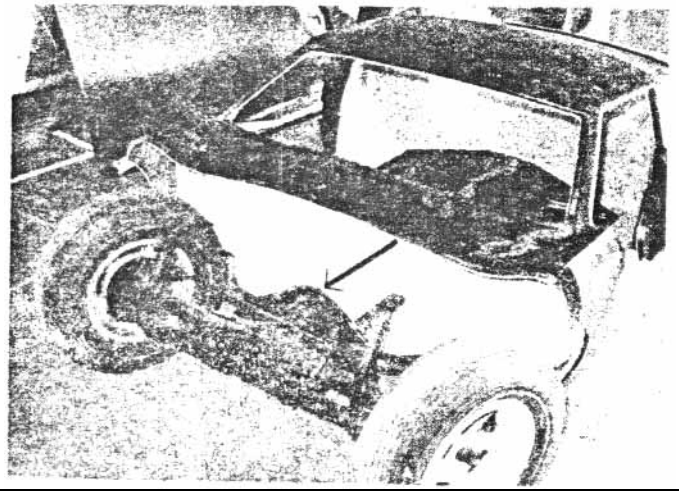
HORSESHOE SHIM

5(a) - MOUNTING THE GT -- TWO PIECE BODY -- CONTINUED

All of the preliminary operations described in the instructions for mounting the two-piece body are applicable to mounting the threepiece body. After weatherstripping, lower the main body section onto the floorpan (unlike the two-piece body, the three-piece body main section clears the gas tank even with the tank rigidly in place--hence the gas tank can be secured to its supports prior to mounting the three-piece body). The body is centered as shown in Figure 11 and the proper fore and aft position is with the front surface of the firewall flush with the floorpan front crossbrace (see Figure 18). Bolt the three-piece body main section to the floorpan in the manner described for securing the two-piece body front section.

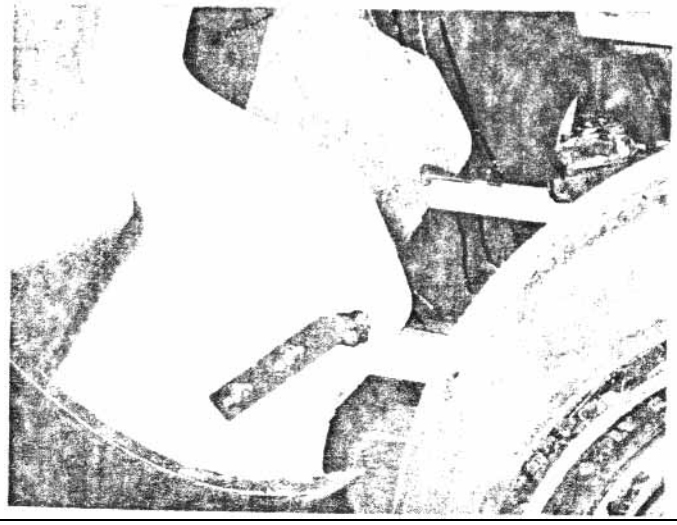
With the main section in plaace mount the tail section by temporarily clamping it in and adjusting the rear hangers until the hinge collars are aligned (see the details of mounting the two-piece body rear section). Install the hinge pins and release the clamps.

FIGURE 18



The nose section of the three-piece body can be fixed permanently in place so as to become, effectively the front of a two piece body, or it can be pivoted to open. In either case--fixed, or pivoted--the nose section must be supported by the frame-rails. Figure 19 shows the pivote arrangment recommended by the factory. referring to the figure--a fixed pivot as provided on the end of the frame-rails in the form of a weld-on hinge collar. This collar engages a hinge pin attached to the nose section. The hinge pin assembly is comprised of a 5/16" bolt (at least 3" long), two large washers and a nut, and is secured to the nose inner panel--one assembly on each panel; right and left--as shown in Figure 20.

To locate the position of the hinge pin on the inner panel, temporarily clamp the nose section to the main section along the flange just ahead of the windshield opening. The left the nose (which, in the three-piece body con-figureation, droops considerably when unsupported) until the point formed by the intersection of the inner panel and the trailing edge of the underside of the nose is 1/2" above the level of the underside of the frame-rail (see Figures 21 and 22). With the nose lifted, mark the inner panels through the hinge collars. Install the hinge pin assemblies in holes drilled at the points marked.

FIGURE 19	

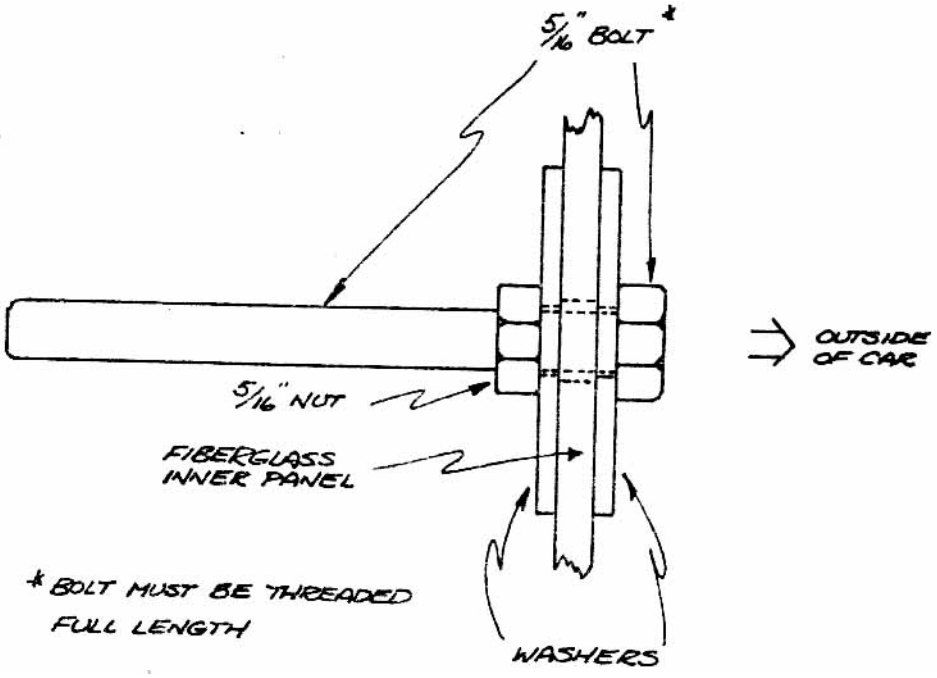


FIGURE 20

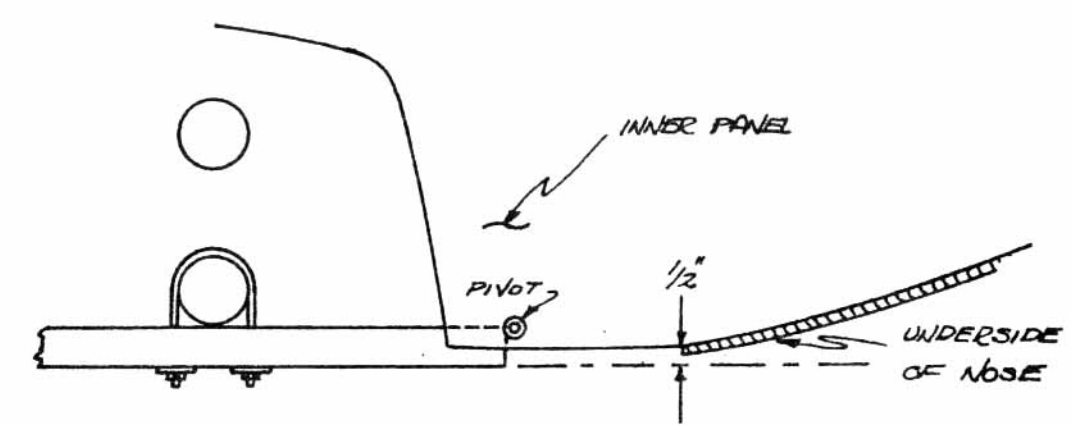
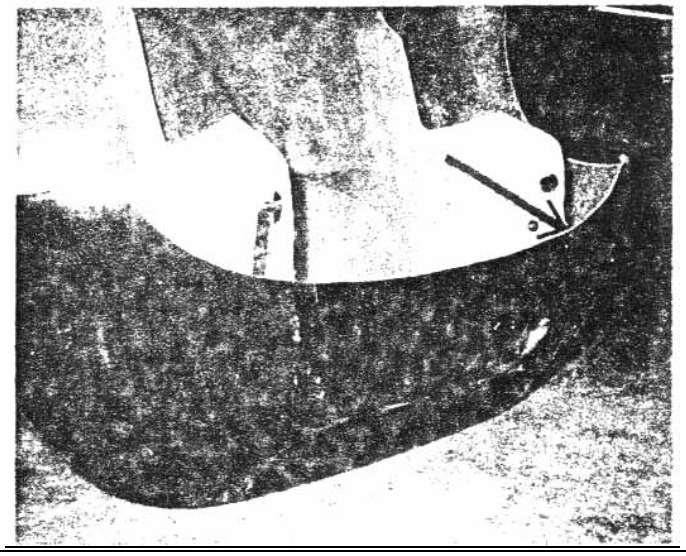


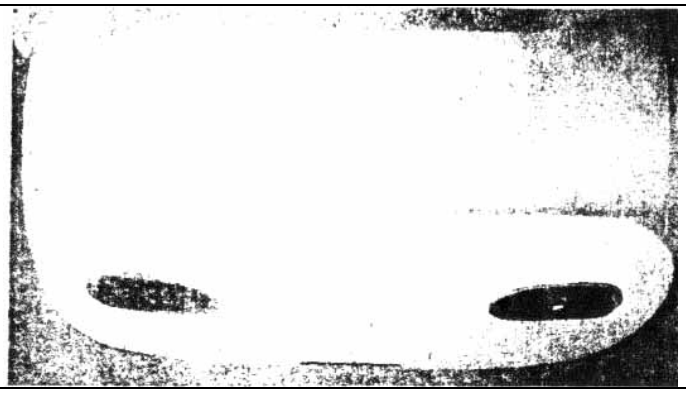
FIGURE 21

FIGURE 22	

With the hinge pins engaged in the hinge collars, move the frame-rails apart until the hinge collars just contact the nuts on the hinge pins. Now tighten the U-bolts and the bolts at the rear torsion bar dust covers. Fasten the floor pan to the frame rails in the same manner as directed for the two-piece body.

Use the instructions for the two-piece body to install the steering column and doors.

FIGURE 32



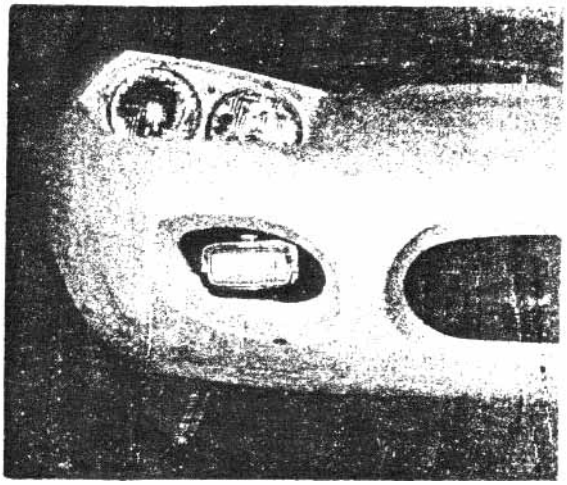


figure 33

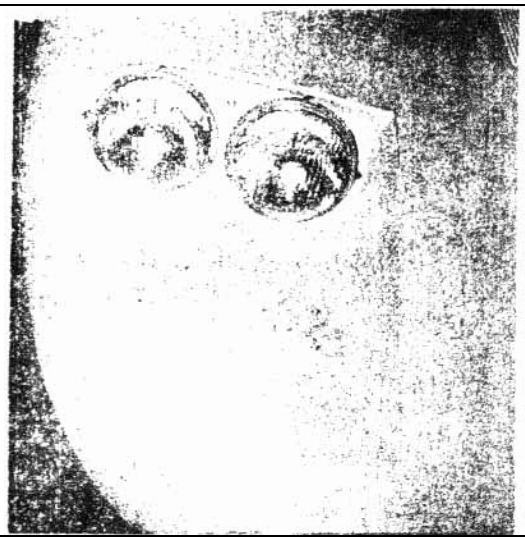
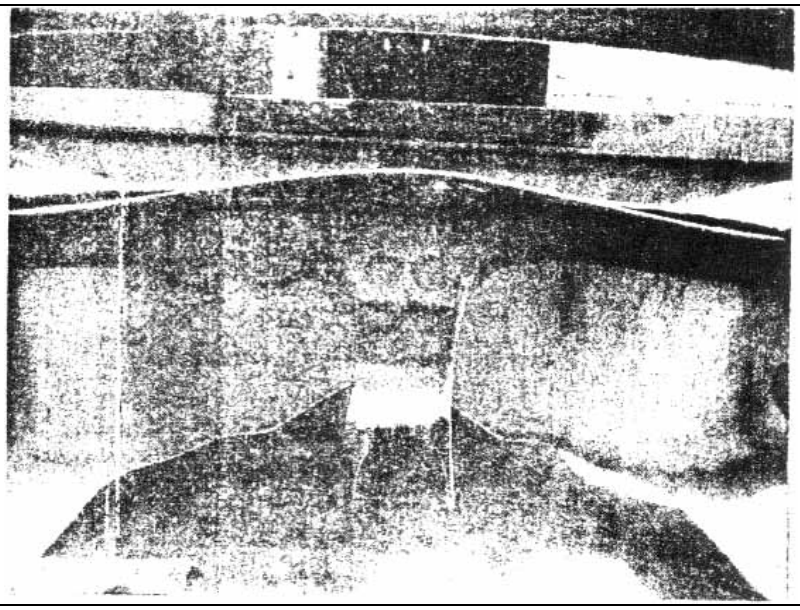


figure 34

FIGURE 35



6. INSTALLING THE WINDOWS AND WINDSHIELD

The Aztec Avenger GT-12 body is designed specifically to use the Chevrolet Corvair (1965 standard) windshield and surrounding chrome trim. The windshield is supplied as part of the DELUXE kit. The chrome tril is available from your local Chevrolet dealer if you wish to use it on your Avenger.

The windshield is installed using silicone rubber sealant (see chapter 2/Construction Materials). The lip of the windshield opening is filled with sealant and the windshield glass is immediately pressed into place. Next, the chrome trim is pressed into place around the glass and the excess sealant is wiped away before it commences to set. Do not disturb the glass for at least eight hours after installation.

The rear window opening of the Aztec Avenger is designed to accept the Ford Mustang (1965-66 2+2 "Fastback") rear window, rear window rubber moulding and the chrome surrounding trim. The DELUXE kit includes the rear window glass. The rubber molding and chrome trim and trim retaining clips are available from your local Ford dealer.

If chrome trim is used, the trim retaining clips should be screwed in place around the window opening before the glass is installed. Small wood screws will suffice to hold the retainers securely.

The rear window is installed by first placing the rubber molding around the glass and then placing a talc-covered (for slipperiness) 1/8" cord (or twine) in the groove around the outside of the molding.

Then the window is put in position in the wondiw opening as shown in Figure 9 (Drawing A). Now, with the window being pushed firmly into the opening, a person in the car withdraws the cord -- Figure 9 (drawing B) -- from the groove by pulling perpendicularly to the windshield surface. As the cord is pulled out of the groove, the molding should lay over the fiberglass lip. When the cord is fully removed, the molding should completely engage the lip as illustrated in Figure 9 (Drawing C). After the rear window is installed, the chrome trim can be snapped into its retainers.

Side windows may be as elaborate as you desire. The simplest window would be a piece of plexiglas (clear plastic) permanently affixed above the door and sealing against foam rubber weatherstripping when the door is closed.

We have successfully installed Ford LTD (1966 4-door hardtop) curved glass roll-up windows, using a Ford Mustang vent window and window guides. This installatioin makes as elegant side window arrangement but requires considerable ingenuity on the part of the builder to make it smoothly operable.

6. INSTALING THE WINDOWS AND WINDSHIELD

A side window kit is available from Fiberfab which includes side window glass, window guide channels, weatherstripping and fixed vent window. The roll-up lift mechanism is supplied by the builder and is stock Volkswagen.

FIGURE 9

Rear Window Installation

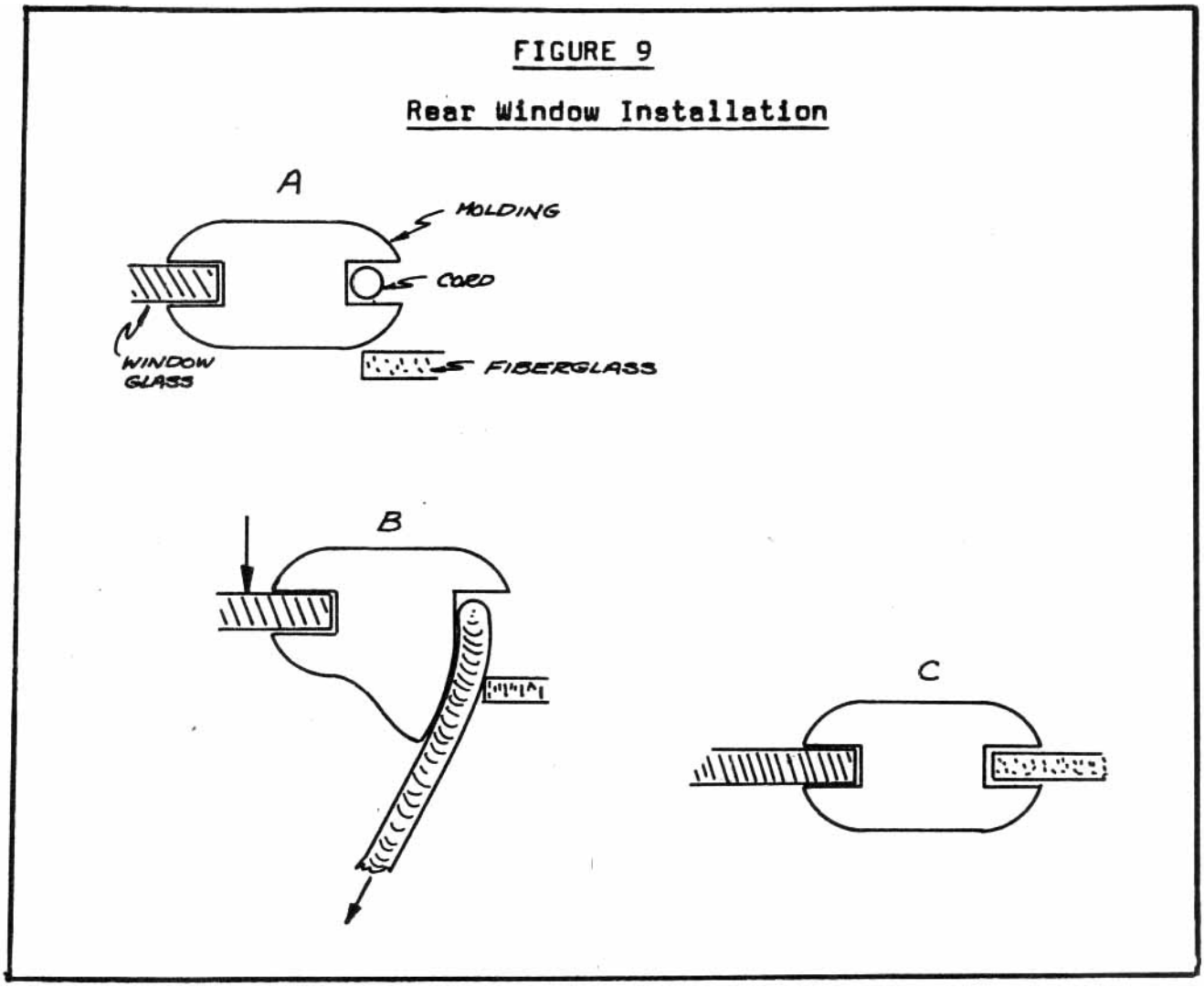
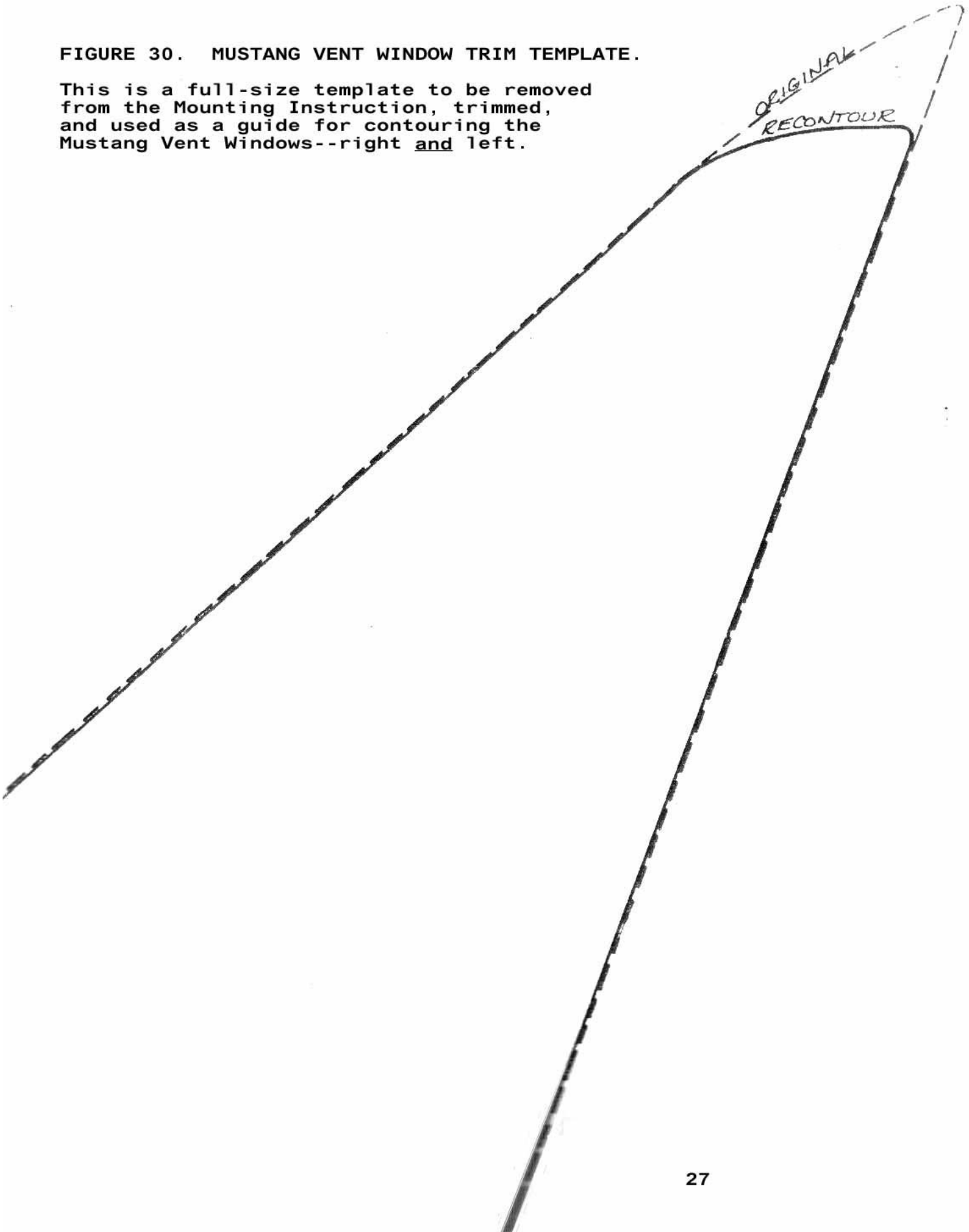
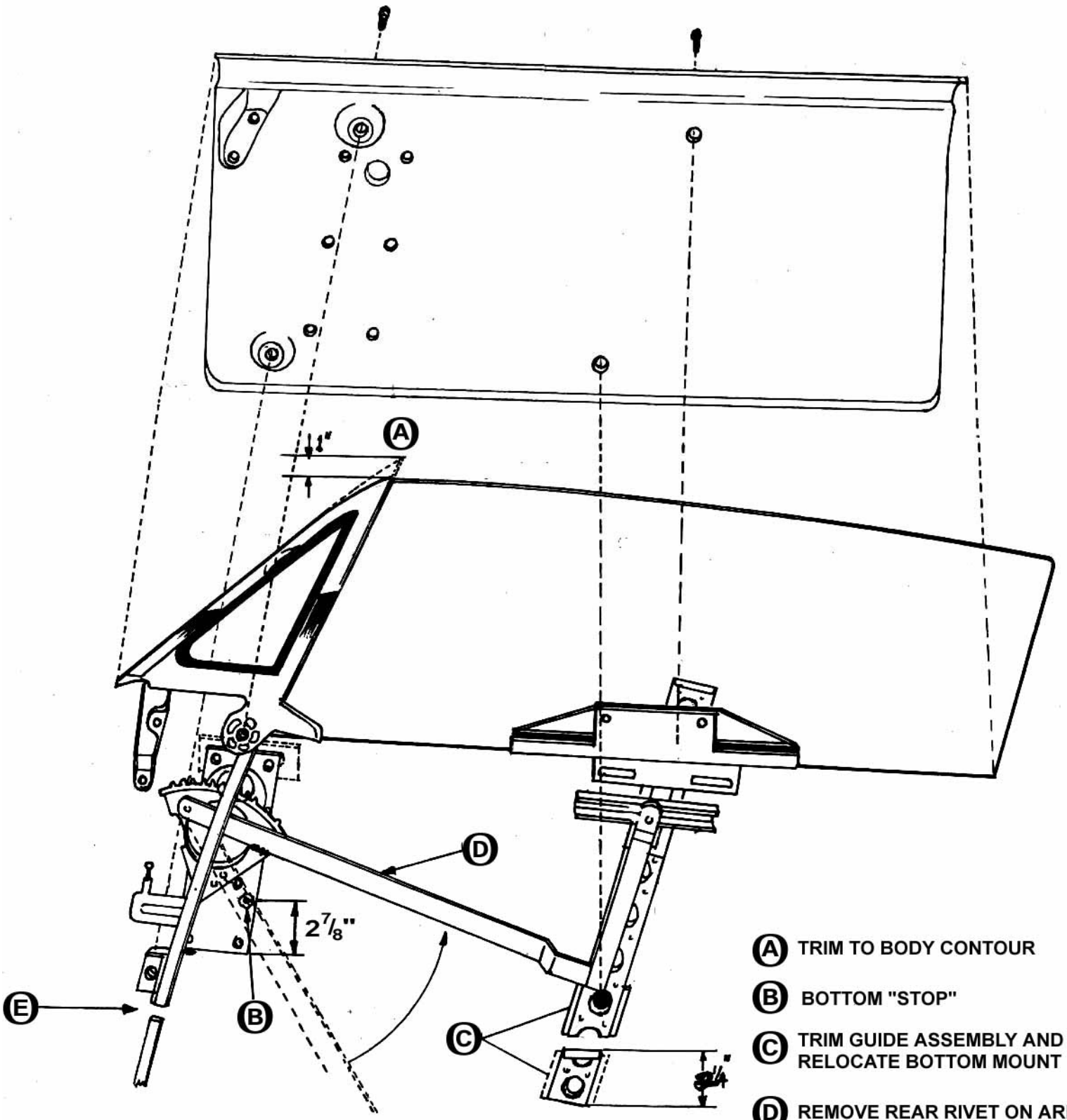


FIGURE 30. MUSTANG VENT WINDOW TRIM TEMPLATE.

This is a full-size template to be removed from the Mounting Instruction, trimmed, and used as a guide for contouring the Mustang Vent Windows--right and left.





A TRIM TO BODY CONTOUR

B BOTTOM "STOP"

C TRIM GUIDE ASSEMBLY AND RELOCATE BOTTOM MOUNT

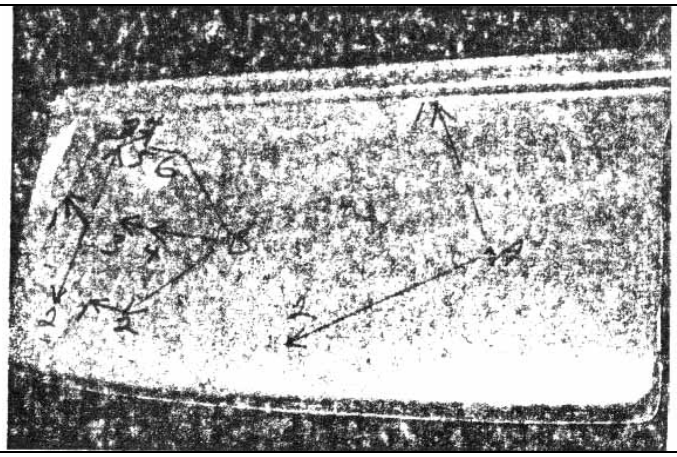
D REMOVE REAR RIVET ON ARM AND SWING ARM UP 2 INCHES (MEASURE FROM CENTER OF RIVET HOLE)

E TRIM TO BRACKET

PARTS USED:

FIBERFAB DOORPANELS
1965 MUSTANG WINDWING - COMPLETE
1965 FORD LTD FRONT DOOR WINDOW GLASS

FIGURE 24



guide-track. The six "B" holes are used to mount the regulator (crank-up mechanism). The "C" holes (there are four) are drilled using the vent window frame as a guide (see subsequent figures). All holes are drilled with a 5/16" drill bit.

Figure 25 shows a stock (right) and modified roll-up guide-track and track-rider (the VW parts numbers are: 141-837-5528 for a right door and 141-837-5518 for a left door). The first step in modifying the guide track is to cut the top (the track riders are nearest the "tops" of the guide-tracks if Fig. 25) of the track at a 25-degree angle as shown in the figures. Then make a parallel cut 18" along the track. The extra slot in the track-rider is added subsequently.

Figure 26 shows the reverse side of the guide-tracks. Note that the botom attachment-point must be moved up 4 3/8". To perform this repositioning drill-out the attachment spot welds (obviously, this operation must be performe
d
before the track is shortened to 18"), remove the attachment point and secure it in its new position--welding (asin the figure) or epoxy cement are appropriate for the fastening--screws or rivits should not be used because nothing should project on the other side of the track.

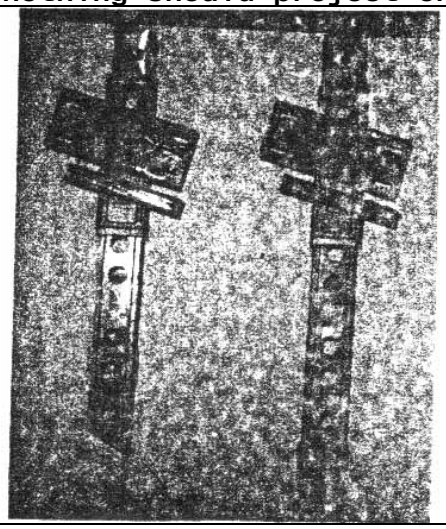


FIGURE 25

FIGURE 26

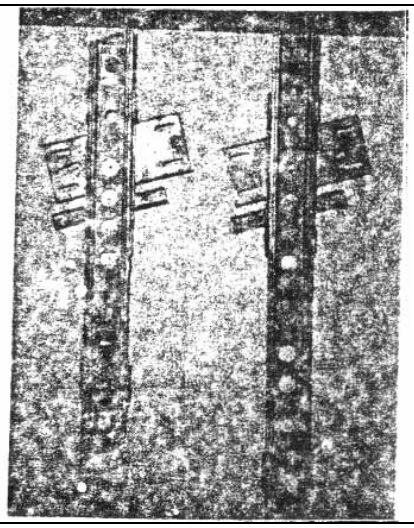


Figure 27 shows a stock (right) and modified regulator (the VW parts numbers are: 141-837-502A for a right door and 141-837-501A for a left door. To modify the regulator the L-shaped arm must be rotated 32-degrees clockwise as viewed in Figure 27. To move the arm, drill out the lower (in the figure) securing rivit and moove the arm so that the rivit hole is positioned 2" away from its original position--secure by welding or epoxy. Note also that the "up-travel stop" must be lengthened to 2 5/8".

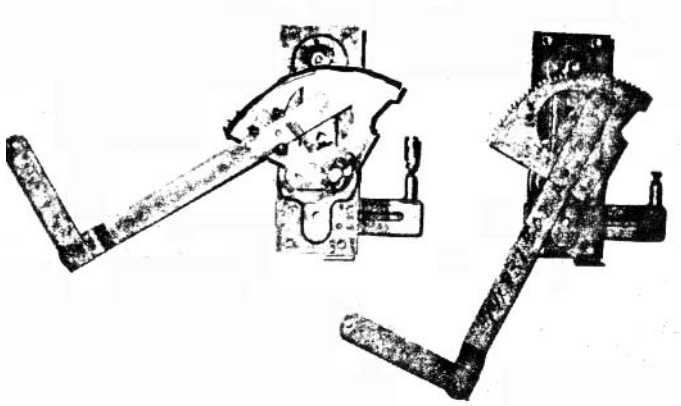
FIGURE 27	

Figure 28 shows the LTD window glass installed in a VW glass-holder (part number 141-837-571A) using butyl tape (silicone rubber seal may also be utilized--see your local parts store for other window-affixing materials). The track-rider is attached to the glass-holder so that the rider is paralel with the front edge of the glass as shown in the figure. Use one original slotted hole and cut a second as in figures 25,26, and 28.

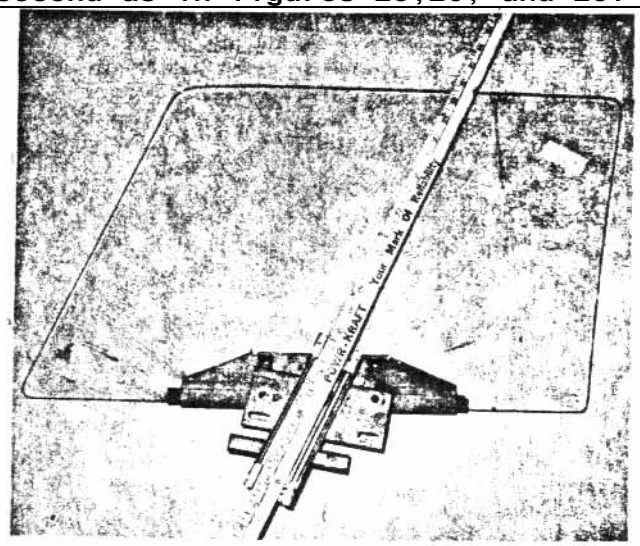
FIGURE 28	

Figure 29 shows the roll-up guide-track and vent window assembly mounted on the inner-panel. Before mounting the vent window cut-off the window guide channel just below the lower attaching plate as in the figure. Also use Figure 30 as a full-size template to re-contour the top of the vent window frame to match contours of the GT window opening. Use a file or grinder to carefulyremove metal from the frame. Referring again th figure 29--after the guide track and vent window are loosely bolted in place use a square to set the track and the channel parallel.

Finally, install the glass by bolting the glass holder to the track-rider--position the front edge of the glass firmy in the guide channel using the slotted adjustment holes in the track-rider. Now install the regulator by engaging the L-shaped arl in the track-rider and securing the crank assembly to the inner pannel using six bolts (get the metric hardware you need at your VW dealer's parts department). The completed roll-up window assembly is shown in Figure 31 in the maximun "UP" position. Be sure to grease the track, crank-gear,etc. before installing the inner-panel, with the mechanism attached, in the door--fasten the panel to the doo
r
with flat-head bolts at the top of door, when nuts can be applied, and with #8 X 3/4" interior trim screws (with countersunk washers) along the sides and bottom of the door. Not also, in Figure 31, the application of weather stripping along the inside, top edge of the inner-panel--use small wood screws or epoxy cement.

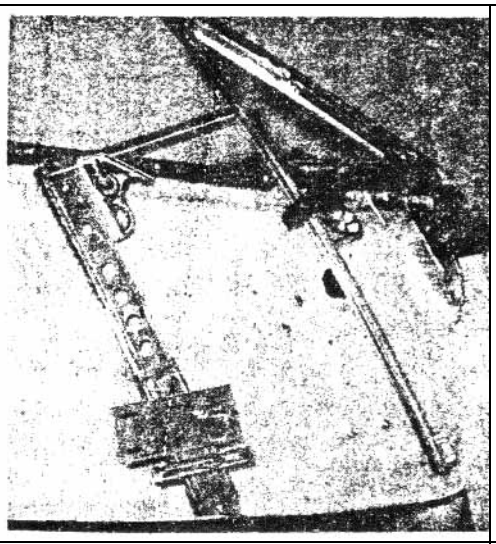


FIGURE 29

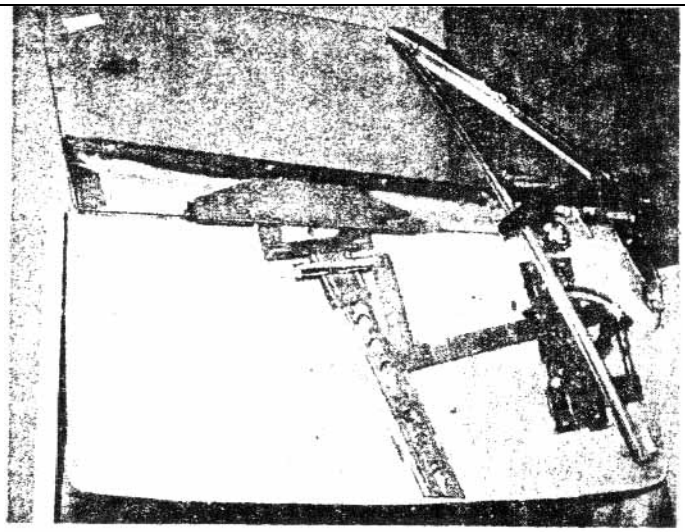


FIGURE 31

7. WIRING AND INSTRUMENTS

This section of the instructions provided the ground-rules for completing the basic wiring of your AZTEC AVENGER GT-12. the configuration described below is based on the factory-assembled wiring harness which has proved most adaptable to a variety of engine/lighting.instrumentation combinations. The factory-prepared harness is available from Fiberfab at extra cost.

To begin, a wiring harness should provide:

1. starting
2. ignition
3. instrumentation -- temperature(s), oil pressure, fuel level, battery/generator condition, etc. using gauges and/or lights
4. interior lighting
5. exterior lighting
6. power for accessories (switch controlled)

At this stage in the construction process, most items to be wired have been installed, viz., the starter, starter solenoid, ignition, coil, generator/alternator, voltage-regulator, fuel-level sender and oil-pressure*, oil temperature*, cylinder head temperature*, senders.

(Special sender units such as those used in conjunction with a tachometer should be mounted near the engine but in an area which avoids high temperatures). The following items, however, have not been installed:

THE LIST BELOW CONTAINS THE ITEM TO BE INSTALLED PLUS REMARKS CONCERNING MOUNTING LOCATION AND RECOMMENDED SOURCES FOR THE ITEM.

1. TAIL LIGHTS/BRAKE LIGHTS -- in the rear panel of the tail section wherever a pleasing appearance is gained -- 1967 Pontiac GTO tail lights or any lights which mount on a relatively flat surface inclined about 15 degrees from the vertical.

2. FRONT PARKING/TURN INDICATOR LIGHTS -- in the two recesses adjacent to the nose opening in the body -- post -1964 Pontiac GRan Prix parking lights.

3. HEADLIGHTS -- in the mounting area provided in the GT-12 body -- post-1958 Chevrolet dual headlight units.

4. WINDSHIELD WIPER MOTOR -- in the upper, rear corner of the right-side, front wheel-well -- any LUCAS windshiled wiper assembly as found in Austin-Healey, Triumph, pre-XKE Jaguar, etc.

*warning light switch or gauge sender unit

7. WIRING AND INSTRUMENTS - CONTINUED

4. WINDSHIELD WIPER MOTOR - continued.
(Note: The recommended wiper units are designed for 12-volt operation. The reletive ease with which they are installed and the small amount of under-dashboard space they consume causes us to recommend them even for 6-volt operation -- albeit they run a little slowly.)

5. DIMMER SWITCH -- on the firewall just to the left of the clutch pedal -- any standard dimmer switch unit.

6. HORN -- on the left side of the front, upper torsion bar housing, adjacent to the steering box -- any relay operated horn.

7. HORN RELAY -- on the left-side splash panel inside the front, left wheel-well just above the shock absorber tower -- any standard hoen relay.

8. BATTERY -- in the open area just behind the right, rear seat and just ahead and below the starter motor.

9. COURTESY LIGHT SWITCHES-- in the front door jamb between the hinges in both dor openings -- Corvette type, two-terminal, flange-mounting switch.

Several things to remember before and during the mounting of the lights are 1) the VW has a six-volt electrical system so change all the bulbs to 6-volt bulbs -- they're normally all 12-volt, 2) appropriate 6-volt seal-beam headlights are General Electric #4031 head lamps (Jeep 6-volt units), 3) make sure the low-beam lamps are to the outside of the body, 4) lights -- or for that manner, any electrical component -- mounted in fiberglass requires a seperate ground wire -- there's no steel body for a ground return.

Your GT-12 body is delivered to you with a fierglass dashboard and console (see figure 4) already in place. It is not necessary for you to laminate the dashboard into the body -- this has been done at the factory. The dash is designed to utilize a centralized instrument/control cluster -- the cluster is the hub of the wiring harness and should be carefully planned. The standard instrument/control configuration used in factory-built cars is

1. key-operated ignition switch
2. headlight switch (preferably with provision for instrument light dimming and courtesy light control)
3. windshield wiper switch
4. other accessory switches
5. fuel level gauge
6. cylinder head temperature gauge (warning light may be substituted)

7. WIRING AND INSTRUMENTS - CONTINUED

7. oil pressure gauge (warning light may be substituted)
8. oil temperature gauge (optional)
9. ammeter (discharge warning light may be substituted)
10. speedometer (non-electrical except for lighting)
11. tachometer (optional)
12. high-beam indicator lamp
13. turn-indicator dash lights

Although stock Volkswagen instruments can be used, many of our customers prefer to used a more extensive set of gauges in their new GT-12. Listed below are the numbers of the Stewart-Warner gauges which may be used in building your Avenger GT-12. These items may be ordered from your local Stewart-Warner dealer or directly from Fiberfab.

AZTEC - VOLKSWAGEN 6-VOLT ELECTRICAL SYSTEM	S-W NUMBER	PRICE
Ammeter	D-359-L	$6.95
Fuel level gauge	D-300-B	10.95
Fuel level sender	D-384-B	6.20
Installation kit	366-LP	1.65
Tachometer	429370	26.00
Tachometer sender	429378	26.00
Speedometer (160 mhp)	D-530-y	16.00
Speedometer cable adapter	777-F	15.20
Cylinder head temperature gauge	D-311-CZ	13.60
Cylinder head temperature gauge (2 required)	D-333-D	5.50
Oil temperature gauge	D-310-A	10.95
Oil temperature sender	D-362-B	5.25
Oil pressure gauge	D-305-B	10.95
Oil pressure sender	D-353-E	7.50

The wiring harness is divided into three major pieces -- the hub or dashboard section, the hub-to-front harness and the hub-to-rear harness. Figure 10 shows the general routing of these harnesses, shown relative to the Volkswagen floorpan.

7. WIRING AND INSTRUMENTS - CONTINUED

The hub-to-rear harness is routed from the hub down to the floor, along the floor next to the tunnel, under the left-side of the right rear seat and through the hole in the sheet metal that formerly accomodated the Vollkswagen battery-cable. On the engine side of the sheet-metal, four wires are routed to the right to the rear hanger and back along the hanger to hinge where they are terminated in a connector. In the vicinity of the starter, two wires are routed to the starter and one wire is routed under the engine. Eight wires continue to the rear and terminat at various points on the engine.

Referring to the numbers shown in Figure 10, the wires in the hub-to-rear harness terminate as follows.

1. connector -- tail light power (14/16)* F**
2. connector -- brake-light power (14/16)/F
3. connector -- right-turn indicator power (14/16) F
4. connector -- left-turn indicator power (14/16) F
5. connector -- ground (a short wire from the connector to a hinge adjusting bolt) (14/16) B
6. voltage regulator charging terminal (10) T
7. voltage regulator field terminal (alternator) (14/16) F
8. ignition coil (14/16) F
9. oil pressure sender (16/18) T
10. cylinder head temperature sneder (16/18) T
11. tachometer sender (16/18) T
12. tachometer sender (16/18) T
13. spare (14/16) F/T
14. starter solenoid (14/16) F
15. starter primary (same terminal as the battery connection to the starter) (10) F
16. oil temperature sender (usually installed under the engine as a substitute oil drain plug) (16/18) T

Again referring to Figure 10, the hub-to-front harness is routed from the dashboard through the center of the firewall just above the floorpan crossbrace and then left along the firewall, above the brake master cylinder, to the point where the firewall turns toward the rear of the car. Thenthe harness is directed up to the fender, forward along the junction of the inner-panel and the fender to just behind the left headlight "bucket" and then across the front of the car, along one of the front torsion bar tubes, to just behind the right headlight "bucket." The harness is then directed back along the right-side inner-panel in the same manner as it came forward on the left side. It terminates at the right hand door jamb between the hinges (as does the harness branch on the left side).

* number in parentheses refer to recommended wire size
** F=from hub, T=to hub, A=ahead in harness, B=back in harness

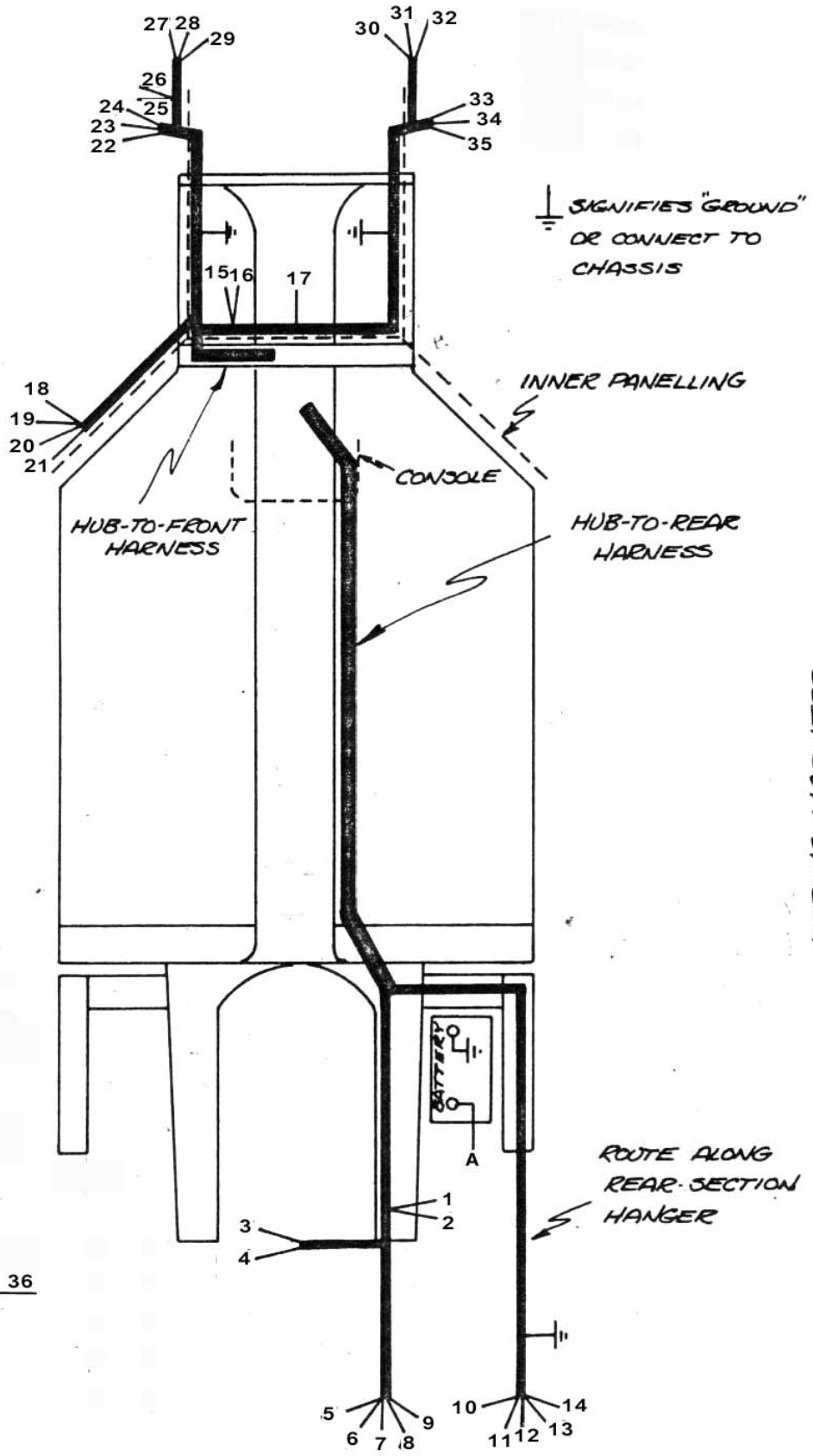

27 28 29
30 31 32
26
24 25
23
22
33
34
35
SIGNIFIES "GROUND" OR CONNECT TO CHASSIS
15 16 17
INNER PANELLING
18
19
20
21
CONSOLE
HUB-TO-FRONT HARNESS
HUB-TO-REAR HARNESS
BATTERY
A
ROUTE ALONG REAR SECTION HANGER
1
2
3
4
5 6 7 8 9
10 11 12 13 14
WIRING HARNESS ARRANGEMENT (KEY TO NUMBERS IN TEXT)

FIGURE 36

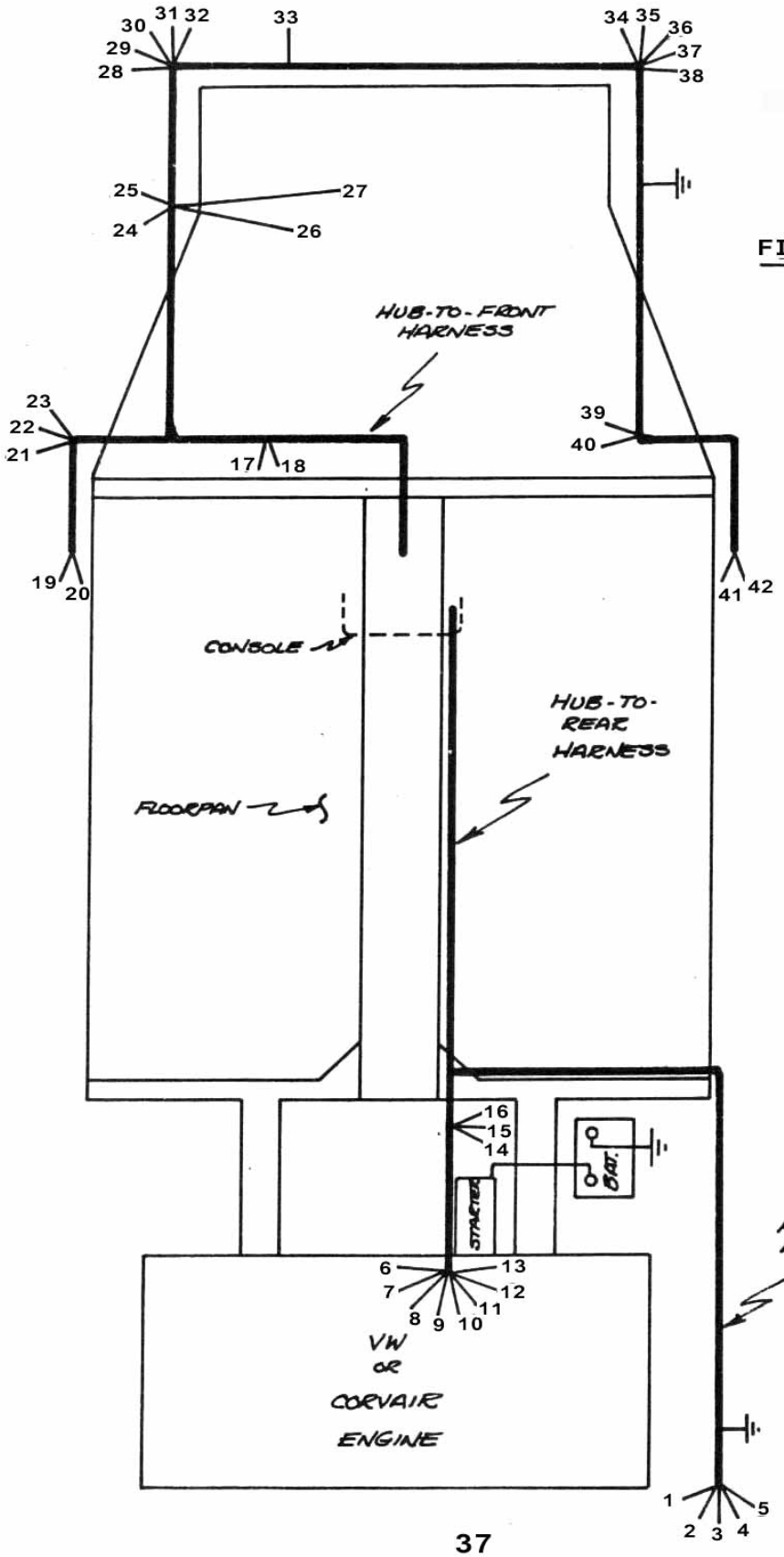


FIGURE 10

WIRING HARNESS ARRANGEMENT (KEY TO NUMBERS IN TEXT)

7. WIRING AND INSTRUMENTS - CONTINUED

Using the numbers in Figure 10, the wires in the hub-to-front harness are used as

17. brake light switch power (switch is mounted on the master cylinder) (14/16) F
18. brake light switch return (14/16) T
19. couurtesy light switch (14/16) F
20. courtesy light switch return (14/16) T
21. headlight power to dimmer switch (14/16) F
22. low-beam power from switch (14/16) A
23. high-beam power switch (14/16) A
24. horn relay power (14/16) F
25. horn power (14/16) A
26. horn ground from steering column (16/18) A
27. fuel-level sender (16/18) T
28. ground (10) A
29. high-beam (14/16) B
30. low-beam (14/16) B
31. parking lights (14/16) F
32. turn indicator (14/16) F
33. Horn (14/16) B
34. high-beam (14/16) B
35. low-beam (14/16) B
36. parking lights (14/16) F
37. turn indicator (14/16) F
38. ground (10) A
39. windshield wiper power (14/16) F
40. windshield wiper homing lead (14/16) F (ground wiper motor case to frame-rail)
41. courtesy light switch (14/16) F
42. courtesy light switch return (14/16) T

The factory hub wiring includes a six-fuse fuse-block with integral flasher (turn indicator) unit. A Corvair unit or equivalent fuse-block is appropriate. The fuses are used for

1. head lights
2. other lights except brake lights
3. brake lights
4. windshield wiper
5. spare for accessories
6. flasher unit

The fuse-block is mounted on the firewall just above the point the hub-to-front harness passes through the firewall.

Other hub wiring includes the following operations:

1. wire all gauge grounds together and to ground
2. wire all gauge lights together and to dimmer terminal on headlight switch
3. wire gauge "ignition" terminals together and to "accessory" terminal on ignition switch

4. ammeter "charging" terminal (from voltage regulator charging terminal) wired to "BAT" terminal on ignition switch and "BAT" terminal on headlight switch

The remaining hub wiring is fairly obvious: e.g., the starter solenoid is wired to the ignition switch, the coil is wired to the ignition switch, the head light dimmer switch is wired to the headlight switch, etc.

To complete the wiring, the tail-section is wired as an independant unit. The tail-lights, brake-lights, turn indicator lights and ground wires are routed to the right-side hinge and terminated in a connector to mate with the hub-to-rear harness. If a license plate light is incorporated, its power is drived from the tail-light circuit.

8/ UPHOLSTERY -- INTERIOR FINISHING

The upholstery of your IRWIN GT is purely a matter of personal taste. You can be as austers or as elaborate as you desire--purely functional for the "road machine" buff or posh for the grand touring enthusiast.

At the factory we use, of course, the IRWIN GT upholstery kit (available from Fiberfab as extra cost). The upholstery kit consists of automotive-grade carpet cut to fit the firewall, floor (including the rear seat area), and headliner areas. The carpet is bound with 1-1/2" wide carpet-binding to prevent fraying. The headliner carpet is extended down the windshield pillars. Also in the kit are the vinyl door panels, vinyl front seat covers and a quart of "fast tack" trim adhesive.

If you have access to a commercial, heavy-duty sewing machine you can make your own carpeting and interior trim. The materials required are :

1. 6 yards vinyl (54" wide)
2. 12 yards carpet (36" wide)
3. 6 yards carpet jute for padding under floor carpet
4. 50 yards, 1-1/2" wide carpet binding
5. 2 sheets (3' x 4') waterproof panel board approximately 1/8" thick
6. 1 quart trim adhesive--"fast tack" variety

Use heavy paper to make patterns of the interior surface of the car. Transfer this pattern to the carpet (making sure it is not upside-down) and cut. Sew on the binding. The same "paper-pattern" technique is used to develop the door panels which are constructed of vinyl sewn to panel-board--a "customizing" effect can be gained by sandwiching up to 1" foam rubber sheet between the vinyl and panel-board and than stitching a design in the vinyl.

Before installing the carpet--especially the headliner--rough-up the fiberglass surfaces to be covered with any coarse sandpaper. After sanding, wipe the surfaces with lacquer thinner or acetone. If the surfaces are not prepared, the carpet may not properly adhere, particularly the headliner carpet.

When the surfaces are ready coat them thickly with adhesive--also coat the back side of the carpet (or lute padding for the floor). When the adhesive is tacky, install the carpet. Wood blocks are glued into the windshield pillers are glued in place, or preferably, attached with chrome-plated, grommat-head wood screws backed with chrome-plated bezels.

Other items to be considered for interior finishing include ashtrays mounted in the console, interior lights mounted just behind the window openings, etc. The console surface may be covered with adhesive-plastic sheet imprinted with a wood-grain (available from 3M and other manufactures). The dash may be padded and vinyl-covered. Etc. Let your imagination be your guide.

For those builders in colder climates, it is quite easy to provide heat and defrosters in your IRWIN GT Figure 37 shows how the Volkswagen heating system can be used. Tubing is run under the door sills--flexible exhaust tubing is appropriate. As shown in Figure 37, this system can be employed for both heating and defrosting. Suitable defroster outlets are available (such as those used in Corvettes) from many sources.

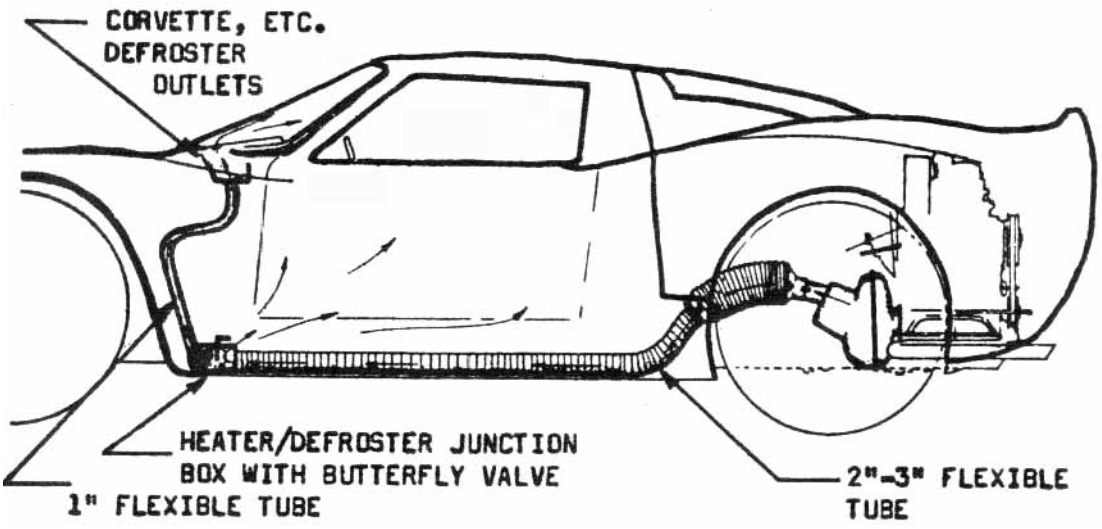


FIGURE 37. SUGGESTED HEATING AND DEFROSTING SYSTEM

9/ EXTERIOR FINISH OF YOUR GT

The most important item in the area of exterior finish is, of course, the painting. The ""first impression" others will have of your IRWIN is dependant on the quality of the painting. Fortunately, it is possible to acheive a beautiful exterior finish using only a spray-gun--no elaborate bake-ovens, etc., are required. Fiberglass is very compatible with acrylic lacquers. Lacquers, also, are the easiest and most trouble-free finishes to apply. They can even be applied in a slightly dusty environment--the dust and any spraying imperfections can be subsequently rubbed out. Just follow the instructions which accompany the lacquer--spray where there's plenty of ventilation and don't attempt spraying on cold and/or damp days.

About body surface preparation--most fiberglass bodies have slight imperfections such as pin holes or marks made by mold parting lines. Often a few scratches will be added during shipment. Body putty (e.g., "green stuff") and fiine sand paper should take care of any body surface imperfections you might encounter.

We are proud of the surface finish of our bodies. We use special care in preparing mold surfaces and special materials around body edges to minimize chipping. One of our own GT's which has travelled over 50,000 miles in all types of weather and over all types of roads, does not have one body crack. It still retains its original paint, too!

Your IRWIN GT body will have a color when you recieve it. In most instances, this color will be black. This is <u>not</u> the finished color. It is a special Gel-Coat finish your body has been given to achieve the best possible surface.

Before you paint your GT , the entire body should be <u>lightly</u> sanded with #400 sandpaper (preferably wet-sanded). The sanding is done in order to "scuff up" the surface which is otherwise too slick to allow the paint to properly adhere. Remember to sand lightly--you are scuffing the surface, not re-styling the body!

Following the sanding, the body should be washed with PREPSOL (or any equivalent surface-preparation agent) and wiped dry or wiped with a specially-treated clotch such as a TACK-RAG in order to eliminate any lingering dust, oil, or dirt (be especially careful to remove oils from fingerprints which, even though unseen, can produce "fisheyes" in the finish).Now, all chrome trim, headlights, window glass, etc. should be masked with masking tape--for large surfaces use kraft paper (brown, wrapping paper) held in p[lace with tape. When the masking is complete the body is ready for the application of primer and paint.

other items of exterior finish are:

1. <u>Tail section latches.</u> we use, in the factory-built cars, Ford (e.g., Mustang--see PARTS LIST) hood latches. Two complete latches (striker

and stud) are required--one on each side of the car. The latch striker mechanism is mounted just ahead of the rubber-bumper cup in the horizontal body-surface intersecting the rear wheel opening. The mounting position for the striker is identified by "dimples" cast in the body. The latch stud is mounted in the tail section in the recess provided. The striker operating arms must be shortened to clear the inner surface of the body and the dafety catch should be removed from the latch used on the right side (if both safety catches were retained it would require two persons to open the tail section).

Many other latches are suitable. For example, the key-operated variety used as hood latches for MG-TF, early KX-E Jaguar, etc. offer a measure of security as well as holding the tail section closed.

2. Front and rear section latches--3-piece body. Figure 38 shows the latching arrangement used by the factory on 3-piece GT bodies--front and rear sections. These latches are inexpensive, easy-to-install Universal Cabinet Latches manufactured by Southco Division, Chester Corporation, Lester, Pennsylvania 19113. The Southco number(s) are 61-10-2-0 (slotted flush type) or 61-99-113-10 (tamperproof type) plus 61-7-3-14 (trim washer) and 61-0-6649-11 (key for tamperproof type).

3. Door latches. The door latches used on the factory-built cars are stock Ford parts (see PARTS LIST). The striker stud is mounted on the door and the latch is mounted in the door post--this mounting configuration is the reverse of the Ford mounting which places the stud on the door post. The latch is operated directly by a handle on the door post or remotely via cable, run through copper tubing, connected to handles mounted on the side of the floor pan tunnel.

4. Headlight covers. Headlight covers can be made from 3/16" Plexiglas by heating and forming over an appropriate mold. Covers are also available from Fiberfab at extra cost. The covers are installed using small "L-shaped" tabs located around the headlight opening to which the cover can be attached--five tabs per cover should be sufficient.

   Be sure to check with your local Department of Motor Vehicles to find out whether the use of headlight covers at night is illegal in your state.

5. Air scoops, engine air intakes. The air scoops on the side of the IRWIN GT body can be made functional if you wish. The upper ducts can be utilized to provide fresh air to the cab a-la-Mustang Fastback. The lower ducts can be used to supply cool air to the engine compartment via flexible hose (we have found laundry dryer vent-hose to be quite satisfactory for air ducting purposes).

6. Mirrors. For the interior rear-view mirror. Any mirror which mounts (using epoxy glue) to the windshield, such as T-Bird, can be used. For side mirrors, there are any number of mirrors which can be used. The 1965 Mustang mirror is good.

7. Spare-tire Mounting. Figure 39 is self-explanitory.

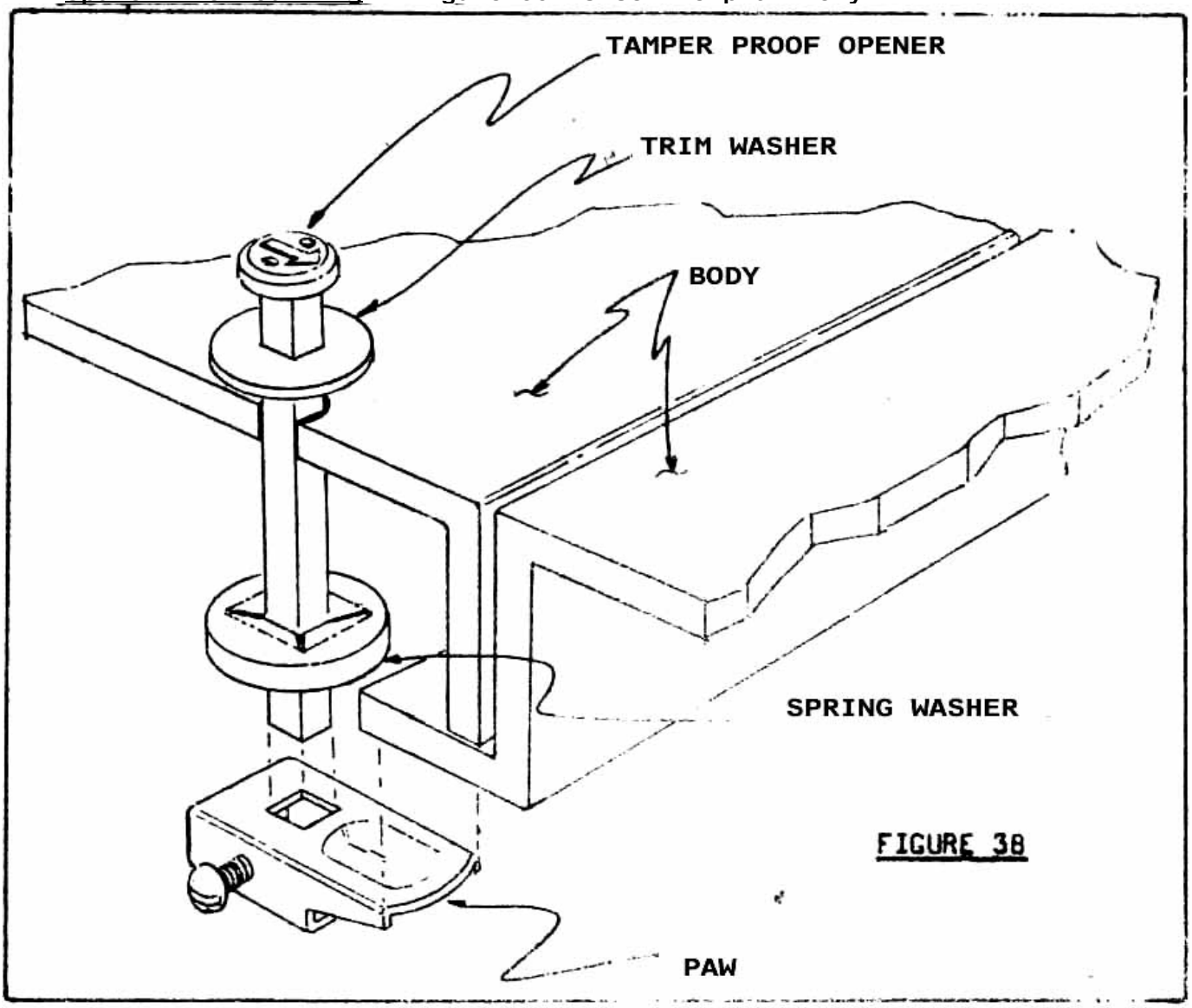
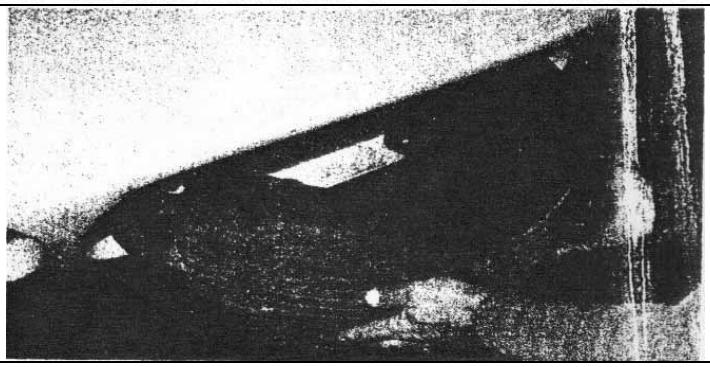


FIGURE 38

FIGURE 39	

OPTION/ACCESSORY LIST FOR GT

Clear Safety-Glass Windshield*	$ 70.00
Tinted Safety-Glass Rear Window*	105.00
Frame-Rails*	75.00
Rear-Section Hangers*	60.00
Special Dashboard/console*	55.00
Roll-up Window Door Inner Panels,pair*	30.00
"GT" Bucket Seats, pair**	40.00
"Classic" Bucket seats, pair**	25.00
Lotus-Type Bucket Seats, pair**	30.00
Upholstery kit, Deluxe Black	175.00
Upholstery Kit, Deluxe Blue or Red	195.00
Seat Covers only, Classic or Lotus-Type, each	25.00
Seat Covers only, GT, each	35.00
Plexiglas Headlight Covers, pair	30.00
Wiring Harness Kit, 6-volt	49.50
Wiring Harness Kit, 12-volt	49.50
Steering Column Bracket Set	15.00
Custom Aluminum Wheels, set of four, with lug nuts	175.00

STEWART-WARNER INSTUMENTS--6-Volt Electrical System

	S-W Number	Price
Oil Pressure Gauge	D-305-B	$ 11.25
Oil Pressure Sender	D-353-E	7.50
Oil Temperature Gauge	D-310-D	10.95
Oil Temperature Sender	D-362-AM	4.35
Fuel Level Gauge	D-300-B	10.95
Tank Unit	D-384-B	6.50
Installation Kit (Tank Unit)	366-LP	1.75
Ammeter	D-359-L	6.95
Vacuum Gauge	D-355-A	12.95
Vacuum Gauge Installation Kit	366-HM	3.95
Speedometer (0-160 MPH)	D-530-DH	17.50
Gear-Box	777F/1.307	15.20
Heavy-Duty Drive (16")	1240L	11.85
Speedometer Cable (36")	446159	8.50
Tachometer (0-8000 RPM)	972-A	45.50
Ignition Monitor	990-B	4.00
Lighting Kit (3 required)	366-CH	1.00
Lighting Kit (1 required)	366-FK	.85

*Included in GT Deluxe Body Kit.
**Choice included in GT Deluxe Body Kit.

STEWART-WARNER INSTUMENTS--12-Volt Electrical System

	S-W Number	Price
Oil Pressure Gauge	D-306-BB	$ 11.45
Oil Pressure Sender	D-353-Z	7.50
Oil Temperature Gauge	D-311-CF	11.45
Oil Temperature Sender	D-362-AH	4.35
Fuel Level Gauge	D-301-AW	11.25
Tank Unit	D-385-B	6.50
Installation Kit (Tank Unit)	366-LP	1.75
Cylinder Head Temperature	366-LW	19.95
(Gauge and Sender)Ammeter (Generator)	D-359-CE	8.45
Ammeter (Alternator)	D-359-CW	8.45
Vacuum Gauge (Optional)	D-355-AP	13.50
Vacuum Gauge Installation Kit	366-HM	3.95
Speedometer (0-160 MPH)	D-530-DH	17.50
Gear-Box	777F/1.307	15.20
Heavy-Duty Drive (16")	1240L	11.85
Speedometer Cable (36")	445159	8.50
Tachometer (0-8000 RPM)	970-E	45.50
Ignition Monitor	990-B	4.00
Lighting Kit (3 required)	366-CH	1.00
Lighting Kit (1 required)	366-FK	.85

RECOMMENDED PARTS LIST

Throughout these instructions, we have referred to parts which can be used in the completion of your GT. Here is a list of items which have been previously mentioned in the text. Please remember, there are many other types of items that can be used, particularly for tail lights, etc. Let your imagination be your guide!

Hardware Item	Manufacturer	Description and/or Manufacturer's Part Number
ELECTRICAL SYSTEM		
Headlight Assembly	GM/Chevrolet	897185
		897186
	Hella (For VW)	92ZRRGN1/ABLX-510
PArking Lights	GM/Pontiac	1966 GTO or Gran Prix
Parking/Turn Lights	GM/Pontiac or	1966 GTO
Tail Lights	GM/Pontiac	1959 All Pass. Cars
	GM/Chevrolet	Standard 4-Position
Ignition Switch	Ford	All Late Pass. Cars
	GM/Chevrolet	3-Position with Rheostat
Dimmer Switch	Lucas or Micro-Dot	SPST
Headlight Switch	GM/Chevrolet	9000514
Accessory Switches	GM	Delco 920-12 V
Horn	GM	2974547
Horn Relay	Lucas	Austin-Healey, TR-3, XK-150, XK-140, etc.
Fuse Block		
Windshield Wiper Motor & Assembly		
DOOR/WINDOW HARDWARE		
Vent Window Assembly	Ford	1965 Hardtop Mustang Vent
	Ford	Window
Side Window Glass	VW/Ghia	1965 4-Door Hardtop LTD
Wwindow guide-Track	VW/Ghia	141-837-552 B
	VW/Ghia	141-837-551 B
Regulator	Ford	141-837-502 A
	Ford	141-837-501 A
Glass-Holder	Ford	141-837-571 A
Arm Rest Base		C5ZZ-5524144-A
Arm Rest Pad		C5ZZ-6524100-AFA
Weatherstripping		C5ZZ-6551222-B
	Ford	C5ZZ-6551222-C
	Ford	C5ZZ-65513467-A
		C5ZZ-65513466-B
	Ford	C5OZ-6221984-A1
Door Lock Cylinder		C4SZ-6321813-C
Door Latches		C4SZ-6321812-C
Striker Studs		C20B-6220008
		C20B-5220009

DOOR/WINDOW HARDWARE (Cont.)		
Hardware Item	Manufacturer	Description and/or Manufacturer's Part Number
Hinges RH Top RH Bottom LH Top LH Bottom	Ford	C5AZ-6222810-C C5AZ-6222800-B C5AZ-6222811-C C5AZ-6222801-B
OTHER BODY HARDWARE		
Tail-Section Rubber Bumper	Gm/Chevrolet	3742247
Tail-Section Latch	Ford Ford	C5ZZ-16700-A C2OZ-16929-A
Tail-Section Stud	GM/Chevrolet	4489204 4489203
Front Window Trim (5 Pcs.)		4469665 4469664 4489205 4474353 (12 Required)
	Ford	C5ZZ-6342084-A
Rear Window Rubber Molding	Ford	C5ZZ-6342404-A C5ZZ-6342405-A C5ZZ-6342430-A C5ZZ-6342431-A
Rear Window Trim (4 Pcs.)	Ford	C5ZZ-6542413-C (2 Doz.)
Trim-Retaining Clips		
MISCELLANEOUS		
Rear View Mirror	Ford Ford	C1SZ-17700-D C1SB-17698-A
Mirror Bracket	Empi	"Empivent"
Air Vent Covers		
Windshield Wiper Arm Blade	Trico	AL 150 PR 15 2W

10. CORVAIR POWER OPTION

For more "GO" from your Avenger GT-12, the Volkswagen engine is readily replaced with a much more powerfull Corvair engine. Good Corvair engines, 1962 or later, are available at most wrecking yards for $100 to $300, depending on year and condition. Be sure to get all the accessories -- starter, generator, etc.

It is not necessary to decamber the Volkswagen floorpan if Corvair power is used as the added weight of the Corvair engine compensates for the Volkswagen camber.

Take the Volkswagen transaxle to a VW shop and have them put the ring gear on the other side of the case (the direction of rotation of the Corvair opposes that of the VW). The ring gear "flop over" should not be attempted by one unfamiliar with setting up automotive rear ends.

Next, the bell-housing is removed from the Corvair engine in preparation for mounting a Corvair-to-Volkswagen adapter plate. With regards to adapters -- we strongly recommend the use of the adapter lits produced by CROWN MANUFACTURING COMPANY, 651 West Seventeenth Street, Costa MEsa, California. The Crown Deluxe Adapter Kit includes:

No.	5001	Engine Adapter
	5002	Starter Adapter
	5003	Heavy-duty Flywheel Plate
	5004	Heavy-duty Pressure Plate
	5005	Clutch Disc
	5008	Universal Throttle Linkage

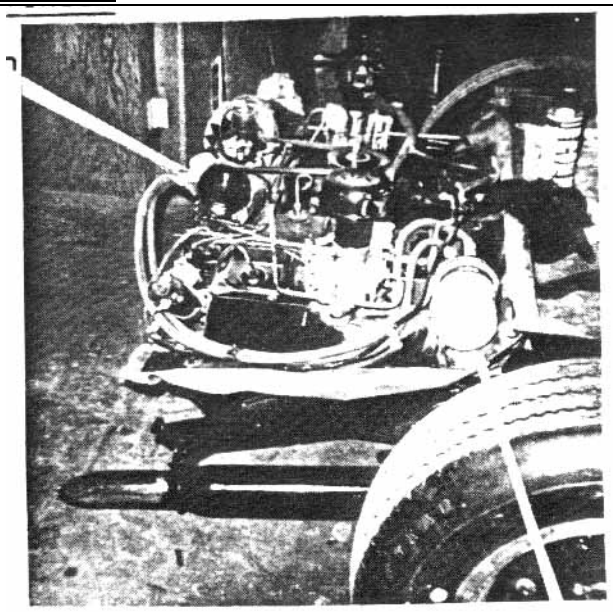
Crown also manufactures a number of accessory items such as muffler-exhaust systems which can be used for your Corvair powered Avenger. Further information is available from Crown Manufacturing. It will be helpful when you write, if you mention that the kit is to be used with the Avenger body.

After the bell-housing is removed, remove the Corvair pilot bearing in the end of the crankshaft and replace with the extended-type supplied by Crown -- the original bearing has the proper ID but does not engage enough of the Volkswagen Transmission input shaft. Bolt the adapter plate to the Corvair (if the oil seal is not yet installed in your adapter plate, make sure that when you do install it you refer to the original Corvair bellhousing to avoid placing it in backwards). Next, bolt the clutch cover plate (with clutch plate in place) to the fly wheel.

Now bolt the Corvair to the Volkswagen transaxle -- interference between the transaxle and the engine heater duct is eliminated by reshaping the ducts or replacing them with Crown #5012 Heater Adapters. The Corvair starter is used by means of the starter adapter.

Original location of oil filter

FIGURE 13



Relocated oil filter (Note connecting hoses)

Shown below is the section which is cut out of the body rear to clear Corvair engine.