1977 Sterling Construction Manual

These pages contain a reproduction of the 1977 Sterling Instruction Manual. Tim Hoffman (of Sterling Central) scanned each page of the manual, saved the pictures, and OCR'ed the text.

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Introduction and Cover Page

Dear Reader:

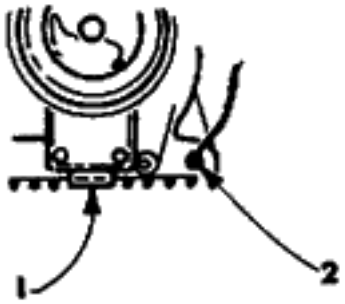
In a continuing effort to improve the Sterling's ease of assembly and quality of this instruction manual this temporary manual is not printed in its normal form. This is to enable us to make alternations to both drawings and text in two areas of the Sterling construction: Seat installation and Wiring.

1.) In recent months we have introduced into our kit two bucket seats which we feel are the best sold in any kit car (or production car for that matter) in America today. They have built in thigh, lumbar and head supports and are richly upholstered. You simply bolt the adjustable tracks to the seats own ridges and then to the floorpan and thats it. New drawings are forthcoming.

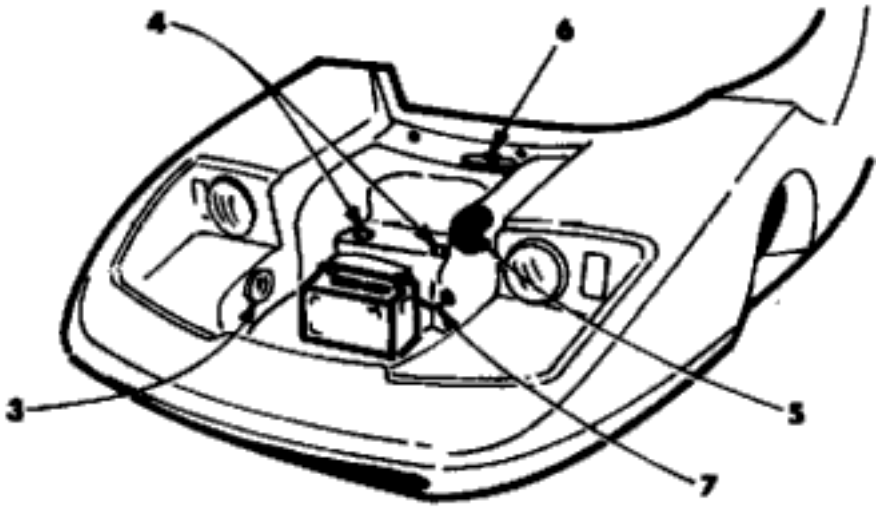
2.) We have long been known for the quality and simplicity of our color-coded wire harness. Once more we have made additions and changes to this our third harness to further simplify installation. We are currently producing new wiring directions to add to this manual.

We are convinced that with the addition to the above, plus some minor changes we will have an extremely concise and straight forward manual to compliment the finest, strongest, safest, and of course, most attractive kit car sold anywhere.

Ten Important Locations



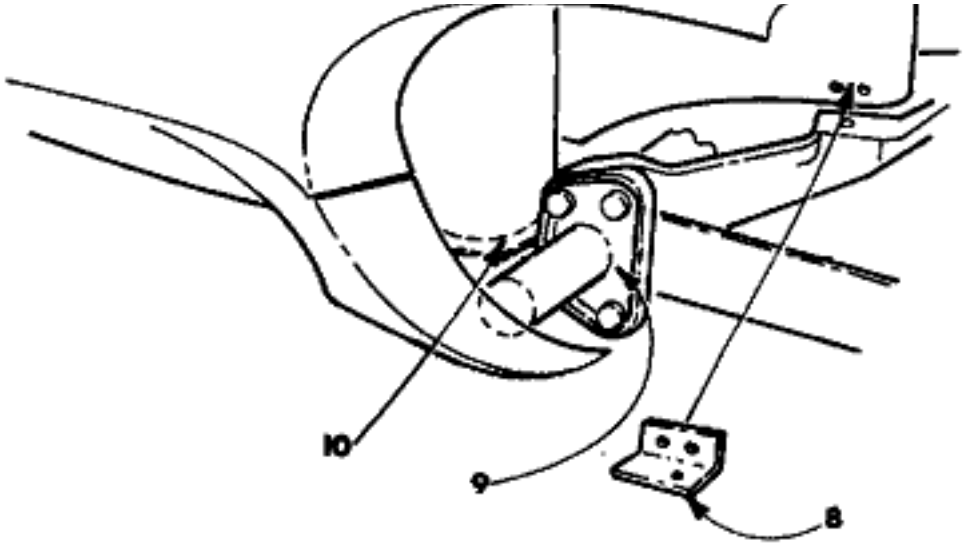
1. Partial view of (upright) typical V.W. engine as viewed from rear.
2. Approximate location for Oil Temp. Sending Unit: Drill and tap for sending unit using 29/64 drill and 1/2 inch SAE U.N.F tap (do this while engine is full of oil so that chips of metal will be flushed out). WARNING: V.W. sending unit will not work in oil drain plug hole as shown in manufacturers instructions as it plugs up oil pick up tube!
3. Suggested location of squirrel cage blower for fresh air (mouth of unit picks up air from inside trunk, motor portion is inside front wheel well).
4. Location of holes for body mounting bolts into top of front suspension (torque tube).
5. Opening provided for maintenance to steering box.
6. Master cylinder reservoir: You will notice a trough or valley at this area. The reservoir wants to be placed here if it's an elongated rectangle type. (If it is square, as in various year VW's, it wants to be placed on vertical wall just immediately rear of body mounting bolts as pointed out in #4 above.) With front hood off, stand at front of car looking at two female receptacles for hood pins. The center of reservoir wants to be approximately 6" towards passenger side of car when measuring from center of drivers side female receptacle. Approximately at center of trough or valley, drill a 1/4 inch pilot hole and check alignment. Reservoir wants to be located as close to directly over Master Cylinder as possible. Now cut an opening 4 1/2 inches by 1 3/4 inches and file to fit so that reservoir fits snugly into opening with flange holding it from falling through. Secure with a strap across top of reservoir.
7. Positive battery cable.



8. Steel angle bracket (black) mounted to inner body panel with

large flat washers on back side of fiberglass and fasten to top mounting point on rear shock towers for rear body mount.

9. Torsion Bar end plate (torsion bar is revealed by removing this cover).
10. Window glazing putty is used as filler at corners of interior body as described in "Construction of Car".



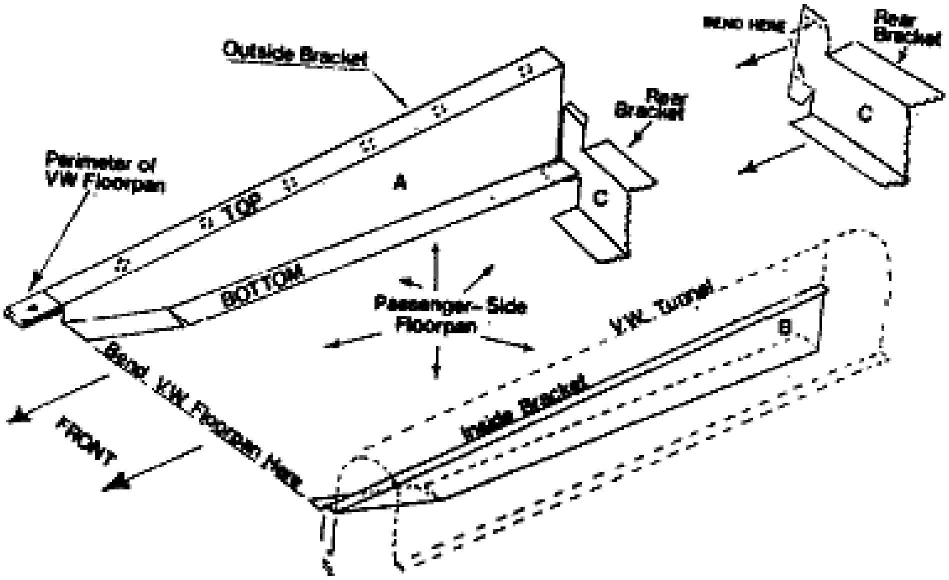
Construction

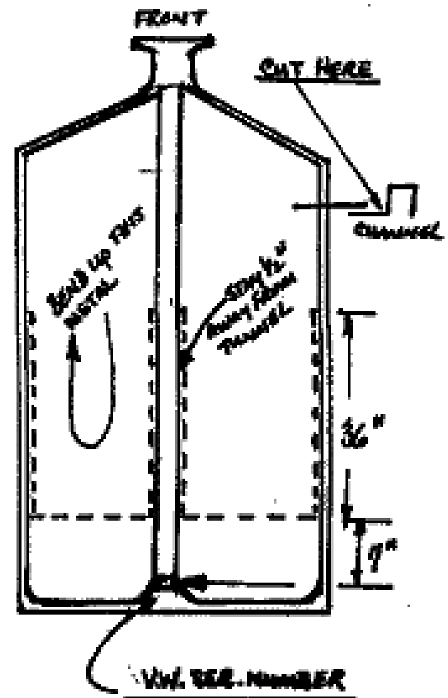
1. Chassis Preparation

After removing the Volkswagen body from the floor pan and saving the necessary parts, clean the pan thoroughly .using a wire brush for stubborn rust, should there be any. A coat of paint at this stage will give the pan a tidier appearance and protect it against future corrosion.

2. Lowering the V.W. Floorpan

We suggest that all customers lower the V.W. floor pan at the seat areas to increase the head room inside their STERLING and thereby comfortably accommodating both the driver and tall passengers (it is much easier to do this prior to installation of the STERLING body). There are several ways to do this and shown below is the installation of brackets we sell as an accessory. Should you decide to fabricate your own units, you might use the following directions as guidelines. initially you will need to chisel off the existing V.W. seat runners from the floor and discard them. You are now ready to mark and cut out the floor pan drop areas. To determine the location, measure 7" from V.W. serial numbers towards front of car. This is the location for cut at rear of seat drop areas ... mark it with chalk. Next is a 36" long cut adjacent to the tunnel (staying 1/2" away from tunnel) ... mark it with chalk. Next is a 36" long cut adjacent to the boxed channel (staying at the 90* angle, just inboard of the boxed channel) ... mark it with chalk. Do both sides like this, double check all measurements, then cut with cutting torch, sabre saw or chisel. Bend the two cut out areas upwards along front edge. Pop rivet or bolt brackets in place. NOTE: It is possible to weld the brackets but they are galvanized (to prevent rust) and will give off a toxic gas when welded so BE CAREFUL. once the brackets are in place, bend floor pans back down and pop rivet or bolt into place. All seams in dropped area should be water proofed by using Dow Corning silicone, caulking or fiberglass, etc. That's it ... floorpan is now ready for placement of STERLING body.


Outside Bracket
Perimeter of
VW Floorpan
TOP
A
BOTTOM
Rear
Bracket
C
BEND HERE
Rear
Bracket
C
Passenger- Side
Floorpan
V.W. Tunnel
B
Inside Bracket
Bend V.W. Floorpan Here
FRONT


FRONT
CUT HERE
CHANNEL
BEND UP THIS
METAL
9"
V.W. SER. NUMBER

Construction (cont.)

3. Fitting The Fuel Tank

Fit the fuel tank (V.W. Beetle '66 -- '69) into the body under the rear window housing using the original square washers. Use the angle brackets furnished with Kit at each side of the tank to install it as high as possible in the body to clear trans- axle and more importantly, the starter solenoid.

The brackets are bolted onto the black fiberglass inner panel (shrouding) in an almost horizontal position.

DO NOT DRILL TANK!!!

Use V.W. tank clamps, one on each front corner of our bracket. The rear flange of the tank rests on top of black fiberglass inner panel (shrouding) and is secured with the two V.W. clamps as shown. Be sure to use large flat washers on bottom of these mounting points.

Fuel tank filler. If you choose to locate tank as shown, the tank must be a 1961-1967 Bug tank. If you choose to run a 1968 or newer tank and want to fill tank from outside of car you may use a quick fill cap and flexible neoprene hose to connect filler cap to tank.

SENDING UNIT FOR FUEL TANK

Standard V.W. sending unit is not compatible with Stewart- Warner Fuel Gauge so use the new S. W. Sending Unit supplied. Simply remove the V.W. unit and replace with S. W. unit (bend the arm so that a full reading is given when tank is full).

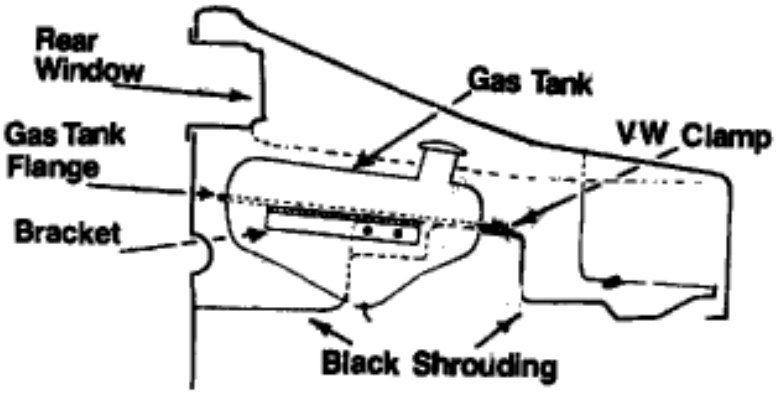
ALTERNATIVE GAS TANK

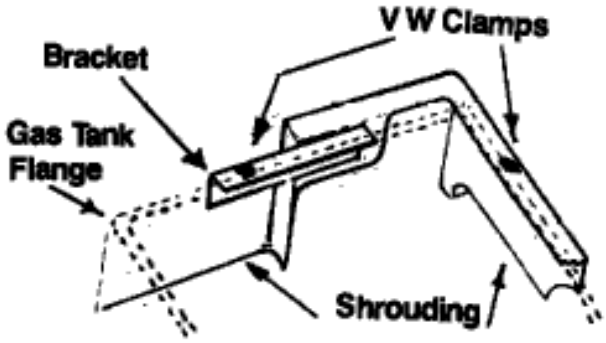
1966 Chevrolet Van Main Tank Part 03856322. This tank has a 16.5 gallon capacity and fits neatly into the STERLING body. You will need to use brackets about 6" longer than those supplied in the kit. Also, in order to use the Stewart- Warner Sending Unit, the Chevy mounting ring needs to be cut out of the tank and the V.W. ring welded in. A radiator shop can probably do that for you. Remember, if you're an inexperienced welder, a gas tank is not the thing to cut your teeth on.

GAS TANK CHECK

It has been our experience with V.W. gas tanks that they have a tendency to rust in their lower regions due to a build-up of condensation. We strongly suggest a full inspection of the tank before installation

and periodic checks thereafter. This applies to other tanks as well.





Construction (cont.)

4. Floorpan

Secure the Volkswagen rubber gasket around the perimeter of the floorpan, bedding it down on some rubberized sealant with pop rivets (if you wish). At 'the rear of the floorpan there is a small inspection cover, which covers the gear linkage universal joint, discard this and re-route the rubber gasket around the front of the hole.

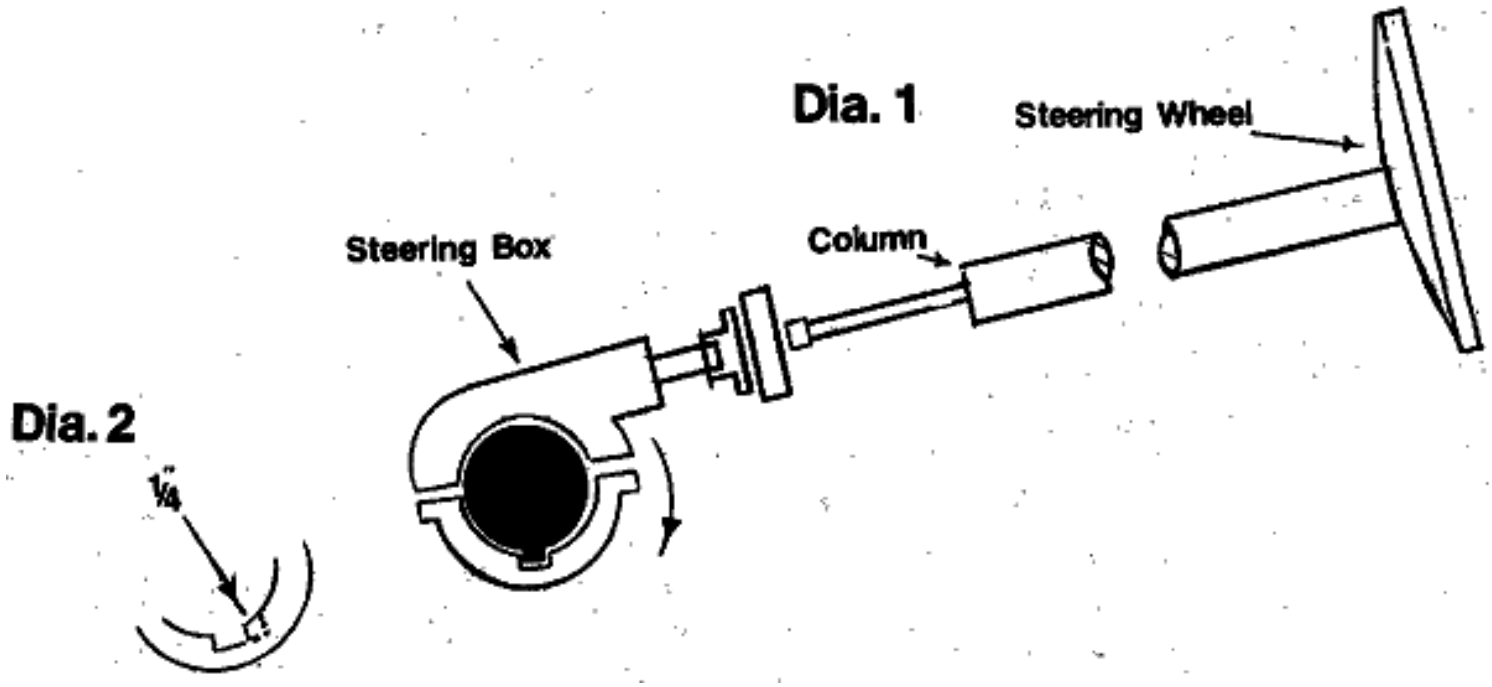
5. Steering Column

Although the steering column is not fitted until the body is mounted onto the chassis with the dashboard in place, we give the instructions here because the steering box adjustment shown below is easier done before hand.

Loosen the bolts holding the steering box in place and rotate the box in the direction shown in diagram 1. To do this you will have to file out a quarter inch or so of the lower bracket as shown in diagram 2. This will not be enough of a rotation to allow the column to make a straight line to the steering wheel "boss" but the joint in the column will bend enough to do so. DO NOT ROTATE THE STEERING BOX TOO FAR. This will cause "bump steer" when cornering which is a result of the steering box fouling on the tie rods.

AT THIS POINT CONTINUE WITH BODY AND DASHBOARD INSTALLATION AS OUTLINED LATER IN TEXT. THEN REVERT BACK TO STEERING COLUMN INSTRUCTIONS GIVEN BELOW.

First, in the center of opening for dash and center of dash facia, drill a 1/8" hole, If you look closely on the forward bulk- head, you will see an outline scribed in the body, approximately 1 1/2" in diameter. Drill a 1/8" hole in the center and insert a 1/8" piece of welding rod thru dash and body. Check at steering box for alignment with rod. If it is off, move 1/8" hole in bulkhead to line up rod. Once aligned, bore 1 l/2" holes in dash and body and install column, using 1/8" holes for pilots. If an old column is used, a "U" bracket is needed to bolt column to dashboard.


Dia. 1
Steering Wheel
Column
Steering Box
Dia. 2
¼"

Construction

6. Fitting The Body

Try the STERLING body on the chassis for fit. If anything hangs up or does not clear, make adjustments as follows; If there is a problem it generally occurs with interference with engine shrouding and engine. If so, cut out some of the fiber- glass shrouding using a sabre saw, file, etc. After you are assured that the body does indeed nest down onto the chassis, making sure that two holes are drilled in front trunk compartment to allow shoulder of threaded mounting points on front top torque tube to stick through, then take it back off and prepare the V.W. chassis for final mating with the STERLING body as follows: You will have noticed that the floor pan has square corners and the STERLING body is rounded, so you should pick up a one gallon can of window glazing (same as used to install a pane of glass in your house). Use approximately 1/4 of it at each corner (just put a big gob of it in each corner) then take approximately 3 tubes of Dow Corning or other brand of calking compound and pick up one of those $1.59 applicator guns (available at Hardware stores) . Apply all this calking all around the perimeter of the standard V.W. floor pan on top of the rubber gasket. Now with several friends, help place the STERLING body on the chassis. Wiggle or shake the body somewhat to settle the flange of the body down into all the muck you've put on top of the gasket. Now drill holes up thru the holes in the V.W. chassis and thru fiber- glass flange. After the drilling is complete, use the carriage head bolts with large washers from inside the car down thru the holes. Use stock V. W. channel type washer and lock washer & nut on bottom side.

Do not tighten any single bolt at this time, it should be done in a continuous cycle of snugging one up, then the next, etc., so that the body flange is pulled down evenly, squeezing out extra calking and glazing putty, so that a nice water tight match is made. But in the end make sure that all bolts are tight. Bolt the rear suspension to the body by means of the brackets we supply when installing body for the final time, be sure rubber washers are on front axle torque tube housing. After body is installed, add the other rubber washers and steel washers along with original bolts that you saved on removal of V.W. body. After main body bolts are tight, recheck these two bolts one more time. After running car for 2 or 3 weeks, recheck all main body bolts.

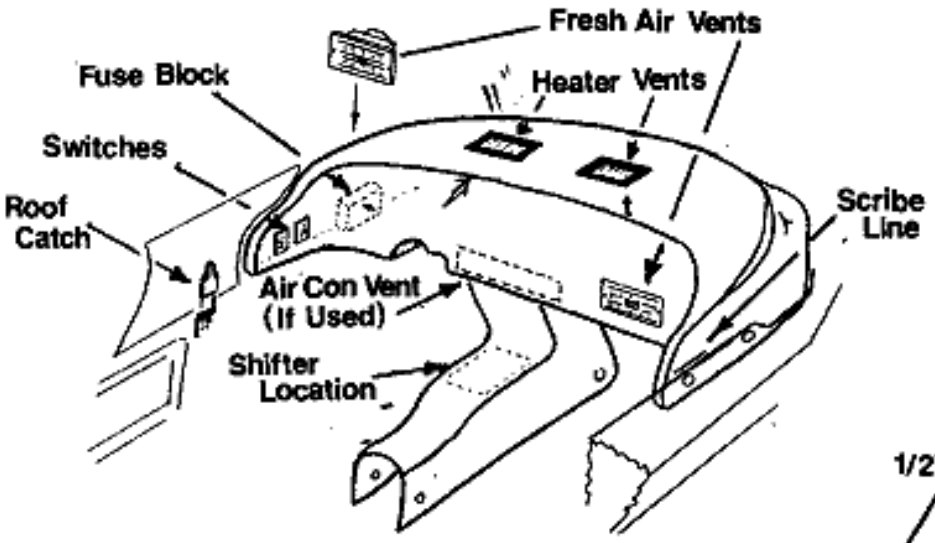
Construction

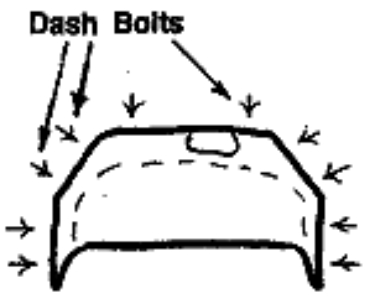
7. Dashboard

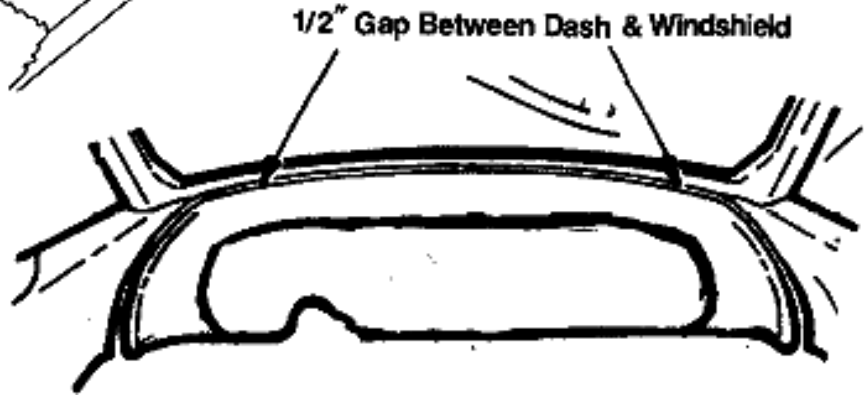
We suggest that you give a great deal of consideration to the placement of your gauges, vents and accessories. Bear in mind that they must first be practical -- easy to reach or view -- and then pleasantly arranged. Be aware that the wiring harness has been designed to fit most standard cluster arrangements. Should you decide to install your gauges in an unusual cluster and/or add other gauges, then some alterations/extensions may be necessary. Make a paper template of your gauge, switch, accessory, vent arrangement and then tape it in position on dash and sit in the car to ensure their visibility or accessibility. Carefully mark and cut out dash facia using the template as a guide and then use the facia as a guide for cutting the main dashboard. NOTE: The holes you cut in the main dashboard can be larger than those in the facia to allow "tolerance" during installation. No screws or adhesive will be required. Take your time when fitting gauges, etc., because they are always in view and a neat installation will be well worth the effort. You will find it an advantage if you cut the holes for switches and vents slightly smaller than you need and then use a file to bring the opening to the correct size and therefore a neat fit. NOTE: Place the defroster vents directly in front of driver and passenger and as far forward as possible without the ducting fouling gauges and wiring.

8. Dash & Console Installation

1. Place the dash into position. NOTE: Often we attach the dashboard onto the main body for transit purposes. THIS IS NOT TO BE TAKEN AS A FINAL INSTALLATION POINT FOR THE DASHBOARD. If dash is incorrectly mounted, remove it and relocate correctly as per instructions.
2. With dash in position, climb inside the car and close the roof. This will enable you to position the dash accurately. Make sure that 1/2" clearance is maintained between forward edge of dash and fiberglass area below windshield when the roof is fully closed. Also make sure that the scribe lines on each side of the dashboard are aligned with top edge of body side wall. (Scribe line is for a reference point only ..... prior to final bolting, raise and lower roof several times to check all tolerances.)
3. Install center console: Trial fit console, cutting a hole in console large enough so that gear lever assembly can be removed through it if necessary. Four bolts hold console to dash and two self tapping screws hold console to center tunnel.

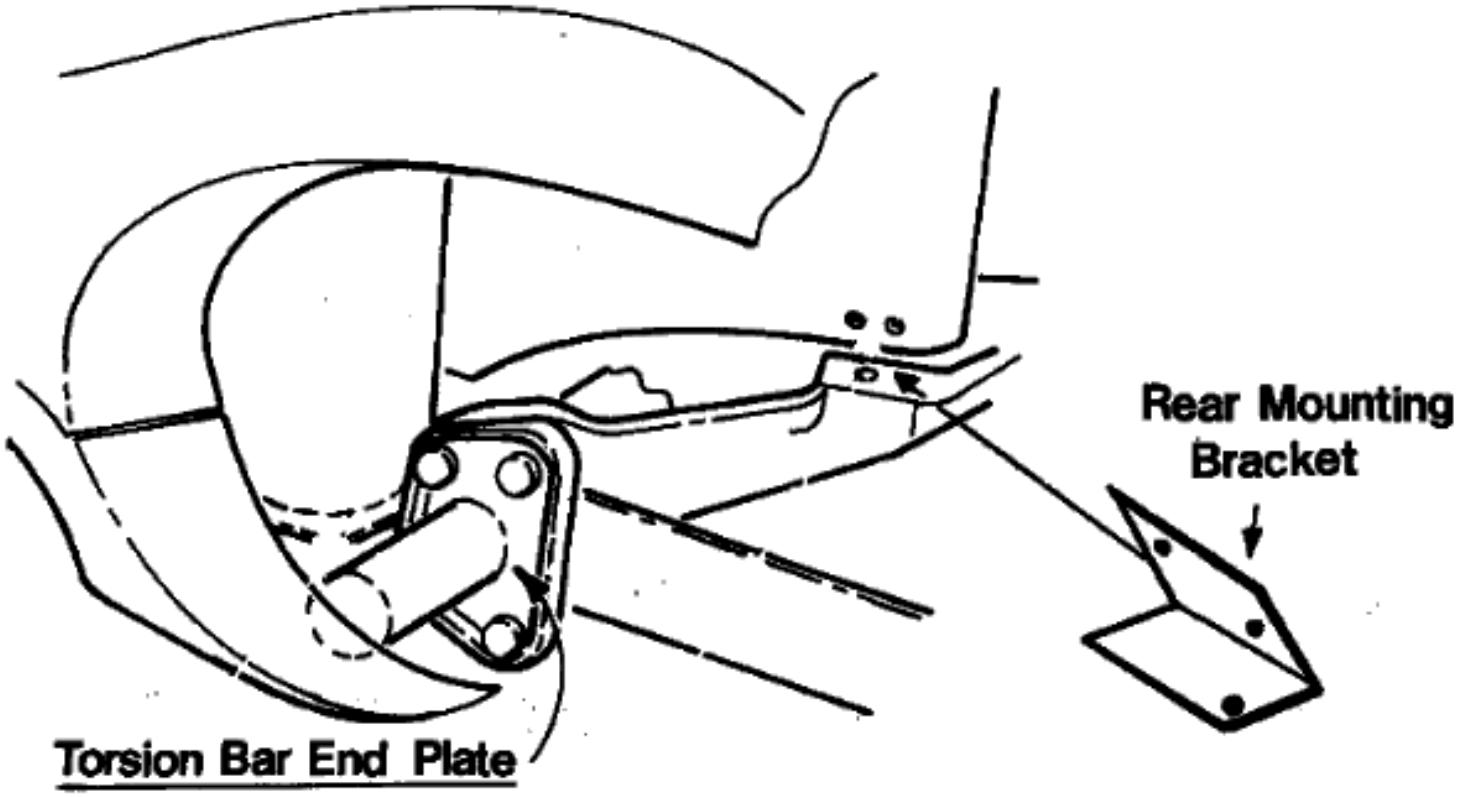

Fresh Air Vents
Fuse Block
Heater Vents
Switches
Roof Catch
Scribe Line
Air Con Vent (If Used)
Shifter Location


Dash Bolts


1/2" Gap Between Dash & Windshield

Construction

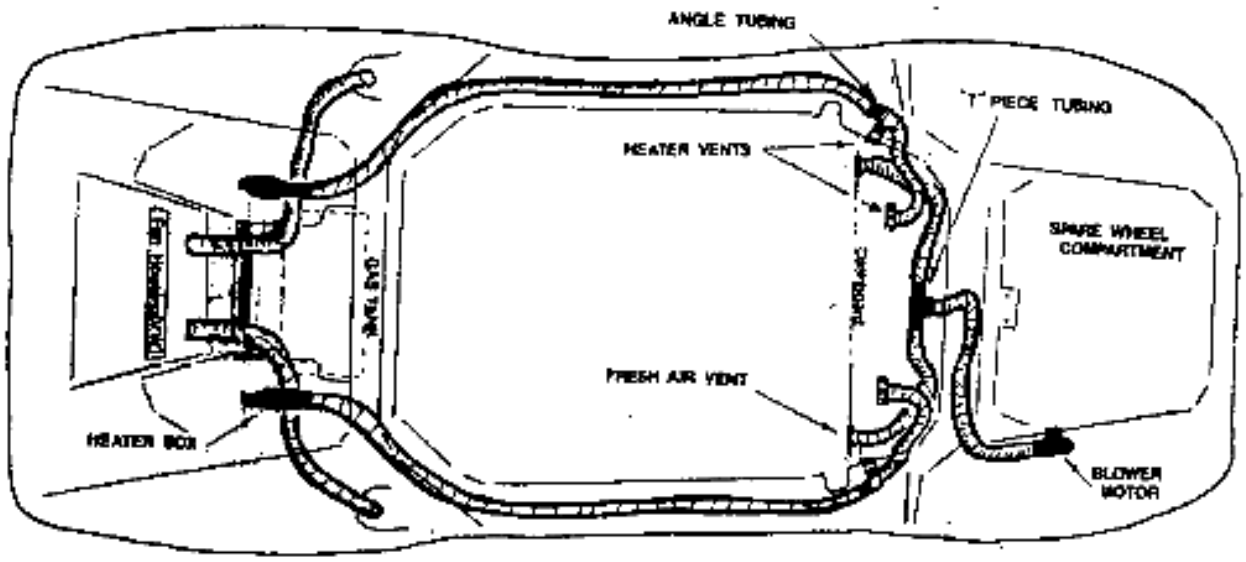
9. Rear Suspension Setting (if required)

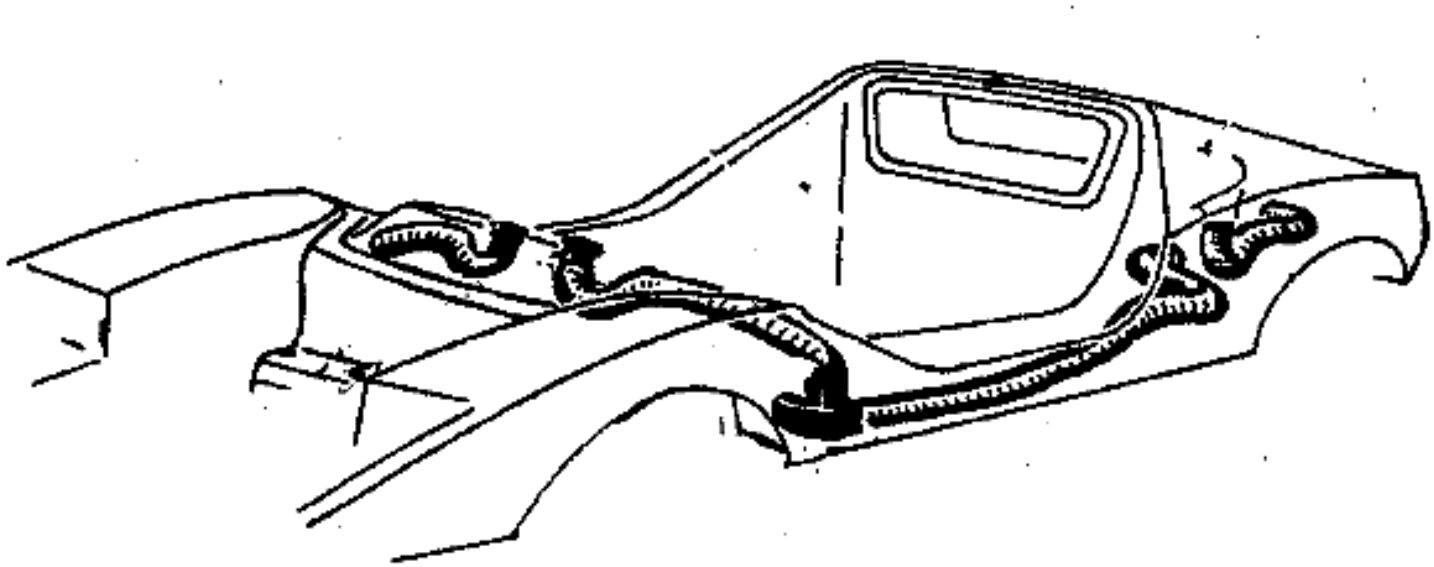


First remove the shock absorber and unscrew the three bolts which hold the trailing arm and the axle together. Unscrew the four bolts which locate and hold the trailing arm and torsion bar together. Pull off the end plate and rubber block, now pull the arm off the end of the torsion bar. This operation can be difficult for two reasons: (a) because of possible corrosion between the two parts and (b) because of the pre-stress between the trailing arm and the torsion bar. The best approach to this problem is to knock a Cold Chisel into the gap behind the trailing arm. A certain amount of caution must be used during this operation to avoid being struck by a "flying trailing arm". Slide torsion bar out and rotate arm upward approximately one to two splines giving approximately 1-2 inch drop in chassis height. More or less may be required due to varied strengths of torsion bar. Re- assemble using reverse procedure.

Construction

8. Ducting





See diagrams for routing. Install heater vents in side panels of inner body. Look for scribed circle in body just forward of depression for ram cylinders and cut 3" holes and file to fit. Route heater ducting through the side panels and attach them to the V.W. heater boxes on one end and "T" at heater vents as shown.

We suggest that the defroster hose be installed thru body and dash as high as possible above heater vents to avoid the chance of interference with your feet. It is advisable to fit a small electric blower to the fresh air pipe in the spare wheel compartment to increase the fresh air flow at low speeds. Almost any squirrel cage heater motor fan will work.

From the air vent in the sides of the car, (above rear wheels) air must travel along a pipe into the engine compartment. This is to give adequate cooling. Fix all pipes with hose clamps. NOTE: If you are installing air conditioning or power top, now is a good time to do the "plumbing" and routing of hoses, etc.

Construction

10. Fitting Lower Panels

Drill 1/2" holes in the flanges at intervals of 10" in all panels except the rear section, where one hole in each corner will be adequate. Put the panels into position on the main body section and mark the hole positions on the main body flange, then drill. Bolt the panels in position with 1/4" u. n.f. nuts and bolts and large washers. Use the glove compartment hole in each side to gain access to the side panel bolts. The front panel is fitted in a similar way using the wheel arches for access. The front edge should be bolted with self tapping bolts and washers supplied. See detailed drawing.

"Ideas"

a. Sound Proofing

Before the under side panels are finally fitted you may want to add some soundproofing materials. This can be done in many ways. Here is one suggestion:

Utilize the existing V.W. sound-deadening materials or something similar (1" -- 1 1/2" fiberglass insulation) and bond it to the outside wall of the passenger cockpit and around the insides of the side panels. Now bolt or fiberglass the under panels in place. Through the glove box holes "stuff" 6" thick roof insulation into the box section sides. Lastly remove the rear window tunnel and fill the void around the gas tank with the same 6" insulation. NOTE: If you use the type of insulation with a aluminum backing, then be sure not to let the metal surface touch the fuel sending unit terminals or you will have rather unpleasant electrical problems.

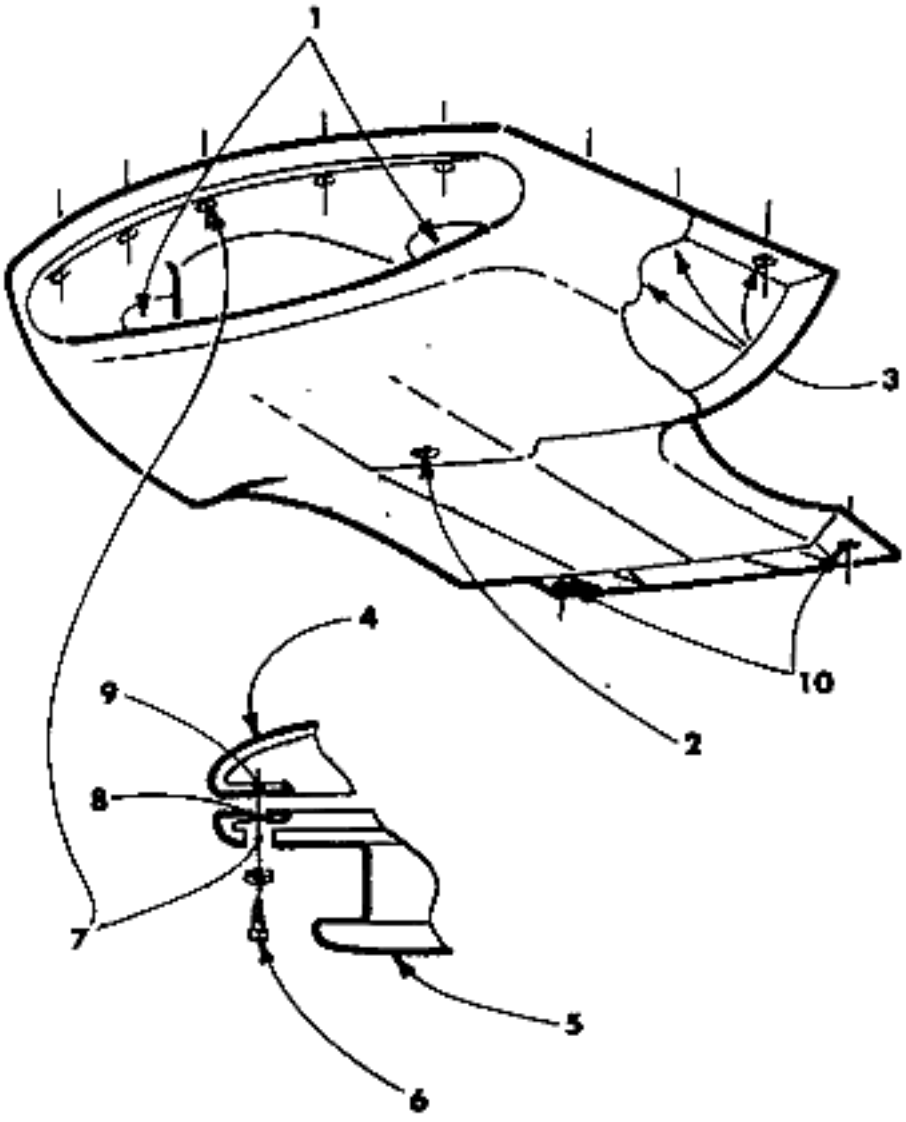
b. "Glassing" Lower Panels

If you decide to glass in your seams, the best way we know of is to pre-fit panels and drill all holes, remove panels and cut fiberglass mat to fit flange area. Rough up both flange surfaces and brush catalyzed resin on both flanges, brush resin on the mat till soaked, lay it in place and bolt flanges together, aligning the panels while tightening.

WARNING: Do one panel at a time and use catalyst sparingly to give you more working time before resin gets hard. When done and resin is cured, excess may can be filed and sanded.

Construction

Under Nose Panel



1. Cut out an opening in each of these scoops by cutting off the end of the two funnel shaped areas.
2. Drill a drain hole at this location using a 3/8" drill.
3. Bolts used on sides of nose section are type "C" combination, same as used on side panels. Some pressure or effort may be required to align lower panel with edges of upper main body.
4. Nose section of main body.
5. Under nose section.
6. Self tapping screw/washer -- See type "A" bolt combination.
7. Drill or use a hole saw to put a (1") one inch hole at this point. (So that you will have access for a socket).
8. After doing #7 above, drill a 3/8" hole thru this flange so that shank of self tapping screw will pass through.
9. Now drill a 1/8" hole thru this flange so that self tapping screw may be threaded into fiberglass flange.
10. Use bolt, flat washer, lock washer and nut combination to bolt rear of under nose section to floor pan.

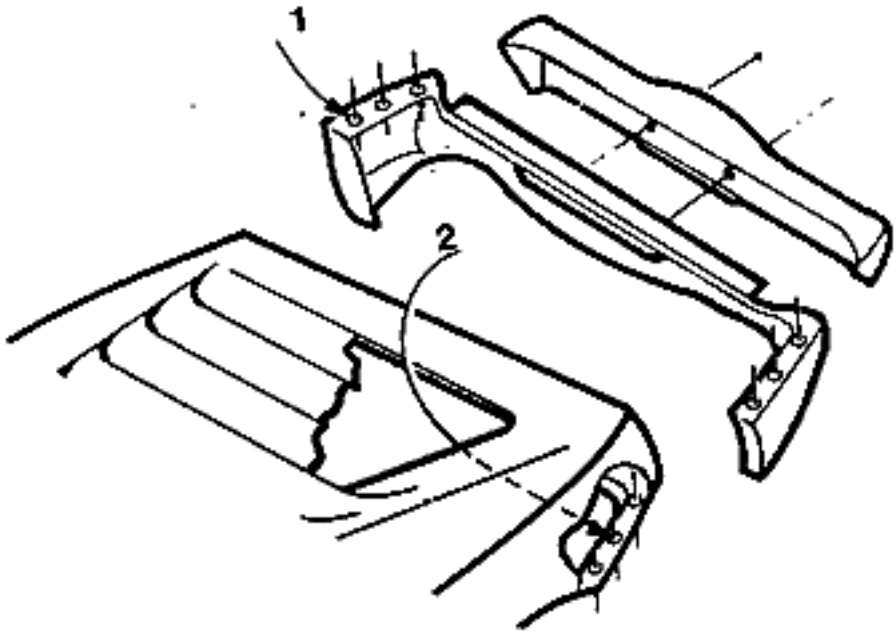
Hint/Suggestion: For final touch, mask off around perimeter of opening in nose and spray the

entire recessed area black.

Under Tail Panel

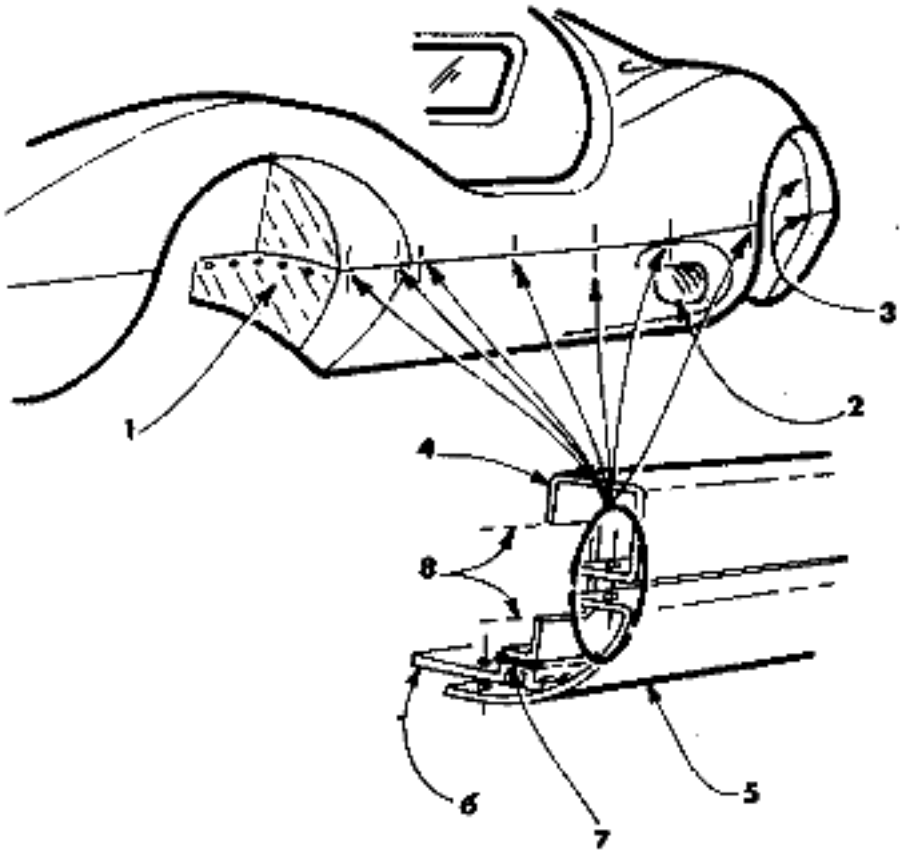
1/2. Attaching points for lower engine skirt.

Attach tail light panel using two (2) carriage head bolts as supplied. Locate in position so as to be hidden by license plate.



Construction

Under Side Panels



1. Fasten this panel at area shown, using self tapping screw.
2. Cut out opening in scoop for fresh air supply to rear brakes. (Cut out can be made with series of side by side drilled holes, then knock out piece and finish ragged edges with 1/2 round file to achieve nice smooth edges.)
3. Sand or file the inner edge of lower skirt so that they match in a nice clean sweeping curve.
4. Main body.
5. Lower side panel. (Don't be afraid to push or pull when aligning as fiberglass does not crack or break easily.)
6. V.W. floor pan.
7. Standard V.W. rubber floor pan gasket. (Be sure to put on the calking as mentioned in "Construction of Car".)
8. Access for working on interior bolts is gained through glove box openings.

Removal Of "Flashing"

At various locations on your STERLING body there are areas where our molds join or come together i.e., around fender wells, around two sides of front hood, etc. The sort of edge or flange sticking out there is referred to as "Flashing". To remove:

1. Using a file, trim off the rough stuff.
2. From that point, use 400 grit sand paper with sanding block until you've worked it back

almost flush with the other surrounding areas.

3. Switch to 600 grit sand paper and sanding block with water and do a little finer job.
4. Remove sand paper from block and finish sanding by hand.
5. Finish off with rubbing compound with an electric buffer if you have one or compound and elbow grease.
6. If for some reason while doing the above, you go thru the color coat, touch up is available.

Hints & Suggestions

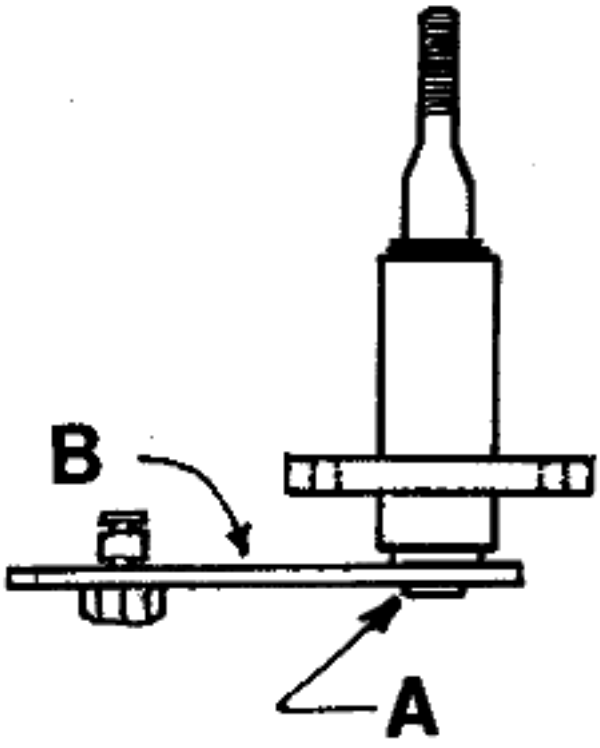
Fuses

20 amp fuses are used in the STERLING, however a 40 amp circuit breaker can be installed in circuit and we thoroughly recommend them. Go to your nearest General Motors dealership and ask for part 41476675 (approximate cost $2.50). This should be used in place of fuses, at least in the headlight circuit (some filing required to make circuit breaker fit holder).

Dimmer Switch & Steering Column

A. Use 1966 V.W. Dimmer switch or earlier for headlights, available at wrecking yard or available new from V.W. parts department as wire harness is designed with this unit in mind.
B. Use 1966 V.W. steering column or earlier. These units have a round collar rather than a rectangular collar and key is in dash rather than on column and dimmer switch is on floor.

Wiper Information



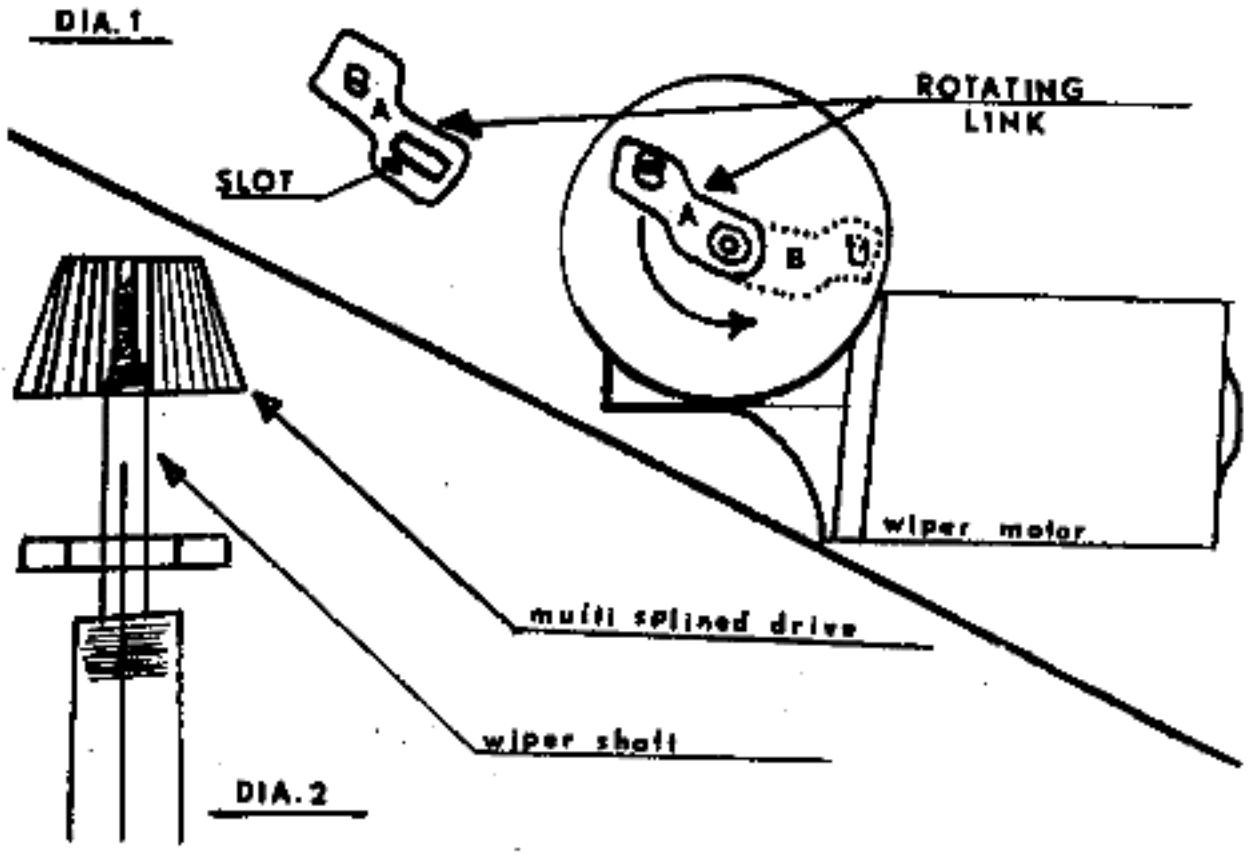
PROBLEM: While in use, wiper suddenly stops but motor continues to run and after pulling over to curb, you find that upon grabbing wiper and arm, that it feels totally disconnected from motor. WHY? In 90% of the cases ... You have been running the wiper across a relatively dry windshield (such as intermittent rain showers). The huge rubber wiper being pushed across the windshield creates friction which causes more pressure at point (A), where shaft is sweat or spot welded to arm (B), than it can handle, resulting in a PROBLEM! FIX: Pull it out of car and re-weld, order a new part from C.C.C.,INC. MORAL TO THE STORY: DON'T OPERATE WIPERS ON DRY WINDSHIELD!! I know 'cause it happened to me ... Cec'

Scoops

Let's assume at this point that all scoops have now been opened so that they are functional. If you will check your local hardware store you may find some screen or mesh (either metal or plastic). Paint it black and fix it to the back side of scoop opening using contact cement or silicone rubber cement. This is a nice finishing touch.

Hints & Suggestions

Wiper Arm Adjustment



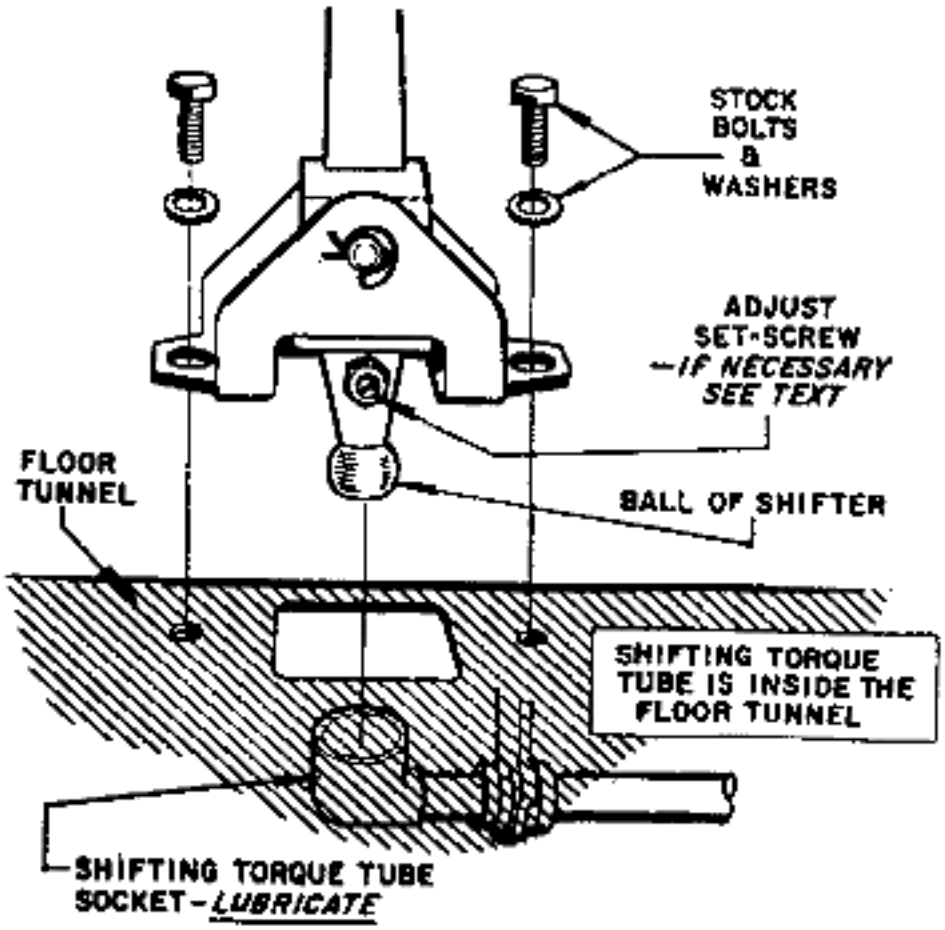
If you have had problems making your wiper arm "Park" on the proper side, with it always parking on the drivers side, refer to diagram 01 and remove rotating link and turn it 180 degrees, replace nut and tighten link. Now, if your wiper goes too far left or right on the sweep, refer to Diagram 02 and remove wiper arm from shaft.

TIP: There is a small hole thru the wiper arm near the wiper shaft. If you lift the arm and slip a small nail, pop rivet or similar object thru this hole, it will take the tension off the arm. This makes it much easier to handle.

The multi splined drive will probably come off with the arm. If it does, tap it out and install it back on the shaft. Now, place wiper arm and blade in desired position on the windshield and install hold down nuts.

Shifter Adjustment

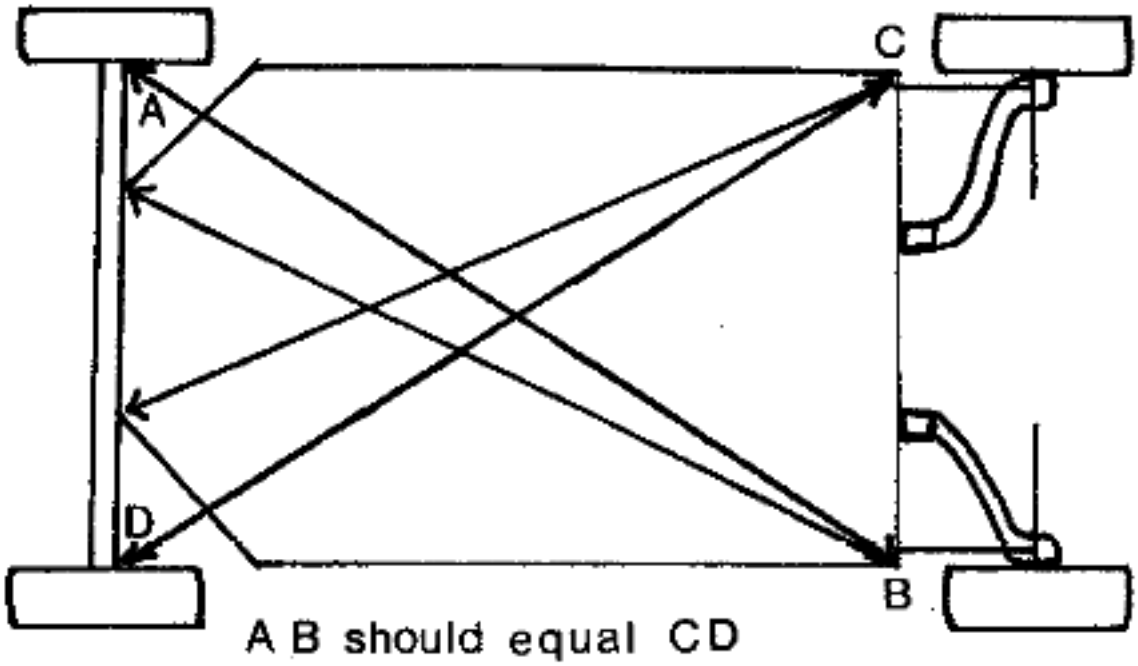
For those of you who haven't already ripped reverse out of your trans-axle downshifting from 3rd to 2nd, here's a few tips on the proper adjustment of your shifter. You should have to pull hard across the neutral gate for reverse. If you have travel less than 1/2" or so at the handle then remove the shifter, loosen lock nut and adjust set screw in so that it engages the reverse lock out sooner. Re-install shifter, center the throw where you want it and test drive. You may have to repeat the process, but it is worth it (we lived with ours 10 months before I took 30 minutes to fix it).



Hints & Suggestions

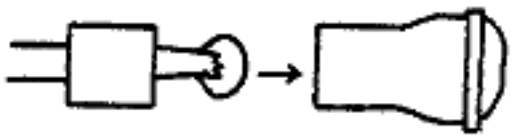
Chassis Check

Save many problems down the road by having your chassis checked for frame alignment BEFORE installing your body. Saves much work later on! Regular wheel alignment (front or back) should be done AFTER the car is complete.



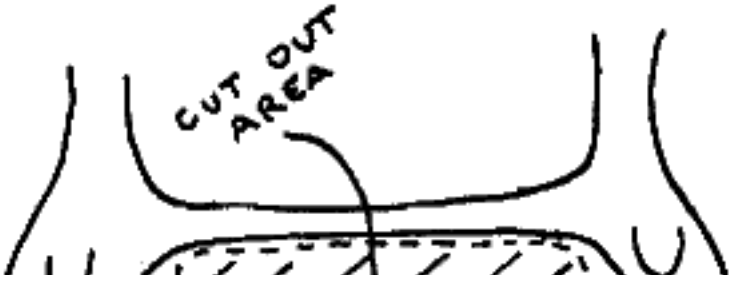
Glare

To avoid annoying glare from high beam indicator light, remove bulb assembly and insert a small amount of fiberglass insulation into housing and install bulb assembly.



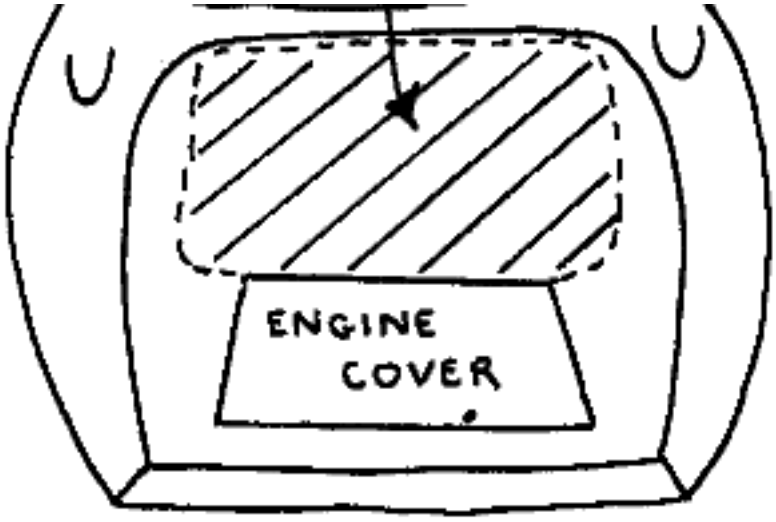
Gas Tank Removal

Should a reason occur for you to have to remove your fuel tank, we suggest the following: Cut out shaded area with saber saw, large enough to get tank out, then glass section back in and spray entire



area below louver section black.

As opposed to removing entire main body or removing axle shafts, trans-axles, etc., this seems to make the most sense to us.



Speedo Noise

For some curious reason, a small percentage of our customers have experienced a strange knocking noise emitting from the speedometer whilst the car is running. Although this is rare, the cause has always proved to be too large a bulb, that is hit by the flywheel in the speedometer. The remedy is obviously to remove the large bulb and replace it with a smaller one, i.e., 453 bulb which should be obtainable in most garages, auto electric stores, etc.

Hints & Suggestions

A. Interior rear view mirror (available as an option) -- Check with local Chevrolet dealer. 1973 Vega interior mirror sticks to windshield and works fine.
B. Exterior mirrors (available as an option) -- Check for availability at local auto supply or new car dealer. Things to be aware of:
    1. Pedestal for mirrors should be as tall as possible to allow viewing over hump in rear fender.
    2. If mirror is adjustable inside housing, then when people lean against or bump housing, your mirror will not get pushed out of position.
C. From time to time a customer will come up with ideas or suggestions that really work. We have and will continue to make these tips or ideas available to our customers through our newsletter (STERLING) "RAP" Sheet).
D. These instructions do not give details or information on how to do optional oar extra things you might want to do to your STERLING, but don't be reluctant to try because it's these little ideas of yours that set your STERLING apart from the others. If you would care to bounce your ideas off of someone, feel free to call upon us because we talk to other STERLING owners daily and based on their experiences and ours, we may be able to save you from a mistake already made by another builder.

Tire & Wheel Recommendations

TIRES: We recommend and our factory demonstrator STERLINGS are equipped with 185 X 14" Steel Belted Radials -- These are produced by various manufacturers.

WHEELS: We recommend and our factory demonstrator STERLINGS are equipped with 14" X 7" Mag type aluminum wheels -- Proper offset should be verified through STERLING Component Cars, if question arises. WHEEL ADAPTORS ARE NOT RECOMMENDED.

NOTE! If extra wide tires are desirable, caution should be exercised at front because interference with fender or interior wheel well panels may result (wide tires work well in rear).

Minor Repairs

Things needed: 600 grit sand paper, 80 grit sand paper, rubber sanding block, gel-coat (as supplied), catalyst M.E.K.P. (from auto body supply house) and a buffer.

HINT ON FIBERGLASS REPAIRS: Always prepare the hole, void, or whatever by sanding with a coarse sand paper (at least 80 grit) to secure a mechanical lock or bond. All Gel-coat supplied by C.C.C. must be catalyzed before using as per instructions supplied with catalyst*. Apply gel-coat that has been thickened with Cab-0-Sil to a putty-like consistency (if obtained from C.C.C. Cab-0-Sil will already have been added) and fill the void with the gel-coat. Cover repairs with scotch tape until hard (approximately one hour). Block sand repaired area with 600 grit sand paper until smooth, then buff out until it shines and matches the other finish. *Catalyst is available from plastic supply co., boat repair shops & some auto supply shops.

Hints & Suggestions

Adjusting The Top

A. Remove interior side panels if they are installed (the leather grained black panels near side windows) exposing a stud and nut on the hinge assembly. It's the one with the slotted hole.
B. While in the car with a 9/16" socket/ratchet, loosen both the left and right side and then have someone close the top completely down and latched at the back. Now have a couple of buddies hold the two front corners of the top down with their full weight.
C. While top is held down in this manner tighten the left one tight, then do the right side tight. If both are now tight, that's it, the top is now adjusted.

- All STERLINGS shipped are factory adjusted, but like other businesses, on occasion one will slip thru on us so if top seems to "clunk" or you feel a sort of loose feeling when lifting your top it may need adjustment. Otherwise an adjustment to the top may be required from time to time, especially if you travel rough roads as the vibration may work the nuts on the hinge loose and allow the adjustment to change.

Care & Feeding

1. Keep it clean "Exterior".
    A. Wash with soap and water (Zip wax car wash soap or liquid dish washing soap.
    B. Road tar or scum may be removed by using tar and grease remover from auto supply house or use paint thinner for stubborn areas.
    C. We recommend Maguire's Mirror Glaze Liquid (Sealer and Reseal Glaze) for protecting the Gel-Coat finish.
    D. For ultra shine, follow up with Maguire's Mirror Glaze Paste Wax #MGH-16.
2. Keep it clean "Interior".
    A. Seat upholstery -- Clean with soap and water, damp cloth only, then wipe with clean damp cloth.
    B. For show type finish on upholstery, spray on Armour-All (from auto supply house) and wipe with clean dry cloth. This works nicely on all interior black parts e.g., dash, seat upholstery, etc.
3. Heat from exhaust will burn off paint on exhaust system and as this is seen from the rear, spraying it with heat resistant black paint (spray bomb) from time to time makes things look cleaner.

Locating a V.W. Bug

Please keep in mind that the STERLING was designed specifically for installation on a **standard unaltered * Type I Beetle chassis, 1947 thru 1975**. Given a choice, we would recommend 1969 or newer chassis because of late type suspension e.g., ball joint front suspension and double U-jointed half shafts at rear makes your STERLING a better handling machine than those put on older type chassis.

The STERLING was neither designed for, nor will it fit the Karmann Ghia chassis, Squareback, Fastback, Super Beetle or Bus chassis (although various parts of running gear are interchangeable with the Bug e.g., engines, trans-axles and some front suspension parts such as Ghia disc brakes).

When purchasing a V.W. it is sometimes cheaper to buy the complete car (this allows test driving all the running gear before you lay out the cash). The following check list should be helpful when looking over a V.W.

**** Unaltered**: Steering remains stock, gear shift stays in same location, emergency brake stays in same location and floor pan is neither shortened, lengthened or made narrower. The entire chassis remains as it was manufactured by V.W.*

Where to look for a V.W.

A. Foreign car repair shops: May have one that needs work or may know of one for sale.
B. Dealers or used car lots: May have one that's a bit rough or with several smashed fenders at a reasonable price.
C. Wrecking yards: May have one with blown engine or a roll-over, etc.
D. Check with local insurance companies for wrecked VW's. Be sure to check for severe damage to chassis.
E. Put an ad in the paper or on bulletin board of local super market.
F. Let your friends know that you're looking for a V.W., as they may know of one for sale.

General Specifications on V.W. Bug

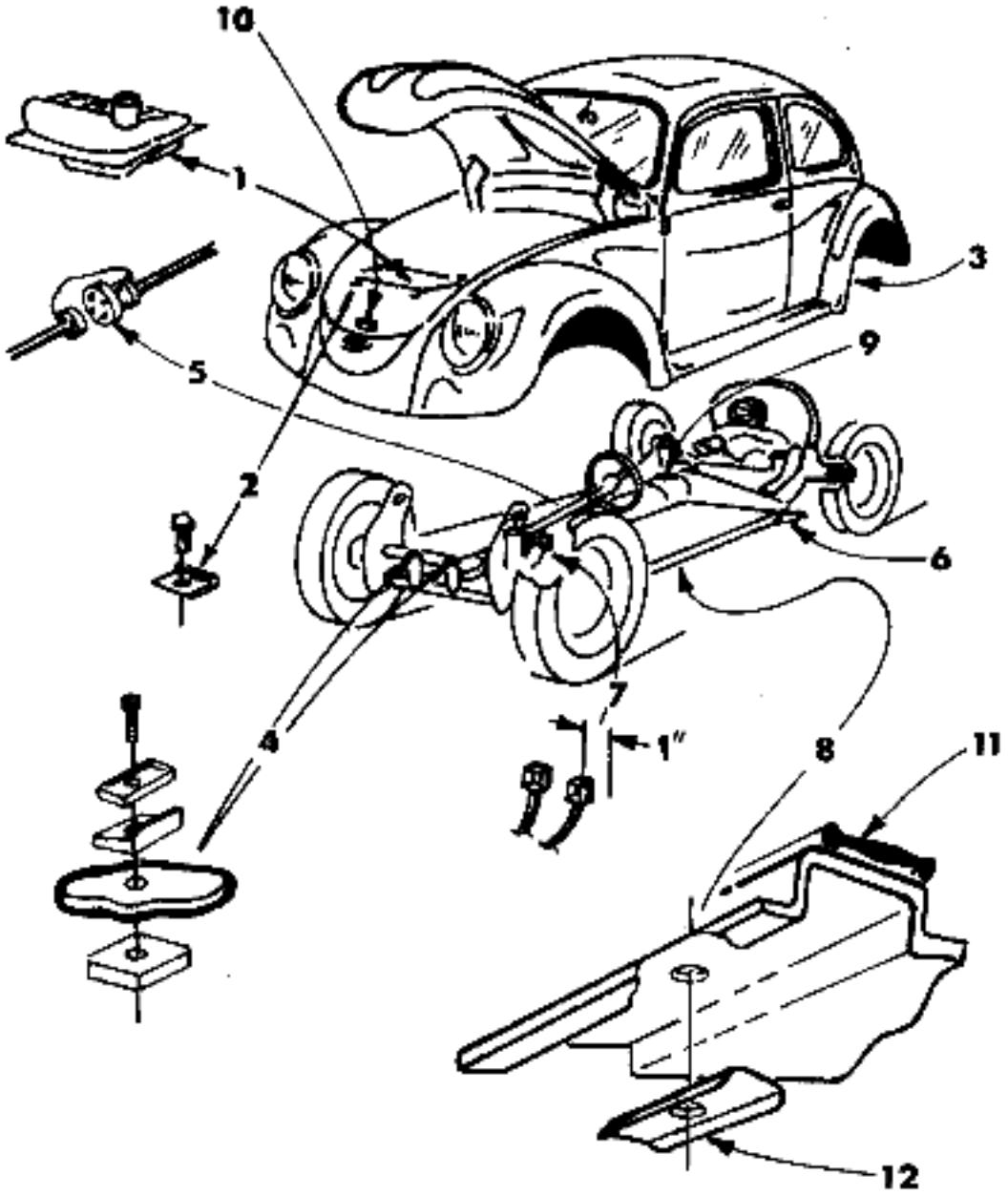
YEAR	SERIES	BHP	FEATURES
'55-'60	1200	36	6 volt / Dependable, will get you there and back. Will not feel like a sports car.
'61-'65	1200	40	(Similar to above)
'66	1300	50	Still 6 volt / But more snap in throttle -- Good sound transportation.
'67-'68	1500	54	12 volt / Starts to feel good although these years still have swing arm rear suspension.
'69-'75	1600	57	12 volt / Ball joint front with double jointed rear axles. More snap at the throttle makes this combination good dependable transportation and a lively performer at Sunday's Auto Cross.

It goes without saying that the newer the V.W., the newer your STERLING.

NOTE: OPTIONAL POWER PLANTS
It is possible to fit a wide range of alternative power plants into your STERLING, some with relative ease. Others will of course require more time and skill from the builder. More information on these engine/trans-axle combinations is given towards the end of this manual.

Things to Save & Do

NOTE: Numbers listed vertically on left of page correspond with numbered drawings on opposite page.



1. Fuel tank (1).
2. Clamps for tank (4). Bolts for same (4).
3. Bolts for rear body bracket (2). Washers for same (2).
4. Front body mounting bolts (2). Rubber spacers (4). Steel washers, channel type (2).
5. Steering column, horn wire, rubber coupling, column to dash bracket and rubber grommet thru body.
6. Jacking points. Remove both sides (chisel, torch or hacksaw).
7. Bend clutch pedal approximately one inch (1") to the left, away from steering column. Easily done using 12" crescent wrench and screw driver.
8. Detail drawing of side rail on floor pan.

9. Trans-axle inspection plate, remove and discard. Allows replacement of trans-axle at a later date.
10. Master cylinder reservoir and hoses.
11. Rubber gasket between floor pan and body (you may want to install a new one).
12. Steel body washers. Use these in the same position on STERLING body in combination with large carriage head bolts. In addition to the above, you might want to save the windshield washer components, radio and any other accessories your Bug might have. Save turn signal switch cancelling cam located on V.W. steering wheel, held on with three (3) screws, also save screws.
13. Speedometer cable and spring clip (not shown in diagram). Replace cable nut with that supplied with Kit.

NOTICE: Drop floor pan for seats (if you're over average height) prior to installing STERLING body.

- If your Bug has a dimmer switch, save it.
- If your Bug is 12 volt, save voltage regulator located in engine compartment.

Removal of V.W. Body

This section applies specifically to the standard type I V.W. Beetle 1947 -- 1975.

You may want to snap a couple of pictures of the old V.W. as you are about to create an entirely new and different type of machine both in appearance and performance. The before and after photos make for interesting conversation when you've completed your STERLING.

Many of the items that are not used from the V.W. may still be in good condition and therefore saleable to your friends, local body shops or to auto salvage yards so, don't overlook the value of parts left over. Some of the parts are to be used in the assembly of your STERLING. These are noted in the "Things to save" list.

Because of slight variations between VW's construction from year to year and the changes or modifications that may have been made, the exact location of some of the equipment to be removed may vary. This is why a final check should be made before attempting to lift body from chassis.

1. Remove gas tank:

   Remove 4 bolts and clip washers located around flange of gas tank (save these clip washers). Raise the tank and disconnect fuel line and drain all gasoline into a container. Remove gas tank (save the gas tank) and store in safe place with gas cap removed to prevent accumulation of fumes. It is recommended that the above mentioned operation be done in a well ventilated work area.

2. Remove steering column:

   A. Disconnect rubber coupling on steering box side by removing 2 bolts (label and save horn wire). Note: Rubber coupling should be replaced prior to assembly of STERLING. It is inexpensive and for safety reasons IT SHOULD BE DONE.
   B. Remove steering column clamp at dash and pull steering column thru body and into car. Note: Save clamp and rubber gasket or bushing around steering column at exit hole thru body.

3. Remove front body bolts (2).

   These two bolts are now visible thru opening formerly occupied by gas tank (save these bolts, washers and rubber spacers).

4. Remove brake cylinder reservoir:

   Disconnect fluid line and drain into container, old fluid is to be discarded (save reservoir and hoses).

5. Speedo cable removal:

   Remove spring clip in center of left front axle hub. Pull cable out from back side then disconnect from speedometer (save cable). Speedometer nut in Kit replaces that of V.W.

6. Remove all floor pan bolts along perimeter of floor pan including those found under rear seat (save special V.W. channel shaped washers for floor pan bolts). If you miss any bolts, you will find it most difficult to remove body.

7. Removal or disconnecting things in the engine compartment: Disconnect throttle cable, manual choke cable or wire to automatic choke. Disconnect coil, voltage regulator, oil pressure sending unit.

8. Disconnecting things under rear of V.W.:

   Jack up rear of V.W. and remove rear wheels exposing rear body brackets (one each side). Remove large bolt and washer where brackets mount to rear shock towers (save bolts and washers). Disconnect heater hoses from heater boxes. Replace wheels and drop V.W. back on the floor.

9. Removal of body from chassis:

   (Be prepared to say goodbye to it's familiar shape.) Break the body loose from the chassis by lifting at the center of each wheel opening -- one at a time -- moving from one opening to the next. When all corners are free, stuff a 4" X 4" block of wood between body and floor pan at each corner. Now you can visually check to see if anything is still connected -- check for misc. wires, etc. If any, they can be disconnected or cut, because

a complete wire harness is standard equipment with your STERLING.

10. Assuming that everything is now disconnected, it's now time to call upon 4 or 5 of your friends to assist you in lifting the V.W. body from the chassis.

Having completed steps #1 thru #10, you now have a stripped chassis to get prepared for your STERLING and a body and misc. other parts to sell, trade or haul away. Preparation of the chassis is covered under section titled "Construction of Car".

Points of Interest

Registration

REGISTRATION PROCEDURES AS A "SPECIALLY CONSTRUCTED VEHICLE" NOTE: The procedures listed below are applicable to the State of California. The requirements of your state may well vary and you should check before assembling your STERLING. "Specially Constructed Vehicle" (SPCN) is the only legally accepted classification in California. Registration as a re- bodied V.W. is illegal. When your STERLING is ready to drive you must first post fees and obtain a "Temporary Operating Permit" from the Department of Motor Vehicles. This will take the form of a sticker to put on your wind- shield. Now you can legally drive your car and have the following items checked off by the appropriate authorized testing stations: 1. Lights-be careful of light height regulations, 2. Brakes, 3. Smog-follows year of engine e.g., '72 engine, '72 smog requirements, 4. Glass-windshield and windows, 5. Vehicle Identification Number (V.I.N.# of V.W.) usually checked by Highway Patrol after other requirements have been met. Keep your receipts for chassis, engine, Kit, etc., plus the "Statement of Origin" for"., supplied by C.C.C.,Inc. You will need these when you first visit the D. M.V.

Headlight Height

California requires 24" minimum from center of headlight to level ground. Check your state and local requirements. NOTE: Tension of torsion bars in front suspension sometime sag or settle due to abuse, extreme usage, etc. If this is the case, addition of spring over-shock units may be required for extra assist in gaining proper height. NOTE: Should you discover you are unable to achieve the required headlight height, call California Component Cars, Inc., for a couple of ideas on how to "fix it".

Bumpers

You will note that bumpers are not included in your STERLING Sports Car Kit. various bumpers existing on the market are adaptable with some modification i.e., 240', etc. Check state and local requirements. NOTE: California requires that your STERLING be registered as a "Specially Constructed Vehicle" (SPCN) and as such the STERLING is NOT required by law to have bumpers.

Window Glass

Windshield, side windows and rear window as furnished in your STERLING are ALL NATIONALLY APPROVED SAFETY GLASS and carry appropriate markings on each piece.

Wiring Harness

This harness was specifically designed for a particular purpose and the designer's intent was to produce the most comprehensive and complete harness available in the Kit Car field today, combined with ease of installation attainable through instructions written in layman's terminology. This unit is not to be confused with typical "Dune Buggy wiring", instead it should be compared with the finest automotive wiring available through major auto makers. This unique harness fits only the STERLING.

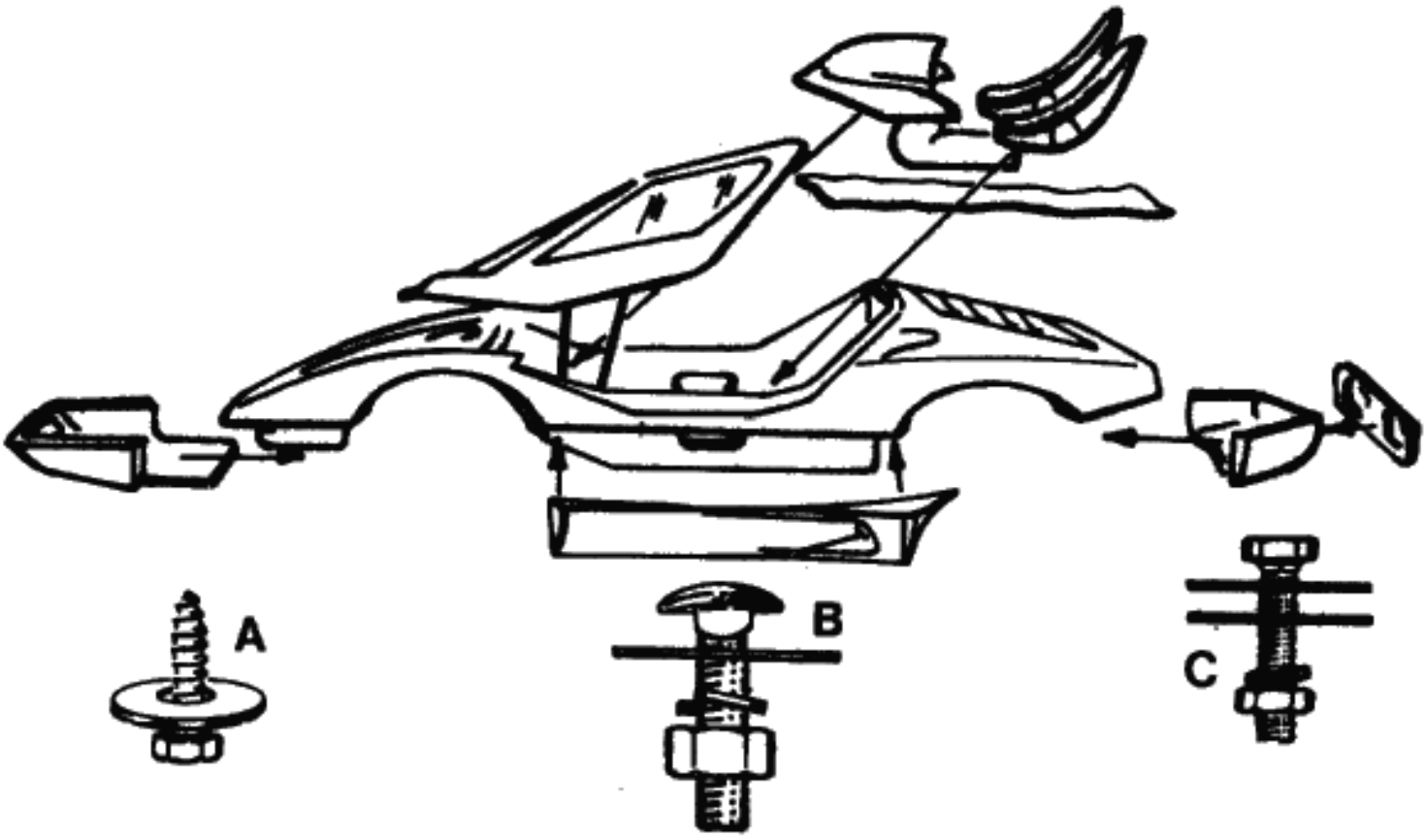
Nuts & Bolts

All nuts, bolts, washers and screws furnished as part of the STERLING are of the highest quality and have been plated i.e., cadmium, anodized, etc., to prevent rust or corrosion and to provide long life of the items.

Fastening Details

A. Self tapping screw/washer combination, used across front of under nose section.
B. Carriage head bolt, washer, lock washer and nut is to be used with channel type washer saved from original V.W. at perimeter of STERLING body flange to V.W. floor pan.
C. Bolt, flat washer, lock washer and nut combination used at under tail section, lower side panels and side portion of under nose section.

Balance of sheet shows schematic of where basic body parts are to be positioned.



Tools Required

3/8" Electric Drill, small assortment of bits 1/8" -- 3/8"
1 set open end or box wrenches
Pliers, regular
Pliers, vise grip (at least 2 pair)

Pliers, cutting
Phillips screw driver
Regular flat screw driver
Adjustable hole cutter, such as SKILL DIAL SAW #73400, 2"-3" range
File, Bastard
Coping or Hack Saw
Crescent Wrench
3/2" Socket set 3/8 to 3/4
