

WOMBAT

Assembly Manual



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WOMBAT Assembly Manual

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WOMBAT Assembly Manual

Donors and Parts

A donor vehicle is the original car on which the WOMBAT is built.

Choose a Donor Vehicle

The **Wombat** Kit Car is designed to fit on a stock, standard Volkswagen Classic Bug chassis. (Also fits Thing and Kharman Ghia chassis.) The chassis does not require any modification for the kit to fit other than removal of the floor pan tins. It is possible to merely swap the bodies, but we highly recommend that you carefully examine the mechanicals and replace or recondition them as necessary. At this point in time most people start with a non-running unit and restore it, which gives them the option to install the engine / transmission combination to match their desired performance and price range

The kit will not fit a Super Beetle unless the front end of the chassis is modified. (Not recommended—this would involve cutting off the Super Beetle front end and welding on a standard front end.) We hope to have a Super Beetle Compatible Kit at some point.

We recommend you locate a VW shop or enthusiast in your area to use as a resource for advice on how to set up the chassis to best suit your needs.

The book ***Baja Bugs & Buggies, How to prepare VW-based cars for off-road fun and racing***, by Jeff Hibbard, is an excellent information source to use when making decisions about your donor chassis. It is published by HPBooks, ISBN 0-89586-186-0.

Points to consider when selecting a donor vehicle are:

- Emission Requirements in your area.

In most locales, cars manufactured before a certain year have less stringent emission requirements than later model cars. Check your local requirements. You may wish to purchase an earlier year car to avoid hassles with the DEQ.

- Licensing Requirements

It may be easier to start with a licensed running bug with a valid title than a junkyard pan.

- Be sure the donor Bug has a valid title.

If you discover you've built your kit on a stolen chassis the original owner of the donor bug will be the legal owner of your kit car.

- Your preference of a Swing Axle or CV rear end suspension.
- What you consider will be the primary use of your Wombat
- Professional Mechanic's Inspection.

You want to avoid (or at least be aware of and correct) bent front and rear suspensions; worn ball joints, bearings, and brakes; non-functioning transmissions, etc.

If you've determined that a part is going to be used in the finished Wombat, be sure it is in good working order.

Donor Chassis Checklist

The following abbreviated checklist may help you decide if you want to use a particular chassis for your Wombat.

1. Verify the following on the chassis
 - A. The transmission yolk mounting bolts are there (this is a difficult bolt to find)
 - B. The rear transmission forks are an even height.
 - C. The rear control arms do not appear to be bent and look proportionate from one side to the other
2. Check for damage of the framehorn
 - A. Are the triangle plates flat or have they been bowed from a collision?
 - B. Are the threads in all holes intact?
 - C. Verify that the mounting area for the master cylinder has not been crushed due to lack of spacers.

Donor Parts to Save or Locate

It is possible that all of the following parts can be salvaged from your donor car, some will probably need reconditioning. If a part is missing or in poor shape, you may wish to buy new or reconditioned parts.

VW Bug Pan	Dimmer Switch Relay
All Running Gear	Emergency Flasher
Engine	Voltage Regulators**
Transmission*	Battery & cables
Front Beam Suspension	Dashboard Grab Handle and Bolts (On later models may be found on ceiling.)
Lug Nuts	Brake Reservoir, Mounting Screws & Aluminum Tubes
Body To Pan Bolts & Washers	Fuel Cap
Steering Column w/ Nuts & Bolts & Wiring Plug	Early Style Tank & Hardware and gas tank sending unit
Steering Wheel	Clip From Speedometer Cable
Horn	Tool Kit.
Gauge	
Flasher	

* Depending on your choice of engine, tire size, and year of donor transmission, you may need to exchange the transmission for one with a different ring and pinion for proper performance. Please consult a competent VW mechanic to assist in this decision. Discuss with him the primary use of your Wombat (Off-Road, Freeway, Around Town, etc.) and he will be able to help you choose the best set up for you. See Appendix K.

**Most engines now come with alternators that have the voltage regulator built in.

Parts to Buy

These parts you will not be able to salvage from your donor.

Battery Tray and Hold Downs—*small vinyl coated steel battery tray, 10" J-Bolts, and hold down frame available from your local auto supply store.*

Carpet/Interior/Bed Lining

Gas Cap

Headlight Bulbs—*5-3/4" Round 3-Prong High/Low Beam #H5006*

Mirrors—*Vanagon Mirrors work well. We like German brand Hagas Part #251.857.514 and Part #251.857.513. Available at your local VW shop or through an on-line store such as www.van-cafe.com.*

Paint Job

Seats—*Most aftermarket bucket seats will work well.*

Seatbelts

Super Beetle Speedometer Cable (Long)

Tires

Wheels

Windshield Glass (*Use windshield frame itself as template.*)

Wiper Motors and Wipers—*A 12 Volt Jeep Wiper Motor Kit available at your local jeep shop or on-line at stores such as www.thejeep.com or www.discountjeeparts.com. You may prefer a more durable marine system. Check local marine shops or sites such as www.boatfix.com, www.westmarine.com and www.shipstore.com.*

Wombat Options

These are items available from Wombat Car Company.

Baja Header (*Thunderbird #4224*)

Custom Exhaust System (*Designed for use with Baja Header-not included.*) See Appendix F.

Rear Deck Luggage Rack See Appendix G.

Right Hand Drive Modification

Soft Half-Doors See Appendix H

Soft Top See Appendix I.

Soft Windows for Soft Half-Doors See Appendix J.

Limited Availability

Wheels

Wheel Spacers

Wombat Car Co. Experience

Donor Cars: Our preference is 1969 or later IRS chassis.

Tires & Wheels: We have used Mickey Thompson 11.5 x 29.5 x 15 on 15 x 10 rims front and back. This size tire hampers the steering radius in front. Dropping the front tires down to 9.5 x 29.5 x 15 on 15 x 8 rims improves steering but does not allow rotation of tires front to rear.

Mickey Thompson tires look extremely cool and are awesome off road but they are bias ply tires which can go out of round, are sometimes difficult to balance, and noisy.

Currently, our choice in tires are P235 75 R15 Radial Traction Tires, (Les Schwab Brand) all around, mounted on 15 x 8 rims. This allows tire rotation, and gives a ride smoother and quieter than the bias ply Mickey Thompsons.

We use wheels with an offset of 3-1/4" backspacing. Try your local yellow pages under "Wheels".

Remember that the recommended tire pressure on these large tires assumes a much heavier car than the Wombat. Tailor the tire pressure to the weight of the Wombat and you will get a much better ride.

Shocks: If the standard shocks on your donor bug are in good shape go ahead and use them. Coil over shocks provide a stiffer ride and some lift.

Trannys & Engines: Our prototype used a 1973 chassis with its original 3.88 RP IRS transmission, a 1776 cc, dual carbureted performance engine, and 29" tall Mickey Thompson tires. The higher horse power engine compensated for the 3.88 RP and tall tires providing adequate power and acceleration. When using a stock 1600 cc engine with anything taller than a stock tire we prefer a 4.37 RP transmission.

Our current shop demo is a 1973 chassis, using the original stock single carburetor 1600 cc dual port engine and P235 75 R15 traction tires. The original 3.88 RP '73 transmission with this engine and tire combination performed terribly. We swapped it for a rebuilt 4.37RP transmission which solved most of the problem. It could still use a little more power in fourth gear. We could do this by either installing a custom close ratio fourth gear or upgrading the engine.

Hot Weather Performance: If you live in a hot climate, your Wombat's performance may benefit from the addition of a Fan Shroud Remote Air Intake System. This addition improves airflow through the Wombat engine shroud. See Appendix L.

WOMBAT Assembly Manual

Assembly Outline

This outline gives a good overview of the procedures necessary to build your Wombat. For details refer to the Assembly Instructions section. These instructions are in a logical order; but it is not necessarily the only order in which to do things. Some builders prefer to install the wiring harness before bonding to the body whereas we have it as an after-paint procedure. Read through the instructions and choose the order that is most convenient for you.

Assembly Step	Page in Detailed Instructions
1. Prepare the Pan.	1
A. Remove VW Bug body from pan. <i>Refer to one of the numerous manuals available to guide you in body removal.</i>	
B. Cut away the old floor pan tins leaving a flange along the center tube.	
C. Do all prep work you determine is necessary to make the pan serviceable. <i>You should plan to replace the shift coupler and shift rod bushing at this time as they will be worn in most donors and it is much simpler to replace them while the body is off.</i>	
D. Be careful to save any donor parts you plan to use in your finished Wombat	
E. Mount chassis on stock (small) tires--allows more room to work.	
2. Bond the Body to the Chassis.	2
A. Prepare the chassis. <i>Clean flange and chase threads in rear chassis mount points.</i>	
B. Prepare the body. <i>Cut a 4"x2-1/2" oval relief hole in the firewall for the brake master cylinder plunger. Clean bonding surfaces of the chassis with acetone.</i>	
C. Test Fit the Body. <i>Grind fiberglass as needed. Do a dry run with clamps.</i>	
D. Bond the Body. <i>Use epoxy and mounting clamps to bond body in place. Install body mount bolts.</i>	
E. Secure the sub-frame yoke to the firewall using the supplied bolts. <i>Drill holes in firewall for the 1/4" bolts.</i>	
F. Return Materials. <i>Return the clamping fixtures and epoxy gun in order to get a refund of your deposit.</i>	
3. Top Support Frame and Spreader Bar	5
A. Position the Top Frame <i>18" between the bottom of top frame and top of rear passenger rail.</i>	
B. Drill "C" Pillar and "B" Pillar Holes <i>18" 3/8" holes and secure with provided bolts.</i>	
C. Drill out "A" Pillar Holes and Install Spreader Bar	

D.	Drill and Tap to 3/8" windshield mount bracket holes on the A-Pillars of the Top Support Frame.	
4.	Install Steering Column.	6
A.	Drill steering column hole in firewall.	
B.	Fabricate bracket and position on spreader bar.	
B.	Mount column to bracket and steering box.	
C.	Seal hole in the firewall with silicone or choice of duraglass, bondo, etc.	
5.	Pre-Mounts, Drill Holes to Prepare for Paint	8
	<i>Drilling holes before painting is recommended to avoid scratching paint and to allow painter to correct any errors.</i>	
A.	Windshield Frame & Wiper Motors	9
B.	Side Mirrors	10
C.	Defrost Diffusers	10
D.	Dash	10
E.	Gauge, Headlight Switch, Flasher Switch/Indicator Light, Grab Handle, Cigarette Lighter	11
F.	Brake Reservoir	11
G.	Hood Support Rod	12
H.	Gas Tank	12
I.	Tire Rack	12
J.	Rear Bumper	12
K.	License Bracket	13
L.	Front Bumper & Brushguard	13
M.	Luggage Rack Option	13
N.	Soft Top/Windows/Half-Doors Option	14
6.	Paint the Car	14
	Take Mounted Body Along with Dash, Hood and Windshield Frame to Paint Shop. Windshield hinge to body spacer plates may be sanded and painted to match the car or you can paint to match trim. Many builders like the effect of painting the wheels to match the body. Be sure to keep track of your nuts & bolts when your remove pre-mounted pieces. Using paint tires will protect your finish tires.	
7.	Paint or Powder Coat Steel Pieces	14
	Bumpers, brackets, brushguard, tire rack, top frame, hood support rod, rear and center bows. The most durable treatment is powdercoat, If you choose to paint we recommend that you use a primer.	

8.	Install Windshield Glass	15
	Take painted windshield frame to glass shop and have glass installed. Glass is a simple to cut flat plate - use the frame itself as a template.	
9.	Apply Bedliner Coating to Floor (Not Provided)	15
	One of several floor options.	
10.	Install Wiring Harness	15
11.	Paint or Under Coat Undersides of Body and Hood.	17
12.	Install Brake Reservoir.	17
	Holes drilled during pre-mount.	
13.	Mount Windshield Frame	18
	Adhere the self-stick gasket to the cowl. Use hinge spacer plates.	
14.	Heat and Defrost	18
	Holes drilled during pre-mount. Choose interior or exterior air routing scheme. Attach hose adaptor to ball vent. Bond ball vents to air intake. Install defrost diffusers. Connect diffusers to ball vents.	
15.	Install Dash	20
	Holes drilled during pre-mount.	
16.	Install Dash Switches	20
	Holes drilled during pre-mount.	
17.	Install Gauge and Speedometer Cable (Not Provided)	21
	Holes drilled during pre-mount.	
18.	Mount the Lights.	21
	All holes predrilled but license bracket light.	
19.	Install Battery Tray and Battery.	23
20.	Mount Horn (Not Provided)	23
21.	Steering wheel (Not Provided)	23
	After the column is wired, if the steering wheel has been removed, or a custom one is going on the car, it should be installed at this time.	
22.	Mount the Fuel Tank (not provided) in the Front Trunk Area.	23
23.	Mount Hood & Hood Support Rod	24
	Paint or under coat back side of hood. Hood hinge & hood latch holes are predrilled.	

24.	Install Wiper Motors in Windshield Frame	24
	Holes were drilled in the windshield frame during pre-mount. You may wish to shorten the shafts. Motors may be mounted on either the top or bottom of the windshield frame.	
25.	Mount Front Bumper & Brushguard	25
	Mount front bumper brackets one at a time. Position bumper and brushguard and mark for drilling. Drill and mount using supplied bolts.	
26.	Exhaust System	25
	We recommend our optional custom exhaust system (muffler, exhaust pipes and hangers) designed to be used with a Baja header (Thunderbird #4224). <i>See Appendix F.</i>	
27.	Mount Tire Carrier	25
	Holes were drilled during pre-mount. Cut and apply protective vinyl to brackets or body.	
28.	Mount Rear Bumper	26
29.	Mount & Hook Up License Bracket with Light	26
	Mounts on the passenger side of the rear bumper.	
30.	Install Seat Mounts	26
	Not Provided. Different seats will require different mounts. Any drilling that is to be done should be done before carpet is installed— <i>drilling through carpet is a very bad idea.</i>	
31.	Carpet/Floor Covering	26
	Not Provided. Possibilities include spray on bedliner, custom rubber mats, or a custom carpet.	
32.	Rear Bench Area	26
	Not Provided. This area may be used for a rear seat, storage box, audio system, etc.	
33.	Mount Seat Belts	26
	Not Provided	
34.	Running Boards	26
	Trim and attach self-adhesive anti-slip tape to running boards.	
35.	Grille Decals	26
	Trim and adhere self adhesive rubber to grille.	
36.	Wombat Decals	27
	Clean area before installing decals.	

37. Side Mirrors	28
Side mirrors may mount on either the windshield frame or half-door frame.	
38. Options	28
A. Luggage Rack <i>See Appendix G.</i>	
B. Soft Half-Doors <i>See Appendix H.</i>	
C. Soft Top <i>See Appendix I.</i>	
D. Soft Windows for Half-Doors <i>See Appendix J.</i>	
39. Mount Finish Tires & Wheels	28
40. Apply Patent Protection Sticker in the Trunk/Gas Tank Area.	28
41. Test Drive	28

E. Use Paint Tires

Mount the chassis on old stock VW Bug tires and wheels. Using old small tires gives you more room to work and you don't have to worry about protecting them from paint overspray, etc.

2. Bonding the Body to the Chassis

Tools Needed

grinder w/wire wheel & disc
rags
4 or more strong friends
saw horses
Tapered Line Up Bar
Rubber Gloves
Mask
Ventilation Fan
length of 2x4
Drill & 1/4" bit

From the Kit

Front Clamping Fixture
Rear Clamping Fixture
Epoxy Gun
Plexus 2 part Epoxy & Mixing Tips
Body Nuts & Bolt Assembly Pkg.

From the Donor

Restored Chassis, floor pan tins removed
Gear Shift Bolts (2)
Seat Belt Bolts (2)

To Buy

Acetone or equivalent
Tube of silicone sealer (optional)

The body will be bonded to the chassis along the center tunnel flange and the front cross-brace flange using a 2-part epoxy (Plexus), and bolted at standard mount points using bolts supplied in the kit.

With all chemicals, it is important that you read and follow the safety precautions, and warnings before using them. On the adhesive that you will be using for the bonding process (Plexus), there is an MSDS safety information and precautions that should be followed. See Appendix C.

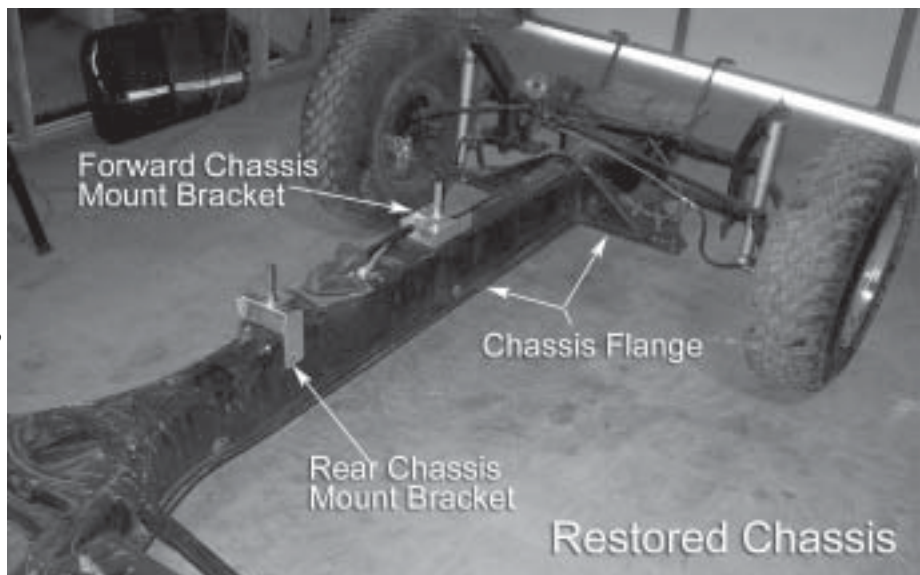
A. Prepare the Chassis

- 1) Clean Flange: Clean the flange of all grease and debris. Application of the wire wheel followed by an acetone rubdown works well. If you have repainted the chassis you will need to grind the flange to bare metal to maximize bonding strength. A scuffed, rough surface is optimum.
- 2) Chase threads in rear chassis mount points.

Figure 1. Refurbished chassis with floor pan tins removed, note flange edge remaining.

Bonding fixtures are in place. Rear clamping fixture fixes to the seatbelt mount holes. Front clamping fixture fixes to the shifter mounting holes.

Picture is inaccurate as we recommend using stock size used tire/wheel during the complete build up process. The smaller tires allow easier access to the chassis.

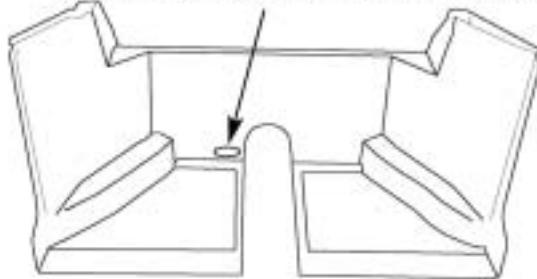


B. Prepare the Body

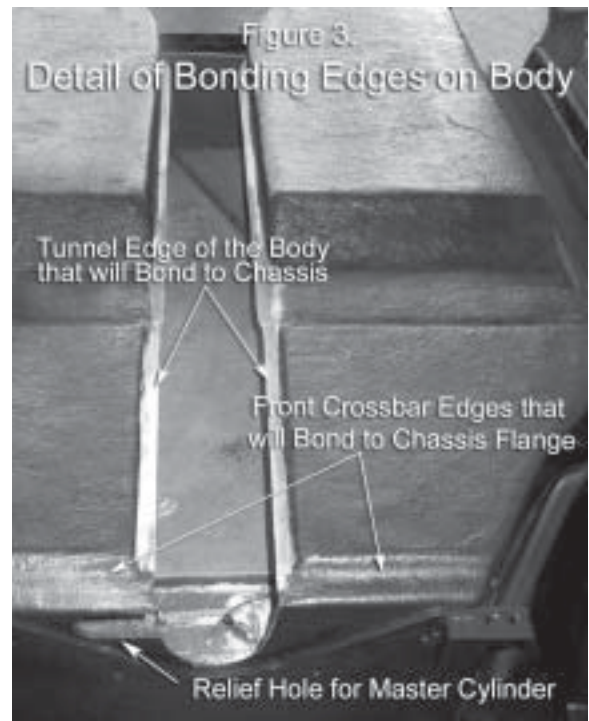
- 1) Cut a 4" x 2-1/2" oval relief hole for the brake master cylinder plunger and master cylinder mount bolts. See figures 2 & 3.

Figure 2

Firewall relief hole for master cylinder plunger and master cylinder mount bolts.



- 2) Use acetone to wipe down the tunnel and front cross bar edges of the body where it will bond to the chassis flange. The bonding surface needs to be clean. See figure 3: *The body is inverted to show the detail of the body tunnel edge that will be bonded to the chassis flange. This may need to be sanded for the best fit.*



C. Test Fit the Body

- 1) Set the body down onto the chassis to check its fit. (This is where all those strong friends come in.) The center tunnel edge of the floor unit of the Wombat body should be able to contact the chassis center tunnel flange (this may require some downward pressure). Make sure all 6 body mount bolts line up. A tapered line up bar or Phillips screwdriver can be helpful with this. Some grinding of the fiberglass may be needed for fit.
- 2) Bolt the lower sections of the clamping fixtures to the center tunnel using existing shifting lever holes and seat belt holes and shifting lever and seat belt bolts saved from donor.
- 3) Do a “dry run” of the final bonding, tightening the clamping fixtures and the bolts in place. If the tunnel edge of the body is not contacting the chassis flange at the forward most point under the dash/trunk area, use a piece of 2x4 to wedge from trunk down to force it into position.
- 4) Remove upper parts of clamps and the mount bolts. Remove the body from the chassis.

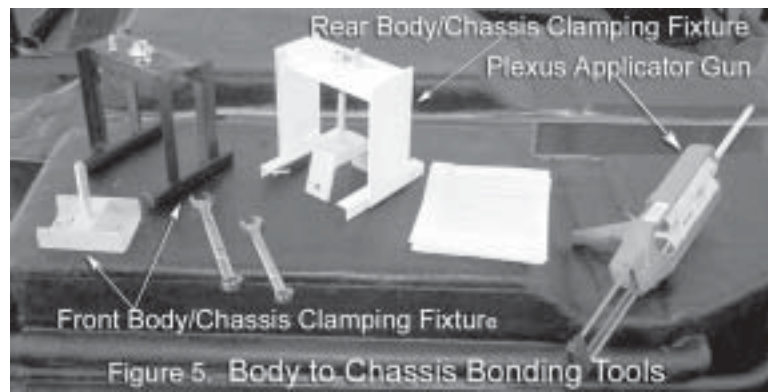
Figure 4.

Lower sections of the clamping fixtures bolted to the center tunnel using existing shifting lever holes and seat belt holes and shifting lever and seat belt bolts saved from donor.



D. Bond the Body

1. Prepare to apply the glue. Read over the instructions in Appendix C for using Plexus and the Epoxy gun. Be sure to set up in a well-ventilated area and wear your personal protective gear. Set time of the glue is temperature sensitive; you will have less time at high temps.



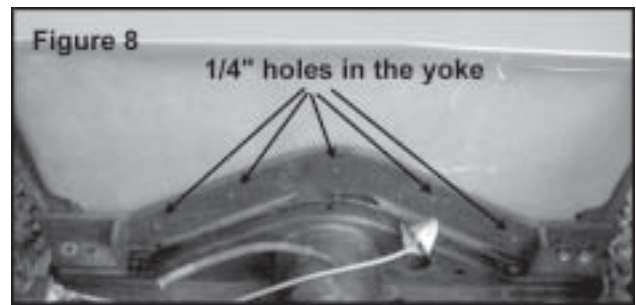
Glue time is limited so be sure to have at hand before you start:

- the upper sections of the clamping fixtures
 - rear bolts from the kit (2 10mm x 35mm long x 1.5 pitch hex bolts with flat and lock washers)
 - the front bolts from the kit (4 3/8" -16 x 2-1/2" Hex Cap Bolts with flat washers and nylock nuts)
 - Friends to lift the body
- 2) Apply a 1/4" bead of glue along the tunnel flange and the front cross brace flange. See *figure 6*.
 - 3) Lower the body back onto the chassis, lining up all four corner mounting points and install bolts finger tight, this will square up the body to the chassis.
 - 4) Place the upper sections of the clamping fixtures onto the lower sections that are already installed on the chassis.
 - 5) Tighten clamps.
 - 6) Finish installing and tightening body mount bolts.
 - 7) Scrape off any excess adhesive from the tunnel and fill in the remaining gaps if desired.
 - 8) Once the adhesive is fully cured, remove the clamping fixtures. We recommend letting the glue dry over night just to be assured of a secure bond.
 - 9) If desired, apply silicone sealer to the area where the tunnel and firewall intersect and around the pedal assembly mounting area.
 - 10) If the firewall front edge doesn't meet the front crossbar use Plexus and/or Duraglass to fill the gap.



E. Secure the yoke to the firewall.

Using the supplied 1/4"-20 x 1" hex head bolts, washers and nuts secure the sub-frame yoke to the firewall. You will need to drill the fiberglass. The yoke may have been predrilled. If not, drill 5 evenly spaced holes through the yoke.



F Return Materials

Return the clamping fixtures and epoxy gun to Wombat Car in order to get a refund of your deposit.

Return to:

Wombat Car Company
10013 NE Hazel Dell Ave., #147
Vancouver, WA 98685-5203

Items:

Clamping Fixtures

Front Fixture, Upper & Lower Sections

Rear Fixture, Upper & Lower Sections

5/8" Hex Nut & Washer

1/2" Hex Nut & Washer

Epoxy Gun

(Used Nozzles/Tips are disposable and need not be returned)

3. Top Support Frame and Spreader Bar

Tools Needed

Drill & Bits
Tapping Tool

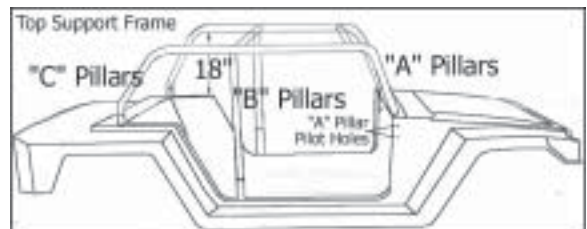
From the Kit

Top Support Frame Nuts & Bolt Assembly Pkg
Spreader Bar.

Your Top Support Frame will come welded and set into position in the body subframe sleeves. Pilot holes (1/4") have been drilled at the "A" pillars (front pillars). You will need to drill the "B" Pillars (center pillars) and "C" Pillars (rear pillars.).

A. Position the Top Frame

Adjust the top frame position such that there is 18" between the bottom of the top frame and the top of the passenger rail



B. Drill "C" Pillar and "B" Pillar Holes

Drill 1/4" holes in the "B" and "C" pillar body sleeves and top frame tubes. Drill

out to 3/8". You may wish to enlarge the holes incrementally when going from 1/4" to 3/8"

Before drilling you may wish to consider whether you wish to install the bolts parallel or perpendicular (or at an angle) to the top frame side bars. You may wish to use the "B" pillar bolts for seat belt mounting.

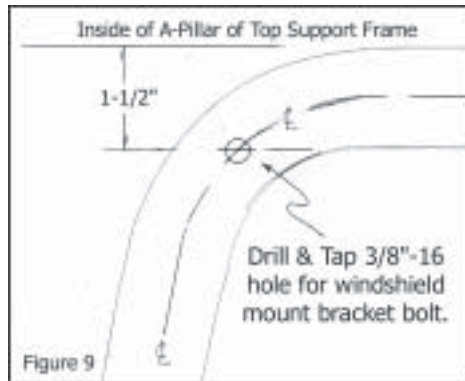
Secure the top frame using the provided 3/8" x 2-1/2" Hex Head Bolts and nuts provided for the "B" and "C" pillar mount.

C. Drill out "A" Pillar Holes and Install Spreader Bar

Enlarge the "A" Pillar holes to 3/8". Install spreader bar using the provided 3/8" x 4" button head socket cap screws and nuts.

D. Drill and Tap A Pillar for Windshield Bracket mount.

The windshield is fastened to the top support frame via L-brackets. It is necessary to drill and tap for a 3/8"-16 bolt to fasten the bracket to the Top Frame. Position the hole along the centerline of the A-Pillar, on the inside, 1-1/2" below the top edge. See figures 9 and 10.



4. Mount the Steering Column

Tools Needed

- Ratchet & Socket to fit donor bolts
- Drill
- 1/4" and 5/16" Bits
- 2" Holesaw
- Straight Dowel or stiff ruler
- Caulking Gun
- Grinder
- Welder (optional)

From the Kit

- Steering Column Bracket Flat Iron
- 2 2" U Clamp sets

Your column should be inspected and reconditioned if needed. It is also advisable to paint it before installation.

A. Drill Steering Column Hole in Firewall

It is helpful to use a stiff ruler or narrow dowel to line up the hole with the steering box. Start with a small hole you can sight through, so that if you are off line you can make adjustment with your next hole. Work your way up in size until the hole is just large enough to allow the column through.

B. Fabricate Bracket and Position on Spreader Bar.

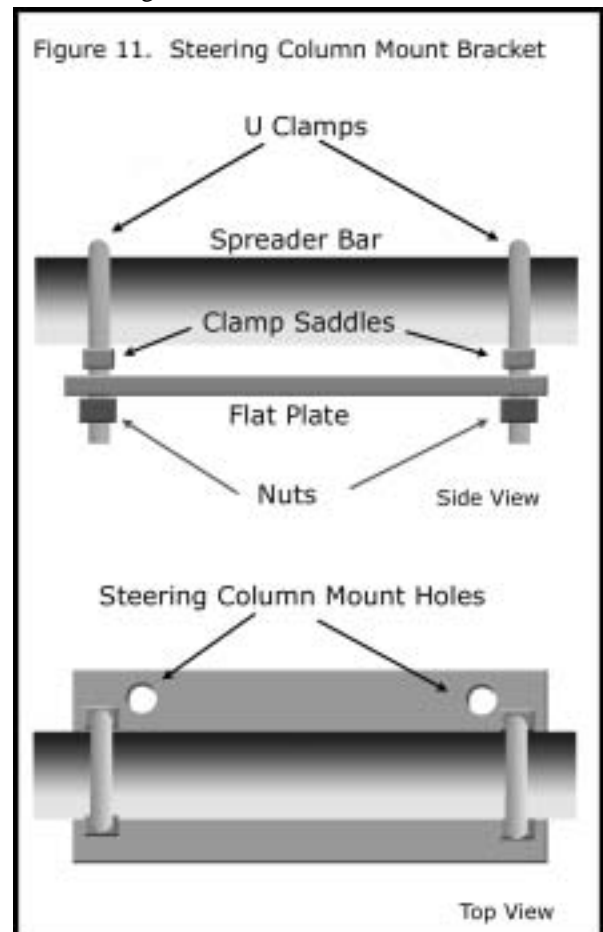
The bracket flat iron is 8 inches long and 3 inches wide. Bracket is shown in Figure 11.

To Buy

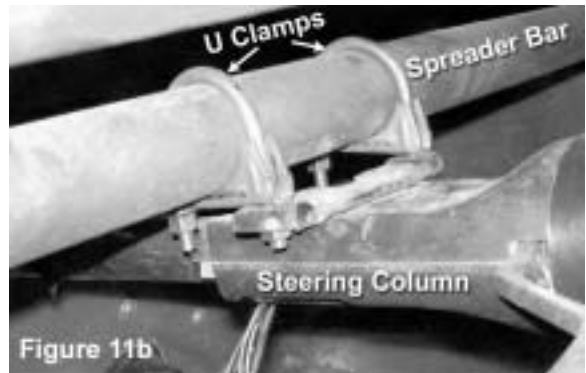
- 1 Can Black Satin Interior/Exterior Spray Paint
- Silicone
- 1-1/2 x 2 x 1/2" x 6" angle iron (option)

From the Donor

- Donor Nuts & Bolts
- Steering Column



Depending on your column, you may prefer to eliminate the flat plate and attach the column directly with the U-Clamps as shown in figure 11b.



- 1) Grind edges of flat iron smooth
- 2) With the steering column in position, hold the flat plate between the column and the spreader bar and mark for steering column mount bolts. Be sure the bracket is positioned to allow for the U-clamp holes.
- 3) Drill holes for steering column mount bolts and U-clamps
- 4) Attach bracket to spreader bar using U clamps. You can adjust the height by adding spacer washers between the U Clamp saddles and the flat plate.

C. Mount the Column

Loosely mount the column to the bracket (reuse donor bolts & nuts) and to the steering box. The U Clamps allow adjustment of bracket placement if necessary. Inspect to insure everything is correct, then tighten.

D. Seal the Column Hole

The column hole in the firewall needs to be sealed. This can be done with a variety of materials. If your cutout is well done, a bead of silicone is adequate. If the hole is a little rough, then it can either be glassed, duraglassed, bondoed, etc.

Alternate Bracket

Option: fabricate bracket from angle iron (1-1/2" x 2" x 6") and weld in place. See figures 12 and 13. If you opt for a welded bracket you may wish to weld to the front of the spreader bar rather than that shown which is welded to the back of the spreader bar. Welding to the front will allow better access after the dash is in place.



5. Pre-Mounts, Drill Holes to Prepare for Paint

Tools Needed

Drill & bits

Measuring Tape

Screwdrivers

Masking Tape

Tapping Tools

Level

Marker

Wrench & Socket Set

It is good practice to drill any holes required in the fiberglass before paint. Any mistakes you make while drilling holes at this point can be easily remedied by the painter. If you do decide to drill after paint, start with a small bit and gradually work up to the size hole you need. This method is least likely to damage your paint or fiberglass. Items which overlap the holes are less critical but you may wish to pre-mount them anyway. You may also wish to pre-mount bumpers.

Most of the nuts provided with the kit are nylon lock nuts. When you need to use nuts during a pre-mount you may wish to substitute non-locking nuts to make it easier to disassemble to paint.

Holes for the lights and hood mount have been predrilled. The following are items you may wish to pre-mount before paint.

- A. Windshield Frame & Wiper Motors
- B. Side Mirrors
- C. Defrost Diffusers
- D. Dash
- E. Gauge, Headlight Switch,
Flasher Switch/Indicator Light,
Cigarette Lighter, Grab Handle
- F. Brake Reservoir
- G. Hood Support Rod
- H. Gas Tank
- I. Tire Rack
- J. Rear Bumper
- K. License Bracket
- L. Front Bumper
- M. Luggage Rack Option
- N. Soft Top/Windows/Half-Doors Option

A. Windshield Frame & Wiper Motors Pre-Mount

From the Kit

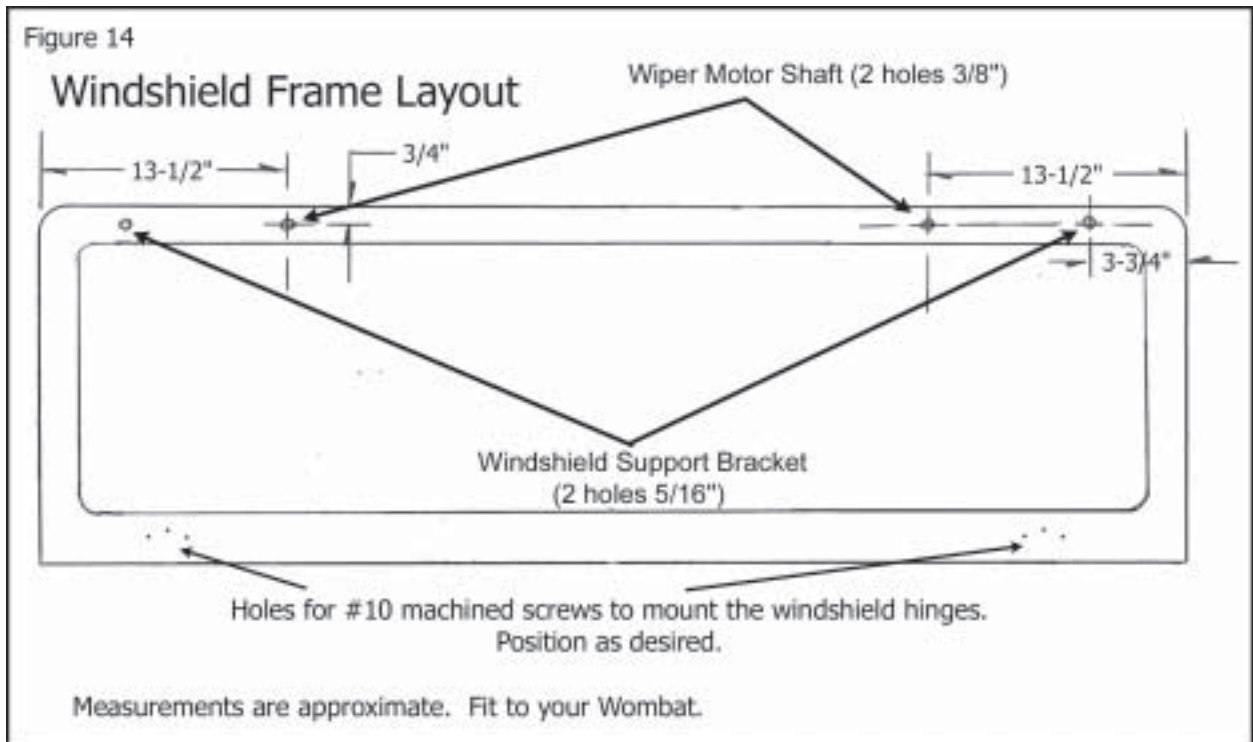
Windshield Frame	Hinge Spacers	Windshield Nut & Bolt Pack
Windshield Hinges	Hinge Gaskets	
Windshield Frame Gasket	Miscellaneous Nut & Bolt Pack	

To Buy

Non locking #10 nuts 2 Wiper and Wiper Motor Kits

Jeep 12 Volt Wiper Motor Kits are available at your local jeep shop or on-line at stores such as www.thejeep.com or www.discountjeeparts.com. You may prefer a more durable marine system. Check local marine shops or sites such as www.boatfix.com, www.westmarine.com and www.shipstore.com.

- 1) Mount the windshield brackets to the A-Pillars using the spacer bushing and provided bolts.
- 2) Secure the self-adhesive windshield gasket to the cowl temporarily with masking tape. Center the windshield frame on the cowl.
- 3) Position the windshield frame hinges and spacers on the cowl. Once everything is positioned as you like, mark windshield frame and cowl for drilling. You will drill 5/16" holes at the bracket position and #10 holes for the hinges.
- 4) Drill 3/8" holes for wiper motor shafts. The wiper motors may be mounted on either the top or the bottom of the frame. If you choose lower mount be aware of steering wheel clearance with the motor housing. With top mount the wiring will run along the top support frame. With bottom mount the wires will be carried under the dash--drill 1/4" holes for wire access to motors.
- 5) Mount Windshield frame using non locking nuts to check for fit.
- 6) Mount wiper motors. Secure with supplied #10 self- drilling screws--drill pilot holes with 1/8" bit.



B. Side Mirrors

From the Kit

Miscellaneous Nut & Bolt Package

Vanagon Mirrors work well. We like German brand Hagus Part #251.857.514 and Part #251.857.513. Available at your local VW shop or through an on-line store such as www.van-cafe.com.

Mirrors may be mounted to the sides of the windshield frame or to the body forward of the A pillar. (If you opt for the soft half-door, mirrors will instead be mounted to the half-door frame using machine screws in the half-door nut & bolt package.)

- 1) Position mirrors along the lower side edges of the windshield frame or forward of the A Pillars. Mark for drilling.
- 2) Drill holes for the 1/4-20 x 3/4" Phillips oval head machine screws provided in the kit. If you chose windshield mount, tap holes.
- 3) Secure mirrors in place.

To Buy

Mirrors

C. Defrost Diffuser

From the Kit

Defrost Diffusers

Dash & Defrost Nut & Bolt Pack

To Buy

Non locking #10 nuts

Refer to Section 14 on page 17 for complete description of the defrost set up.

- 1) Trim diffusers to fit under the upper dash edge of the cowl. See Figure 15. Drill mounting holes in the diffuser for #10 machine screws.
- 2) Position diffuser under dash edge of cowl and mark holes.
- 3) Drill holes for mounting diffusers.
- 4) Drill holes or slot between mount holes for venting air. See Figure 16.



D. Dash Pre-Mount

From the Kit

Dash

Dash Bracket Angle Iron

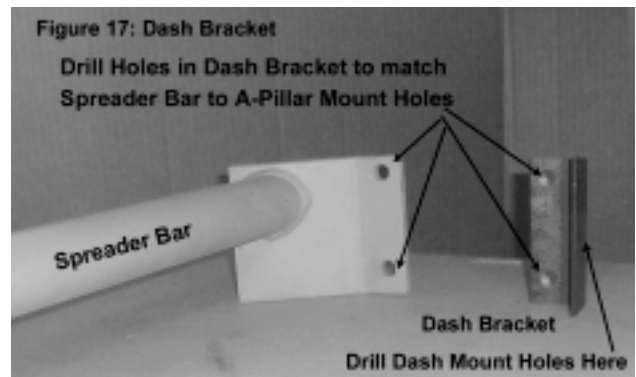
Dash & Defrost Nut & Bolt Pack

The Dash can easily be replaced with a custom unit. Customers have used wood and aluminum to fabricate custom dashes.

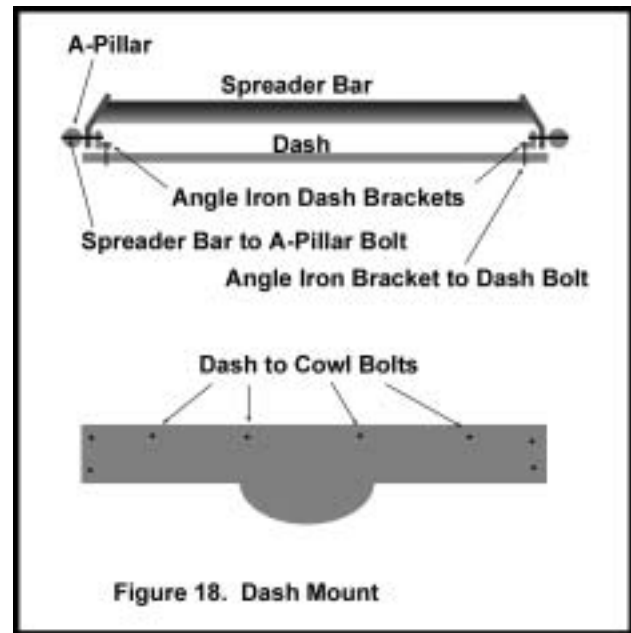
- 1) Fabricate Brackets
Bracket is made of a 4" length of 1-1/2 x 1-1/2 1/4" angle iron.
 - a) Grind edges of angle iron smooth

To Buy

Non locking 1/4" nuts



- b) Mark and drill holes in brackets to mount to spreader bar via 3/8" spreader bar A-Pillar bolts.
 - c) Mark and drill 1/4" holes in brackets for dash mount.
- 2) Fasten Brackets to A-Pillars via Spreader Bar Bolts.
 - 3) Position dash and mark for drilling. You will connect the dash to the bracket via two screws along the sides. Four evenly spaced screws across the top of the dash attach the dash to the cowl edge.
 - 4) Drill 1/4" holes as marked.
 - 5) Secure dash to brackets using 1/4" Phillips Pan Head Machine Screws and temporary non-locking nuts.



E. Gauge, Headlight Switch, Flasher Switch/Indicator Light, Cigarette Lighter

From the Kit (*Switches and Lighter packed in Wire Harness Bag*)

Dash	Dash & Defrost Nut & Bolt Package
Headlight Switch	Flasher Switch/Indicator Light Cigarette Lighter

To Buy or Salvage from Donor

Speedometer	Grab Handle w/Nuts & bolts	non locking #10 nuts
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- 1) **Speedometer** There is a pre-cut hole in your dash for the **gauge** that you salvaged from your donor car or bought aftermarket. The gauge mounts from the back. Drill two holes in the dash on each side of the gauge hole to match the mount tabs on your gauge. Install using the supplied #10 phillips pan head machine screws and temporary non-locking nuts.
You may also request at the time you order your Wombat that we not pre-cut the gauge hole if you prefer to use custom gauges.
- 2) Drill holes in the dash to fit your **headlight switch, emergency flasher switch/ indicator light and cigarette lighter**. Positions are your choice, they should be convenient to the driver. These items are packaged with the wiring harness.
- 3) **Grab Handle** If you salvaged a grab handle from the dash or ceiling of your donor car use it as a template to mark hole positions on the dash. Drill. You will install using nuts & bolts from your donor car.

F. Pre-Mount Brake Reservoir.

From the Donor

Brake Reservoir with mounting screws	Aluminum fluid tubes
--------------------------------------	----------------------

The brake reservoir mounts in the front trunk area, towards the firewall on the drivers side. Two holes must be drilled through the body for the fluid lines to run down to the master cylinder. Two holes for mounting must be drilled, also. The reservoir will be mounted using the original nuts & bolts salvaged from the donor car. Hold the reservoir in place to set these

holes- it is easiest if the holes allow the fluid lines to run down along the firewall. During final installation you will want to bond the hoses to the firewall.



G. Pre-Mount Hood Support Rod

From the Kit

Hood Support Rod
Hood Nut & Bolt Assembly Package

The hood support rod is an “L” shaped rod threaded on the short end. The threaded end is secured through the side of the trunk area with the provided two 1/4" nuts and washers to allow it to pivot. Position as desired and drill 1/4" hole. See Figure 14.

H. Pre-Mount Gas Tank

From the Kit

Gas Tank Nut & Bolt Assembly Package

To Buy or Salvage

Early Style Gas Tank & mounting hardware

Place the tank in the opening. Position salvaged mounting hardware. Mark and drill holes for the supplied 5/16" bolts to secure gas tank to trunk. (Fabricate simple retaining straps if necessary.)



I. Tire Carrier

From the Kit

Tire Rack
Pivot Pin

Hinge Bracket
Pin Bracket

Tire Carrier Nuts & Bolts (*Lock Pin*)

To Buy

Non-Locking 3/8"-16 Nuts

- 1) Assemble the unit off the car: Install bushings in the tubes of the tire carrier. Install the pivot pin in the hinge bracket securing the tire carrier to the bracket. Place lock pin in pin bracket to close carrier
- 2) Position unit so that the bracket holes are centered in the rear vertical base bars of the body sub frame, and so that the length of the tire rack is level. Mark holes.
- 3) Drill Holes.
- 4) Mount Tire Carrier.
- 5) Pre-Mount Rear Bumper before removing and disassembling Tire Carrier. Be sure to remove bushings from tubes before sending to paint or powder coat.

J. Rear Bumper

From the Kit

Rear Bumper
Rear Bumper Brackets (2)

Rear Bumper Nut & Bolt Package

- 1) Insert brackets into tubes on body subframe.
- 2) Center bumper on brackets. Mark and drill bumper to match bracket holes.
- 3) Bolt Bumper into place using provided bolts.
- 4) Adjust Bumper to Body distance so that it lines up with the tire carrier, then drill frame and bracket. Secure using supplied bolts.

K. License Bracket

From the Kit

License Bracket
Lights Nuts & Bolts

This is mounted on the passenger side of the rear bumper, after the bumper and tire rack are mounted.

Holes are not predrilled. Position, mark and drill holes in the bumper for mounting with the provided #10 pan head machine screws



L. Front Bumper and Brushguard

From the Kit

Front Bumper
Front Bumper Brackets, Left & Right
Brushguard
Front Bumper & Brushguard Nut & Bolt Package

1). Mount Front Bumper Brackets

Mount the Left and Right Front Bumper Brackets to the Angle Beam one side at a time using provided bolts. **DO NOT REMOVE BOTH SIDES AT ONCE OR THE AXLE BEAM WILL DETACH ITSELF**

2) Position Bumper and Mark for Drilling

Center bumper on bracket. Mark locations on bumper to match predrilled holes on bracket.

3) Position Brushguard and Mark Bumper for Drilling

Center Brushguard on bumper. Mark locations on bumper to match predrilled holes on brushguard tabs.

4) Drill holes in bumper.

5) Attach bumper to bracket using bolts supplied with your kit.

6) Attach brushguard to bumper using bolts supplied with the kit.

M. Pre-Mount Optional Luggage Rack

From the Kit

Luggage Rack Luggage Rack Nuts & Bolts

The Wombat rear deck luggage rack mounts by way of threaded inserts in the four legs that rest on the deck.

1) Place the rack on the deck, visually centering it on the deck lid. Use a straight edge held against the fender to measure from the side to the rack. When you are satisfied with the placement, trace around the leg.

2) Look underneath the deck lid, and confirm your leg placement mount hole will intersect with the body subframe rails that run below the deck lid. The holes do not have to center perfectly on frame rails.

3) Adjust if necessary. If needed you can fabricate bracket to mount. See Appendix G.

- 4) Starting with a small bit, drill a hole in the center of your marked circles, then gradually work your way up to a 3/8" diameter hole. Warning—if you increase the diameter too quickly, you risk chipping the fiberglass.
- 5) Use the supplied bolts, washers to mount. Loosely start all the bolts, and then slowly and equally tighten.

N. Pre-Mount Soft Top/Windows/Half-Doors Option

You may choose to pre-mount the Soft Top/Windows/Half-Doors option. This is not critical as these pieces have parts that overlap the holes.

The Soft Top requires holes drilled in the windshield frame for snaps and the awning rail and holes drilled along the rear passenger rail for snaps. The Half-Doors require holes in the body for door hinges. The half-door windows come with a wind deflector that mounts on the windshield frame.

See page Appendices H, I and J for mounting instructions.

6. Paint the Car

After each piece has been test-mounted, it is removed. (Be careful not to lose any nuts & bolts.) The mounted body, dash, hood, and windshield frame should now be taken to the paint shop, or painted yourself. We recommend that you use paint tires to avoid getting paint on your finish tires. The windshield hinge to body spacer plates may be sanded and painted to match the car. Many builders like the effect of painting the wheels to match the body.

Note: If you plan to cover your top frame bars with bar padding so the color won't matter, don't tape off your cage as the paint adds protection.

7. Paint, Chrome, or Powdercoat Steel Pieces.

While the body is being painted, it is a good time to paint, chrome, or powdercoat the steel pieces: Bumpers, mounting brackets, brushguard, tire carrier, luggage rack (option) and hood support rod. Krylon Satin Black Interior/Exterior Spray Paint works well.

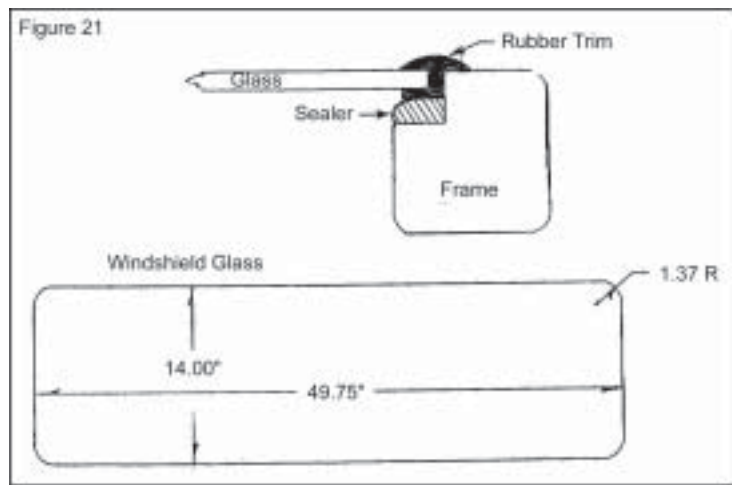
Powder coat is recommended as the most durable finish. If you decide to use paint, it is definitely worth the trouble to use a coat of primer. Be sure to rub the steel down with solvent to remove any grease before painting.

The windshield hinge to body spacer plates may be sanded and painted black if you did not send them to the paint shop. You may wish to consider painting the gas tank black. You may also wish to consider lightly sanding and painting your muffler and exhaust pipes using a paint designed for barbecues. This looks good and helps prevent corrosion.

If you opted for the soft top you may wish to paint or powdercoat the aluminum awning rail to match your trim.

8. Install Windshield Glass

After the windshield frame has been painted, take it to a glass shop and have the windshield glass installed now. The windshield frame itself acts as a template. Use flat plate safety glass. The process is a standard bond-in system.



9. Apply Bedliner Coating to Floor.

Option Coating the floor with a bedliner product is an alternative to carpet. There are a variety of bedliner options available at various prices in both do-it-yourself and professional installation. Be sure to mask off the heater vent tubes before bedlining.

If you plan to do a lot of wet and dirty off-roading you may wish to get plugs and drill drain holes in your floor boards.

10. Install the Wiring Harness

Tools Needed

- Drill
- 5/8" hole saw
- 1-3/4" hole saw
- 4 or more strong friends
- blower or vacuum
- extension cord
- saw horses

From the Kit

- Wiring Harness Nut & Bolt Assembly Package
- Wiring Schematic
- Wiring Harness

From the Donor

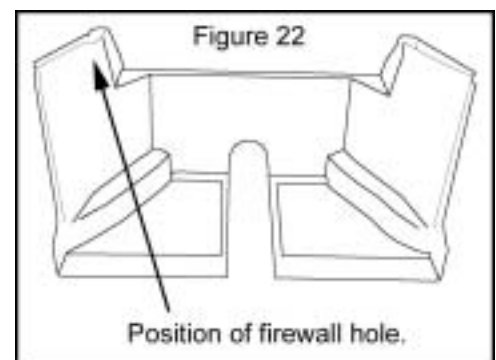
- Dimmer Switch Relay
- Flasher & Emergency Flasher
- Fuel Tank Sender

Some builders think the optimum time to install the harness is before bonding the body. They find it easier to get to the body before the chassis is bonded. Others prefer to wait until after bonding to body to the chassis. Your car, you choose.

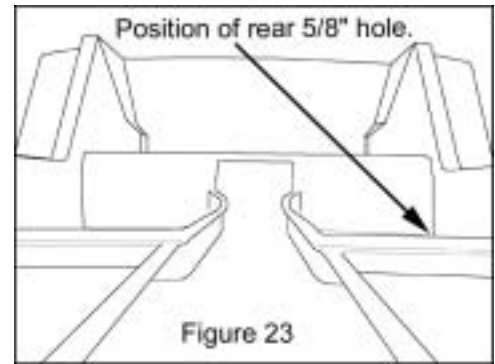
Although our Wiring harness has been greatly simplified, you may still wish to get experienced help for this. Use the schematic diagram included with your harness (also in Appendix E) to install the included harness. Test the wiring before final bolt in of the gas tank for easy access.

The harness is in sections that plug together. The front section is detailed on page 1 of the schematic. The rear section is detailed on pages 2 & 3. Page 4 is a detail of the turn signal converter box.

You will need to drill a hole in the firewall on the driver's side for the front trunkline to the front lights, fuel tank and brake master cylinder. The main wiring trunk runs from the firewall hole, along the driver side lower sill inside the car along the frame rail near the floor, then through a hole



drilled at the base of the rear seat (**Alternatively**, some builders have chosen to run the main wiring trunk through a pvc pipe bonded beneath the body. If you choose to carpet the interior, the harness running along the floor of the car is neatly hidden. If you choose bedliner, having the wires under the body works better. The choice is yours.) The rear harness runs along the frame rails, to each taillight assembly, engine connections, and to the transmission for backup lights



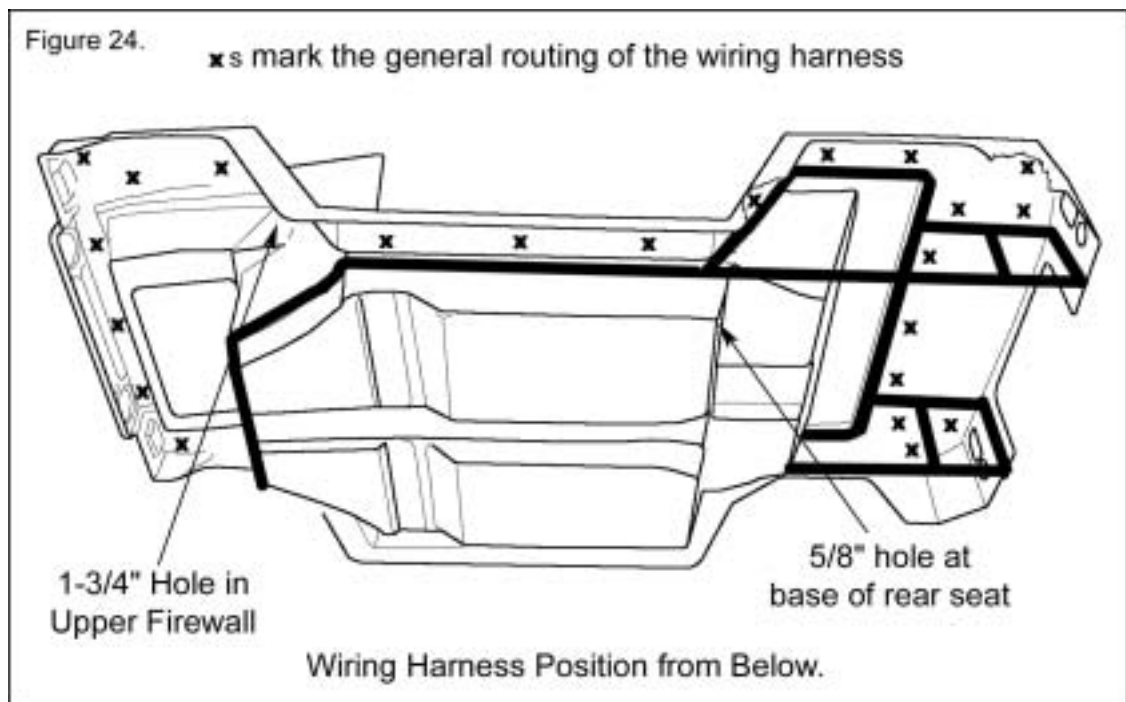
The first step in the installation is to drill the bulkhead holes. Drill a 1-3/4" hole in the firewall and a 5/8" hole at the base of the rear seat. (Not necessary if you opt to run the harness through pvc pipe on the underside of the car.) See Figures 22 and 23 for positioning.

You will want to prop the body up on sawhorses if you choose to install the wiring harness before bonding to the chassis. We recommend that you have at least 4 people, to move the body onto the supports.

Clean the underside of the body. Blowing or vacuuming work well, as does hosing it off with water.

The drawing below shows the general routing of the harness on the underside of the body. The harness is affixed via zip ties, self-adhesive cable clamps, and screw in cable clamps. An assortment is provided with your kit. We found the adhesive in the self-adhesive clamps to fail in the extreme heat of desert summers, but they may be sufficient for milder climates.

Along the sub frame you may wish to simply zip tie the harness in place, or use the provided self-drilling screws to affix cable clamps to the sub-frame. In the front trunk area, away from the sub-frame, you may use either the self-adhesive clamps to bond to the fiberglass, or drill holes through to the trunk and fasten cable clamps with the stainless machine screws and nuts provided. As an alternative, you may wish to bond various lengths of pvc pipe under the body to hold the harness.



Before you begin, you may want to relax and take your time to familiarize yourself with the harness. Lay the harness out on the floor. With the diagram and a cup of coffee or pop, figure out where each of the wires go. This will help tremendously.

The fuse panel mounts to the driver side, upper firewall with the screws, washers, and nuts.

Depending on which year steering column you have, you will either wire through it, or bypass it. You can wire in custom gauges, or reuse your donor Bug gauge.

Headlight Switch, Emergency Panel Light, & Switch are will be mounted in the dash to the left of the steering column.

Note that the schematic calls for the harness wires to be fed through the rubber grommet in the base of the front turn signal so that the connections between the light wires and harness wires are protected by the lens.

If you encounter problems when testing your vehicle, it is a good idea to keep in mind that most electrical problems are ground related and/or in the steering column.

11. Apply Undercoating or Paint to the Underside of Body and Hood.

Option. Spray paint or 3M rubberized undercoating to the underside of the fiberglass body and subframe. You may choose to undercoat the hood also. The black color gives the car a clean finished look. Undercoating helps add another layer of soundproofing to the entire structure.

It is your choice as to the best time to undercoat the body. Some people prefer to do it before mounting the body, some after mounting but before painting, others after painting but before wiring.

If you choose to undercoat early in the assembly of the car you may wish to apply a touch-up coat later in some areas.

12. Brake Reservoir

Tools Needed

Drill
Drive Bit

From the Donor

Reservoir with mounting screws
Aluminum fluid tubes

To Buy

Zip ties or cable clamps
Brake Hose, 7mm. Blue Braided, approx. 3 feet , part N203501

Holes should have been drilled during the pre mount before paint.

Attach a length of brake hose to each end of the metal tubes from the donor to give the correct length to reach from the reservoir to the master cylinder. Run hoses through holes down towards master cylinder along the firewall. Don't add too much length. You want the fluid to flow smoothly without any bends or folds to catch air bubbles.

Attach reservoir in place using screws from your kit. Tubes should be attached to the firewall in some fashion, such as zip ties or cable clamps. (Silicone is not recommended for fastening).

13. Mount Windshield Frame.

Tools Needed

Drill
#10 Phillips Bit
Utility Knife

From the Kit

Windshield Frame
Hinges & Hinge Gaskets
Windshield Nut & Bolt Package
Hinge Spacers
Windshield Gasket

Holes were drilled during pre-mount.

- A Trim the self-adhesive windshield gasket as necessary and adhere to cowl.
- B Secure the windshield frame bracket to the A-Pillar using supplied 3/8" button head screws and bushings.
- C Secure the windshield hinges, gaskets, and spacers to the cowl.
- D Place windshield in position and secure to bracket and hinges using supplied bolts.

14. Heat and Defrost

Tools Needed

Drill
Utility Knife

To Buy

Bonding Agent
Silicone Sealer
OPTIONAL
1" OD PVC pipe
90° elbows

From the Kit

Length Defrost Hose
2 Hose End Caps
2 Louvered Ball Vents
2 Hose Adaptors
2 Defrost Diffuser Ducts
Dash & Defrost Nut & Bolt Assembly Pack

Hot air is brought forward from the engine through pvc pipes installed behind the running boards. There are inlets in the passenger and driver side footwells. Defrost air may be routed to the windshield either on the inside or outside of the firewall. Defrost duct hose is provided with the kit. If you choose to route the air to the outside of the cab you will need to purchase pvc pipe and 90° elbows.



A. Ball Vents

- 1) Drill ball vent and attach hose adaptor.

The louvered ball vents will be bonded to the hot air inlets in the footwell. The vent is directional, so determine if you prefer up/down; front back; or something in between and position accordingly. Mark the top of the vent for drilling. The hose adaptor will attach to the sleeve of this vent to attach the defrost hose. If you choose to route the defrost air outside the firewall, no modification needs to be done to the vent. Simply bond in place.

Figure 26 shows the adaptor and ball vent. A 1" hole has been drilled in the sleeve of the ball vent and the threaded adaptor has been screwed in. Seal with silicon if desired. You may need to shorten the threaded end of the adaptor for clearance on the louver.



- 2) Bond ball vent to hot air inlet and attach hose to hose adaptor.

Figure 27 shows the ball vent and hose in place. Soak the hose in warm water for a few minutes to make it more flexible and easier to push onto the hose adaptor. The hose runs along the firewall up to the dash to deliver air to the defrost diffuser ducts.

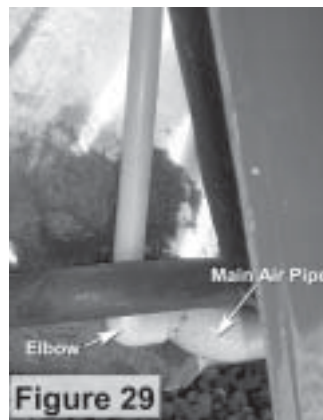
Figure 28 shows the possible alternative of using pvc pipe to run up the inside of the fire wall. Seal with silicone if desired. Attach the hose at the top of the pipe to deliver air to the defrost diffuser ducts.



B Exterior Defrost Air Routing

Figure 29 illustrates how you can use pvc pipe and elbows to tap into the main air pipe outside the firewall and bring the defrost air up to the dash area.

Figure 30 shows how a hole is drilled high up in the firewall for the pipe. Attach the defrost hose to this pipe.



C Diffuser Ducts

(You may have trimmed diffusers and drilled cowl for mounting/venting during the pre-mount.)

- 1) Trim diffuser ducts.

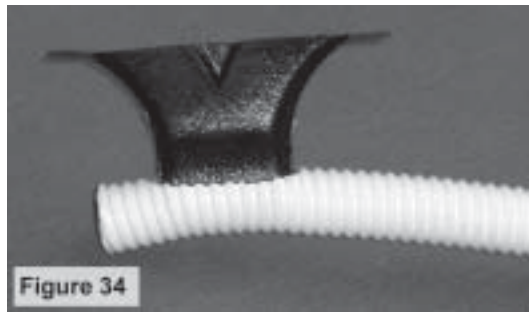
The two diffuser included in the kit need to be trimmed to fit under the upper dash edge of the cowl. Figure 31 shows a trimmed and an untrimmed diffuser.



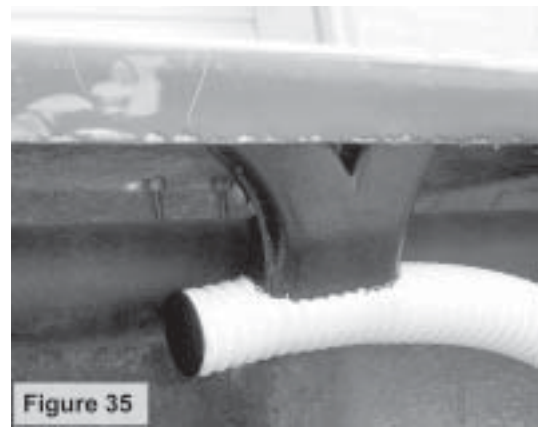
- 2) Attach duct to hose

About 1 inch from the end of the hose, use a marker to trace the base of the diffuser as seen in figure 32. Cut along the outline with a utility knife (Figure 33).

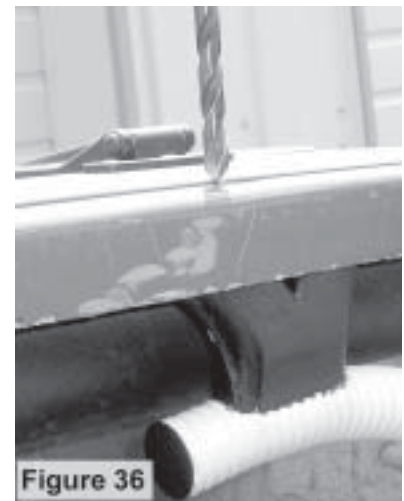




Insert the diffuser into the hose and cap the end of the hose with the included cap. Seal with silicone, if desired. See Figure 34



- 3) Drill holes for mounting screws
Drill screw holes in the diffuser for #10 machine screws. Position diffuser under the dash edge of the cowl and mark holes. Drill holes in dash edge for diffuser mounting.
- 4) Drill vent holes/slot.
Between mount holes drill holes or slot for venting air. See Figures 35 & 36.
- 4) Trim defrost hose
Once Diffusers are properly positioned, trim hose to proper length to fit with your choice of defrost air routing.



Consider your interior finish as you choose your defrost method. You may wish to paint your pvc pipe or defrost hose. If you choose to hide it behind carpet, consider fastening the carpet with Velcro strips rather than glue to allow future access.

15 Install Dash

From the Kit

Dash
Dash Brackets

Dash & Defrost Nut & Bolt Pack

Drilling was done on the dash, dash brackets, and body cowl during pre-mount. Use supplied screws to secure dash to brackets attached to spreader bar/A-pillars. Use supplied screws to secure the top of the dash to the cowl.

16 Install Dash Switches

From the Kit (Switches and Lighter packed in Wire Harness Bag)

Cigarette Lighter
Headlight Switch

Dash & Defrost Nut & Bolt Package
Flasher Switch/Indicator Light

To Buy or Salvage from Donor

Grab Handle w/Nuts & bolts

Holes were drilled during pre-mount. Mount headlight switch, emergency flasher light/switch, and cigarette lighter. Mount Grab Handle if you saved one from your donor.

17 Install Gauge and Speedometer Cable

From the Kit

Dash & Defrost Nut & Bolt Package

To Buy or Salvage from Donor

Speedometer

Super Beetle Speedometer Cable

Super Beetle Speedometer Cable Clip

From the Kit

Battery Tray

Battery Hold Down Frame

10" J-Bolts

Nut & Bolt Assembly Pkg

During pre-mount you drilled two holes in the dash on each side of the gauge hole to match the mount tabs on your gauge. Install gauge from the back using the supplied #10 phillips pan head machine screws and nylon lock nuts.

The speedometer cable requires a small clip that is not included in most new cable packages. Salvage one from your donor car or remember to get one when you buy your new super beetle speedometer cable.

18. Mount the Lights.

Tools Needed

Screwdrivers

Wrenches

To Buy

2 5-3/4" Round 3-Prong #H5006

High/Low Beam Headlight Bulbs

From the Kit

Lights (In cardboard Light Box in kit)

Lights Nuts & Bolts Assembly Pkg.

Headlight Support Frames

Headlight Rings

A Front Turn Signals

Mounting holes are predrilled. A gasket is included that fits between the body and the base. Amber lens attaches with 2 screws. Feed wiring harness wires through the rubber grommet in the base so that the connections between the light wires and harness wires are protected by the lens.

B. Front Marker Lights

Amber lights are sealed units that snap into mounting brackets. Brackets screw into predrilled holes.

C. Rear Marker Lights

Red lights are sealed units that snap into mounting brackets. Brackets screw into predrilled holes.

D. Back Up Lights

Cut outs are done for you. Fit rubber mounting grommets into cut outs then work in the round sealed lights. Lubrication eases this task.

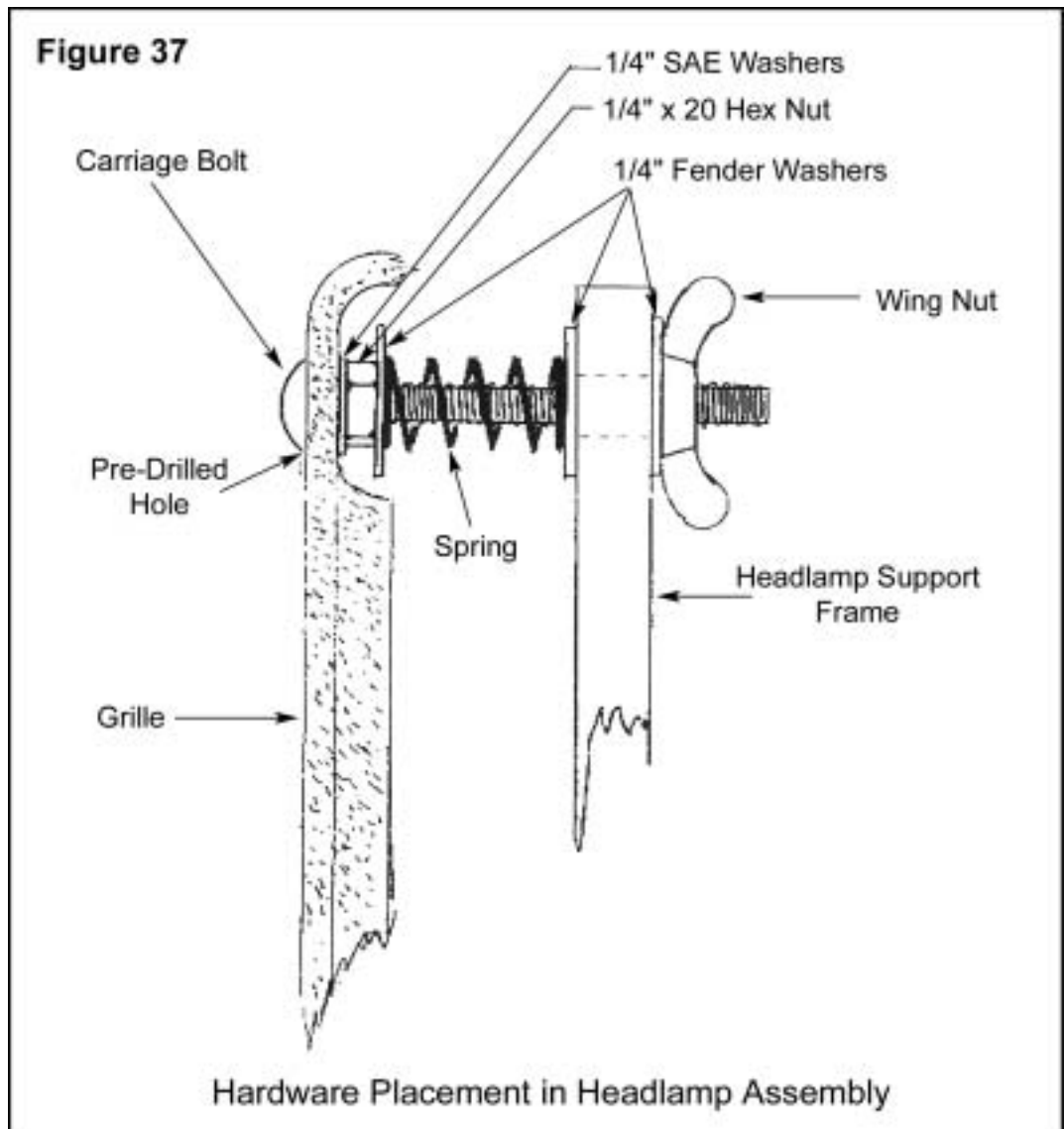
E. Stop/Turn/Tail Light:

Cut outs are done for you. Fit rubber mounting grommets into cut outs then work in the rectangular red sealed lights. Lubrication eases this task.

F. Headlights

Refer to diagram in Figure 37

- 1.) Pre-assemble the headlamp Support Frame, Headlamp, and Retaining Ring. Line up the 3 notches on the Headlamp and Support Frame. Slip retaining ring over headlamp and line up the three small screw holes. Use the 8-32 x 3/8" screws provided to secure the three pieces together.
- 2.) Place carriage bolts through the 4 holes in the body by each headlamp opening. Use one 1/4" SAE washer and one 1/4"-20 hex nut to secure carriage bolts to body creating 8 fixed studs.
- 3.) On each stud place a fender washer, spring, and fender washer in that order. Refer to diagram.
- 4.) Place Headlamp Assembly over studs making sure that the top of the headlamp is actually on top.
- 5.) Put one fender washer and nylon wing nut on each stud and secure the assembly in place. Tighten wing nuts to adjust the headlamp to desired depth and angle.



19. Install Battery Tray & Battery

Tools Needed

Drill & Bits

To Buy (or salvage from donor)

Battery

Battery Cables

From the Kit

Gas Tank Nut & Bolt Package

Pkg Gasket material

The tray mounts on the rear frame rail of the body subframe behind the rear seat on the passenger side. Position the tray on the rear frame to bumper strut. Drill Holes and secure tray in place using the provided 5/16"-18 x 2" Hex Cap Screws, lock nuts, and washers.

Secure battery to tray using the hold down frame and J-bolts provided, following the instructions on the packages.

Battery is installed after the wiring harness to leave more room to access the rear lights during wiring installation.

20. Mount Horn

The horn can be attached directly to any of the available mounting points on the VW front beam suspension. The horn can be salvaged from your donor or purchased new.

21. Steering wheel

After the column is wired, if the steering wheel has been removed, or a custom one is going on the car, it should be installed at this time..

22. Gas Tank

Tools Needed

Drill

Screwdriver

Utility Knife

To Buy or salvage from Donor

Early Style Gas Tank

Gas Tank Sending Unit

Gas Cap

Neoprene Gas Hose and Clamp

From the Kit

Gas Tank Nut & Bolt Package

Pkg gasket Material

The Wombat requires an early style gas tank. Before the tank is installed, replace or clean the in-tank fuel screen. A nice touch is to paint the exterior of the tank with satin black. You may have drilled mount holes during the pre-mount.

- A** Outline the bottom edge of the tank, under the flanges, where it will contact the body with the gasket material.
- B** Attach a length of neoprene gas hose to bottom of tank and secure with a hose clamp. Attach length of fuel tube to vent fitting.
- C** Place the tank in the opening. Secure using the metal restraining clamps salvaged from donor or fabricated and 5/16" bolts supplied with the kit.
- D** Hook up the sending unit.

23. Hood & Hood Support Rod

Tools Needed

Drill
#10 Phillips Bit
Utility Knife
To Buy
3M Spray Undercoating

From the Kit

Hood Support Rod
Hood
2 Hood Hinges, 4 Hinge Butt Gaskets, 2 Hinge Strap Gaskets
2 Rubber Hood Latches
Hood Nut & Bolt Package

If desired, undercoat or paint the bottom of the hood before installation. Hole for the hood support rod may have been drilled during pre-mount.

Install the hood support rod on the drivers side of the trunk area using the 2 ¼" nuts and 2 washers supplied. Fit the plastic end cap on the hood support rod.

The holes for the hinges have been predrilled in both the body and hood. Mount the hinge (short side) to the body first, using the long oval head phillips machine screws (1-1/2") and 2 butt gaskets. Then mount the hood to the hinges using the short (¾") #10 oval head screws and strap gaskets.

The rubber hold down latches mount in the predrilled holes with #10 x ¾" pan head machine screws.

24. Install Wiper Motors in Windshield Frame

Holes were drilled in the windshield frame during pre-mount.

A The shafts of the wiper motors may be shortened for a cleaner look:

- 1) Place a rubber washer on the shaft then position wiper motor in place with the shaft through the hole in the window frame. Place second rubber washer, metal trim piece, and nut on the shaft. Tighten the nut down..
- 2) Count 4 threads out from the nut and mark this as the cutting location. Remove wiper motor from windshield frame.
- 3) Run the nut only back onto the shaft. Now cut off only the outer threaded housing of the shaft at the mark. This can be cut with either a saw or a small tubing cutter. Be careful not to cut the smooth inner shaft.
- 4) Now cut off an equal amount of the inner shaft so that it again protrudes 3/4" from the threaded outer housing..
- 5) Clean up the threaded shaft by backing off the nut.

B. Mount the wiper motors to the windshield frame with the shafts through the hole predrilled before paint using the washers, trim piece and nut provided in the wiper kit.

C. Mount the wiper arms onto the shaft.

D. Secure the wiper motors to the Windshield Frame with #10 phillips pan head self-tapping screws. Drill pilot holes with 1/8" bit.

E. Run wires along the top support frame, securing with zip ties, to connect to the wiper motors.

25. Front Bumper & Brushguard

Tools Needed

Wrench & Socket Set
One helper

From the Kit

Front Bumper
Front Bumper Brackets, Left & Right
Brushguard
Front Bumper & Brushguard Nut & Bolt Package

Holes were drilled during pre-mount.

A. Mount Front Bumper Brackets

Mount the Left and Right Front Bumper Brackets to the Angle Beam one side at a time using provided bolts. **DO NOT REMOVE BOTH SIDES AT ONCE OR THE AXLE BEAM WILL DETACH ITSELF**

B. Attach bumper to bracket using bolts supplied with your kit.

C. Attach brushguard to bumper using bolts supplied with the kit.

26. Exhaust System

We recommend our optional custom exhaust system (muffler, exhaust pipes and hangers) designed to be used with a Baja header. See Appendix F.

We used an exhaust header: Thunderbird #4224 from Autosport: 1-800-344-2847

We suggest that you may want to sand lightly and paint black the muffler and exhaust pipes using a paint designed for barbecues. This looks good and prevents corrosion.

When installing the muffler adjust/rotate it in position to give maximum clearance from the body subframe on one side and the engine valve cover on the other. Leave enough clearance to service the valves.

27. Mount Tire Carrier

Tools Needed

Wrench & Socket Set
Scissors
Utility Knife
Marker

From the Kit

Tire Carrier
Hinge Bracket
Pin Bracket
Lock Pin
Tire Carrier Protective Vinyl
Tire Rack Nut & Bolt Package

Holes were drilled during the test-fit before paint.

Trace the bases of the pin and hinge brackets on the paper side of the self-adhesive protective vinyl. Cut out and apply to the brackets. This will help protect the paint surface of your Wombat. Alternatively, apply the vinyl to the body rather than the bracket.

Mount the tire rack hinge and pin brackets in the predrilled holes using the provided bolts. Mount the tire rack to the hinge bracket using the 1/2" x 2-3/4" Hex Cap Screws, nuts, and washers provided. Close the tire rack and secure with the lock pin.

28. Rear Bumper

Tools Needed

Wrench & Socket Set
Marker

From the Kit

Rear Bumper
Rear Bumper Brackets (2)
Rear Bumper Nut & Bolt Package

Holes were drilled during pre-mount before paint. Insert brackets into tubes on body subframe. Bolt Bumper into place using provided bolts.

Adjust Bumper to Body distance so that it lines up with the tire carrier, then secure brackets to frame using supplied bolts.

29. Mount & Hook Up License Bracket with Light

Holes may have been drilled during pre-mount. Mount the license bracket with light on the passenger side of the rear bumper. Use the pan head machine screws & nuts included in the kit. The bracket comes with a small bag of fasteners to fasten the license plate to the bracket

30. Install Seat Mounts

Place your seats in the car, and determine where the mounting hardware will mount. Different seat companies use different systems, so follow their directions for proper installation. Any drilling that is to be done should be done before carpet is installed—*drilling through carpet is a very bad idea.*

31. Carpet/Floor Covering

You will have to decide on what type of interior you want. Possibilities include spray on bedliner, custom rubber mats, or a custom carpet. If you choose to use carpet or mats glued in place, consider securing with velcro in areas where you may wish later access.

32. Rear Bench Area

This area may be used for a rear seat, storage box, audio system, etc.

You can have a local upholstery shop make up a seat for you—vinyl and foam over plywood backing. It may be secured permanently with screws or be removable with velcro. If you carpet over the rear bench area you can apply the stiff side of velcro to the back of your seats and it will adhere to the carpet. Or use self-adhesive velcro on the rear bench area.

33. Mount Seat Belts

34. Running Boards

Trim and attach self-adhesive anti-slip tape to running boards.

35. Grille Decals

Your kit contains two 2" x 2' strips of self-adhesive black vinyl textured tape. Trim to fit in your grille. Remove backing and apply to your clean, painted grille. Be careful, the adhesive is strong and will stay stuck in the first place it touches.

36. Wombat Decals

Your decals consist of three layers.

- Top layer: transfer tape
- Middle layer: the decal
- Bottom layer: wax backing paper.

You will need:

- Wombat Decals
- Cleaning Materials
- Scissors
- Masking Tape

A. Clean application areas.

Clean the surface of your Wombat where you have determined to locate the decal. (Note: We recommend a surface temperature of 55 degrees or more for decal applications)

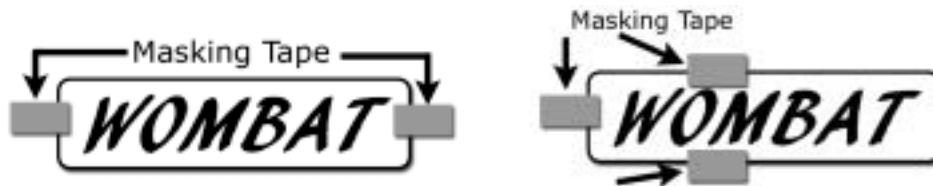
Suggested Locations:

- Centered on nose section,
- Each front quarter panel in front of door openings
- Rear panel, on either side of engine.

B. Carefully cut apart your decals.

C. Position and Tape in place.

Use masking tape to secure decal (as it came with paper back still on) to surface. Position carefully, measuring as necessary.



D. Secure one side of decal

Once in position, tape half of decal securely to the surface. Remove positioning tape from other half.

E. Separate backing paper from free half

Peel transfer tape and decal from the backing paper on the unsecured side. Be sure to watch out so that the decal doesn't come off with the under layer. If it does, work backwards and try peeling it at a sharper angle. Cut away wax paper backing only and discard. This exposes the sticky back of the decal.



F. Smooth free half of decal into place.

Using your thumb, rub transfer tape and decal to surface. Smooth from the center out to the edges.

G. Remove remaining masking tape.

Remove the masking tape and wax paper backing from the other side. Rub transfer tape and decal to surface smoothing from center out to edges..



H. Remove transfer tape.

Slowly peel up the transfer tape. Make sure none of the decal peels up with it. If it does, work backwards and try peeling the tape off at a sharper angle. The decal will stay on the surface.

37. Side Mirrors

Holes were drilled during pre-mount. The mirrors may mount to the sides of the windshield frame, on the body forward of the A-Pillar, or on the optional half-door frame. Secure mirrors to location of choice using supplied bolts.

38. Options

- A. Luggage Rack** *See Appendix G.*
- B. Soft Half-Doors** *See Appendix H.*
- C. Soft Top** *See Appendix I.*
- D. Soft Windows for Half-Doors** *See Appendix J.*

39. Mount Finish Tires & Wheels

40. Apply Patent Protection Sticker in the Trunk/Gas Tank Area.

41. Test Drive