SMYTH JETTA, AUDI, CHARGER BUILD MANUAL

Smyth Charger, Subaru, and Beetle manual is 100% Video on Youtube

Abstract

This original build manual contains a wealth of background info on our kit builds. As time went on almost all build instructions are moving to the smyth performance youtube
https://www.youtube.com/user/Smythperformanceinc/playlists

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Smyth Performance Build Manual

VW Jetta/Golf 4 door 1999.5-2004
VW Jetta 2005-2010
Audi 2002-2008 B6, B7
2005-10 Dodge Charger

2005 to 2010 Dodge Charger Ute

1999.5 to 2004 VW Jetta/Golf MK4 Ute

Audi 2002 to 2008 B6,B7 Ute

2005 to 2010 VW Jetta Ute

Introduction

Welcome to one of the most useful and fun car projects ever made. Unlike huge kit car and restoration builds you will find that Smyth kits take weekends instead of years to assemble, are safe and reliable and offer a driving experience that usually leads to more than a few "thumbs up" while you cruise in this unique car-truck or "Ute". As you build your car keep in mind that Mike and I are available anytime via phone and text. Also, for up to date videos and tips please check Mark Smith(smythperformance) on youtube. Here are the links for the channel and the direct link to the build videos. The Charger and New Beetle builds are 100% video driven manuals.

https://www.youtube.com/user/Smythperformanceinc/playlists

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Cutting a car sounds like a big deal until you actually look at how modern unibody cars are made. We cut the roof and the two rear quarter panels while leaving all the structural floor rails and heavy suspension areas intact. Even though these cars are strong we are reinforcing the entire rear half to make them tough enough for some fairly severe loads and to keep them some of the safest vehicles on the road. This manual will walk you through the cutting and building process. What you will find is that with the parts in front of you the project starts to make a lot of sense and you may not need much of this manual. Have fun, if there is anything I have learned shipping over 10,000 kit cars over 20 years it is that these projects always lead to shared experiences and great camaraderie. Enjoy the project and welcome to Smyth Performance trucks built from cars.

Cut prep

Before you can cut the car you must clear a way for the saw. We are going to cut each of the cut sections twice. The first is the rough cut which allows the removal of the rear shell but leaves plenty of metal behind so you know you have not made a mistake. The second cut in each area is the final careful cut that will allow better fit of the panels we will add later. Even rookies can cut a car since most of the metal you are cutting is rather thin.

Before cutting you must unbolt the easy stuff and mark where the saw will cut. I will not go into huge disassembly detail here since the Bentley publishers VW mk4/5, Audi A4/S4, and Dodge Charger repair manuals are fairly common. Any brand of repair manual covers all these disassembly steps professionally. Use the book and get used to how your car works under the skin if you are new to VW, Audi or Charger cars. The problem with diving in and just starting to take things apart is that you may break the small fasteners and clips that hold the inner panels together. None of these cars are very complicated and it is easy to mark each part that you take apart for later assembly. We professional car guys are the worst offenders since we think we know how to take things apart. Read the books a bit. Here we go.

Rear seats out (all models):

Remove the rear seats(you will be amazed at how heavy some cars seat sections are). In general the lower cushions are removed by tilting them up and pulling the spring rods and clips. The rear seat backs are removed by tilting them forward and then using a screwdriver to release the "c" catch on the outer post at the lower corners on VW's, Audis and Chargers without folding seats are pretty straight forward since you unbolt the outside edges. I will have some good videos on the smythperformancinc youtube channel so check the list of videos.

Loosen/Remove roof rear trim, trunk and rear doors all models:

After removing the plastic trim on the area over the rear seat area, you can lower the headliner rear section behind the front doors. Feel free to remove the whole headliner if it needs re trimming but you can do the cut without removing it if you are careful. **When you make the roof cut you will leave a section of headliner and fabric sticking out beyond the cut**.

For my rough cut of the roof I usually cut about 5" to the rear of the actual cut markings and I cut through everything, headliner and steel. This leaves plenty of material to trim back whe I do the final cutting. Later on, the headliner backing board is cut and you leave a bit of the soft headliner material so that you can wrap it over the end of the board.

The antenna(if you are keeping it) will move to the area just forward of the new rear window surround so save the hole size with a rubbing before you toss the cut section, this will make it easier to duplicate later. If you decide to cut with the headliner in you will lower the uncut headliner rear half and stick something in between the liner and the roof to hold it down

and out of the way of the saw if your headliner is in good shape. The headliner is soft, make sure it is low enough since even a glancing blow with the saw will probably cut right through. Cut the headliner with a sharp razor blade.

Sunroof cars: We are cutting a few inches behind the sunroof so you will only have a tilt function remaining if you want to keep it…we don't. We usually just seal the sunroof panel in place since we have a rear sliding window and the factory sunroofs are notorious leakers.

After you have made your cut on the roof you can remove the sun shield easily.
Trunk and hinges. Remove trunk side inner felt liners and felt floor parts. The wiring in the trunk can be removed first and snaked out since we are using the plate light circuit in the rear roll pan of the ute and you may find a cool use for the remote trunk release actuator if you are clever...why not keep it. An alternative is to just cut the wires and wire the license plate lights to the parking light circuit.

Rear doors all models: Doors are removed after unplugging the connectors at the b pillar. On the Audi these rear door plugs are a pain. I cut them if I have trouble as the only wiring I need is the speaker wiring and that is easy to do later. Each door is 70 pounds...unbelievable. You may want to keep the speakers and mount them in the door pillar plates but we find it easier to mount new round aftermarket speakers since the tweeter is usually built into the aftermarket speakers and it is a pain to remove the high frequency tweeter from the top of the door panel on the VWs and remount. The Bose units in some optional Audis are the exception, Bose is cool. Look at the Bentley to ID your speaker wires for your model year. On some cars you will see an amplifier under the rear window shelf. This is the monsoon/bose stereo system central amp, nice to keep. **On the mk5 Jetta, Audi and Charger kits you will be using the door trim at the top and bottom of the rear door window area so remember to save it.**

All the cars have various electronics and speakers under the rear deck/tray beneath the sedan rear window, remove all the wires if you plan on keeping it. On most cars the side curtain air bag cylinder is mounted at the outside of the rear deck/tray as well. Battery disconnected before touching anything to do with air bags. Read the Bentley on airbag removal.

> ***A note on side curtain airbags fitted to some 2001 and later models. If you are the owner of the Jetta/Golf/Audi/Charger you are working on you can remove the curtain airbags legally. If you are a shop building a car for a customer it is important that the customer who owns the car remove them. The feds don't like pro shops removing an airbag. The side curtain airbag is the only one removed since there are no longer rear passengers. We keep all the rest of the airbags operational. Rather than use resistors in the side airbag circuit you can leave the cylinder connected if you wish, just mount it outside the cabin in the rear door area. Check for error codes after any wiring work BEFORE installing the side panel fiberglass. Note that many cars had curtain airbags as an option. The non curtain cars went all the way into 2007 for the Charger for example. So if you are a builder making a car for sale, try to find the non curtain airbag cars.***

Roof cuts

The only cut that is critical is the roof. The other two cuts above the wheel wells are very robust and though we give measurements there is a lot of leeway. Measure two or three times and cut once. The rear window surround has a 1" flange that slips under the roof sheet metal. Even if you cut too much off you will still be able to get the roof section on and riveted through...it will just mean more body work...so try to get this one cut right. With sunroof cars you can cut through the extrusion tracks with the sunroof in place.

VW Mk5, outer roof section Boron steel. The stronger boron steel that VW uses at the area near the top of the door pillar will not cut with blades it must be cut with an abrasive disc. It is only the 4" section at the outside of the roof cut so not too bad, but do not try to cut this with a metal cutting blade or a saws-all as you will ruin your blade. Abrasive discs make sparks so protect the headliner if it is still in place.

The sunroof is great for the roof cut since it gives you a nice straight edge to double check/measure from. The sunroof channels are made of aluminum and cut easily if you go slow. Test cut always helps, you have the whole section of the roof to mess with behind the cut line....practice.

Mark the roof cut line behind each door top edge <u>CAREFULLY</u>

- <u>VW MK4 4 door</u>: **3.25" behind front door <u>top rear</u> edge(remember to leave 2.75" of headliner/backing board sticking out) Check is that this roof cut is approx 2" behind sunroof**

- <u>VW MK5 4 door</u>: **6.5" behind front door top rear edge**
  (remember to leave 3.25" of headliner sticking out beyond the cut)
  Check that this roof cut is approx. 6" behind sunroof

- <u>Audi A4 4 door sedan</u>: **6" behind front door top rear edge**
  rubber (first 6" cut through all steel), remember to leave at least 1" of headliner/backing board sticking out beyond the cut) check that this is approx. 3 5/8" behind sunroof. The Audi is the only car with a second cut. You cut through everything but the headliner at 6", then you cut 1.5" of the outer skin back at the outside of the roof(see pictures)

- <u>Dodge Charger</u>: **7 7/8" behind front door top rear edge . Like the VW's one cut through everything but the headliner. (Leave 3" of headliner beyond the steel final cut).**

Charger Roof Cut example

Mark a line left to right over the top of the car connecting these two spots with a flat straight edge. This is your final cut. Any saw will do the cut since the sheet metal is thin...but a pretty burr free cut is always nice. If you are using a saws-all use a high tooth per inch metal blade and use an angle when cutting so the thin metal does not grab.

AUDI Roof Cut example

The Audi is the only kit that has a stepped cut on the roof panel. All other kits have one cut left to right at the specified distance from the top rear edge of the front door. The Audi cutting is similar to the VW except for a stepped cut on the roof. Below is the side view of rear edge of the front door near the roof. The first cut after the headliner is lowered or removed is 6″ behind the top edge of the front door rear-rubber-corner.

Audi reminder: 6″ total from the top of the door corner…1.5″ trimmed plus 4.5″ untrimmed

To double check this line draw a line 5″ behind the sunroof rear edge, they should be the same, if you left the headliner in you would see it sticking out beyond this cut.

Double check your 4.5″ line you drew behind the door edge by looking at how far the line is from the Audi sunroof edge, it should be about 3.5″ behind the sunroof. Trim the 1.5″ of outer thin metal at the outside structural rail. Notice how the thicker inner metal is cut as you go toward the center of the car.

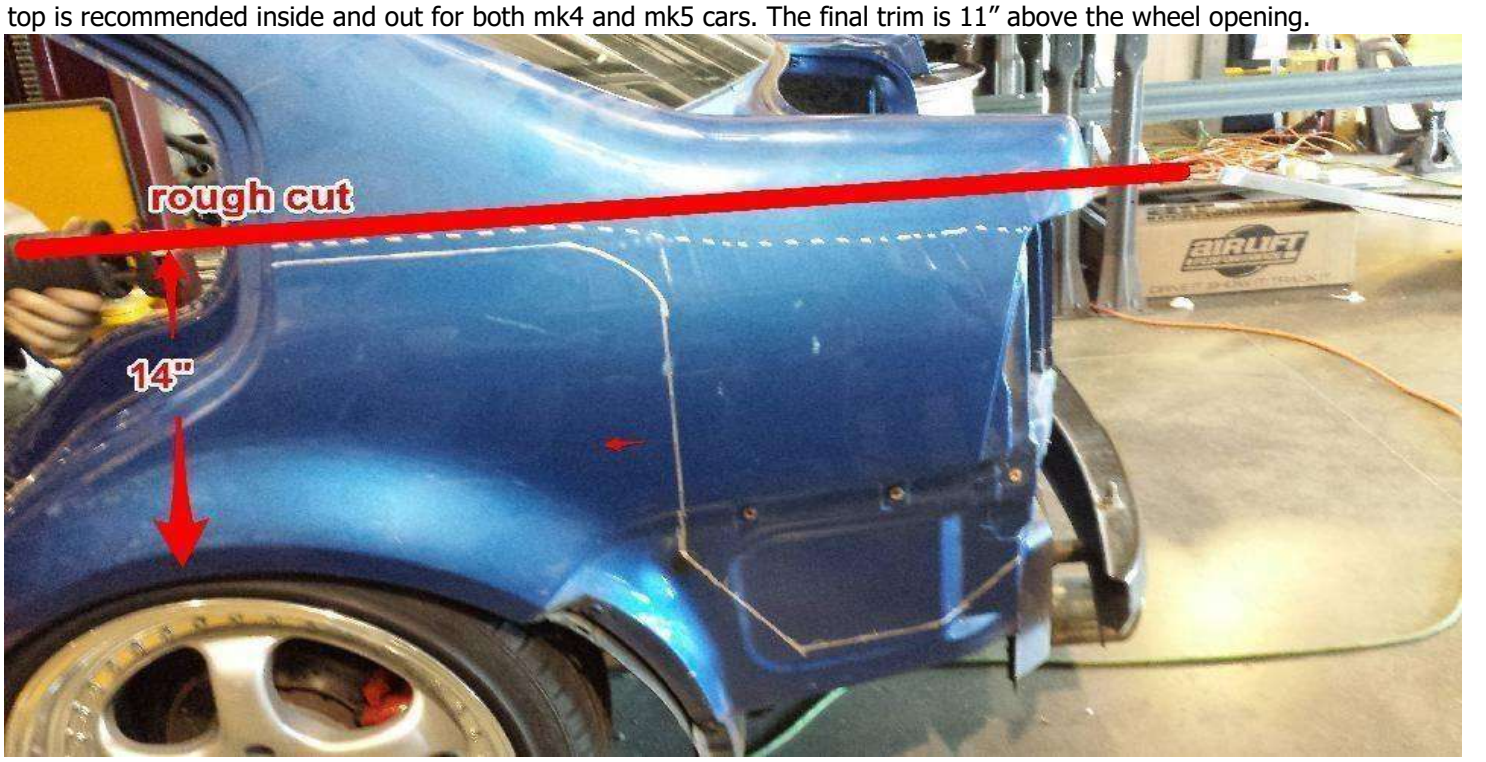
Take a look at the Audi gutter in the picture here above. This is the Audi outside corner after cutting away 1.5″ of thin outer skin and some of the thicker metal toward the center, start with the outer skin removal.

VW MK4 and MK5 roof cuts

Draw your line at the specified distance from the top corner of the front door. Make sure to leave the correct amount of headliner sticking out beyond the cut. MK5 cars have boron high strength steel in the top corners, use an abrasive cutting disc(dusty but only way to cut this impossibly hard steel). The MK4 cars you can just cut with blades.

Cutting the rear quarter panels - VW

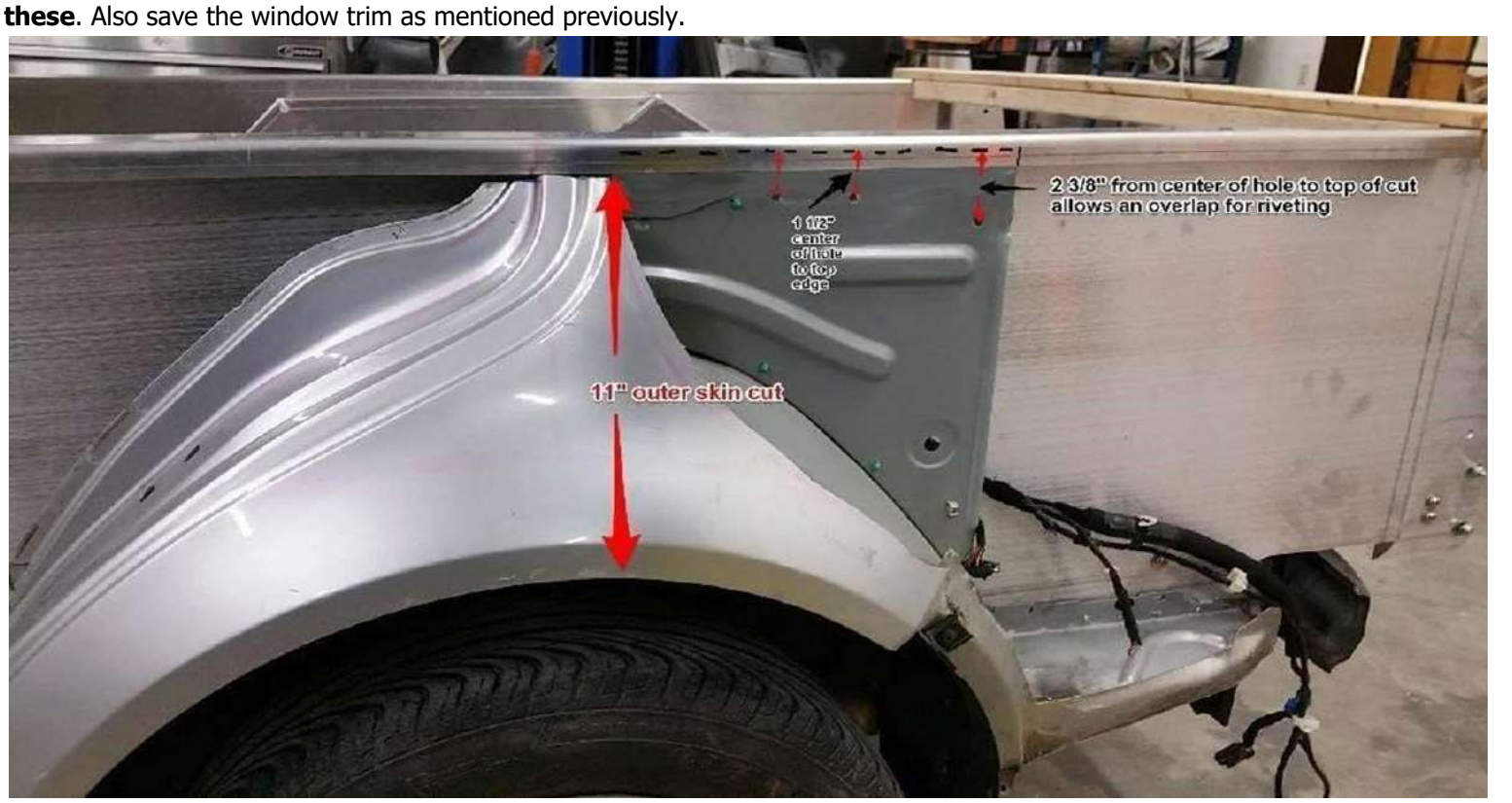
Marking the side quarter rough top cut consists of measuring 14" above the wheel well top, this cut is cut level back to the tail light top is recommended inside and out for both mk4 and mk5 cars. The final trim is 11" above the wheel opening.



VW mk4

Lately I have been cutting more of the upper outer sheet metal away as shown in these pics. The steel remaining over the wheel well edge is what I use to bond the fiberglass quarter…really all you need. The gas cap needs to be removed from the body of the car by taking out the single torx screw under the release pin. After the screw is removed you pull the pin side away from the body and slide the door assembly forward to remove. Save this for reassembly onto the fiberglass quarter. We are bonding the new large fiberglass quarter panel to the section of the outer wheel well later. This allows us to use all the inner wheel well parts on the stock jetta such as the plastic stone guards and the stock fuel fill system and related emissions components. The less comes off and remains stock the easier this car is to build.

Rear Door Note: The rear door catch mount bolts are used to mount the rear tailgate hinge so remember to save these. Also save the window trim as mentioned previously.



Trimming the outer skin of the MK4 and MK5 Vw Jettas

On the fuel cap side of the car the quarter is cut the same but you have a reference point with the fuel door...mark the rough cut 2" above the door. The inner layer above the wheel well on the fuel cap side is easy...leave 3/4" of flange over the top of the fuel filler housing...this 3/4" flap of steel can be riveted to the aluminum 1" rolled outer edge just as on the other side.

If you want to be extra careful wait to mark the final cut until after you have loose fit the aluminum bed sides. Then mark the cut 1/4" below the top flat of the bed. This allows you to rivet the bed steel to as much of the existing Jetta as possible. The inner wall rivets reinforce the entire spring perch area in the rear. By riveting the wheel well seam to the front of the bed steel and door pillar plate you are making a very strong rear chassis assembly. Prime and rust proof the edges before you start putting the aluminum on.

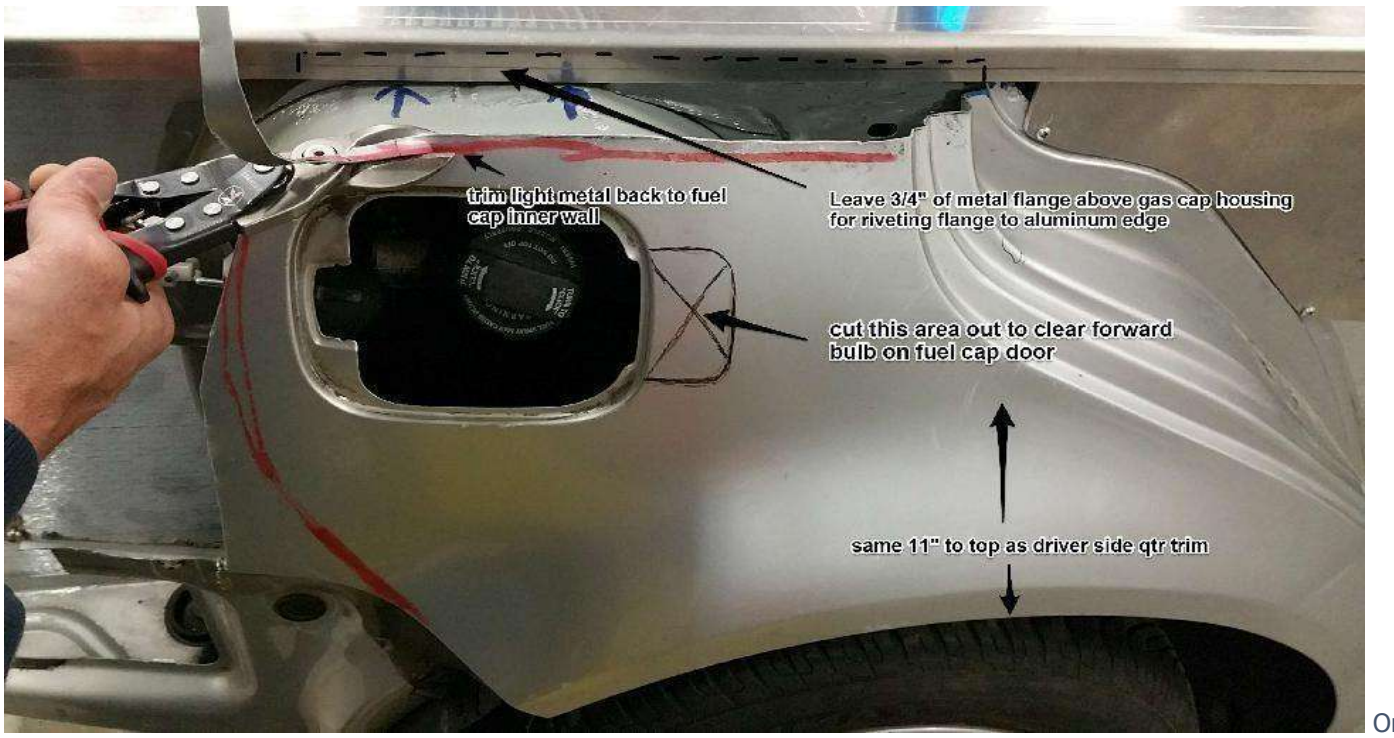
On the passenger side quarter remember the gas cap has a solenoid, we don't use the solenoid so you can remove it. The driver's side has a lower wheel well inner structure and is mostly free and clear...look for wires on the top area of the inner wheel well. Make sure you re attach any brown ground wires that are bolted to the steel body. You are marking an inch or two above the wires but make sure you have cleared everything from the inside area of the cut. You should be able to see

Fuel cap outer skin removed from a MK5 Jetta

Mk4 inner area of the quarter consists of marking the cut so that the rear window shelf is removed with the roof section. Inner parts are easy to see just remember mark a rough cut above the final cut line so that you can leave plenty of margin...the final cuts are so much easier once the bulk of the roof and trunk is gone.

While you are drawing the cut lines double check the fit of the front doors on your car before the cut. Rarely, if a car has been repaired or assembled with bad gaps at the bottom of the front door/front door to fender then you will have a tougher time getting the rear to fit. Fix these easy gap issues on the base car's doors now before you begin.

Trunk area marking is done along the seam as shown. remember that we are not using much of the metal above the trunk floor so the cosmetics of this cut are up to you. I like a clean well cut and edge primed under frame on our cars even though I can't see this area when we install all the panels...it just feels better to know that it is tidy



On this MK4 the outer skin is not being removed from the fuel cap but interfering metal is being trimmed away….your choice

When cutting the rear area above the bumper just remember to stay above the heavy area near the upper bumper bolts.

The inner final cuts are marked on this MK4 Jetta. You are trimming away everything but the flange that follows along the middle of the wheel well steel.

Cutting the rear quarter panels - AUDI

The Audi A4/S4 quarters are very accessible and simple to cut. You will start with a rough cut to remove the roof/rear window from the car so that you can see between the layers of steel for the final cut. Start by getting in the back seat and looking to the trunk area. You will see a large opening between the outer metal and the rear shelf. We do not want to cut the inner wheel well of the Audi so I will show pictures of the final cut car first so that you can see what we keep.

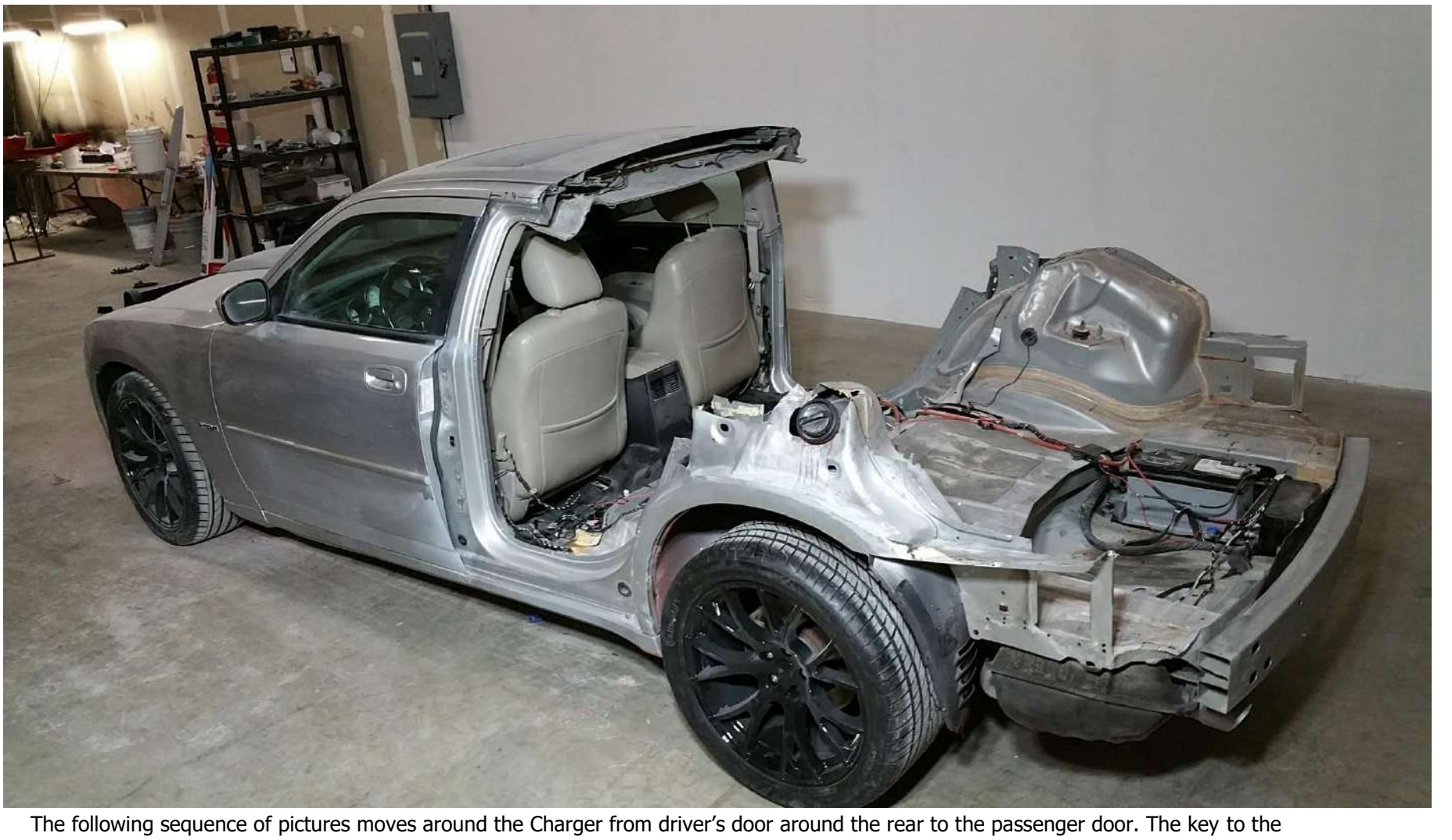
The rough cut is about 5″ above the black line here and goes through all layers of steel **ABOVE** the inner wheel well.

This is a view from the trunk looking forward. The wires are going over the inner wheel well, rough cut above them, the foam is removed up at the top here to allow for a great path for the saw. Continue the cut to the tail light area and remove the roof section.

As you leave the inner wheel well you cut all the way through again above the bumper.

Rear of the Audi with cut line above bumper

Cutting the Charger



The following sequence of pictures moves around the Charger from driver's door around the rear to the passenger door. The key to the simple Charger cut is laying out your cut lines and not cutting too deep through more than one layer of thin steel as you make your final trim cuts. **Refer to the youtube cut video for detailed shots**.

The Smyth Build

All Smyth kits are assembled the same way with thick aluminum bed sides, a front wall and 'B" pillar support plates. The first step after you have cut the car and painted a bit of rust preventative on the raw edges is to position all the aluminum in place for a rough fit of the bed without fasteners. The front door plates can be riveted or clamped to the bed front wall at this point and slid into the door opening. The laser cut holes in the flat side plates (b pillar braces) are your guide as you drill the 3/16" holes for rivets. Use about 4 rivets to position the b pillar plate. Don't use too many since if you decide to move the plate you can just drill the aluminum rivet out easily and reposition, clamps or vise grips work great...the plates really only fit in one spot in the door opening since they are cut to fit with an even gap all around. Once the side forward door plates are in place you can slide the forward wall into position between them. Be careful not to pinch any wires under the wall lower legs. The carpet can be pulled away from the mount area and rough trimmed.

*****Recent note. Lately I have been pre-assembling the bed sides, front wall, front tray, and lower bed bolt on cross supports with all the bolts finger tight as a box. Then I pick the whole bed up and wiggle it between the front b pillar braces and lower it onto the car. Each part can be installed separately but this seems to work best. Before drilling out the 1/8" pierce holes on the aluminum, line up the panels with clamps to see where the bolts go. The front tray will still be removed again later to seal the front wall but I find pre-assembly easier. What follows is the original build sequence.**
Remove the front seats or move them all the way forward so you have a bit of swinging space for assembly. The plan is to lightly bolt the front bed wall and sides into place to check fit. The top surface of the front wall is about flush with the top of the 4 hole bed side ledge...this is an important start point. Do not do anything but position and clamp the front bed wall at this point.

The next step is to slide the bed sides down into position. Assembly of the bed is done in pieces by raising the rear of the aluminum bed side, starting in the center of the bed, and sliding it forward and out onto the front wall that should already be positioned between the two B pillar braces. There is a bit of free play for adjustment but the idea is to drop the thick .120" laser cut patterned wall down into the area just **inside** of the wheel well flange seam. The laser cut piece should touch the top of the wheel well on each side and the Jetta/Audi floor area back by the rear bumper. The front aluminum wall is flush with the edge on the steel door plate. Install the forward cross member and the rear 2 cross members lightly tightened or assemble the whole bed at this time loosely and drop it onto the car.

Special Audi Bed side note: There is a hole in the driver's side bed side for a post behind the wheel well….go ahead and leave this post on the audi for positioning help. HOWEVER, there is no hole cut on the passenger side, don't drill a hole for the stud on the passenger side, remove the stud. You need to cut or twist off the stud on the pass side. The reason is that the stud on the passenger side is above the inner fender and will show through if it remains.

Slide the front tray floor section into position loosely if you did not pre-assemble it with the bed sides. You will remove or slide this front floor just before final assembly in order to seal the front wall so don't tighten all the bolts. As you fit and slowly make sure that nothing is binding or preventing a snug fit it helps to hold the bed square. Use 2 wood spacers at the top of the bed sides cut at 48 9/16" to help keep the bed square on the VW cars. In the rear area of the tailgate you have the option of simply assembling the lower tray/bar and putting the tailgate in place on its hinges and latches…then putting a paint stick or other 1/8" spacer between the gate and the alum at the top. On the Audi and VW cars the rear bed sides next to the tailgate are about 46" wide top and bottom. The Charger and the MK4 VW use a "c" channel brace at the bed level and the MK5 VW and the Audi use a formed aluminum tray.

Front wall/bed sides/b pillar brace is the order of layers in to out at the b pillar area where all three bolt together

Assemble the tailgate hinges, latches and rods to the center handle and mount it to the side supports on the steel bed sides. Hand tight is best for fitting as you make sure all the parts are lining up correctly. The hinge round ends are fitted to the rear. Tighten up the side bed bolts while your wood spacers are in place and get the tailgate opening and closing smoothly with good square gaps all around. Operate the tailgate after tightening the bolts that mount the sides to the front wall. After everything looks straight take some early time here and fit the fiberglass side panels onto the assembly loosely and trim them to make sure the gaps up front by the door are close.

With the partially assembled bed sides, front wall and floor parts in place you can position the aluminum bed floor extrusions to the end of the front wall. The aluminum corrugated sheets lay flush to each other side to side and need to be trimmed square. That circular saw metal blade is great for this step as well. At this stage you are just positioning the parts, shown here are finished assemblies so you can see how they go together as you mock it up.

The only pierces that are not drilled 5/16" are the 25 pierces on the b pillar reinforcement plate in the door opening and the lower holes on the front wall.

At this point you may find that you need to file the oval holes just a little more (about 1/16") to get the bedsides to fit square. On VW cars Measure the 'centeredness' of the left and right aluminum bedsides using rivets in the gap shown below. A 1/8" rivet is slightly loose.

VW Mk4 b pillar, outer brace, bed side and front wall interface

Note: The newer bed sides and B pillar plates are cnc cut with a 1/8" pierce where the bolt or rivet locations are. The aluminum being softer than earlier steel parts makes this a better way to start. The bed side pierces to the rear of the b pillar braces have pierces that you drill 5/16" for the stainless button head bolts using the pierce
as a guide. The 8mm stainless button bolts assemble the bed sides to the cross bars and the front wall and tray. We drill these holes before assembly to make life easier. On the Audi the holes are
not cut on top of the front wall since the edges line up at the front and top of the corner. Audi uses flush recessed bolts for these 4 bolts on the top corner

The front of the bedsides should rest on the B-Pillar ledge as pictured for the MK5 below. The bed sides are bolted at the front top surface with 4 8mm button bolts on the mk4 and mk5 Jettas. On the Audi and Charger these bolts are flush tapered 8mm bolt.

MK5 VW front wall, b pillar and outer plate support

Charger pre-assembled bed

Audi and Charger b pillar area. No outer plate brace as in the MK4 and MK5 Jettas since the side wall is even with the b-pillar brace. When assembling the rear sides and the front wall for all the cars it is best to put the front tray in place loose and THEN position the outer walls. This allows you to mock up the aluminum and slide the front wall to the rear a few inches when you are ready to seal the area under the tray with silicone. After sealing the wall to the floor you can put in the final fasteners for the front tray just as the mk4 and mk5 VW. The above VW pics give you an idea of how the parts are fit together. "L" braces to mount middle cross supports.

Audi

Sealing the cab from water. Remove rubber plugs from the rear seat area over the fuel tank and from the spare tire well. They will now function as drain holes. Before you final install the aluminum bed panels it is time to make sure the rear wall is sealed properly and that water has a place to go in the area above the rear seat. The two small plastic plugs over the fuel tank should be pulled. The larger plastic plugs(1.5") are to be left since they would drain into the frame rails...not good. The small 1" plugs allow the water to drain over the fuel tank and out. they are also at the lowest point in this area so will allow any water out without buildup. The side area directly to the outside of the seating area is the potential trouble spot. The panel is sealed and on later cars the secondary panel deflects water to the outside as shown. Seal the flat cockpit panel well at the bottom and test.

VW mk4 examples with Audi on lower right

Front tray fuel pump access covers:

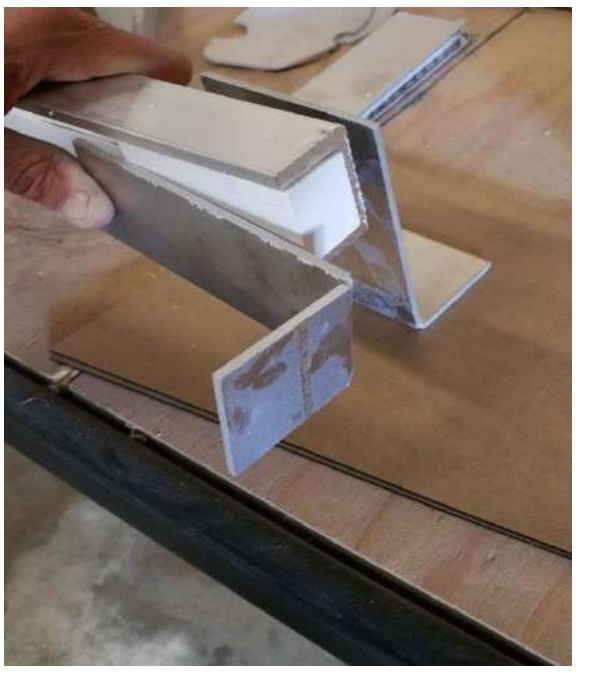
Audi

<u>INSTALLING THE FLOOR & FLOOR SUPPORTS (all models):</u> If you lay a couple of straight edges along the bolt-in bars, you will be able to clamp the rectangular tube below the straight edges, in order to begin positioning them. These pictures here show the older bar supports, newer models are aluminum C channel as shown in the next set of pictures. MK5 and Audi models have trays front and rear, MK4 models have a C channel in the rear.

VW MK4, MK5, Cross bar number one is bolted to the front tray and the bed sides in front of the rear wheel well, this makes it a very strong area for when you haul motorcycles or something that needs to be tied down hard. The Audi has a large front tray that extends to the floor instead of an additional cross member.

Charger Build video goes into detail on spacing and position of Charger floor.

VW mk4



VW cars use a removable rear cross bar over the spare, **notice how the small bracket is mounted to the side** so that the bar can be lowered and removed for spare access

Cross bar four on the VWs is bolted to the bed sides, and cross bar five is bolted at the tailgate area on the MK4. On MK5 cars there is an aluminum tray instead of a crossbar support under the tailgate. Cross bar two is bolted to the aluminum L brackets and those brackets are riveted to the floor of the jetta about 13" behind crossbar 1 that is shown here. Cross bar three is the one over the spare and is bolted with two large L aluminum pcs and two smaller pcs so that the bar can be removed to access the spare.

On the Audi all of the Aluminum crossbars are riveted or bolted to the floor with "L" brackets. Only the bar over the spare is removable for spare tire access. On the Audi you will notice that the L brackets are of different heights depending on the placement of the C channel, there are 3 cross bars between the two trays. The forward tray of the audi extends to the floor so it does not have a corresponding "c" channel support like the VW. **This forward Audi and Charger tray has a pad that extends to the floor, the fuel tank crossover tube is just below the floor, if you drill rivets(we don't, we bond with adhesive) make sure you don't drill thru into the fuel crossover tube.**

The following Aud pictures are extra various angles of the center c channels***. Please note that while the inner fenders are installed in some of these pictures, they must be installed after the crossbars go in.***

Note that the thin aluminum triangular shaped mounts in the first picture are prototypes, our production part is the thicker "L"shaped aluminum you received. All bed supports are now thick (0.100 or 0.125) aluminum sheet bent to 90 degrees. On the left is the cross member over the spare…the smaller angle is so that the bar can be unbolted then lowered to access the spare.

The last crossmember is similar to the others on the Mk4 cars just a bit shorter. You can also see the seam that joins the rear crossmember to the inner fender here. The backing plate is used to reinforce the underside and the spacer keeps the two surfaces flush.

VW MK5 and the Audi have a rear tray instead of a rear C channel as shown here. The butt joint for the inner fender is riveted with a joiner and spacer as shown. On the mk4 cars a similar joiner and spacer attaches the inner fender edge to the thicker "c" channel.

Audi bed floor pictures. The Audi rear area is similar to the VW mk5 and uses this tray under the tailgate. You can bolt the front lower section of the tray to the cut spare well for added strength.

Rear Tray on VW mk5, Audi

Installing the inner fenders:

When installing the inner fenders it is easiest to trace around the perimeter of the fender with a marker, then remove the fender and drill your pilot holes at the beginning and end of every straight flange section 3/4" below the marker line....this way you know where the flange is as you drill into it from the outside. Before you can get to the fiberglass install you must rivet the inner fenders in place on all models. On the MK4 cars you may have to slightly dent the wheel well corner on the passenger side of the Jetta in 1/4" or so with a hammer just a little to make room for the new inner fenders if clearance is an issue. The fenders should be mounted slowly and fastened a few rivets at a time while watching the alignment of the rear tailgate top area.

VW MK4 inner fender and a Charger corner reinforcement right

Charger inner fender

In this view above of the mk5 you can see that we mounted the airbag cylinder in the rear and left it wired…no rear passengers so the cylinder vents to the outside and no error lights on the dash.

Aluminum floor corrugated:

The three sections of aluminum floor corrugated are a special hard alloy for heavy use. They mount to the C channel by drilling and tapping holes for the ¼ x 20 fasteners. The front tray and the rear tray areas are not as thick so we use small screws or riv nuts in these areas on the mk5 and audi cars. Trim the ends square and mock them up first then mark and drill the holes to be tapped.

Assembly of the fiberglass quarters and rear surround

Mk4 and Mk5 have different assembly sequences when it comes to the rear surround. The mk4 cars require the rear surround to be installed after the side quarter panels are in place and the Mk5 cars need the rear surround to be installed and sealed first. The Audi is the same as the MK4 since it has quarters that seal at the b pillar.

The reason for this is that the mk5 car uses the surround to seal the cabin and the mk4 and Audi cars use the top corner of the quarter panel to seal the cabin. Position all the panels first in any order…it is the final assembly that has to follow the order described. After the aluminum bed sides are riveted or screwed down temporarily with a functional loose rear tailgate fit, the fiberglass rear quarters are test fitted. The reason for the trial fit of the aluminum box and tailgate is that everything must be lined up to the fiberglass quarters. This is the step where it all comes together.

The gap at the front of the quarter panel lines up with the front door rear edge. This determines the rear positioning of the tailgate more than anything as this seam must look good and straight. If there is a gap problem top or bottom you have to raise or lower your bed side rear section up or down to make sure the door seam is good. Remember that the fit of the quarter panel follows the fit of the front door, so if you are starting with a front door that does not have a good fit you will spend a bit more time chasing this fitment. Always try to get the front door fit properly first, then proceed to the rear. The filler panel can be test fit after you have the front edge where you like it. The filler panel can also help shape the edge is you feel an area is too curved or too flat...use it to make the seam perfect.

When the fiberglass is able to be lined up with the front door and the tailgate you may then tighten all of the bolts and add a few rivets to the 18 ga area on the wheel well flanges/steel inner bed. Remember...the tailgate and the front door seam to a large degree determine how good the ute looks at the end...take your time and fit the panels properly. When all the panels are fit you go to the assembly and fit of the rear window surround.

The fuel door is assembled onto the fiberglass quarter as it was on the original car except without the locking mechanism. When you trim the fuel door area DO NOT TRIM TO THE SHAPE OF THE DOOR, if you look at the factory steel under the old car that is what we are trimming to re shape. Look at the stock door shelf that the door rests on…we want that ledge. The new quarter has a recess at the rear of the opening to allow you to flip the cover open. Remove the metal under the leading edge as necessary and trim the fiberglass leaving about ¼" of ledge for the cap to rest on when closed.

The quarters are mounted along the top edge directly to the 1x2 metal top bar underneath with tapered stainless fasteners that are tapped into the steel rail at the end. Sheet metal self tapping screws are the way to go during the test fit so that you can move things around. Test fit and test fit again since once the final holes are tapped and the quarters are bonded you are committed. In general the car should be looking really good with excellent seams before you final tap. Keep the panels in place with the self tapping screws and rivets and proceed to the rough fit of the window surround.

1. After quarter panels are in place the rear window surround rough fit is done. The key to the rear window surround is to hot melt or temporarily tape the window into the opening. Once the window assembly is fitted place install the rear surround assembly on the front bed wall top. The window surround rests on the front bed wall with a slight offset. Again you are using the front door rear edge to guide the fitment of this fiberglass part. Pick the tightness desired for the door to surround gap(we like a 1/4" consistent gap).
2. The surround has a flange at the top of the part that slips under the roof steel on sunroof cars you may have to pry the layer apart a bit to fit the 1/8" thick tapered fiberglass between the layers of cut steel. Left to right fitment is based on the evenness of the door gap. Fit the surround on one side and go to the other and make sure it is even. When you like the fit use a marker to put reference lines on the two parts for ease of re assembly since it will go on and off a few times before final rivet and bonding of the flange.

Jetta MK4 rear surround fit

Jetta MK4 rear surround

Audi top of rear surround in place

Figure 2Audi upper mount for

rear surround corner audi

Audi rear surround trimming and positioning

The Audi and mk5 cars use an offset that mates to the front door/door joiner as shown here on the left and finished on the mk5 below. The area can be painted gloss black or flat black. On mk5 cars a plexi window can be used as well if some visibility is needed. Notice how you re use and bond the chrome/black detail strips at the top and bottom of the window area on the VW mk5, Audi, and Charger. This really finishes off the quarter window area.

Audi rear surrond in place with door rubber

Audi Surround where it meets the front wall at the bottom, we are looking down from the top

Jetta MK4 surround in place and ground down ready for flush rivets

Finished MK4 surround top area right

Finished VW MK5 rear surround left

Charger rear surround is different as it assembles in 3 pieces, two sides and a top(see video)

Charger lower aluminum 2 x 2 glass mount

INSTALLING QUARTER PANELS:

There is often some minor trimming to do on the fiberglass panel to get everything to line up. Trimming back the offending fiberglass is the key. The quarters are test fit on the car after you have the aluminum and tailgate loose fit. Areas of particular fitting are the lower forward edges of the quarters down by the sill…these areas often are a bit thick from the molder and need to be sanded down to about 1/8″ thick for clean fit. Remember to raise this lower corner as high as you need in order to fit the door to the quarter leading edge.

In the rear by the tailgate things are adjustable in almost every direction…start with a forward edge lined up and work rearward.

We provide countersunk flush rivets to attach the body to the aluminum top rail. We did not use very many rivets, only 5 or so rivets through the top of the fiberglass to the top rail of the bedsides. Remember that at the end of the build you will be installing more rivets through all of these layers if you use rivets to install the "railcaps" on top later. (The rivets you use in this top rail cap will sandwich the fiberglass between both layers of aluminum.) You could also choose to install the panels with windshield adhesive or 3M 5200, but those would be darn near permanent and may cause issues later if you need to make a repair that is easier with the panel removed.

Where the quarter panel touches the car, (gas cap area), I would consider using 3M 4200 or something semi-permanent such as silicone II which allows for removal of the panel down the road.

To install the bottom of the quarter panel to the car, use the flush rivets again after you know you like the fit. Countersink so that the hole is just a little bit larger than the rivet, so that you can bondo over the rivet before paint, in the lower areas we don’t cover the rivet heads since it is nice to know where they are if you ever want to remove the quarter.

Mounting the sills remember that the flat area on the sill follows the contour of the jetta steel sill and is perfect for flush rivets since as the rivet pulls flat on flat there won’t be a dimple

A word about panel edges on the ute. When the panels are fit to the Jetta/golf and the steel framework the bolts are used to anchor all the fiberglass with the exception of the seam at the top of the roof. The roof seam is bonded with panel adhesive after final fitting is done. after the adhesive is applied to the fiberglass to steel lap joint and flange the positioning rivets are re installed to hold everything together permanently. Position, rivet, disassemble,
adhesive, re rivet. The Mk5 front door edge area is rougher than the audi and jetta parts since there is no molded step at the door interface. We leave about ¼″ of extra material there and you need to sand the edge down for a perfect fit. If you lok

closely there is a ghost of a ridge in the mold that you can use as a guide, but take care on this leading edge as the final fit determines much of the quality look of the finished car.

VW fuel door trimming for the VW MK4 and MK5, Charger and Audi have a full molded fuel door recess

Jetta fuel door

Windshield sealer/GE silicone II:

The other seam that uses the windshield sealer is the lower edge of the window surround as it meets the upper front edge of the qtr panel. this seam is about one half inch thick and needs to look smooth and nice to get an oem look. The key to a factory look using windshield adhesive is the masking of the joint. Put tape along the edges of the seam to be filled, fill the seam, and use a scraper or even a gloved finger to smoothly finish the seam with a gentle radius and smooth line free finish. The satin finish of the cured windshield adhesive will look factory if wrinkle free.

The rear window is screwed in place before final bonding and riveting of the surround. It will be bonded with windshield adhesive at the end after paint. Make sure you sand the area that will receive adhesive on the powder coated window frame but still requires the seam to be bonded, use the same process, tape, fill, smooth, remove tape.

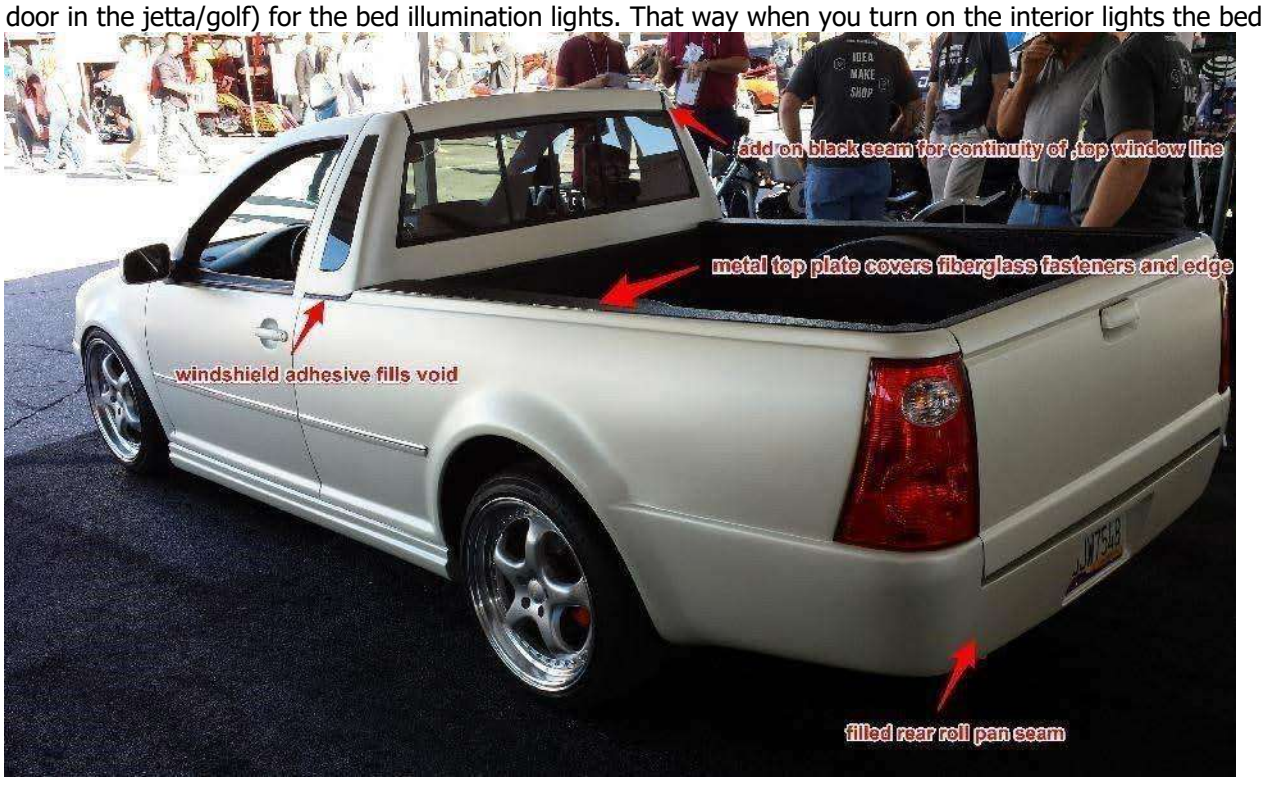
Now you can go to the area over the rear wheel and bond the body along this area to the original steel skin above the tire. The quarter is just laying against the old steel and will self position in a place that allows all the panels and the rear gate to align.

The most important thig to remember in this build is that everything gets positioned first...lights, gate, windows, everything. Bolt and shim and use spacers before bonding...
Since the rear surround is installed permanently remember to pre fit this part if your quarter does not go all the way to the b pillar as you install and fit the rear surround. **UPDATE** Lately I have been mounting the rear surround after mounting the side quarters on the mk4 cars. With the new molds it seems to be easier to seal the quarters at the top and then final fit the window surround.

The rear window was positioned in the rear window surround before final bonding and riveting. If you are running the Jetta/golf trailer hitch you will notice that you need to use a longer input bar to keep the ball away from the rear license plate. The stock license plate lights are mounted above the license plate but the wires need to be run to the bumper area rather than in the old trunk. The wiring of the tail lights follows the wiring diagram. stop, turn signal, parking, and reverse lights use the

hot leads from the jetta/golf assembly. We drill a hole in the clear socket as shown to place the led reverse light in the same socket area as the new turn signal yellow bulb.

If you wish to run a third brake light/bed light you can use any aftermarket led from ebay…many styles to choose from. Remember that the inside dome lights can be wired to a bed light as well. Wire the third brake wire from the old third brake light which was over the rear seats of the jetta/golf and use the extra wires from the rear dome lights(the ones above the rear door in the jetta/golf) for the bed illumination lights. That way when you turn on the interior lights the bed light will illuminate.



I think the use of air bags is great for any VW but for the ute it is actually a pretty functional style since you can pump the car up high for loads...a win win if ever there was one.

Tailgate Assembly details all models:

Audi has no external handle, it uses a strap and pull system on the inner plate as shown here, the mk4 and mk5 have a filled plate without an opening. Also, The Audi includes a fiberglass tailgate cover that changes the look of the stock metal gate. Sand and fit this piece as you install the Acura MDX tail lights for a nice matching shape on the Audi.

Early MK4 cars had a side quarter window that has been discontinued. You have a few choices with regard to the side windows on the ute. Many people love to just fill in the depression solid and have a look similar to the original caddy...nice look actually on this car and there are a few pics on the web site of a golf done this way. The other way is to simply bond the quarter plexi windows into the opening without trimming the fiberglass...there is so much visibility that this is the most simple option and the cleanest install if you keep the adhesive in the center area of the plexi. The last way to do it is below ...trimming out the window opening and fitting the plexi with a visual opening.

After trimming the perimeter .75 to 1" of paper from the edge of the inner surface of the plexi, you can sand the surface of the plexi with 80 grit paper and coat it with **epoxy** adhesive. Coat the opening flange on the fiberglass as well after cutting the fiberglass flange back to .75" before positioning the window. Remove the paper on the inside just before positioning. The paper allows for a clean line of adhesive when the window is viewed from the outside. When you tape the plexi in place make sure the edges are flush with the body flange since it is a pain to re do this step..the black adhesive gets everywhere if you are not careful.

After the adhesive has set, in order to get the perfect oem look, simply tape off the groove between the window and the body and squeegee in more black windshield adhesive. when this adhesive gets tacky...peel off the tape for a smooth black filled gap. Do the same for the rear quarter to rear window gap and you have a nice finished factory look all around.

On the Audi and MK5 there is just a smooth surface behind the front door that we paint gloss or flat black.

Rear sliding window install

The window opening works best when it is about 3/8" deep…sand the raw edge to fit and then sand the area in the trough where you will be putting adhesive. Sand and solvent clean the black window edge as well. When you are ready **and after a good dry fit**, apply the adhesive in about a ½" to 5/8" bead in the window trough in the corner of the fiberglass, wipe a thin layer of adhesive on the window flat as well and place the window in the opening from the inside. **There are small rectangular drain holes on the lower surface of the sliding window frame**…remember to keep them open to the outside. Make sure you have enough adhesive in the trough to contact the window frame. Only put adhesive along the corner of the window frame on the side and top, leave the lower edge thin so as to not clog the drains. We install the window before putting the rear surround in place. Use weights on the window to hold it flat against the fiberglass surround on a flat table. The window frame is a big part of the structure of the rear surround so you can use as much weight as you need to flatten out the lower fiberglass edge.

Apply the last coat of adhesive after paint so that the seam looks oem smooth…but remember **to leave a gap at the lower edge** for drainage. If you clog the drains by accident don't worry, just drill two 1/8" holes on the outer lower edge of the window frame about ¼" from the bottom.

Final assembly: details, bed aluminum, rear window, filling gaps

The top rail area from the window surround to the tailgate is covered by the 18 ga long sill plate which covers all the flush fasteners underneath that are mounting the quarter to the top steel channel rail. The rear corner is a separate piece that allows the rear end of the top plate to cover the rear exposed gaps from assembly. Rivet or bolt this top cover along the inside edge.

use adhesive.

The rear bed aluminum is removable for access to the spare and the fuel pump access under the rear seat area.. The aluminum panels are laid in place and the tapped holes are marked off with the spacing that you wish. Each hole is drilled then tapped. Then you match the stainless bolt for a flush fit. The trough area(area of the aluminum that touches the base metal cross support is where you drill for good contact. We use two bolts per 12" aluminum section per cross support(with the 3 panels laid down that

The tail light area is not just a place to slide the lights in. Behind the tail lights are the bolts for mounting the quarter to the heavy side plate as well as the spacers that determine where the body is with respect to the gate alignment. If you shim the body out away from the 1/8" plate you will increase the gate to body/light gap on the side. if you remove washers you will tighten the gap. The final light position a=can also be adjusted by putting washers between the plastic light mounts and the plate/body "sandwich" under the
light area

Wiring General all models: When you unplug the rear lights on the Audi/Jettas it is a great time to use your volt meter and double check which wires are which. We are lucky that VW group cars use separate wires for brake, turn stop and parking lights. The only catch is that can bus wiring in the mk5 and Audi may require resistors in the reverse and or turn signal circuit depending on the bulbs you use. The LED reverse light definitely need a resistor.

You positioned the rear lights when you aligned the tailgate. This is how you wire them. An led back up light is added to the upper socket which used to be the back up light on the MK4 and mk5 cars, on the Audi the strip LED reverse lights are placed next to the lic plate . We replace the back up light with an amber turn signal bulb on the mk4 and 5 cars. For the first models of the Audi we are using used acura MDX tails since the LED cluster is so cool and Audi like. Look at the wiring diagram in the bentley for details on your year car. Stop and parking lights are on the bottom. Make sure the bright half of the 1157 bulb lights when the stop light circuit is activated on the mk4 and 5.

The master plug from the Jetta/Golf has five wires.

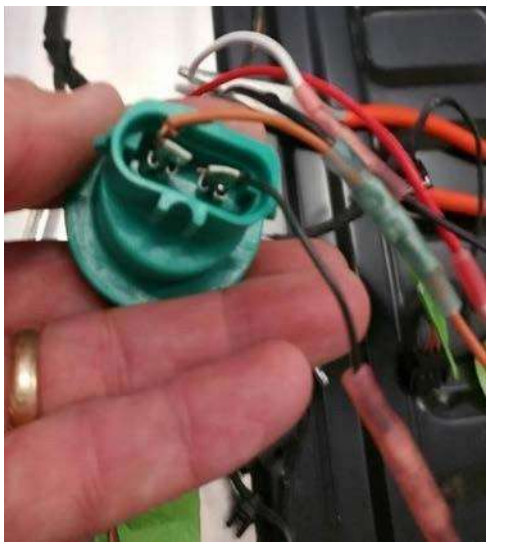
The left plug colors are as follows in the plug numbered 1 thru 6: 1 black and light blue(reverse light) 2 light blue white (turn sig) 3 grey parking light 4 red (brake) 5 brown (ground) 6 (empty)

The right plug1 empty 2 black green(turn sig) 3 grey(parking) 4 red (brake) 5 brown (ground) 6 (black green)

Notice on the right tail light plug there can be two black and green on the same plug, number 2 and number 6, they have different functions but look the same(no wonder VW has a few wiring glitches)...use the number that the wire pins to as you cut.

The green turn signal socket is wired with the small 90 degree push pins then sealed with silicon

The interior of the truck only needs the rear window surround and the rear bed wall finished. The headliner after a bit of trimming and cleanup simply requires the patch panel to be placed over the cut as a last step. The rear wall is covered all the way to the be pillar with the enclosed black carpet and 3m super 77 adhesive. Tucking the carpet under the side plastic of the b pillar is a slick way to an oem finish. I use thick bed liner or carpet in the rear surround upper area. Your headliner butts up against the finished surface of the roof splice.



Charger Wiring is detailed in the Charger wiring video.

Interior trimming and carpet

Charger lower corner behind seat, VW, Audi are the same, you trim the stock plastic to the new wall and carpet the rear wall.

Load capacity:
Truck calculations(mk4 shown)...truck is 2900 lbs finished as a ute. Figure about 700 lbs max load using the load range sticker on every car. In general the Smyth Ute kit assembly saves about 175 lbs over the rear.

Side Curtain airbags(some models)

In mid 2001 the jetta/golf and Audi came with an optional side curtain airbag. Since we are making the car into a two door, the optional airbag that deploys in the rear seat area is not used if it is fitted on your later model mk4, audi or Charger. When removing this airbag as the owner of the car, please follow the steps in the bentley manual. It is a simple procedure but failure to follow some common sense could fire off the bag...never a good thing. The biggest thing to consider when working on things like an airbag canister is to make sure the battery is disconnected. If you are a professional shop it is illegal for you to disable the airbag, this can only be done by the owner of the car. We highly support keeping all the airbag safety features of the car for the front occupants. We encourage the use of stock airbag equipped seats and steering wheels and do not disconnect any of them on our cars. As the owner and builder of this car you are the one who makes these safety decisions. By retaining the front and rear bumpers, air bags, and oem seats and steering wheel you are driving an amazingly safe car…why not keep as much as we can.

VW MK4

In order to prevent the airbag light from coming on a resistor can be used in rear wiring harness of the previous rear seat area. What follows is a copy of some discussion on resistors for the vw mk4.

"In summary the resistor value for the curtain airbag should be around 2.2 ohms (if the same as steering wheel airbag).

Most recommendations are for a 1/2 watt resistor while I used a heavier 1 watt to be safe.

The resistor should be wired between the blue wire and grey wire / pins.
The colors may change with different models but mine is a 2002 Jetta Wagon.

The only other wire besides the blue and grey on that harness is the brown wire which goes to a grounding point on the airbag module itself.

I also recommend using the blue resistors vs the tan ones. The blue resistors are metal film while the tan ones are carbon composition.

The major advantage, in this application, of the blue metal film resistors is that if they fail they do not produce the heat that a carbon resistor can." from VW vortex.com

Audi:

Some Audi and some MK5 VW cars have curtain airbags as well as auto tensioning seat belts in the rear seat area. Since there are no rear passengers these seat belt devices can be disconnected. The measured resistance in both the side curtain airbag and the seat belt circuit is .3 ohms. I have simply reattached the curtain airbag cannisters as I do on the mk4 cars but the seat belt circuit will need a resistor is you don't replace the auto wind mechanism.

Charger:

Side curtain airbags were an option on the Charger. Same methods as above. Almost all police Chargers were shipped without curtain bags which is why they are terrific donors for resale.

Misc Charger Pre Cut pics collection(use Charger videos….these are for reference)