

Installation Instructions – Keyless Stop-Start System

VW Phaeton (3D0)





Overview

This article is a how-to guide that explains how to retrofit an <u>engine start-stop button</u> to North American Phaetons that are equipped with keyless entry (production code **4F6**). Elsewhere in the world, if a Phaeton or Touareg is equipped with keyless entry, it is also equipped with keyless start capability. VWs imported to North America have the keyless start button deleted at the request of VW of A, most likely because of liability concerns. To a certain extent, this concern of VW of A is understandable ââ," if the key fob is present in the cabin of the car (in a jacket pocket or purse, for example), all an enterprising 10 year old needs to do to start and drive away is simply put their foot on the brake pedal, then press the start button.

In principle, it is not difficult to retrofit the keyless start button. No software needs to be changed, all you do is buy the button, a new trim plate, a wiring harness, and connect it to the existing access / start control module (this is sometimes called the Kessy module, it is component J518, shown on Phaeton wiring diagram 14/4). Once it is connected, everything works as it should. The difficult and time consuming part of this job is removing the various bits of trim most especially, the driver footwell carpet to get access to the access / start control module. If you have previous experience removing trim components from VW products, and have a patient disposition, this can be a do-it-yourself task. If you have no previous experience disassembling VW products, then best if you have the service technician at your dealership do the work for you. Whatever they will charge you in labor (my guess is about 4 hours for a skilled technician) will be less than the cost of replacing one broken or scratched trim component.

Before I get into the details, some thanks and credits are in order: To <u>Spockcat</u> from the Touareg forum, who was part of the group that pioneered this modification on the Touareg, and who gave me the encouragement to go ahead and try it on the Phaeton; to Blaine, the parts manager at my VW dealer, who did all the work to get me the parts I needed (everything you need can be ordered from your North American VW dealer), and to Mark; the Phaeton service technician at my dealership, who was always there to help me out when I got in over my head, and to re-install the shift lever cover for me. Terence (Pilgrim7777) very kindly supplied the scanned images of the UK Phaeton owners manual that explain how to use the start button.



Parts Needed:

Keyless Start-Stop Kit, including;

- Airbag Deactivation Switch w/dummy lock cylinder Whether you intend to hook up the airbag switch or not, you still need this part to hold the lock cylinder in place.
- **Seat retaining bolts (4)** These bolts have a special coating on them, and can only be used (tightened) once. Even though the bolt looks perfectly good after you remove it, you still need to discard it and install a new one.
- **Self-tapping screws (5)** These are special self-tapping screws that will hold the start button in place on the bottom of the trim piece. You will need 3 screws for the start button, and 2 for the airbag switch.
- **Shifter surround trim piece** This is the grey color trim piece that surrounds the shift lever and contains the left and right rear view mirror control and the flashlight / cigarette lighter receptacle. It is NOT possible to get one that has a start button hole but not an airbag on-off hole.
- **Start button** For vehicles with keyless entry, this is the start button itself. It is identified on Phaeton wiring diagrams as component **E408**.
- Start button wiring harness

Tools Needed:

- Torx screwdrivers #10, 15, 20, 25 for various trim pieces, and a Torx 50 driver for the four bolts that hold the driver seat in place.
- A deep 10 mm socket wrench
- A reasonable assortment of standard shop tools, including needle nose pliers, both straight and offset.
- A portable shop work light, preferably a fluorescent one. This is essential.
- A large, good quality magnifying glass to read the connector pin numbers on the T81K connector.
- Either a selection of good quality dental picks or automotive trim picks, or a Mercedes trim removal tool P/N 140 589 02 33 00. VW also makes a trim removal tool, VW tool P/N 3370, however, the Mercedes tool is easier to work with, and it is less expensive than the VW tool.



Phase One: Vehicle Preparation

1.1 Open the trunk and, using the deep 10 mm socket wrench, disconnect the negative terminal of both batteries. This is essential to avoid having dozens of fault codes generated by the car as you remove and reconnect the various electrical connectors. NB that battery terminals on the Phaeton should NOT be greased.





- **1.2** Park the car in such a way that you can open the driver-side doors fully. Ensure that the front wheels are exactly centered, and that the steering wheel is perfectly in the "straight ahead" position. This will minimize work later on associated with re-adapting the steering wheel position sensor.
- **1.3** Apply the parking brake firmly, then release pressure from the main brake pedal (allowing the car to be held in place by the parking brake).



- **1.4** After you have done that, put the transmission selector in Neutral. You will be moving the transmission selector around later on, so you don't want any pressure on the dog that engages to hold the car in position. Turn the engine off, but leave the ignition power on.
- **1.5** Move the driver seat to the most forward and highest possible position. Turn the ignition power off. The key won't come out because the transmission is not in Park don't worry about that.



Phase Two: Seat Removal

2.1 Remove the trim strips that cover the seat rails at the back of the driver seat. The trick to getting the trim strip off is to stuff a very small slotted screwdriver into the inboard (footwell) side of the trim strip, and pry it outwards and away from the retaining tangs that you can see in this picture. Stuff your screwdriver in about where the arrow is, from the same angle. Once you have slid the trim strip back about an inch and a half, it will be clear of the retaining tangs. There are no tangs on the outboard side.



Seat Rail after Trim Strip has been removed



The photo below shows the technique for releasing the seat rail cover trim strip. At the same time, you have to lift the middle, rear strip of plastic free of a nut that it covers. The nut is not visible in the photo below, the view of it is blocked by the forward end of the screwdriver handle. Once the trim strip has been slid back about a quarter of an inch, this nut is no longer a concern.







2.2 Remove the two bolts that secure the seat rail to the floor of the car. Set the bolts and trim strips out of the way in the right rear passenger footwell.





- **2.3** Move the driver seat to the rearward and lowest position. Double check that the steering wheel remains exactly centered. Turn the ignition off you still won''t be able to get the key out, because the shift lever is (or should be) in Neutral.
- **2.4** Remove the trim strips that cover the seat rails at the front of the car, using the same technique as you used for the rear seat rail trim strips. Loosen, but do not remove the two bolts that hold the driver's seat in place at the front. Screw them out about a quarter of an inch.
- **2.5** Open the rear driver side passenger door. Tilt the entire driver seat forward a little bit (rotating it about the axis of the two loose bolts holding it in place at the front) and shove a towel under the rear end of seat rails, to protect the carpet of the car. Put a few more towels down in the left rear passenger footwell.



2.6 Remove the two loose bolts from the front of the driver seat rails. Go find a helper, the driver seat weighs over 200 pounds! Tilt the entire driver seat assembly backwards, and slide it back into the left rear passenger footwell. Pay attention that you do not stress the cable coming up from the floor into the bottom of the driver seat. You only need to move it back far enough to have access to the seam between the driver footwell carpet and the left rear passenger footwell carpet, this seam is about midway under the driver seat rails. The seat will probably remain wedged back in a tilted position, as you see in the photo below. Leave it that way.

About how you want the seat to look once you have removed all 4 bolts and slid it back a bit. NOTE: There is a pin sticking down from the bottom of the inboard seat rail, towards the rear (about under where your right elbow would be if you were sitting in the seat). You need to tilt the seat outboard a bit, to get that locating pin out of its hole, before you can slide the seat back. This will normally happen by itself when you stuff the towels under the aft ends of the seat rails, but if for some reason the seat won't slide back, it's the pin that's still holding it in.





Phase Three: Center Console Disassembly

3.1 Pop both ashtrays open, and remove the wood trim from the front by sliding the trim pieces towards the outboard side of the car. Push the ashtrays back into the closed position.







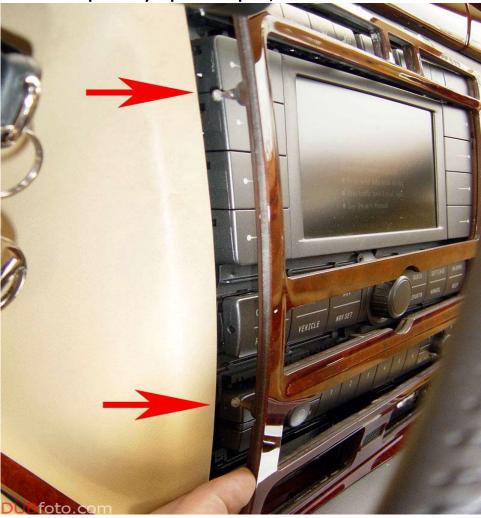
3.2 Remove the wood trim surround from the Front Information Display Control Head Control Module J523 (the radio), using the Mercedes tool or dental pick. Be very careful to avoid having the radio trim surround fall and damage the wood trim on the center console. You might want to put a towel down over the center console, between the shift lever and the ashtrays, before you remove the radio trim surround. Once you have that trim panel off, set it aside in a safe place, the clear finish on it chips easily.

Just put the dental pick underneath the wood trim panel and pull out. The trim panel is very strong. Repeat this process on both sides, top and bottom.









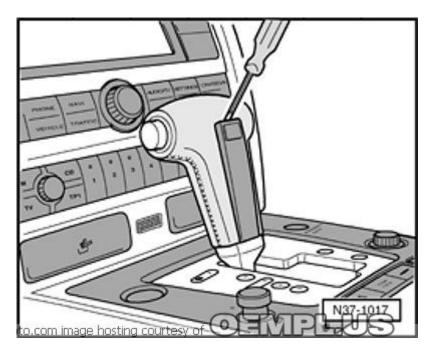


Before you begin to remove the shift lever trim, the radio area should look like the next photo. If you try to remove the shift lever trim with the radio or ashtray trim still in place, you will wind up damaging the horizontal wood trim on the center console. Note: These pictures were not taken in sequence, for this reason, you see power applied to the radio in the picture below. It is critical that you disconnect the batteries as described in **Step 1.1** before you get this far, otherwise, you will be in a heap of trouble so far as fault code generation is concerned.





3.3 Remove the shift lever cover, as shown in the photos below. This is a two part process: First gently pry off the wood trim strip, working from the top.





Second, pry out the little retaining clip, it will come completely out, and it looks just like a large staple, don't lose it! Once this retaining clip is out, just pull the shift lever straight up. You don't have to push the button in, just pull it straight up and it will come off.





3.4 Now remove the trim panel from the side of the transmission area. Stick your hand under it, near the front, and pull it straight out.





This will pop a spring clip out of a hole directly above



so you can stick your hand in the top and pop a few more clips loose.





You don't have to actually "remove" this panel, just need to pop a few clips loose so you can get your hand in between the top of this trim panel and the bottom of the wood trim that runs above it. There is no need to pop the clips at the extreme front and rear ends of this trim panel.



3.5 Stick your hand into the opening, and gently press up on the entire wood trim assembly that holds the transmission lever cover assembly, mirror adjusting assembly, etc. What you want to do is pop up the wood part within the little rubber seam. Start pressing up at the aft end of this assembly, and then work your way to the front. Don't try to raise it more than about an inch or so. Push it straight up, there are 4 pins holding it in place, you cannot tilt or otherwise maneuver this panel until the pins have cleared their sockets.

Again, be aware that these pictures were taken out of sequence. You need to remove all the vertical wood trim panels from the ashtrays and radio area (steps 7 and 8) before you start lifting this panel. If you try and remove this panel with the vertical trim still in place, you won't be able to get the front part out, and you will probably scratch this panel.



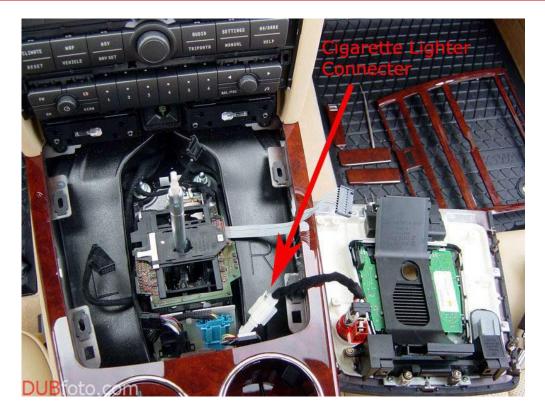


3.6 Once the panel is up and the 4 retaining pins are clear of their sockets, you can maneuver it around and disconnect all the electrical connectors. All of the connectors have locking mechanisms on them, so have your dental pick or a very small jeweller's screwdriver handy, to assist you in releasing the locking mechanisms. Take great care to not let the bottom of this panel rest on the surrounding wood trim, otherwise it will scratch it. It's quite helpful to have a few folded towels ready on the passenger seat, to use to protect the surrounding trim once you have lifted this panel free.



Remove the connectors on the left side (mirror control) and the aft end (seat heating, ESP, etc.) first, then you can lift the panel up and over the transmission select post, and turn it upside down. This makes it much easier to separate the connector that supplies power to the cigarette lighter. That particular connector requires quite a bit of force to get apart.





3.7 Now that you have the middle panel out, take it inside to a comfortable work area.



Phase Four: Shifter Surround Disassembly

4.1 Remove the screws that secure the grey plastic trim piece to the wooden surround. Be aware that these screws are not all the same length or diameter, even though they appear to have the same screwheads on them. Make a diagram of which type of screw (long self-tapper or short machine screw, see arrows in photo below) goes in what hole, otherwise, the strength of the assembly will be compromised if you mix the screws up when you reassemble it later.



4.2 Remove the mirror adjustment switch. Use a jeweler's screwdriver to loosen the small plastic retaining pins, and just push it up from underneath.



4.3 Remove the 4 screws that retain the control for the seat heating, ESP, etc. and set them to one side. These are exactly the same screws that you need to purchase an additional 5 of to mount the start button and airbag off switch.

The underside of the stock North American middle panel, BEFORE you have removed the wooden trim that surrounds it, looks like this:



4.4 Remove the cigarette lighter assembly from its hole is a real ******, so go carefully. Locate the two orange tabs inside lighter hole and gently releasing them by pressing a small screwdriver into each one. This will let it slide out of the orange styrene surround and the process of getting it out of the trim panel goes like this:











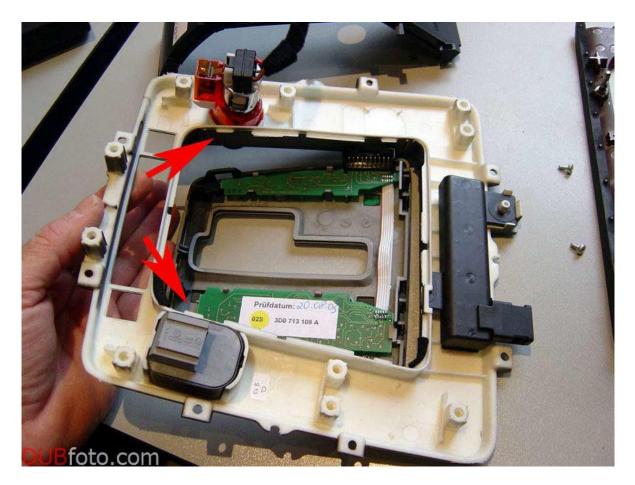
4.5 Remove the sliding cover that the transmission select lever fits through by releasing the two plastic locking tabs at the aft (rear) portion, then just lifting it up and pulling back.



4.6 Remove the chrome surround for the transmission select lever by releasing the two tabs that hold it in place. Once you have this part out, you will see 4 little self-adhesive fabric strips in each corner of your "old" grey trim piece. Carefully remove these, and put them in the same locations on your "new" trim piece. They stop the metal assembly from squeaking against the plastic.



4.7 Note also that your "old" trim piece might have been shaved down, with a knife, in each of the very outboard corners, to allow it to properly sit into the wooden trim surround. (I'm not promising your car will be like this, it just <u>might</u> be like this). If it has been trimmed by hand for a perfect fit into the wood surround, make the necessary trimming to your "new" grey piece now, before you install all the electrical components into it.



At this point, you have pretty much completed disassembly of the middle part of the car, and all you have to do now is reinstall the components that you just removed onto the new 4-hole grey trim piece, and then put that trim piece back into the wooden surround. By the way, don't install the wooden surround until you have everything else assembled, because the wooden surround is quite susceptible to scratching.

The easy part is now done. The difficult part, getting the driver footwell carpet up so you can get to the T81K connector on the access / start control module, comes next.



Phase Five: Accessing T81k Connector

5.1 Remove the hood release handle by pulling out the little black locking clip that is mounted on the forward face of this handle, then just gently pulling the handle away from the sidewall of the car.





5.2 Remove the screw that is located behind where the hood release handle was.





5.3 Remove the lower trim strip from the driver door aperture by lifting it up and pulling it off. Begin the lifting at the aft end of the strip, near the base of the B pillar. It is easiest to do this if you lift the trim strip from the outboard side of the car (from where it rests in the rubber gasket). If you try to lift it from the inside of the car, you run the risk of breaking it.





This photo shows where the spring tabs are, and if you know where they are ahead of time, it is a lot easier to get the trim strip out.





5.4 Remove the single Torx screw that secures the trim at the base of the B pillar to the body of the car. You don't need to remove the entire trim piece.





5.5 Remove the dead pedal from the floor. It is held on with 6 spring clips, and just pulls straight off. Pry it off from the inboard side, applying equal pressure to the top and bottom at the same time, to avoid snapping it in two.



5.6 (This step is difficult and can be frustrating.) Starting at the forward, top, outboard area of the driver footwell carpet, above the deadpedal area, pull the carpet back and downwards, and fold it under the brake pedal, so that that whole area of the carpet is now covering up the brake pedal (in other words, towards the rear of the car, not towards the front of the car).

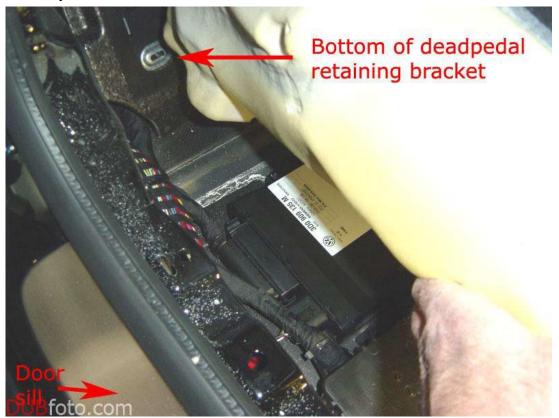
Gently pry the base of the B pillar trim away from the carpet (see **Step 5.4**) you only need to move it about an inch and pull the little bit of the front footwell carpet out from underneath this trim piece.

Now, lift the whole part of the driver footwell carpet that is closest to the door aperture, what you can see the edge of in the photo with the 4 arrows in **Step 5.3** - straight up. Don't try to bend this carpet or to roll it, for starters, it doesn't bend, and



worse than that, it has insulation 6 inches thick hanging off it in places. Just pull it straight up. When you can see the access start control unit (picture below), then you can sort of bend the carpet towards the middle of the car, and shove a screwdriver or something like that in there to keep the carpet propped up.

Access / Start Control Unit





5.7 Pull the locking handle on connector T81k out (towards the front of the car). Gently pry the connector away from the access / start control module. The locking handle has two stages to its movement. Once the connector is about one quarter of an inch off the KESSY unit, you will be able to move the locking handle fully forward to the final stage, and remove the connector from the module.



5.8 At this point, I am going to refer you to Spockcats website, <u>Touareg Keyless Start Install Instructions</u>, where he details the process of doing the same thing on a Touareg. The Touareg has the same connector and same access/start control module, it is just located in a much easier position to get at in the Touareg.

Have a look at the pictures and instructions there that show how to take the T81k connector apart, but DON'T follow the instructions on the Touareg site for putting the new wires into the connector. The Touareg has blank pins in the unused holes of the T81k connector, and the Phaeton does not. Besides, if you crimp a wire onto a blank pin yourself on a Touareg (not exactly a military-spec way of doing things) and the wire



comes loose later on, it's easy to get at the connector. As you have already discovered, it's hell to get at the connector in a Phaeton, so I'm recommending you do it right the first time and use VW repair wires.

Phase Six: Wiring

- **6.1** Run the cable (the one you got from Spockcat, or one you have fabricated yourself, whatever) underneath the carpet and up into the transmission selector area. It is much easier to run it from the door area up towards the transmission selector area than to try and run it in the opposite direction. Be cautious and meticulous about how you route the cable, you don't want it stressed when you put all that carpet back down, and you especially don't want to route it over the top of the electric heaters for the rear footwell air supply that are directly under the driver seat.
- **6.2** I forgot to take pictures showing how I routed my cable, but more or less, I shoved it up the side of the transmission tunnel from just behind the frame member that supports the front of the driver seat. Then I ran it forward about 14 inches until I could put the connector in the driver side ashtray, that left enough slack for maneuvering it into the start button later in the process. I then ran the cable behind the frame area that supports the front part of the driver seat, up, over and through the cable protection clip in the door seal, and along the floor to the access / start control module.



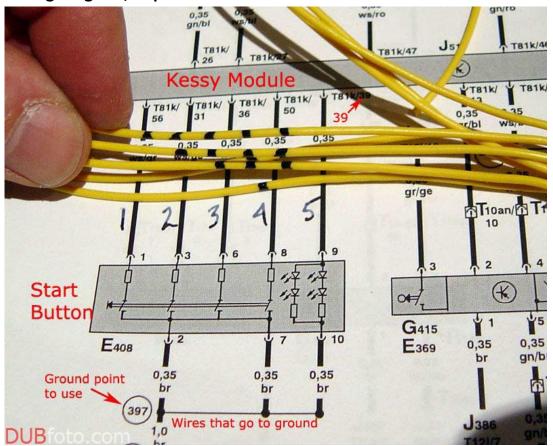
Once you have the cable in place, the end with the loose wires, at the access/start control module will look like this:





6.3 As you can see in the photo above, I have marked the ends of the repair wires with a felt pen, each wire having from 1 to 5 dots on it. This is how I keep track of things when I am working off a wiring diagram. In the photo below, you can see that I labeled the 5 connections that run from the start button itself to the access / start control module (Kessy module) from 1 to 5, then I marked the repair wires with dots corresponding to the appropriate circuit. You don't have to do this, but I find it more convenient than trying to figure out color codes.

Wiring Diagram, Repair Wires





6.4 Following the wiring diagram instructions, poke the 5 wires through the appropriate holes of the rubber seal, then poke them further down into the connector itself. Note that the metal connector on the end of the repair wire has 4 sides to it, and there is only one correct way to put it into the plastic T81k fitting. The correct way is with the crimps facing towards you, this will ensure that the barb in the end of the metal connector properly locks into the plastic frame. The repair wire will fit in incorrectly, if you put it in oriented in any of the other 3 possible ways,it will then slide back out when you shove the T81k connector onto the Kessy module, and you'll have to do the whole driver seat and carpet re/re all over again to troubleshoot.

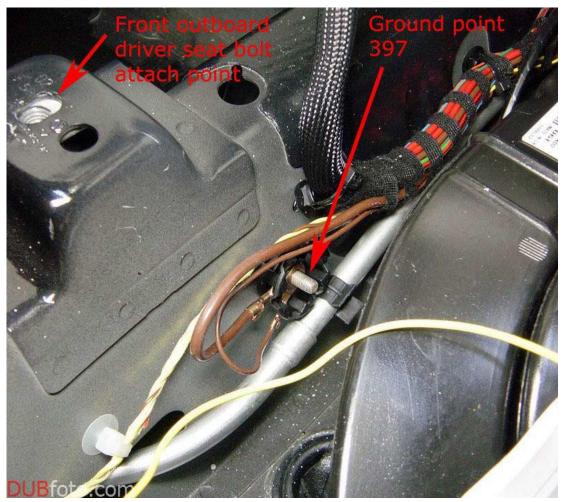






6.5 You now need to connect the three ground wires to the appropriate ground point. The three ground wires are probably tied together into a common 1 mm wire within the wiring harness. The wiring diagram indicates that this should be attached to ground point 397, which is the ground point located on the aft face of the frame that supports the driver seat. So, use this ground point. On the Phaeton, not all ground points are created equal, and you don't want the access / start control module throwing codes at you later on, complaining of a poor quality ground. I suggest you replace the slide tap on the wiring harness with a circular ring crimp connector, and attach that directly to the ground point stud. Remember, you're going to be shoving that carpet, complete with 6 inches of foam insulation, back down over the cable, you don't want it ripping the slide tap off. Below is a photo of ground point 397.

Ground Point 397





Phase Seven: Reassembly

- **7.1** Now that the wiring is done, you just have to put everything back together. Assembly is the opposite order of disassembly, the only exception being the shift lever handle, which is a bit of a PITA. Put the driver seat back in position, and attach and torque the two front bolts. You won't be able to get access to the two rear bolts until after you have connected the battery. Don't connect the battery until you have reconnected everything else with the exception of the shift lever cover and the 2 rear driver seat attach bolts, otherwise, you'll generate multiple fault codes.
- **7.2** The most difficult part of the whole job is reinstalling the leather shift lever handle and the chrome base that fits on the bottom of it back onto the shift lever stick once you have finished all of the reassembly. The problem here is that there is a "trick" to doing this, and unless someone has taught you the trick (visually demonstrated it), it is otherwise impossible to accomplish. Worse still, you can easily cause several hundred dollars of damage to the Tiptronic position sensing switch if you don't know what you have to be "very careful" about.

So, my suggestion to all of you is that unless you know exactly how to reinstall the leather shift lever cover and its chrome base piece, you should take your Phaeton to a VW dealer and have them refit those parts for you. It's only a 2 minute job, and the parts go back together the same way a Golf, Jetta, Passat or Touareg shift lever goes back together. For that reason you can be assured your VW tech will know how to do it properly.

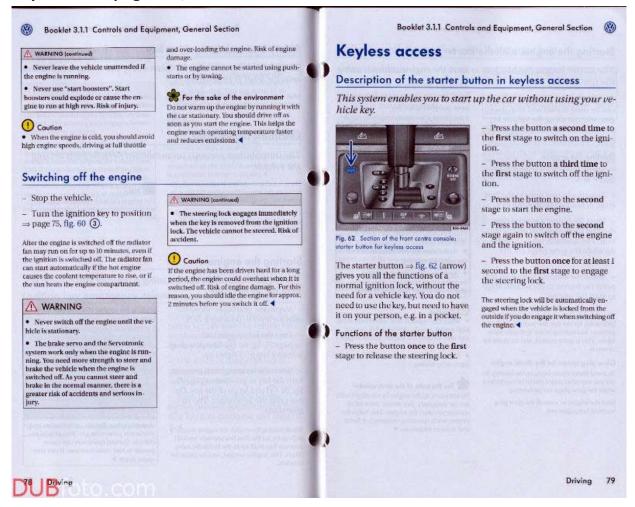
- **7.3** If you are not able to put the shift lever cover back on yourself, move the transmission selector into the PARK position, by lifting up on the plastic stick and moving it forward, before proceeding to the next step.
- **7.4** When you first power up the car, you will be presented with a number of very dire warnings in the instrument cluster display, suspension system needs shop attention, perhaps an ABS warning, etc. This is because the steering wheel position sensor needs to be re-adapted (calibrated) anytime the batteries are disconnected. If you parked the car with the wheels pointing straight ahead, and the steering wheel perfectly straight before you disconnected the battery, there is a good chance that the car will self-calibrate if you put it through about 4 complete operational cycles before you move it.



A "complete operational cycle" is a start, let it run for at least 60 seconds, turn it off and remove the key from the ignition, close and lock the doors (windows up first, or you'll set off the cabin motion sensing alarm), wait 60 seconds and then repeat the process.

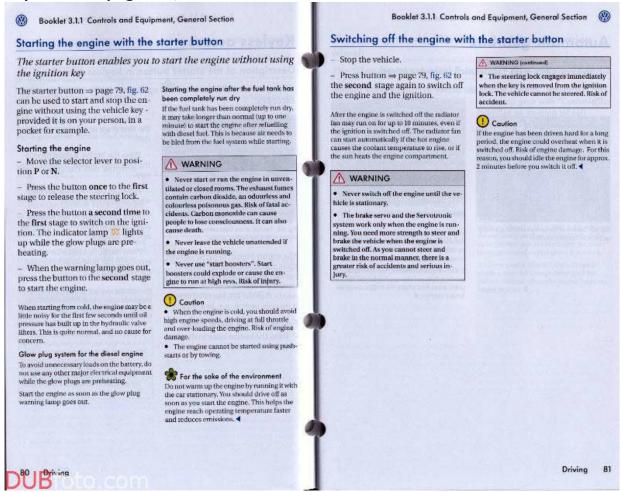
7.5 While you are going through these 4 cycles, you can function check the new start button. I suggest you read the instructions in the British Owner's manual first (courtesy of Terry/Pilgrim7777):

Keyless Start pages 78, 79





Keyless Start pages 80, 81



I almost forgot - here's what it looks like after the job is done and everything is put back together.



Keyless Start System



Important Note!

If you install a start button in a North American Phaeton, you still have to put the key blade into the ignition cylinder if you want to enable or disable the "valet lockout" feature. This is, I presume, because start buttons are not offered in North America, and Phaetons in all regions of the world except North America are equipped with a rear foglight on/off switch in the place where the North American Phaetons have that valet lockout button.



DISCLAIMER:

Use your common sense. Your car may be different than mine, it might have different options, or even if it is identical, it might have different components if it was built before or after my car. If you encounter something you can't figure out, don't go further until you get it figured out.

I have checked this document pretty carefully for errors and omissions, but that doesn't guarantee that there aren't any. So, be alert and take responsibility for your own actions, just like people used to do in the old days, before coffee cups had "caution: contents are hot" warnings on them.

If you don't feel comfortable attempting this task yourself and it is a task that requires prior experience working on VWs, like I said at the beginning, print these instructions out and ask your Phaeton service technician to put the button in for you. When you do something like this (asking your VW technician to install a European modification), there are two rules of courtesy that should be observed: 1) Plan on leaving your car with the tech for a few days, so that in case he encounters difficulty, he has the time to consult with others, and; 2) Always offer to pay "straight time" for the job, in other words, whatever time it takes him (or her) to do this custom work, that's what you pay for.

I have followed those two rules in the past, and the result has always been a satisfying and interesting installation process for both the tech and myself.

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