

# BLAU PARTS®

## PLEASE READ THE FOLLOWING BULLETIN BEFORE CONTINUING WITH YOUR TIMING BELT REPLACEMENT



### **Bulletin: Prevent Premature Water Pump Failure!**

BLAUfergnügen! Inc. recommends that an Audi Vw Factory Trained ASE Certified Technician install your parts to ensure your safety. Always read Robert Bentley factory service manual safety instructions and guidelines. ALWAYS WEAR SAFETY GLASSES AND OTHER SAFETY ITEMS WHEN PERFORMING THE FOLLOWING WORK!

#### **Installers Responsibility:**

Blauparts recommends that installers take the necessary time to thoroughly follow the steps outlined in this bulletin to prevent future labor costs, as well as any inconvenience after the installation of the water pump included in this timing belt kit. It has been noted that due to time constraints, inconvenience, and profit, many individuals and mechanics alike, do not take the extra time needed to thoroughly flush the entire vehicle cooling system prior to the installation of the new water pump. Just draining the cooling system and refilling the system is not enough! Premature water pump failure (water pump seals and bearings) can occur because of failing to take the time to flush the entire cooling system and its related components. Often when problems arise, such as a coolant leak, the new water pump is blamed as the cause when in fact the opposite is true. It is usually because the installer has neglected to follow these steps listed below.

#### **Flushing the Cooling System:**

It is imperative that the cooling system be thoroughly flushed of all accumulated silt and sediment build up, including all aftermarket cooling system additives, or stop leak products that may have been added to the cooling system, past or present. This would entail flushing the radiator, engine block, heater core and hoses etc. **Use Only Tap Water** to flush the entire cooling system. DO NOT USE Cooling System Flush Products since many contain muriatic and/or other acids. Remnants of such acids left in the cooling system can cause your new water pump to prematurely fail.

#### **Water Pump Installation:**

Take extra time in cleaning the water pump gasket/o-ring mating surfaces. Make sure the surface is free of all old gasket material and corrosion build up before installing your new water pump. It may be necessary to use a light abrasive scuff pad or razor blade. Gasket sealing agents should NOT be used if your water pump includes a paper gasket. If the water pump mounting surface area on the engine block is thoroughly cleaned, smooth and free from old gasket debris, gasket sealing agents (*Form a Gasket* products in gel or spray forms) are not needed. Sealing agents vary in composition and intended usage, and when used in conjunction with paper gaskets may affect the paper gaskets' long term ability to compress and/or perform its sealing function. Appropriate gel like gasket sealing agents should only be used in the case of severe pitting of the engine block surface whereby an even and smooth mounting surface for the water pump is not attainable. Double check all water pump mounting bolts for tightness. A loose or missing water pump or thermostat housing bolt can result in a leak and falsely attributing the water pump as defective.

#### **Filling the Cooling System:**

IMPORTANT: Read the Warnings on the antifreeze coolant bottle, improper use is HARMFUL or FATAL. Use only Audi, Vw G-12 antifreeze coolant which was included in your timing belt kit. These bottles contain coolant that is concentrated. You must dilute the coolant. Mix 50% coolant with 50% DEIONIZED WATER. DEIONIZED WATER IS PREFERRED. However, if it is not available use distilled water. DO NOT MIX TAP WATER with new coolant if at all possible. Tap water varies in Ph and mineral content and depending on these factors, can adversely effect your new water pump and other cooling system components.

#### **Water Pump Break in Period:**

All water pumps are inspected and air pressure tested at the factory for any leaks. However, new water pumps do have a break in period. It is not uncommon for a new water pump to have some seepage of coolant from the discharge hole below the water pump pulley shortly after start up. This is because the unique seal material in the new water pump is designed to 'bed in' as the impeller shaft spins. Slight weeping or dampness from or around the discharge hole or cap is allowable for at least 100 miles after installation and should not be attributed as a defective water pump.

#### **Maintenance:**

Mixing other brands of unauthorized antifreeze coolants with the approved G-12 antifreeze coolant included in your new timing belt kit can also cause an adverse chemical reaction to G-12 coolant, causing the coolant to gel and clot. This can damage the new water pump, plug the cooling system, and weaken other plastic cooling system components such as, the radiator and plastic coolant hose connections.

#### **Environment:**

Be environmentally responsible. Dispose of the old anti freeze coolant properly.

# BLAUPARTS®

## Guidelines For Installation Of Your VW ALH TDI Timing Belt Kit

**! CAUTION !**

**Performing Work on Your Automobile Without Having Proper Knowledge, Mechanical Ability or the Proper Tools and Safety Equipment, CAN CAUSE SEVERE INJURY OR DEATH !**

BLAUfergnügen! Inc. recommends you have an A.S.E. Certified Technician install your parts to ensure your safety.

**ALWAYS WEAR SAFETY GLASSES AND OTHER SAFETY ITEMS WHEN PERFORMING THE FOLLOWING WORK**

The following information is simply a guideline and is not intended to replace the official Bentley Factory Manual. Always refer to the factory manual for proper installation and safety guidelines.

**NOTE: For the low mileage timing belt kits some steps in these instructions can be skipped. (Example thermostat and water pump steps)**

- 1) Position the vehicle in the air on proper automotive jack stands and remove the passenger side front wheel.
- 2) Remove the protective splash pan using a T-25 Torx driver.
- 3) Remove the lower intercooler hose by removing (1) 10mm nut (1) spring clip and (1) hose clamp located in the passenger side wheel well. **(Image 1)**
- 4) Loosen and remove the passenger side fender liner by removing the spring clips from corresponding studs. **(Image 2)**
- 5) Using a 16mm wrench, loosen and remove the serpentine belt by turning tensioner clockwise. **(Image 3)**
- 6) Using a 13mm socket, remove (3) bolts that secure the serpentine belt tensioner to the engine.



Image 1



Image 2



Image 3

7) For Golf and Jetta Models: If the forward upper intercooler hose clamp is not accessible you may need to remove the front bumper in order to remove the passengers side headlight. If the hose clamp is accessible remove hose clamp and continue to step 18.

8) Remove the bumper cover to gain access to the hose clamp at the top of the intercooler. Pull up (vertically) in the top side corners of both the passenger and driver side of grille trim. Then push inward towards engine and once again pull up on the top side corners of both the passenger and driver side of grille trim. Be careful not to break the clips molded into the grille. **(Image 4)**

8) Pry up and remove the spring clip from the hood latch lever. Then using a flat blade screwdriver, spread the latch apart so that the rod clears the latch pins and remove latch. **(Image 5)**

9) Pull upwards on the grille and remove it.

10) Using a T-25 Torx driver, remove (4) screws from both passenger and drivers side on the front side of wheel well. **(Image 6)**



Image 4



Image 5



Image 6

**11) Using a T-30 Torx driver, remove (5) screws on the top of the bumper cover. (Image 7)**

**12) Remove passenger and drivers side lower front bumper grilles.**

**13) Using a T-30 Torx driver, remove (1) screw from behind the grille opening on each side of vehicle that secures the bumper cover to the radiator. (Image 8)**

**14) Begin to remove the bumper cover, but pause to remove the bulbs from the rear side of the marker lamps. It may be advantageous to use 2 people for this step. (Image 9)**



Image 7



Image 8



Image 9

**15) Unplug passenger side headlamp (Image 10), then use a T-25 Torx driver to remove the (4) screws holding the headlamp in place. Remove headlamp. (Image 11) (2 upper screws and 2 lower screws)**

**16) Use a 1/4" drive ratchet and 10mm socket to remove (3) nuts from your engine cover.**

**17) Use a pliers to remove all clamps from intercooler hose between the intake manifold and intercooler. Twist the intercooler pipe and remove the pipe through the headlamp opening in the radiator support. (Image 13)**



Image 10



Image 11



Image 12

**18)** Drain the coolant from the engine by removing the lower hose from the oil cooler, located just above the oil filter. Then, drain the radiator at the radiator drain knob located on the lower drivers side of the radiator. **(Image 12)**

**19)** Use a phillips screwdriver to remove (2) screws securing the coolant tank. Remove both hoses connected to the coolant tank and locate them to the side.

**20)** Use a 5mm allen wrench to remove the single allen head bolt that secures the power steering reservoir to the motor mount. As an option, you can choose to completely remove both power steering hoses for easier access to the area.

**21)** Loosen the (5) spring clips located around the cover, then remove complete upper timing belt cover. **(Image 14)**

**22)** Use a 6mm allen to remove the (4) allen head bolts on vibration damper. Counter hold the crankshaft by using a 1/2" drive ratchet and 19mm socket. Remove vibration dampener. **(Image 15)** - Torque Spec this fastener, 7 ft lbs + 1/4 turn.



Image 13



Image 14



Image 15

**23)** If you are planning to install a new lower crankshaft seal at this time, loosen lower crankshaft toothed pulley bolt. Position special tool #3415 in lower crank toothed pulley and use breaker bar with 12 point 19mm socket to loosen main crank bolt. Note: Do not remove bolt or toothed pulley at this time. Just loosen the bolt. **(Image 16)**

**24)** Remove valve cover breather assembly. **(Image 17)**

**25)** Use a 10mm wrench to remove the (2) 10mm nuts holding the vacuum hose bracket located below the vacuum pump on the drivers side of valve cover. Loosen vacuum hoses from support bracket **(Image 18)**



Image 16



Image 17



Image 18

**26)** Use a 10mm wrench to remove (2) bolts that hold the coolant manifold on at the right side of the cylinder head. This will allow clearance for the removal of the vacuum pump. **(Image 19)** - Torque spec for this fastener is 7 ft lbs.

**27)** Use a 13mm wrench to remove (3) bolts securing vacuum pump to cylinder head. **(Image 20)** - Torque spec for this fastener is 15 ft lbs.

**28)** Use a 5mm allen wrench and socket to remove (7) allen head bolts retaining the valve cover. Note: Use allen wrench to remove allen bolt located under the egr valve **(Image 21)**. - Torque spec for this fastener is 7 ft lbs)

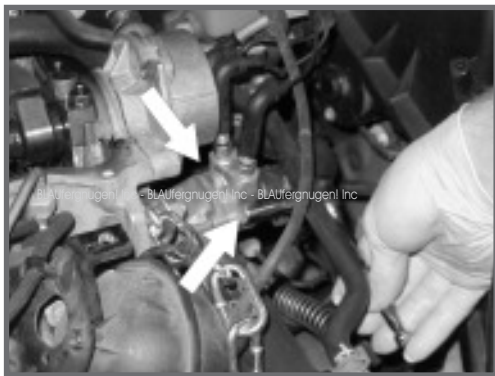


Image 19



Image 20



Image 21

**28)** Remove plastic plug from bell housing on driver side of engine.

**29)** Rotate crankshaft until both valves for cylinder #1 are completely up and fully seated. **(Image 22)**

**30)** Insert the cam locking tool #3418 into the slot on camshaft. If you cannot, rotate crankshaft 180 degrees and re-attempt to insert the cam locking plate. **(Image 23)** - NEVER use locking plate to torque crankshaft or camshaft bolts.

**31)** Locate and align the machined marker on the flywheel with the notch protrusion in the bell housing. **(Image 24)**



Image 22



Image 23



Image 24

**32)** Install the flywheel locking tool #4004 on lower toothed pulley of the crankshaft. Tighten allen bolts hand tight, then add 1/4 turn with a 5mm allen socket. **(Image 25)**

**33)** Insert fuel pump locking pin/tool #3359 into hole in fuel pump toothed pulley and then thru hole in fuel pump casting. It is possible to install pin/tool 3359 to the right of the hole and have the injection timing off by about 30 degrees. If this is done your engine will not start. **(Image 26)** - Note: you may have to tap gently on the pin tool to get it into the hole in the fuel pump casting. Never turn over engine by injection pump.

**34)** Support engine with suitable engine support. **(Image 27)** - Warning: Failure to use an appropriate and safety approved engine support could result in Injury or Death.



Image 25



Image 26



Image 27

## **Timing Belt Removal:**

**35)** Use a 1/2" drive ratchet to remove (2) 18mm upper motor mount bolts. **(Image 28)**

**36)** Use a 1/2" drive ratchet to remove (2) 16mm body motor mount bolts and remove body side motor mount.

**37)** Remove the cast motor mount bracket secured to the engine by removing (2) 16mm bolts on the top side and then (1) 16mm bolt on the bottom side of the bracket. **(Image 29)** - A swivel extension might be required.

**38)** Raise drivers side of engine to remove motor mount bracket. **(Image 30)** - Note: This can be difficult. Make sure the lower bolts have been fully removed from the bracket so they are not in the way. Lift bracket up and then forward toward front of car. You may have to lightly pull on the a/c evaporator pipe to allow the motor mount bracket to clear. If you are unable to remove the bracket towards the front, you will need to remove the turbo air intake pipe in order to remove the motor mount by moving it towards the rear of the vehicle.

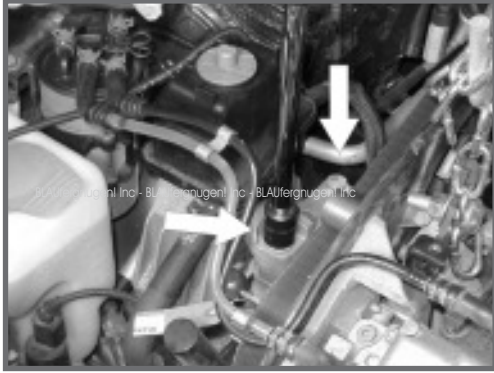


Image 28



Image 29



Image 30

**39)** Remove and lower timing belt cover by removing (4) 10mm bolts. **(Image 31)** - Important: Apply Loctite to these bolts when reinstalling the cover.

**40)** Loosen and remove timing belt tensioning idler, timing belt, and all other fixed tensioners. Also remove water pump. **(Image 32)**

**41)** Position tool #3415 in lower crankshaft toothed pulley. Using a 12 point 19mm socket, remove crankshaft bolt. **(Image 33)**

**42)** Remove toothed pulley.



Image 31



Image 32



Image 33

**43)** Using tool #3203, remove lower crank seal. Inspect crankshaft for possible groove from where the old seal rubbed on the crankshaft. Lubricate the sealing lip of the new crank seal with clean motor oil. Using tool #3265, gently tap new crank seal into place. If a groove existed in the crankshaft, recess the new seal slightly deeper so the seal lip rides on a new surface area of the crankshaft. **Important: Do not rotate or turn the crank shaft at this time.**

**44)** Re-install toothed belt pulley and torque bolts to 88 ft lbs + 1/4 turn.

## **Installation Of New Tensioners Belts and Seals:**

- 45) Clean machined area where the water pump will mate with engine block. Install the new improved water pump by turning all water pump fasteners equally snug by hand and then slowly and evenly torque the fasteners to 7 ft lbs.
- 46) Use a pliers to loosen the hose clamp at the thermostat housing and remove hose. Then use a 10mm socket to remove (2) bolts securing the housing to the engine block. Remove old thermostat, noting the orientation of it. Clean thermostat mating surface on engine block. Install the new thermostat in the same orientation as removed. Install new o-ring to housing, then install housing to block. Torque housing to 7 ft lbs. and reinstall hose and clamp.
- 47) Install (3) new upper and lower FIXED tensioners. Apply a small amount of thread locker and torque fasteners to specifications. **(Image 34)** - Smaller tensioner torque spec 16 ft lbs - Larger tensioner torque spec 22 ft lbs.
- 48) Install improved 62mm O.D. fixed tensioner using the new bolt # GK29001 supplied. **(Image 34)** - Torque fastener to 30 ft lbs + 1/4 turn.
- 49) Install timing belt tensioning idler. Position backing plate flange on tensioner with slotted hole in plastic cover and slide tensioner onto stud. Tighten securing nut only finger tight at this time. **(Image 35)**
- 50) Temporarily remove tool 3418. Loosen cam sprocket with tool #3036 by about 2 turns. Reinstall Tool 3418 with camshaft at TDC Then using tool #T4001 and a 3/4 drive ratchet with 18mm socket, apply tension to center of cam bolt until the cam sprocket pops off. **(Images 36 and 37)**

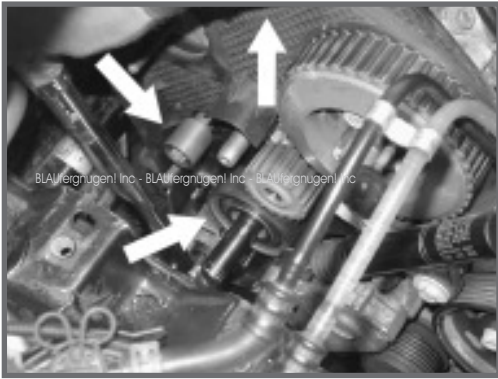


Image 34

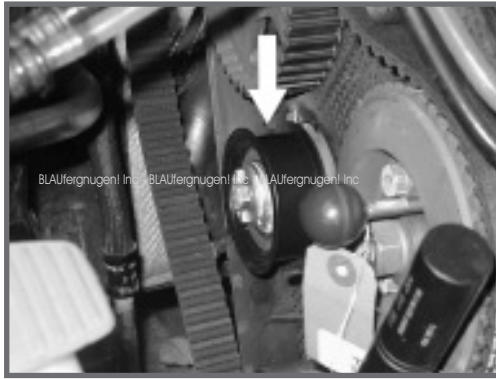


Image 35



Image 36

- 51) Loosen and remove camshaft cam cap. Remove camshaft seal. Inspect camshaft for possible groove from old seal wearing on camshaft seal surface area. Lubricate the seal lip of cam the seal with clean motor oil. Slide in new cam seal. If a groove existed on the camshaft, locate the new seal a few millimeters deeper on the camshaft so that it rides on a new surface area. Reinstall cam cap and evenly torque nuts to 15 ft lbs. **(Image 38)**

- 52) Reinstall cam sprocket and only tighten finger tight at this time.

- 53) Loosen (3) 13mm bolts on injection pump sprocket. Do not remove bolts completely, just break them loose.



Image 37

### **Warning: Do not loosen center bolt !**

**Loosening center bolt changes injection pump factory settings which can only be adjusted by using special equipment.**

- 54) Install timing belt by positioning it over the lower crank toothed pulley and then work your way upward.
- 55) Double check that the timing belt is properly in place and engaged in the teeth of the lower crank pulley, the teeth on the camshaft pulley and the teeth on the injection pump pulley. Center timing belt on all pulleys and idlers. Next, Set timing belt tension. Remove tensioning idler nut and apply thread locker. Loosely reinstall nut. Remove tool #T4001, then use tool #T10020 to apply tension clockwise to the tensioning idler pulley. Align top dead center marks. Once marks are aligned, tighten nut and torque it to 15 ft lbs. **(Image 39)**

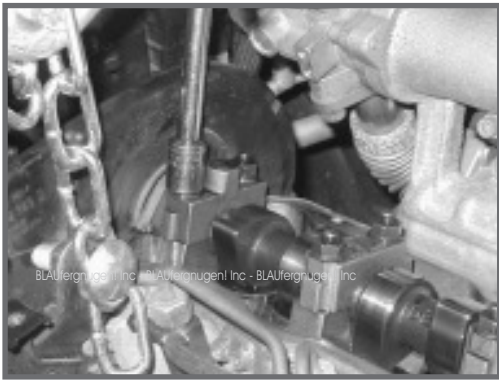


Image 38



Image 39

### **Wrap Up:**

- 56) Remove injection pump pulley bolts **one at a time** and install new bolts and tighten to 15 Lbs.
- 57) Tighten Cam Sprocket bolt with tool #3036. Torque to 33 ft lbs
- 58) Remove locking pin tool #3359 from injection pump sprocket.
- 59) Remove tool #4004 lower crank lock pulley tool.  
(Note: install (2) the allen bolts and nuts onto tool that where supplied with the tool)
- 60) Remove tool #3418 cam locking plate.  
(Note: NEVER use tool #3418 to tighten or torque fasteners - Damage to Camshaft may occur)
- 61) Turn engine over by hand two full revolutions and verify that there is no interference.
- 62) Bring # 1 cylinder of engine to top dead center and verify all timing marks align properly as outlined earlier.
- 63) Install the lower timing belt cover. Important: Apply Loctite to the (4) 10mm bolts when reinstalling. **(Image 31)**
- 64) Reinstall motor mount casting to engine block. Be sure to apply thread locker to all existing bolts. Install lower bolts into motor mount casting before positioning bracket in place, then position casting into place in between engine and body of vehicle. Install the (3) bolts into casting at the same time and start threads of all the bolts before tightening any one of them down. - Torque spec for these fasteners is 33 ft lbs.
- 65) Reinstall the body half motor mount with (2) bolts. - Torque spec for these fasteners is 30 ft lbs +1/4 turn
- 66) With the engine lowered and back at the proper level, install the motor mount to engine bracket bolts. - Torque spec on these fasteners is 44 ft lbs +1/4 turn.
- 67) Locate any components removed not specifically addressed in this guideline and re-install.
- 68) Review each step found in this set of guidelines to ensure each component has been addressed properly and has been re-fastened to specification.

### **Cooling System Filling:**

- 68) Reconnect the lower oil cooler hose to fitting.
- 69) Make sure the radiator drain knob is tight.
- 70) Fill the coolant expansion tank slowly with a 50/50 mix of coolant/antifreeze and water.
- 71) Install your coolant expansion tank cap, start your engine and allow the engine to warm until the radiator fans cycle at least once or until you are sure the thermostat has opened. You can safely bring the engine up to around 2000 RPM to quickly develop heat in the engine in order for the thermostat to open.  
\*If the coolant expansion tank fluid level goes down while you are running the engine, turn off the vehicle and carefully remove the coolant expansion tank cap. Re-fill with coolant to the max line and re-start the engine and let warm again until the radiator fan cycles\*
- 72) When the engine has cooled re-check the coolant and add as needed.