

ECS TUNING

Audi B7 A4 2.0T

ECS Tuning Lightweight Underdrive
Crank Pulley Kit Installation


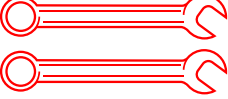




Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

INTRODUCTION

Audi B7 A4 2.0T ECS Lightweight Underdrive Crank Pulley Kit: ES#6140, ES#6141

The Audi B7 A4 2.0T ECS Lightweight Underdrive Crank Pulley Kits are assembled by the experts at ECS Tuning in order to include everything you need for a seamless installation. Underdrive Crank Pulley Kits include an Underdrive Crank Pulley (available in Anodized Black or Silver), accessory belt and necessary installation hardware. Our Underdrive Crank Pulley is made from billet aluminum, which makes it extremely lightweight and strong, it also features an anodized finish which can resist harsh weather and road salt for years to come. The smaller diameter makes it easier for your engine to turn accessories such as your alternator and A/C compressor, which unlocks hidden horsepower and transfers it to the road where it belongs.

<p>EASY</p> 	<p>MODERATE</p> 	<p>ADVANCED</p> 	<p>PROFESSIONAL</p> 
<p>BASIC SKILLS REQUIRED</p>	<p>SOME EXPERIENCE RECOMMENDED</p>	<p>ADVANCED SKILLS & EXPERIENCE REQUIRED</p>	<p>PROFESSIONAL SKILLS & SPECIALTY TOOLS REQUIRED</p>

Upgrading to the ECS Lightweight Underdrive Crank Pulley is the perfect, low cost modification that will translate into crisper throttle response and more power being sent to the wheels. An experienced technician should be able to complete this repair in a weekend, plan accordingly based on your experience level. Before you begin, read and familiarize yourself with these instructions and make sure that you have all of the required tools on hand. Thank you for purchasing the Audi B7 A4 2.0T ECS Lightweight Underdrive Crank Pulley Kit, we appreciate your business!

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KIT CONTENTS



Lightweight Underdrive Crank Pulley Kit



Lightweight Underdrive
Crank Pulley

- Silver Pulley included in:
- [ES#6140](#)



Lightweight Underdrive
Crank Pulley

- Black Pulley included in:
- [ES#6141](#)

REQUIRED TOOLS

Note: The tools required for each step will be listed by the step number throughout these instructions.

Below is a list of the tools we used to install the ECS Tuning Lightweight Underdrive Crank Pulley Kit onto our Audi B7 A4 2.0T FSI. Additional tools may be required for any issues that arise during installation such as rust, corrosion, or broken and stripped fasteners. Tools with a part number listed are available on our website - click on their [ES# link](#) to view them.

- 1/4" Drive Ratchet [ES#2093757](#)
- 1/4" Drive Extensions
- 3/8" Drive Ratchet [ES#2765902](#)
- 3/8" Drive Torque Wrench..... [ES#2221245](#)
- 3/8" Drive Sockets: 10mm, 13mm [ES#2763772](#)
- 3/8" Drive Extensions
- Spark Plug Socket: 5/8" [ES#9340](#)
- 1/2" Drive Ratchet
- 1/2" Drive Breaker Bar [ES#2776653](#)
- 1/2" Drive 12-Point Socket: 19mm
- 1/2" Drive 6-Point Sockets: 13mm, 16mm
- Torx Bit Sockets: T20, T25, T30 [ES#11418](#)
- Triple Square Bit Socket: M10..... [ES#1910125](#)
- Hex Bit (Allen) Socket: 6mm [ES#11420](#)
- Hex Bit (Allen) Wrench: 8mm
- Open/Boxed End Wrenches: 13mm, 17mm..... [ES#2765907](#)
- Screwdrivers: Flat Blade & Phillips Head..... [ES#2225921](#)
- Torx Screwdrivers: T20, T25..... [ES#11417](#)
- Ignition Coil Puller Kit..... [ES#2643082](#)
- VAG Connector Tool [ES#2628676](#)
- Lock Carrier Tool Set [ES#2710836](#)
- Pliers

SHOP SUPPLIES AND MATERIALS

Below is a list of standard shop supplies which we like to keep on hand during all repairs and services. Additional supplies may be required for any issues that arise during installation. Shop supplies with a [“Click Here”](#) link are available on our website - click on their [link](#) to view them.

- Hand Cleaner/Degreaser [Click Here](#)
- Latex Gloves - For those especially dirty, oily jobs [Click Here](#)
- Mechanics Work Gloves [Click Here](#)
- Oil Drain Pan - For catching fluid as it is draining from the vehicle..... [Click Here](#)
- Pig Mats - For protecting your garage floor and work area from spills and stains..... [Click Here](#)
- Medium and High Strength Loctite Thread lock compound - To prevent bolts from backing out..... [Click Here](#)
- Anti-Seize Compound - To prevent seizing, galling, and corrosion of fasteners..... [Click Here](#)
- Micro Fiber Towels - For cleaning the paint on your car [Click Here](#)
- Spray detailer - For rapid cleaning of anything that comes into contact with your paint such as brake fluid [Click Here](#)
- Electrical Tape - For wrapping wiring harnesses or temporary securing of small components
- Aerosol Brake/Parts Cleaner - For cleaning and degreasing parts
- Shop Rags - For wiping hands, tools, and parts
- Penetrating Oil - For helping to free rusted or stuck bolts and nuts
- Mechanics Wire - For securing components out of the way
- Plastic Wire Ties/Zip Ties - For routing and securing wiring harnesses or vacuum hoses
- Paint Marker - For marking installation positions or bolts during a torquing sequence

INSTALLATION NOTES

- **RH** refers to the passenger side of the vehicle.
- **LH** refers to the driver side of the vehicle.
- Always use the proper torque specifications.
- If applicable to this installation, torque specifications will be listed throughout the document and at the end as well.
- Please read all of these instructions and familiarize yourself with the complete process **BEFORE** you begin.

GENERAL PREPARATION AND SAFETY INFORMATION

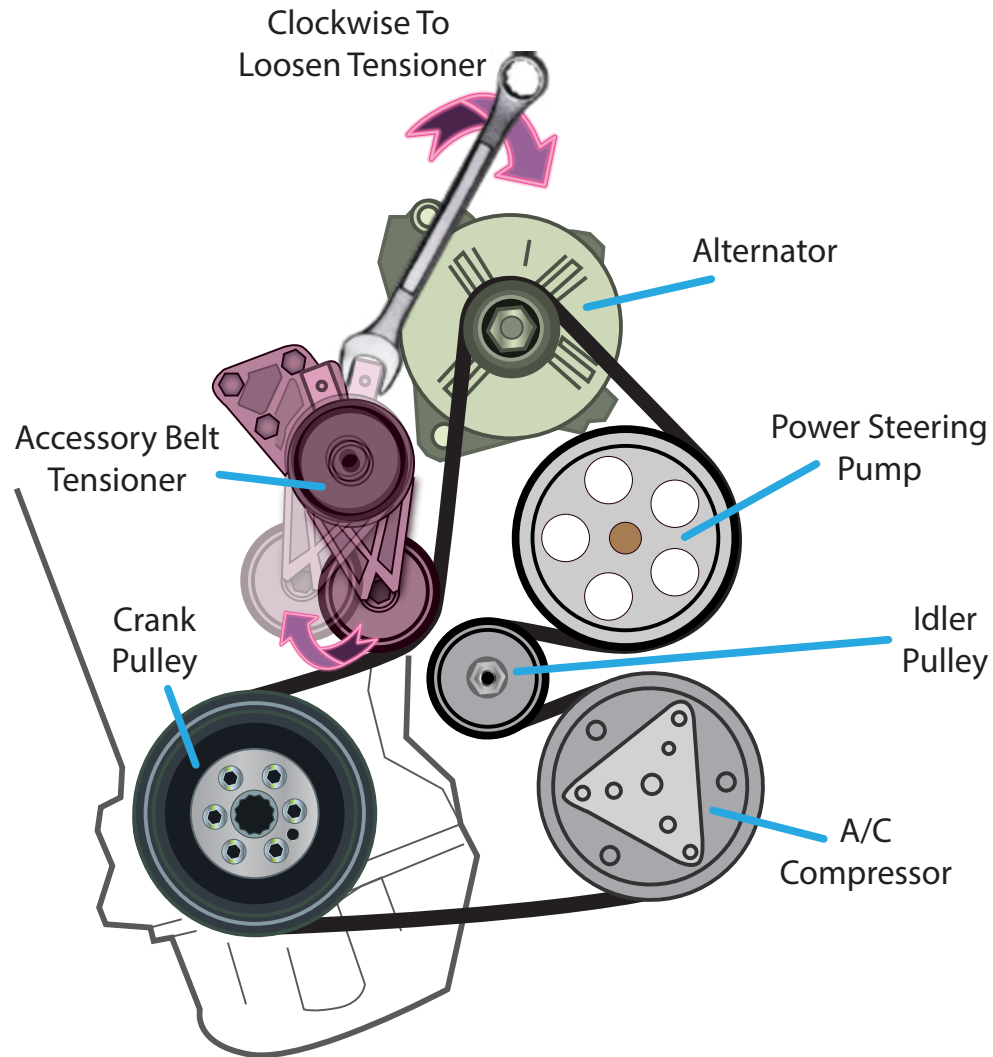
ECS Tuning cares about your health and safety. Please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- Park your car in a safe, well lit, level area.
- Shut the engine off and remove the key from the ignition switch.
- Make sure any remote start devices are properly disabled.
- **ALWAYS** wear safety glasses.
- Make sure the parking brake is applied until the vehicle is safely lifted and supported.
- If using an automotive lift, be sure and utilize the factory specified lift points. Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear.
- When lifting a vehicle using a jack, always utilize the factory specified lift points. Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear. **ALWAYS** support the vehicle with jack stands.
- Always read and follow all safety information and warnings for the equipment you are using.



Never get underneath a vehicle that is supported only by a jack. Always make sure that the vehicle is securely supported on jack stands.

DRIVE BELT ROUTING DIAGRAM



FRONT LOCK CARRIER - SERVICE POSITION

Step 1: T20 Torx Bit Socket & Ratchet - OR - Phillips Screwdriver

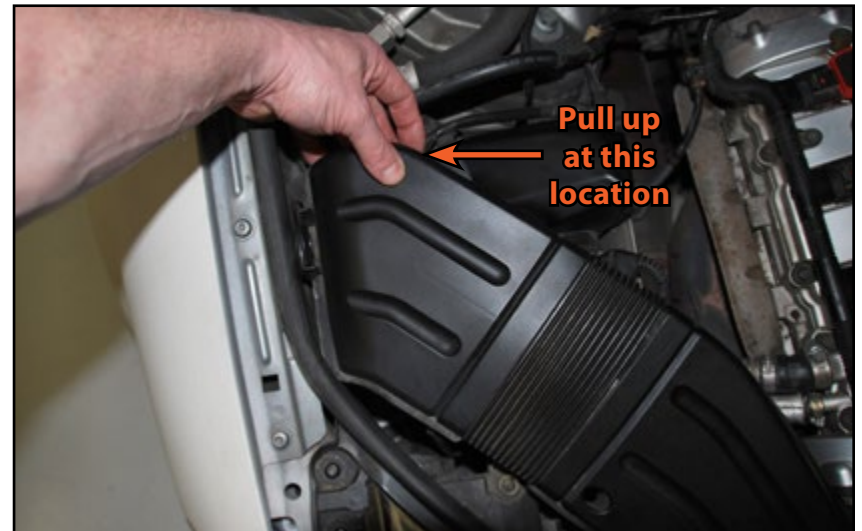
The following instructions show how to place a B7 A4 lock carrier into "service position", your vehicle may differ slightly.

Locate the two air scoop mounting screws and remove them. Depending on production date will you find that you may have either torx or phillips head fasteners.



Step 2:

Pull up on the intake duct at the location shown to separate it from the airbox, then pull it rearward to pull the air scoop out of the front core support and remove it from the vehicle.



FRONT LOCK CARRIER - SERVICE POSITION

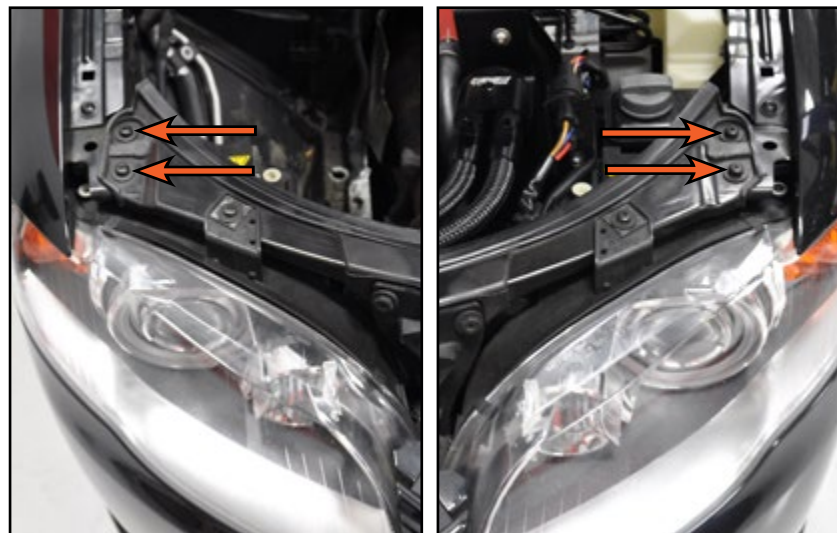
Step 3:

Remove the hood seal (highlighted in **RED**) from the front vehicle and set it aside.



Step 4: T30 Torx Bit Socket & Ratchet

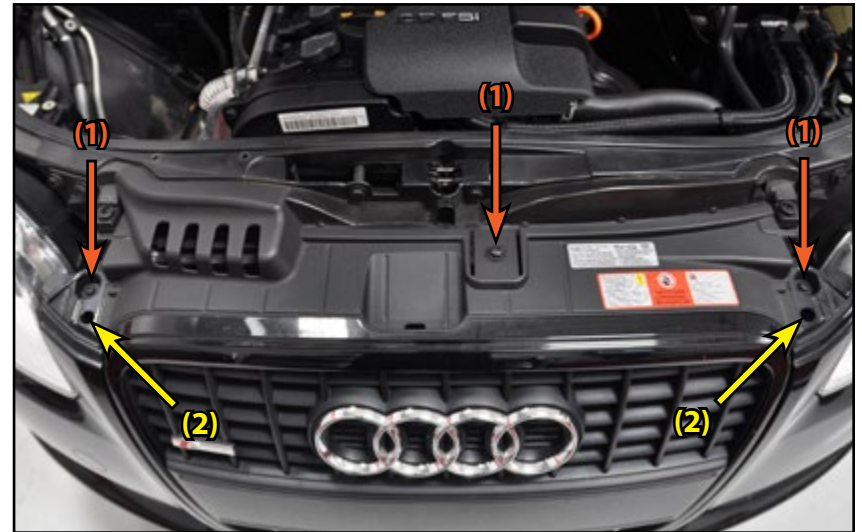
Remove the two bolts securing each side of the lock carrier to the chassis.



FRONT LOCK CARRIER - SERVICE POSITION

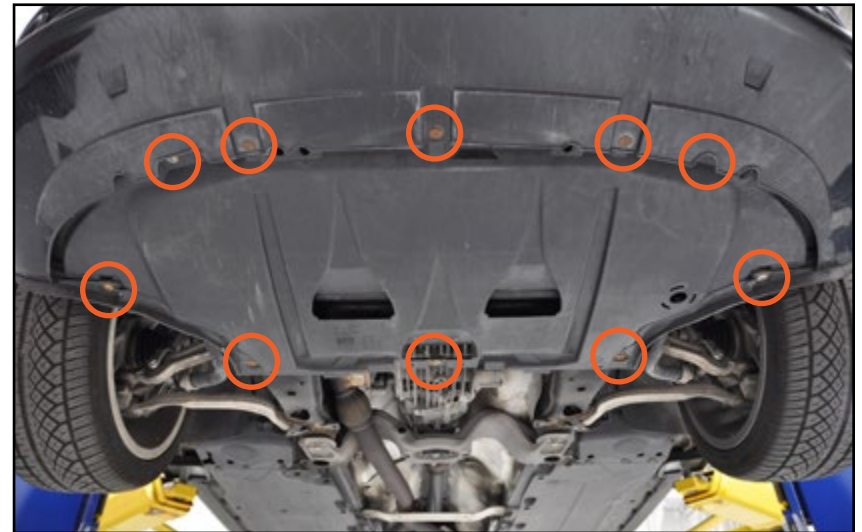
Step 5: T30 Torx Bit Socket & Ratchet

Remove the three bolts which secure the top of front bumper cover to the vehicle (**ORANGE** arrows, **1**), then loosen but do not remove the two bolts inside the bumper cover (**YELLOW** arrows, **2**).



Step 6: Flat Blade Screwdriver

Safely lift and support the vehicle, then remove the ten (10) 1/4 turn screws and remove the belly pan from the vehicle.



FRONT LOCK CARRIER - SERVICE POSITION

Step 7: T25 Torx Bit Socket & Ratchet

Remove the two screws securing the fender liner to the bumper cover on each side of the vehicle.



Step 8: T25 Torx Bit Socket & Ratchet

Gently pull the fender liner out of the way with one hand while removing the two remaining screws on the inside, repeat this on the other side of the vehicle.



FRONT LOCK CARRIER - SERVICE POSITION

Step 9:

Remove the fog lamp grille by grasping the bottom of the grille and pulling it outwards as shown in the photo.



Step 10: T20 Torx Bit Socket & Ratchet, VAG Connector Tool

Remove the three screws securing the fog lamp to the bumper cover, then disconnect the fog lamp connector by releasing the tab and sliding the connector off of the lamp.



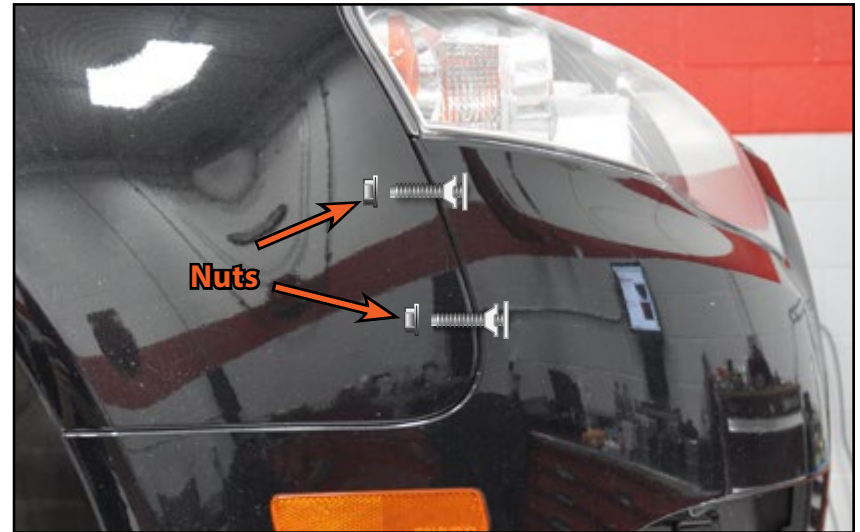
For tips on using the VAG Connector Tool, please refer to [Page 25](#) for detailed photos and procedures.



FRONT LOCK CARRIER - SERVICE POSITION

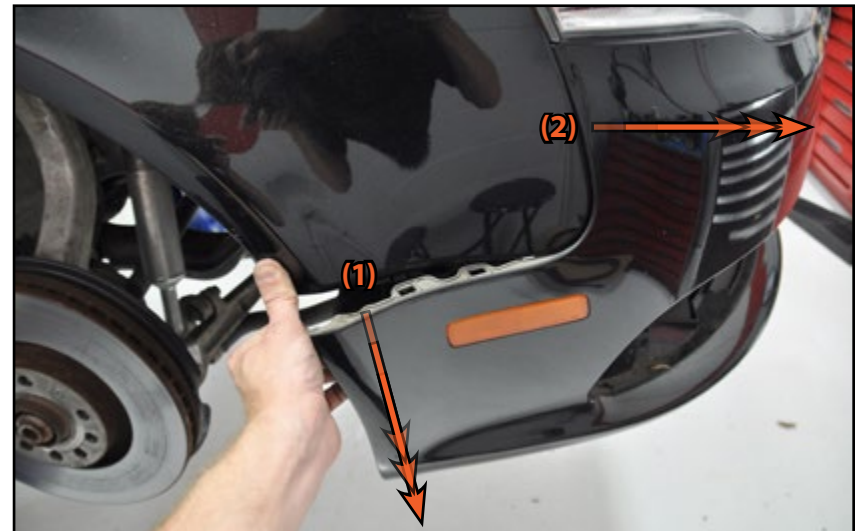
Step 11: 10mm Socket & Ratchet

Pull the fender liner back in order to access and remove the four nuts which secure the front bumper cover to the fender. Reference the photo shown on the right for the location of the nuts.



Step 12:

Enlist the help of a friend, then gently pull outwards on each side of the bumper cover as shown to release the locking tabs **(1)**. Once both sides of the bumper cover have been released, pull the bumper cover forward slowly approximately three to six inches **(2)**, using extreme caution to not damage on any connectors which may still be attached.



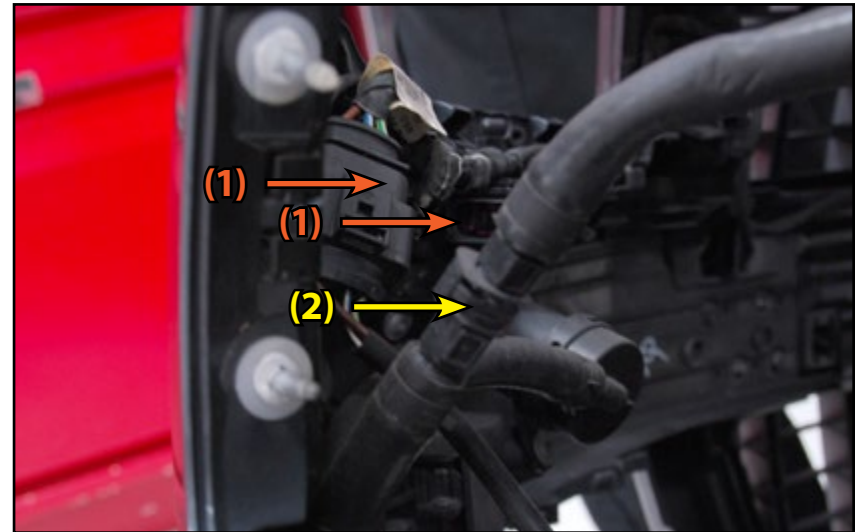
NOTE

The bumper cover is NOT completely removed during this step, please continue to [step 13](#) to remove it from the vehicle.

FRONT LOCK CARRIER - SERVICE POSITION

Step 13: VAG Connector Tool, Small Flat Blade Screwdriver

Disconnect the two wiring harness connectors in the front LH of the bumper cover **(1)**, and disconnect the headlight washer hose **(2)** if your vehicle is equipped with that option. Remove the bumper cover from the vehicle and set it aside.



Step 14: VAG Connector Tool

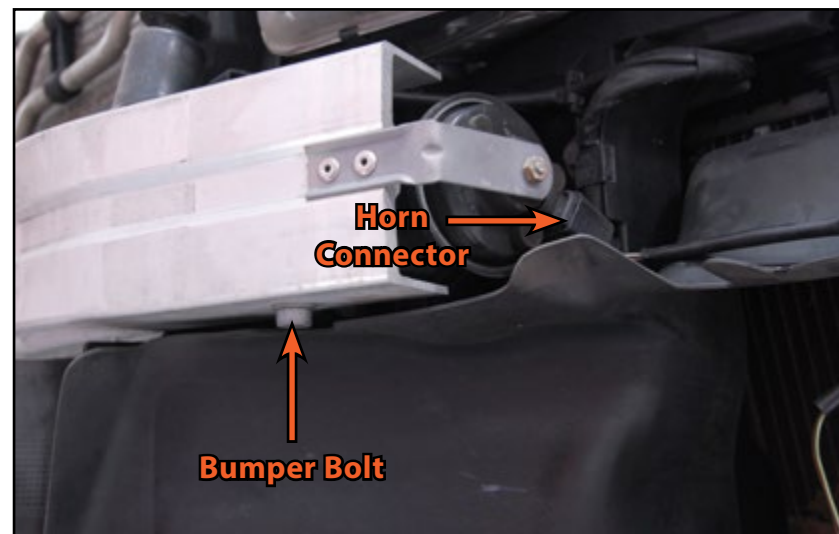
Disconnect the fan harnesses located on the LH of the engine compartment.



FRONT LOCK CARRIER - SERVICE POSITION

Step 15: M10 Triple Square Socket, Ratchet, VAG Connector Tool

Disconnect the electrical connector on each horn, then remove the two bolts which secure the front bumper to the bumper support. Remove the bumper from the vehicle and set it aside.



Step 16: T30 Torx Bit Socket & Ratchet

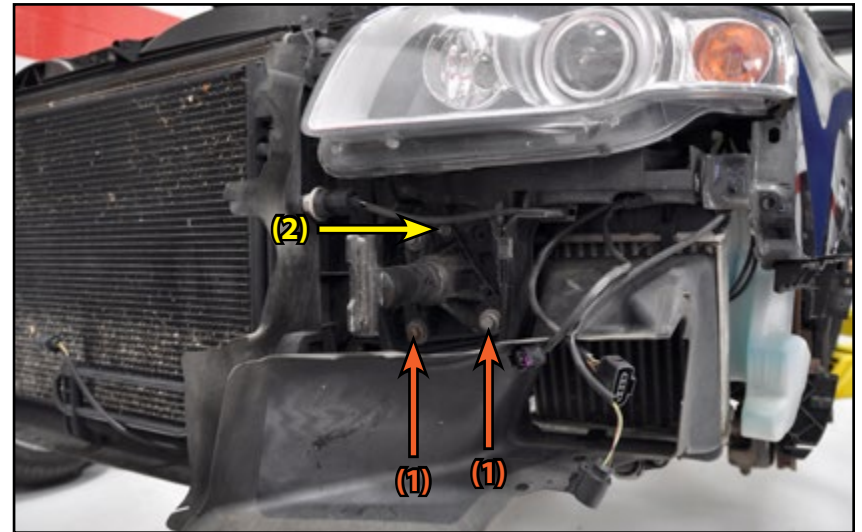
Remove the bolt securing each front fender to the lock carrier.



FRONT LOCK CARRIER - SERVICE POSITION

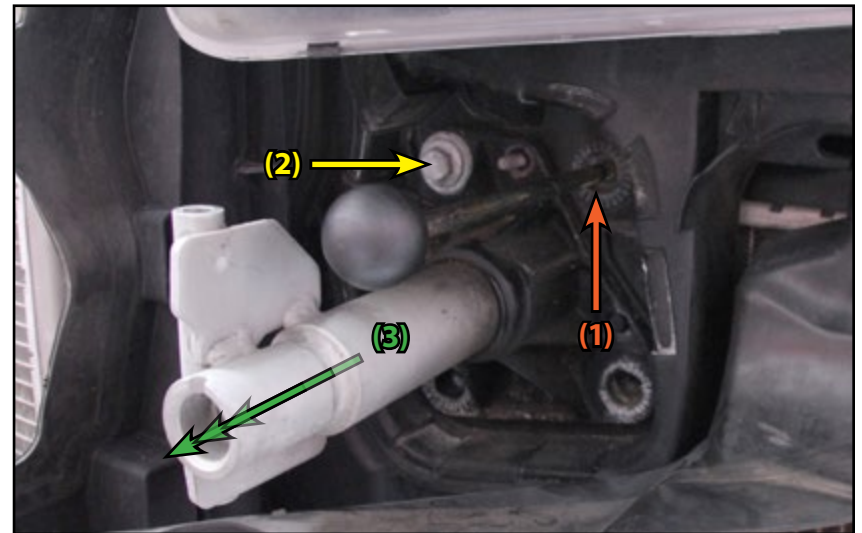
Step 17: 10mm & 13mm Sockets, Ratchet

Remove the two bolts **(1)** and one nut **(2)** from the front bumper support as shown in the photo, DO NOT remove the remaining bolt at this time. Repeat this on the other side of the vehicle.



Step 18: Lock Carrier Tool, 13mm Socket & Ratchet

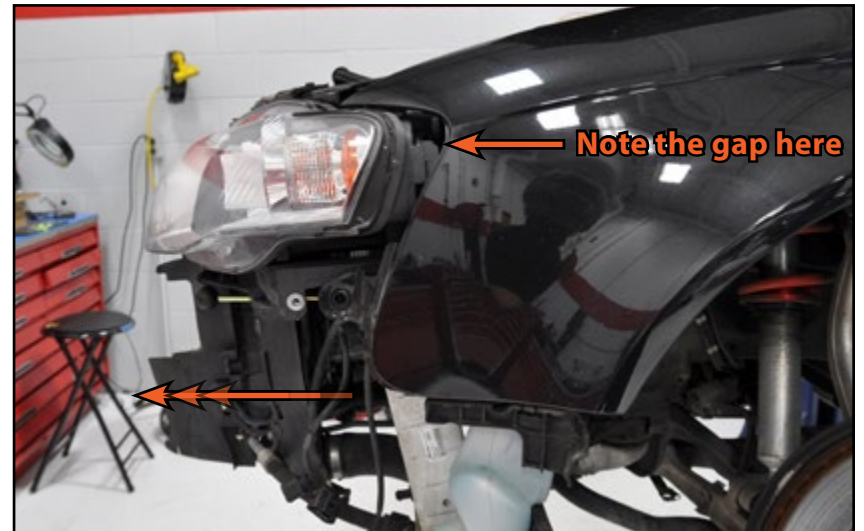
Install a lock carrier tool into the bolt location as shown in the photo **(1)**, repeat this on the other side of the vehicle. You can now remove the last bolt securing the bumper support **(2)** and remove it from the vehicle **(3)**.



FRONT LOCK CARRIER - SERVICE POSITION

Step 19:

Pull the lock carrier forward approximately two inches, anything more than that will risk damaging wiring harnesses and hoses to the front end components.



Step 20: T30 Torx Bit Socket & Ratchet

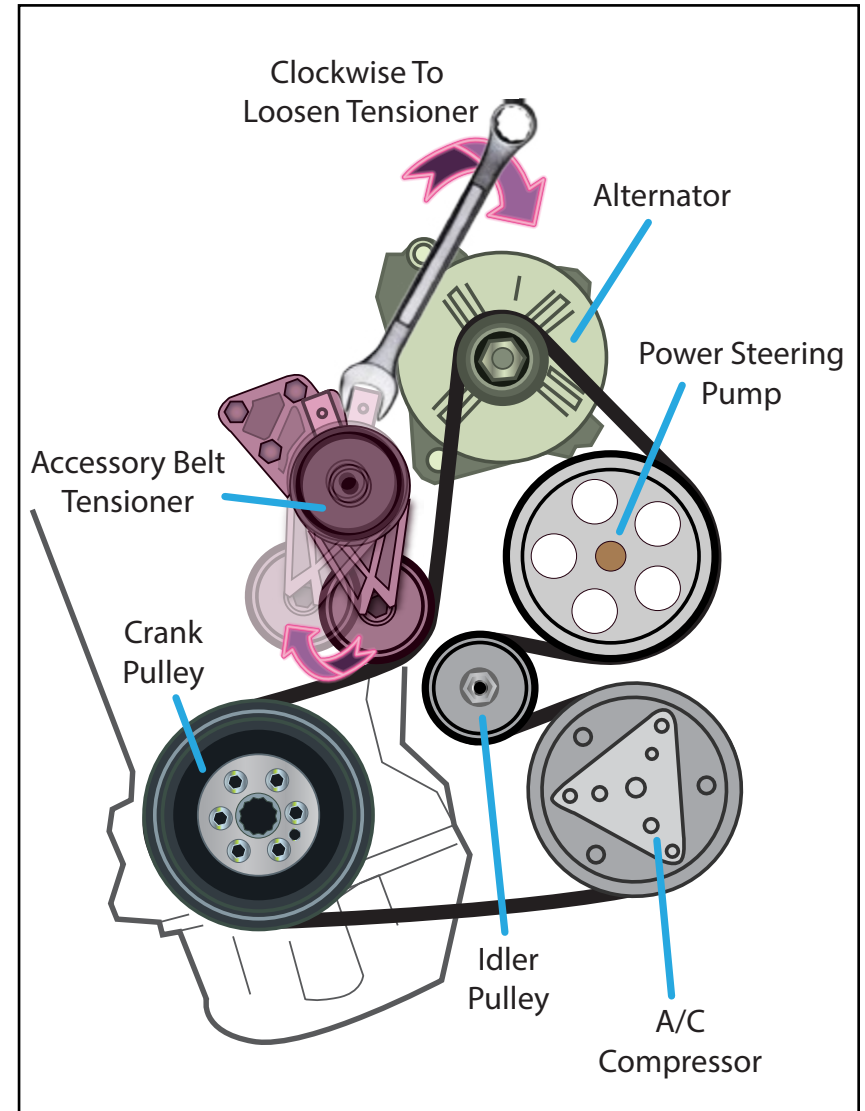
You can secure the lock carrier in place by loosely reinstalling one of the bolts into the outer hole as shown in the photo. This will prevent the lock carrier from being able to shift while performing any repairs or service.



REMOVING THE ORIGINAL CRANK PULLEY

Step 1: 17mm Combination Wrench

Using an open end wrench to engage the tensioner as shown in the photo, rotate the accessory belt tensioner clockwise until the tension has been released on the belt, then slide the belt off of the alternator pulley. Once the belt has been removed from the alternator pulley, slowly rotate the tensioner back to its rest position (DO NOT let the tensioner snap back), then remove the belt from the remaining pulleys.



REMOVING THE ORIGINAL CRANK PULLEY

Step 2: T20 Torx Bit Socket & Ratchet, VAG Connector Tool

Loosen and remove the two screws which secure the ignition coil wiring harness to the top of the valve cover, then disconnect the electrical connectors from each coil and swing the harness out of the way.

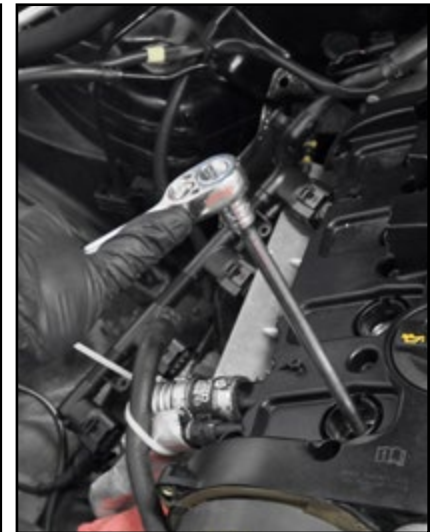


Step 3: Ignition Coil Puller Kit, Spark Plug Socket & Ratchet

Gently pull upwards on the four ignition coils and remove them from the engine, then loosen and remove all four spark plugs.

TECH TIP

Inspect the spark plug tubes for any signs of oil or dirt BEFORE removing the spark plugs, then blow out any contaminants with compressed air.

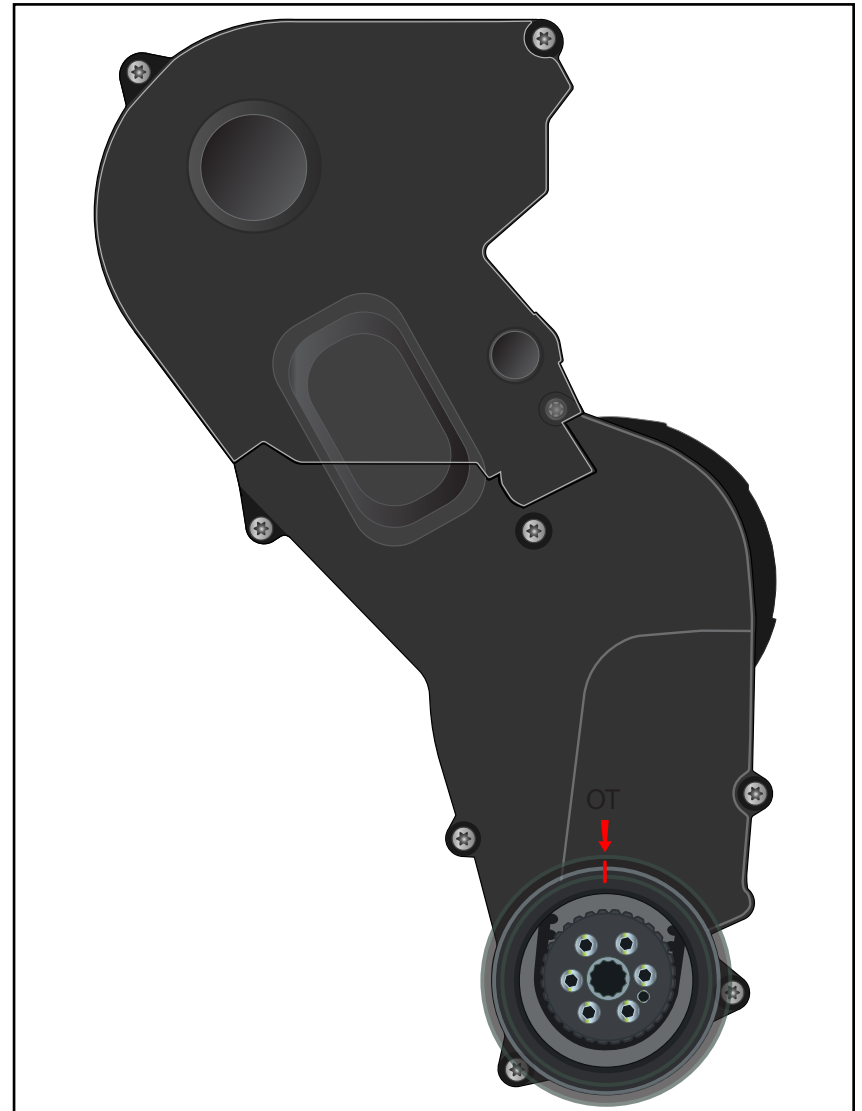


REMOVING THE ORIGINAL CRANK PULLEY

Step 4: 19mm Twelve Point Socket & Ratchet

We suggest at this point in the installation that you set the engine so that cylinder #1 is at "Top Dead Center" (TDC), though we will not be altering the engine timing in any way during this install. If the engine is set to #1 TDC now, you will be able to easily confirm that the new crank pulley is installed properly by confirming that the timing marks are aligned.

To set the engine to #1 TDC, use a socket and ratchet on the **CRANKSHAFT BOLT** to rotate the crankshaft **CLOCKWISE** until the crankshaft timing marks are lined up with the timing mark on the lower timing cover. Please refer to the diagram shown on the right for a detailed layout of the timing covers and timing marks.



REMOVING THE ORIGINAL CRANK PULLEY

Step 5: Large Flat Blade Screwdriver

Enlist the help of a friend, have that friend insert a screwdriver through the access hole located where the transmission meets the engine, and use the blade of the screwdriver to hold the flywheel in place.



Step 6: M10 Triple Square/6mm Allen Bit Socket & Ratchet

While the flywheel is being held, loosen but DO NOT remove the bolts which secure the crank pulley to the crankshaft. Once all six bolts are loose, double check your crank timing mark to ensure the engine is still at #1 TDC. Once the timing mark is confirmed to be lined up correctly, remove the crank pulley bolts, then remove the crank pulley by wiggling it back and forth while pulling it off the end of the crankshaft.

TECH TIP

Depending on your vehicles manufacturing date these bolts may be M10 Triple Square or 6mm Allen, use a mirror and a flashlight in order to determine which tool is required for your application.



INSTALLING THE NEW CRANK PULLEY

Step 1:

Locate and identify the locating bump on the end of the crankshaft (left photo) and the corresponding locating hole in the crankshaft pulley (right photo). Install the crankshaft pulley onto the crankshaft, ensuring that all six mounting bolt holes are lined up, and that the locating bump is inside the locating hole in the pulley.



Step 2: 6mm Allen Bit Socket & Torque Wrench

Hand tighten all six mounting bolts in the crankshaft pulley, then confirm that the timing mark lines up with the mark on the timing cover (left photo).

Once the timing mark is confirmed to be lined up correctly, hold the flywheel in place in the same manner as when we removed the crank pulley, then install the six included crankshaft pulley bolts and torque them to 10 Nm + 90 Degrees.



INSTALLING THE NEW CRANK PULLEY

Step 3: 17mm Combination Wrench, 13mm Socket & Torque Wrench

Reinstall the accessory belt, refer to the diagram on [Page 8](#) for belt routing instructions.

Reinstall the spark plugs and ignition coils.

Reinstall the lock carrier in reverse order of removal.

Reinstall the intake duct.

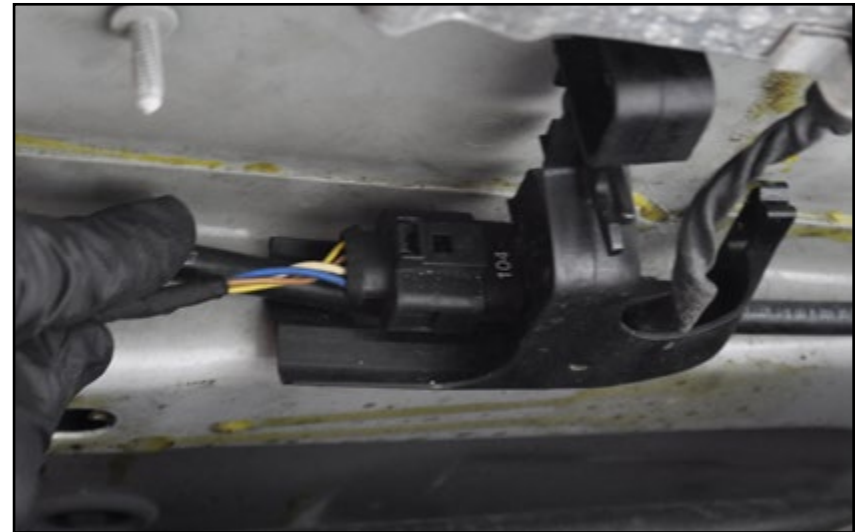
Reinstall the belly pan.



USING THE VAG CONNECTOR TOOL

Step 1:

These connectors are commonly referred to as “Push and Pull” connectors, in reference to the method used to disconnect them.



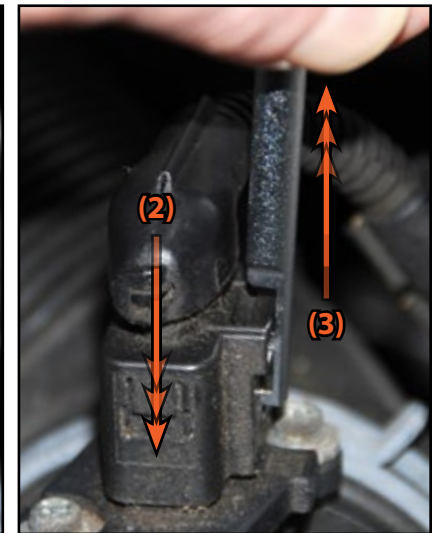
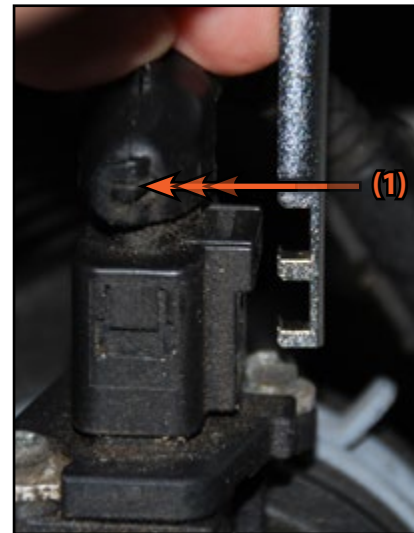
Step 2: VAG Connector Tool

To disconnect one of these connectors, follow this procedure:

1. Engage the connector release tool into the connector housing.
2. Push inward gently on the connector.
3. While holding pressure inward on the connector, pull up on the handle of the release tool.
4. Pull the connector off of the component.



To return to the Lock Carrier Service Position Instructions, simply click [HERE](#).



TORQUING TIPS

Torque to Yield or "Stretch" Bolts

Many bolts will have a torque specification listed in the format - xx Nm (xx Ft-lbs) + xx degrees. These bolts are torque to yield bolts, commonly referred to as "stretch" bolts. The correct procedure for torquing these bolts is:

Stage One - Torque the bolt(s) to the initial Nm or Ft-lb specification. If there is more than one, be sure to torque them in the correct sequence.

Stage Two - Tighten or "stretch" the bolt(s) the additional specified number of degrees. If there is more than one, be sure to follow the correct sequence.

Note - Some bolts may have two or more stages of torquing before the final stage of "stretching" the bolts.

When tightening more than one bolt in a specified sequence, be sure to mark each fastener with paint **immediately** after performing the final stage or "stretching" of the bolts. This will ensure that you keep track of which bolts have already been "stretched".

All Torque to Yield bolts should only be used once and should be replaced each time they are removed. If they are reused, they will not be able to achieve the proper clamping force with the specified torque.

Lubrication

Torque specifications are always listed for a dry fastener (**no** lubrication) unless specified otherwise.

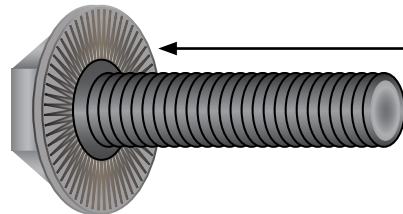
Some fasteners require lubrication on the threads -or- on the the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

Lubricating a fastener that is intended to be installed dry and then torquing it to factory specifications will increase the clamping force and stress on the fastener and components, which can result in damage or failure.

Do not lubricate the threads of any fastener unless it is specifically recommended by the manufacturer.

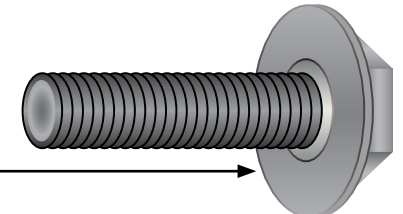
Ribbed vs. Non-Ribbed Bolts

Ribbed and Non-Ribbed bolts in the same location generally require a different torque specification.

















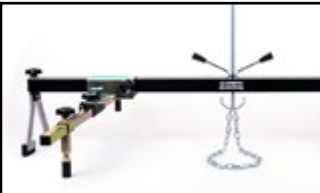



A ribbed bolt is identified by the ribs on the contact surface

A non-ribbed bolt is identified by the smooth contact surface



SCHWABEN - BUILD THE ULTIMATE TOOL COLLECTION

At ECS Tuning, we carry a line of high quality Schwaben Tools and Equipment to help you build your ultimate tool collection. Never before has affordability and quality been so closely related. Our entire Schwaben line is subjected to strict in house testing for strength and durability. See what we have to offer and equip your garage without breaking the bank.

					
	<ul style="list-style-type: none"> Breaker Bar Creepers Gloves Engine Bars Screwdrivers Pressure Bleeders Lighting Pry Bars Coil Spring Compressors Camber Gauge Hose Pinch Pliers Wheel Bolt Pattern Gauge Ball Joint Separator Vanos Solenoid Socket 	<ul style="list-style-type: none"> Scraper, Hook, & Pick Set Camshaft Tools Fan Clutch Wrenches Tie Rod Tools Brake Fluid Catch Bottle Tubing Cutter Booster Cables Oil Filter Tools Service Carts Battery Charger Stethoscope Battery Terminal Brush Wheel Chocks Torx Sockets 	<ul style="list-style-type: none"> Sockets E-Drive Sockets Car Ramps Torx Drivers Jack Stands Circuit Tester Ratchets Exhaust Hanger Pliers Bubble Flaring Tool Thread Chaser Drain Pans Wrenches Impact Sockets Torque Wrenches 		
					
					
					

Your Audi B7 A4 2.0T ECS Lightweight Underdrive Crank Pulley Kit installation is complete!



These instructions are provided as a courtesy by ECS Tuning

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