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Supercharger Reduction Pulley Install Instructions for MINI Cooper S

Part Numbers: 163988, 163966, or 164003

ATTENTION! READ THIS FIRST!

Parts that have been drilled, painted, altered, or installed are not returnable. This product is moderate to difficult to install. However since each persons mechanical ability does vary, please read these instructions completely prior to starting the project. This install requires the Pulley Removal Kit(Part # 157970) which can be rented and the reduced length drive belt(Part # 157848). Most installation takes between 2 and 4 hours. If you have any doubt in your ability or lack of tools, we recommend having this work performed by a professional mechanic.

Parts Required:

- 1 Taper Bore Hub (included in kit)
- 1 Pulley (included in kit)
- 6 Allen Bolts (included in kit)
- 1 Reduced Length Drive Belt (Part # 157848)
- 2 Hose Clamps (included in kit)

Tools Required:

- 1 10mm Socket
- 1 16mm Socket
- 1 18mm Socket
- 1 19mm Socket
- 1 13mm Wrench
- 1 #25 Torx Driver
- 1 8mm Allen Wrench
- 1 5/32" Allen Socket
- 1 Flat Blade Screwdriver
- 1 Phillips Screwdriver
- 1 Torque Wrench (capable of 60 inch/lbs of torque)
- 1 Car Jack
- 2 Jack Stands
- 1 2 Foot 2x8 Board
- 1 Blue Loctite
- 1 Pulley Removal Rental Kit (Part # 157970)

Technical Service

For any technical advice concerning this product or its' installation, call our Technical Support Line at (903) 581-1371.



Figure 1

Step 1: Disconnect Battery

Do not close your rear hatch after disconnecting the battery as power is required for the rear latch to operate. Use a small towel to cover the lower latch and lower the hatch onto the towel.

Tools: 10mm Socket

Step 2: Jack Up Car

Jack up vehicle using factory jack points and making sure to use jack stands to safely hold your vehicle. Consult your owners manual for proper jack points.

Tools: Jack and Two Jack Stands

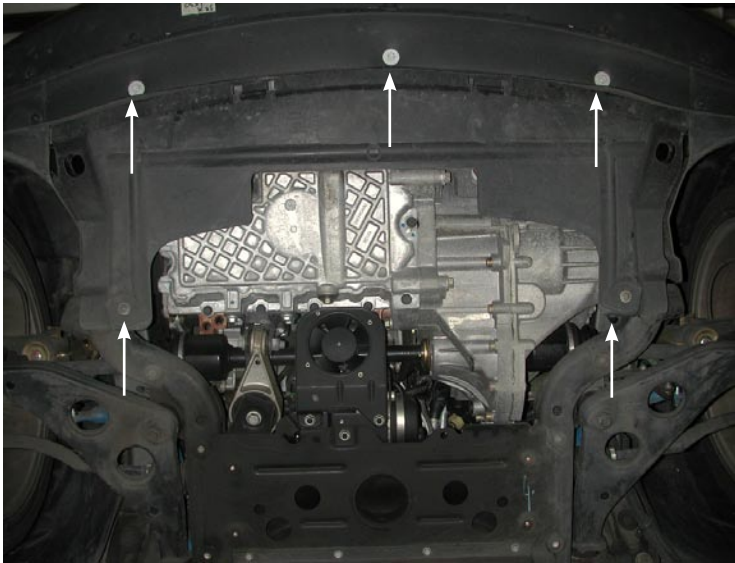


Figure 2

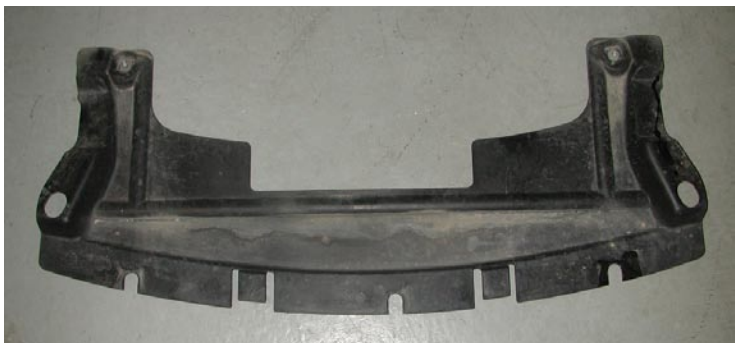


Figure 3

Step 3: Remove Skid Plate, Bolts, and Screws

Remove skid plate bolts and screws.

Tools: 10mm Socket and Phillips Screwdriver



Figure 4

Step 4: Remove Lower Engine Mount Bolt

Tools: 16mm Socket

Step 5: Lower Car

Lower car off of jack and jack stands.

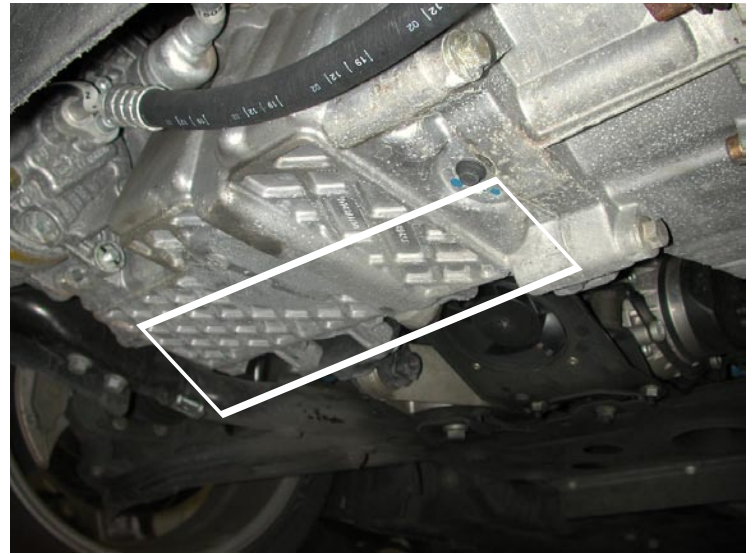


Figure 5



Figure 6

Step 6: Position Jack

Put jack in place under oil pan. Use a board to distribute the load and align near the rear edge of oil pan making sure not to come into contact with the power steering pump fan. Jack up until board is snug under oil pan but has not yet started to lift engine.

Tools: Car Jack and 2 Foot 2x8 Board



Figure 7

Step 7: Remove Intake Boot Clamp

Remove intake boot clamp from upper air filter housing. If you have an aftermarket intake you will need to remove the clamp that was provided with that intake. If you have a stock intake, you need to use the flat blade screwdriver to gently pry apart the factory fixed clamp. Included in the kit is an extra hose clamp to replace the factory hose clamp.

Tools: Flat Blade Screwdriver

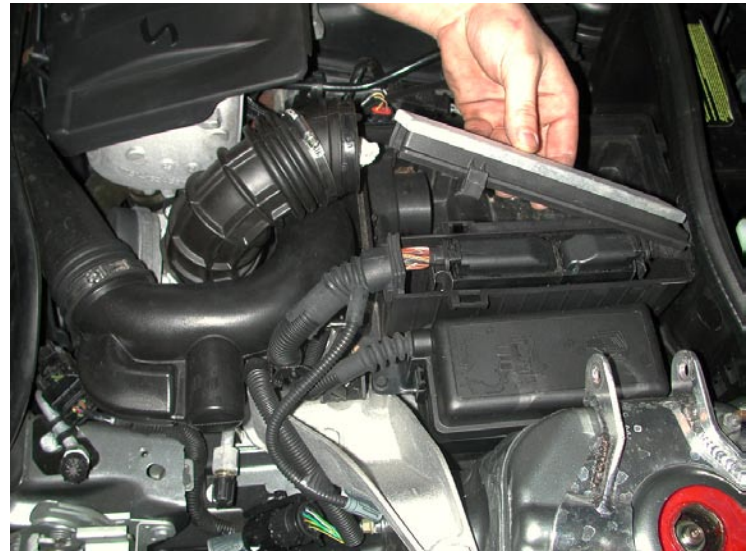


Figure 9

Step 9: Remove ECU Cover

Remove ECU cover by depressing the clip on each side.



Figure 8

Step 8: Remove Upper Air Filter Housing

Remove upper air filter housing by sliding off battery conjunction block and removing two torx screws at front of the upper air filter housing. Place a clean rag inside of the intake boot to keep foreign objects from entering.

Tools: #25 Torx Driver



Figure 10

Step 10: Remove ECU Cable

Remove ECU cable by releasing the two clips by pulling back and then lifting the cable up to disconnect.



Figure 11

Step 11: Remove Lower Air Filter Housing Bolt

Tools: 10mm Socket

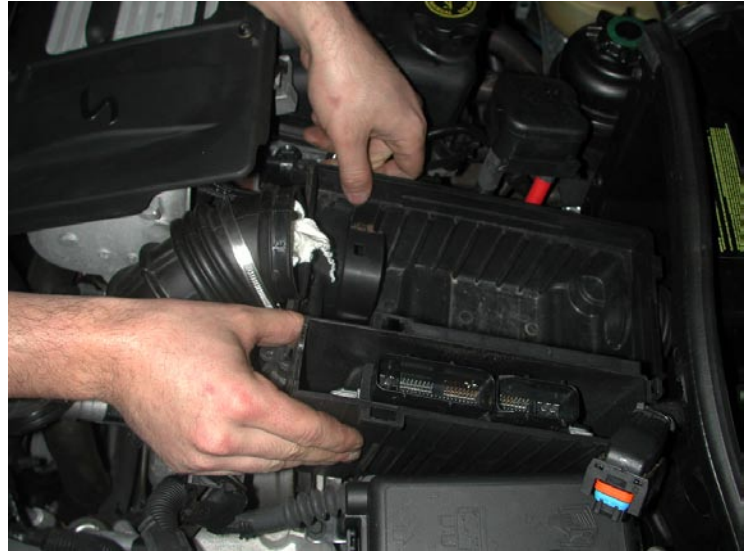


Figure 13

Step 13: Remove Lower Air Filter Assembly



Figure 12

Step 12: Remove Intake Snorkel and Clamp



Figure 14



Figure 15

Step 14: Remove Canister Purge Valve

Remove canister purge valve by depressing clip on each end and disconnect the wire.

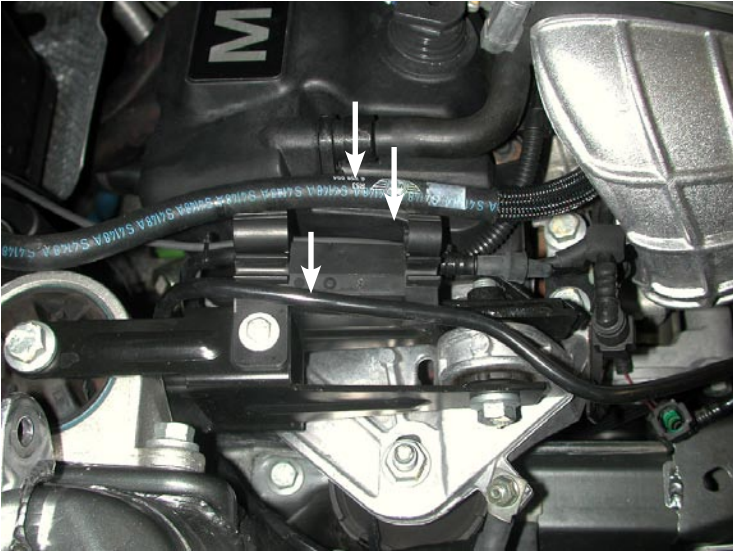


Figure 16

Step 15: Remove Fuel Lines from Holder

Three lines total, two on the topside and one on the bottom.



Figure 18

Step 16: Remove Engine Mount Bracket Bolts

Remove lower and upper bolts from engine mount bracket.

Tools: 16mm Socket



Figure 17

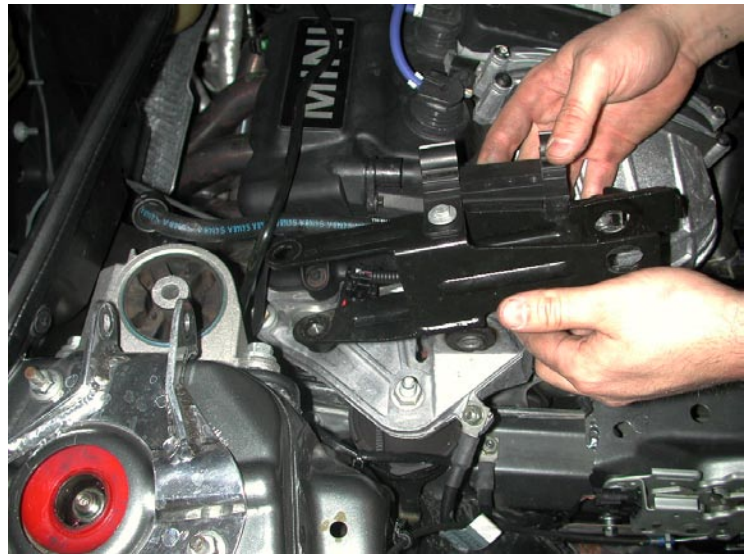


Figure 19

Step 17: Remove Bracket



Figure 20

Step 18: Disconnect Water Hose Mounting Clamp

Disconnect water hose mounting clamp at front of intake manifold.

Tools: 10mm Socket



Figure 22

Step 20: Disconnect Ground Strap

Disconnect top end of ground strap by removing bolt.

Tools: 13mm Wrench



Figure 21

Step 19: Unclip Knock Sensor Wire

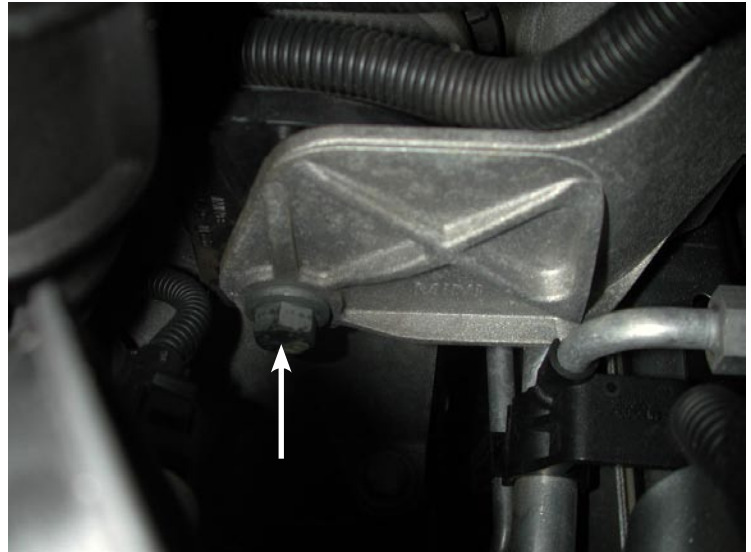


Figure 23

Step 21: Remove Transmission Mount Bolt

Tools: 16mm Socket

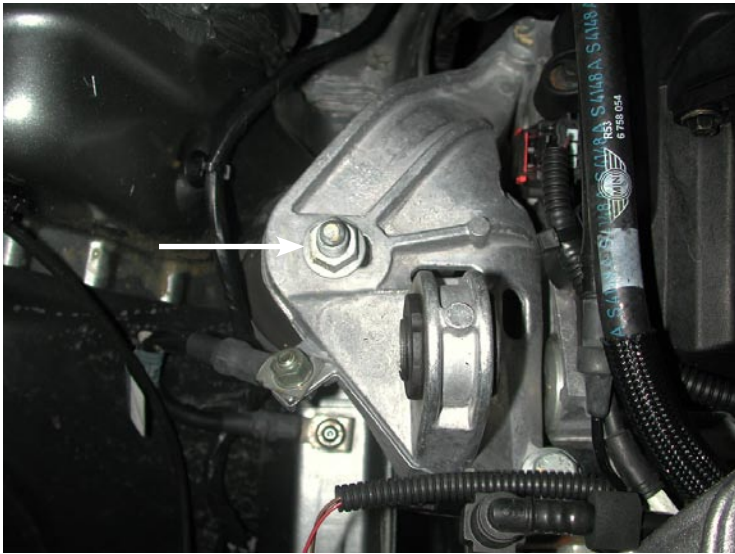


Figure 24

Step 22: Remove Upper Engine Mount Bolt

Tools: 18mm Socket



Figure 26

Step 24: Compress Belt Tensioner

Place belt tensioner tool in place. Fits over front bolt on the belt tensioner and two holes at rear of belt tensioner. Pull back until second hole in spring strap is visible and place small pin supplied with pulley rental kit or a small Allen wrench into hole. Slowly release belt tensioner tool to transfer load onto pin.

Tools: Belt Tensioner Tool and Pin

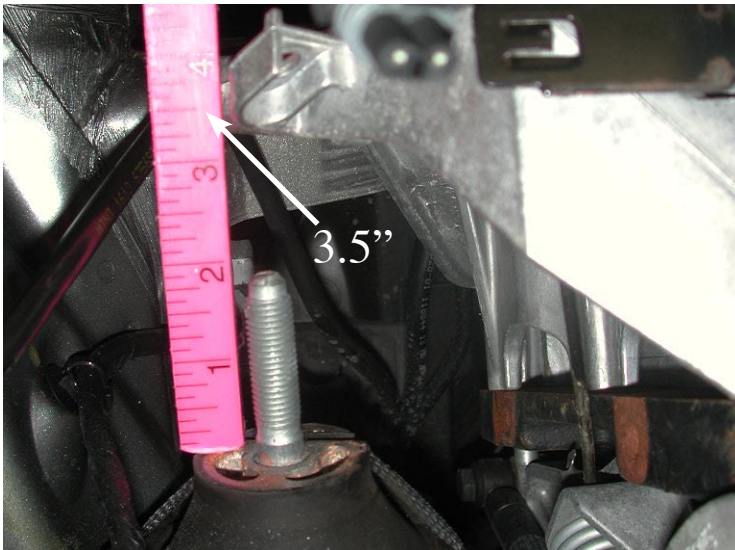


Figure 25

Step 23: Slowly and Carefully Jack Up Engine

When jacking up engine, make sure that the crank vibration dampener pulley does not come into contact with the frame rail and that nothing is binding or is still attached that shouldn't be. Distance from upper rubber engine mount to bottom of fixed engine mount is approx 3.5". Goal is to jack up engine just enough to properly fit pulley removal tool.

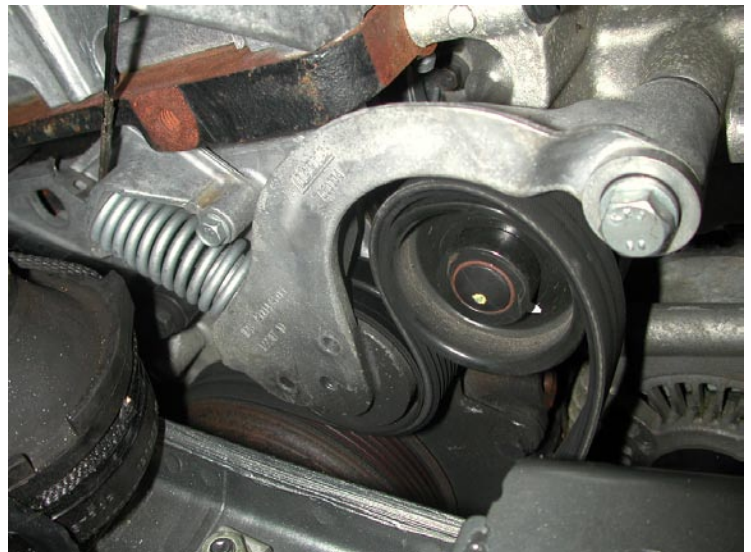


Figure 27

Step 25: Remove 4 Belt Tensioner Bolts

Remove four bolts illustrated in Figure 28 from the belt tensioner.

Tools: 10mm and 16mm Sockets

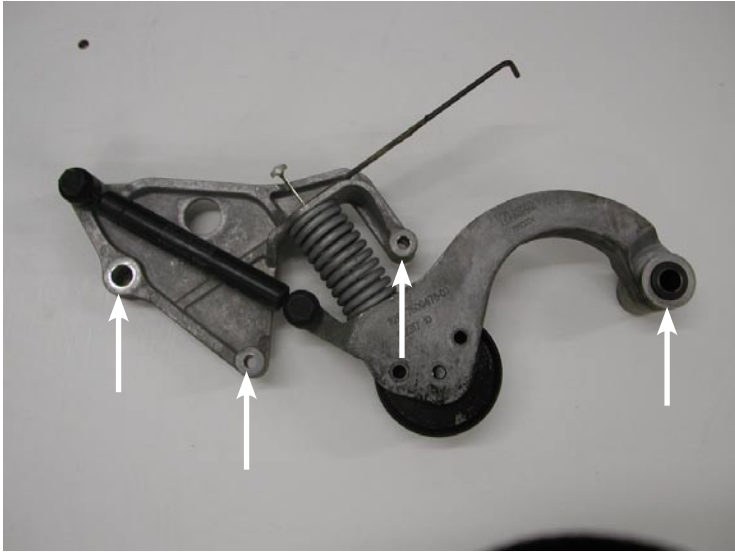


Figure 28

Step 26: Remove Belt Tensioner

Remove belt tensioner making sure pin stays in place.



Figure 29

Step 27: Slide Drive Belt Off Supercharger Pulley

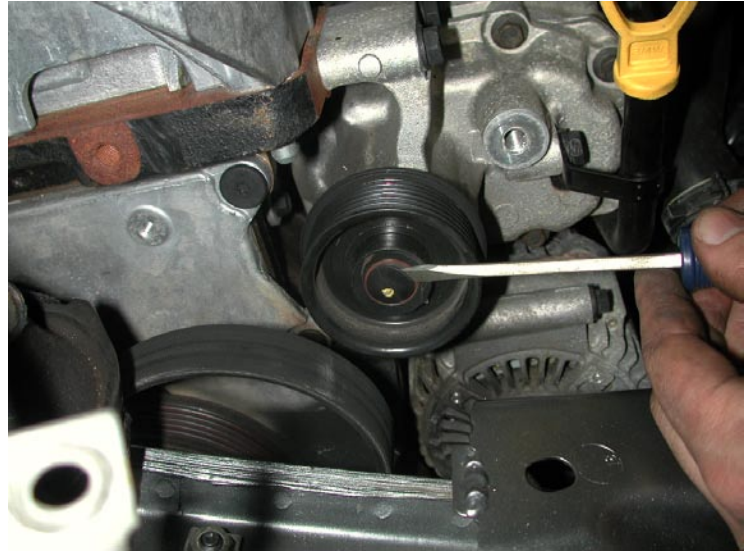


Figure 30

Step 28: Remove Center Cap from Supercharger Shaft

Remove center cap on pulley by using flat head screwdriver to pry out enough so you can unscrew it by hand.

Tools: Flathead Screwdriver

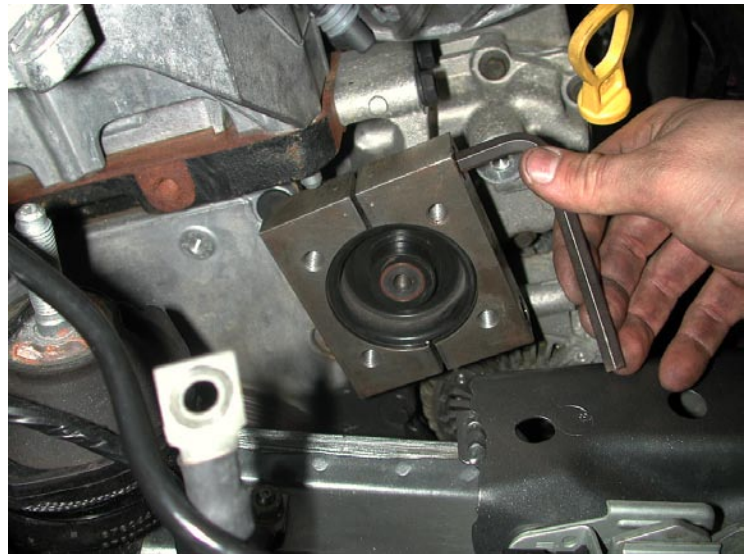


Figure 31

Step 29: Install Pulley Removal Plate

Install pulley removal plate supplied with pulley removal tool over pulley and tighten down with two supplied bolts.

Tools: 8mm Allen Wrench

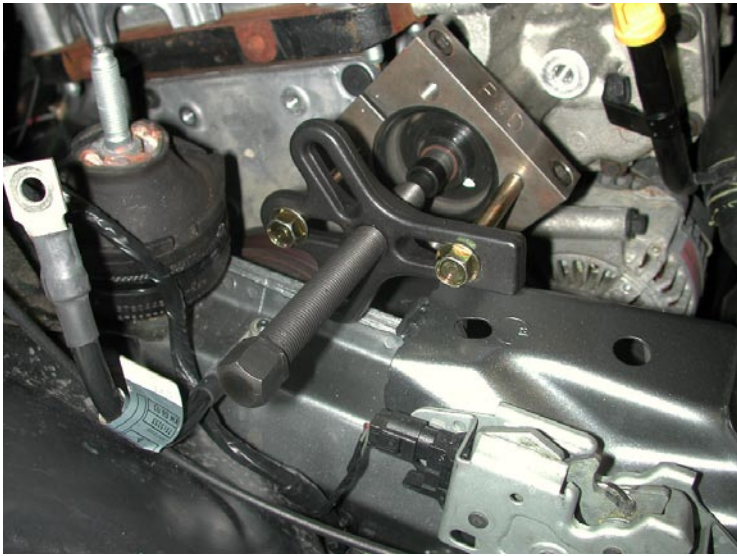


Figure 32

Step 30: Finish Installing Pulley Removal Tool

Install the rest of the pulley removal tool using two supplied bolts. Make sure puller part of tool is above the frame rail.

Tools: 19mm Socket

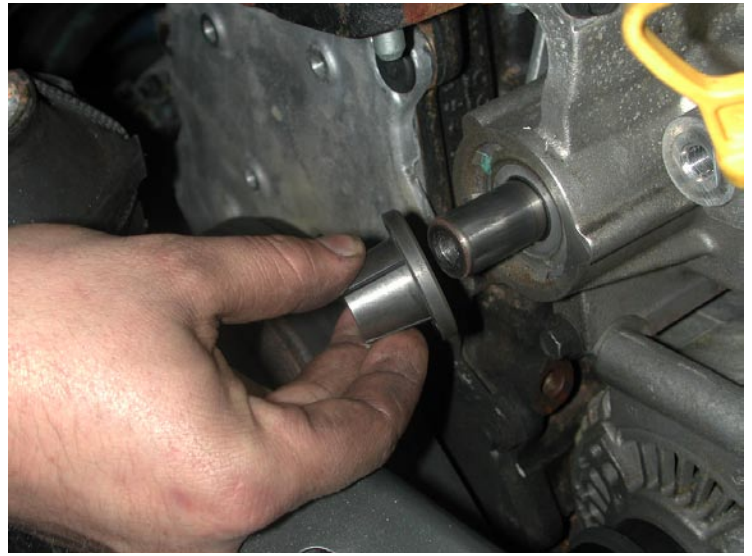


Figure 34

Step 32: Install New Pulley Hub

Slide new pulley hub onto supercharger shaft.

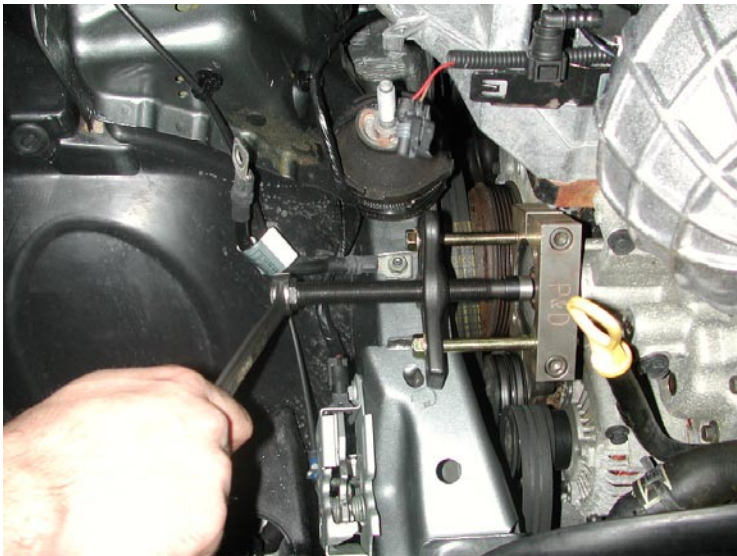


Figure 33

Step 31: Remove Stock Supercharger Pulley

Turn shaft on pulley removal tool clockwise until pulley has slid completely off the supercharger shaft. While turning, make sure the center shaft on pulley removal tool stays centered on the supercharger shaft. Make sure supercharger shaft is smooth and free of any burrs. If needed, smooth the supercharger shaft with single cut flat file.

Tools: 19mm Socket

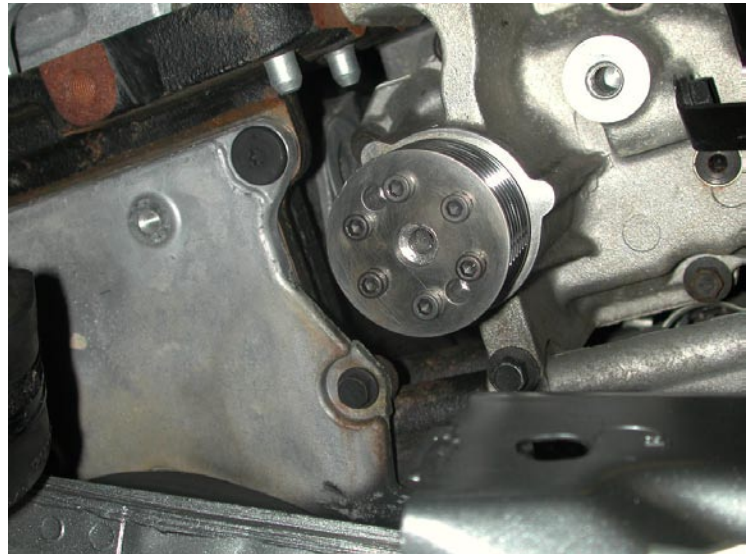


Figure 35

Step 33: Install New Pulley

Place new pulley over hub until inside end of pulley touches the end of the supercharger shaft.

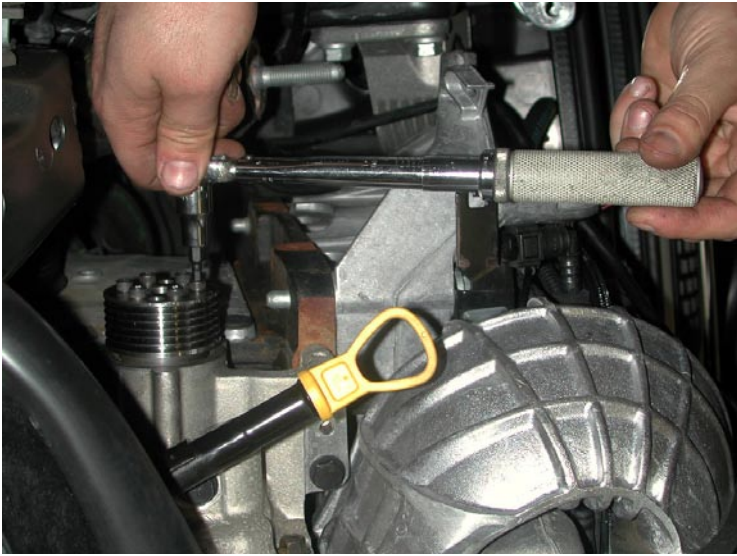


Figure 36

Step 34: Tighten Down Pulley on Hub

Apply a drop of blue loctite onto end of the threads on the six supplied 5/32 Allen bolts. Thread in the six bolts into pulley making sure they go into the pulley hub. Using an Allen socket and torque wrench, evenly tighten the six bolts to 60 inch/lbs of torque.

Tools: 5/32" Allen Socket, Blue Loctite, and Torque Wrench (capable of 60 inch/lbs of torque)

Step 35: Reinstall Center Cap on Supercharger Shaft

See Figure 30

Step 36: Reinstall Belt Tensioner

Reinstall belt tensioner making sure the pin stays in place. The longer 16mm bolt goes on front.

Tools: 10mm and 16mm Sockets

See Figures 27 & 28

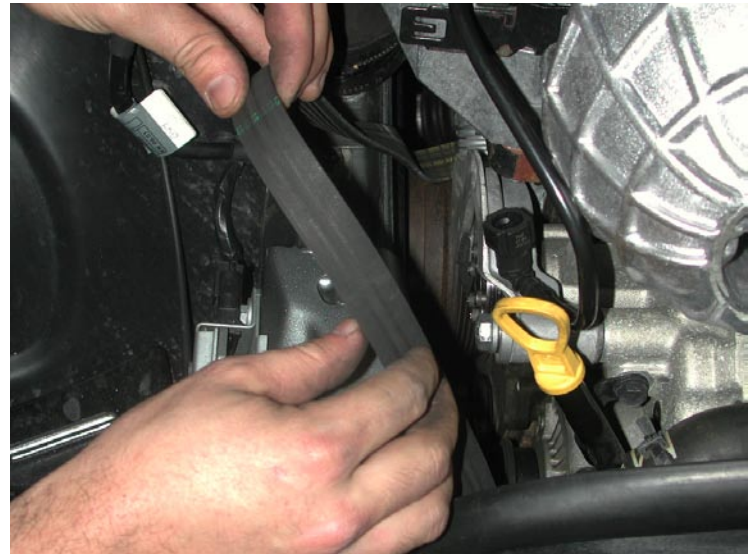


Figure 37

Step 37: Remove Stock Belt

You may have to slightly lower the car to provide a bit more clearance between the crank vibration dampener pulley and the frame rail so there is room to slide the belt out.

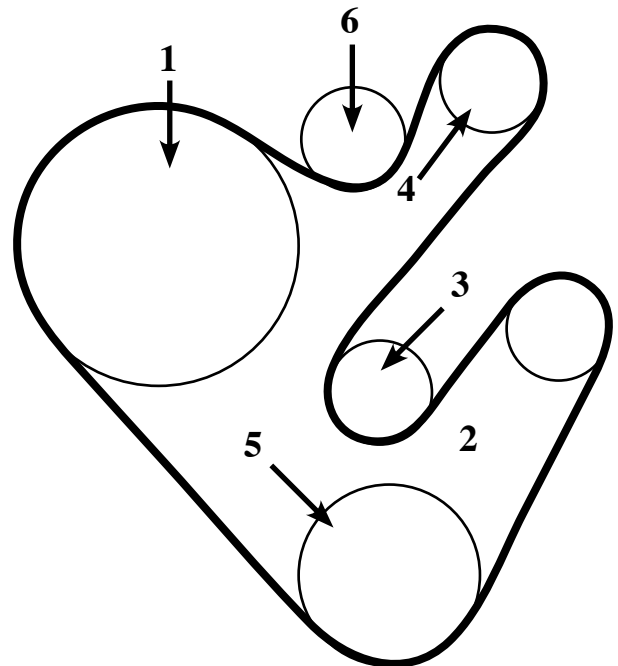


Figure 38

Step 38: Install New Drive Belt

Install new belt supplied with pulley kit according to the diagram. Make sure all belt and pulley grooves line up. In the diagram the following numbers represent: 1) Crankshaft pulley, 2) Alternator, 3) Idler, 4) Supercharger pulley, 5) Air conditioning compressor, 6) Tensioner roller.



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Step 39: Uncompress Belt Tensioner

Using belt tensioner tool, compress tensioner slightly to remove pin from second hole. Slowly release pressure from the tensioner tool.

See Figure 26

Step 40: Lower Engine

Slowly lower engine making sure upper engine mounts and transmission mounts are aligning.

Step 41: Reinstall Transmission Mount Bolt

You may have to use the jack to help position the engine so that the transmission mount lines up and the bolt can be installed.

Tools: 16mm Socket

See Figure 23

Step 42: Reinstall Upper Engine Mount Bolt

Tools: 18mm Socket

See Figure 24

Step 43: Clip Knock Sensor Wire Back in Place

See Figure 21

Step 44: Reconnect Water Hose Mounting Clamp

Reconnect water hose mounting clamp at front of intake manifold.

Tools: 10mm Socket

See Figure 20

Step 45: Reconnect Ground Strap

Reconnect top end of ground strap with bolt.

Tools: 13mm Wrench

See Figure 22

Step 46: Reinstall Engine Mount Bracket

Reinstall engine mount bracket with lower and upper bolts.

Tools: 16mm Socket

See Figures 17, 18 & 19

Step 47: Reinstall Fuel Lines in Holder

Three lines total, two on the topside and one on the bottom.

See Figure 16

Step 48: Reinstall Canister Purge Valve

Reinstall canister purge valve by pushing in clip on each end and reconnect wire.

See Figures 14 & 15

Step 49: Reinstall Lower Intake Assembly

You may have to reinstall rubber seal at the back of lower intake assembly as well.

See Figure 13

Step 50: Reinstall Intake Snorkel And Clamp

Tools: Flat Blade Screwdriver

See Figure 12

Step 51: Reinstall Lower Intake Assembly Bolt

Tools: 10mm Socket

See Figure 11

Step 52: Reinstall ECU Cable

Reinstall ECU cable by pushing down and then pushing two clips at front forward.

See Figure 10

Step 53: Reinstall ECU Cover

Reinstall ECU cover by pushing down until it snaps back into place making sure that ECU cables line up correctly on ECU cover.

See Figure 9

Step 54: Reinstall Upper Air Filter Housing

Reinstall upper air filter housing reinstalling the two torx screws at front of the upper air filter housing. Reinstall battery conjunction block to side of upper air filter housing.

Tools: #25 Torx Driver

See Figure 8

Step 55: Reinstall Intake Boot Clamp

Remove clean rag from inside of the intake boot.

Tools: Screwdriver

See Figure 7

Step 56: Jack Up Car

Jack up vehicle using factory jack points and making sure to use jack stands to safely hold your vehicle. Consult your owners manual for proper jack points.

Tools: Jack and Two Jack Stands



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Step 57: Reinstall Lower Engine Mount Bolt

Tools: 16mm Socket

See Figure 4

Step 58: Reinstall Skid Plate

Reinstall skid plate with bolts and screws. There is three bolts in the front and two screws in the back.

Tools: 10mm Socket and Phillips Screwdriver

See Figure 2

Step 59: Lower Car

Lower car off of jack and jack stands.

Step 60: Reconnect Battery

Tools: 10mm Socket

See Figure 1

Step 61: Reset Throttle

Reset throttle by turning ignition key to position 2 for 10 seconds

Step 62: Start Car

Start car and perform visual inspection of belt movement.

Step 63: Redo Visual Inspection with Car Off

Turn car off and redo visual inspection making sure everything looks sound.

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