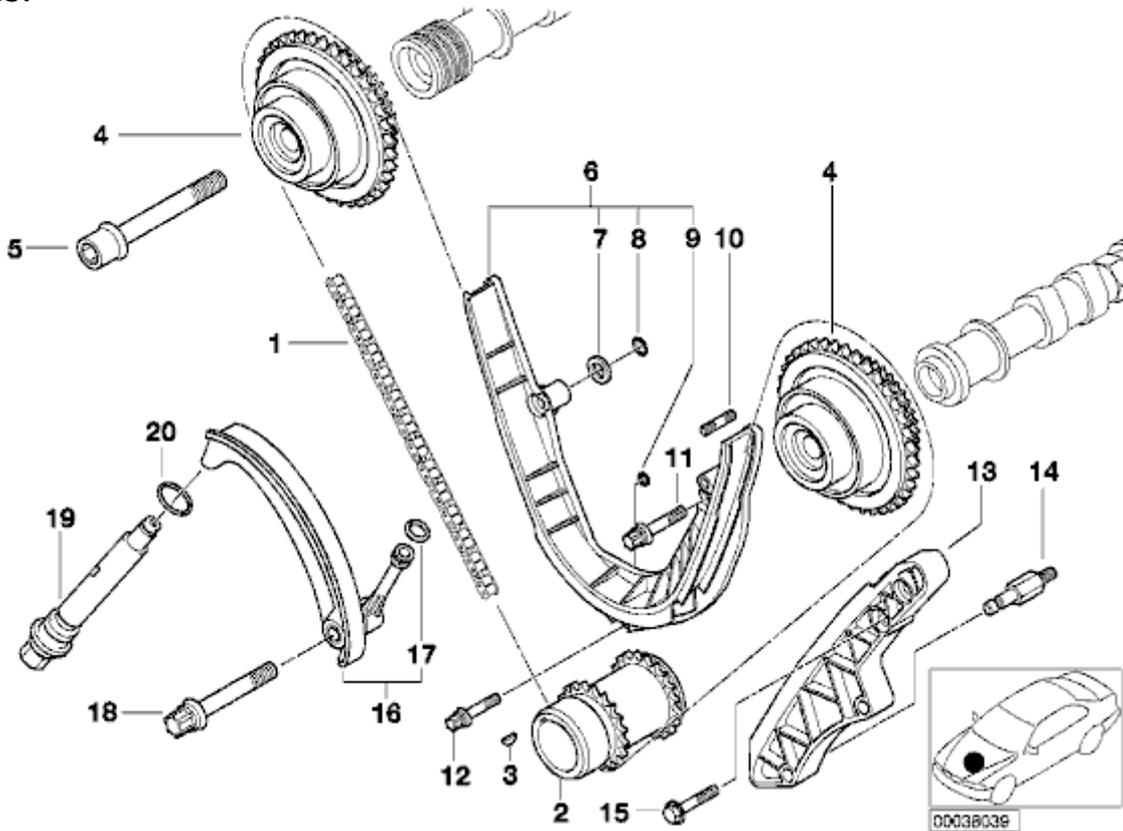


## E39 540i - M62TU Timing Chain plastic guide disintegration

540i Brethren,

We are discussing on one of the boards the frequency of repairs that are starting to show up related to the plastic timing chain rails starting to disintegrate at around 100-120k miles.



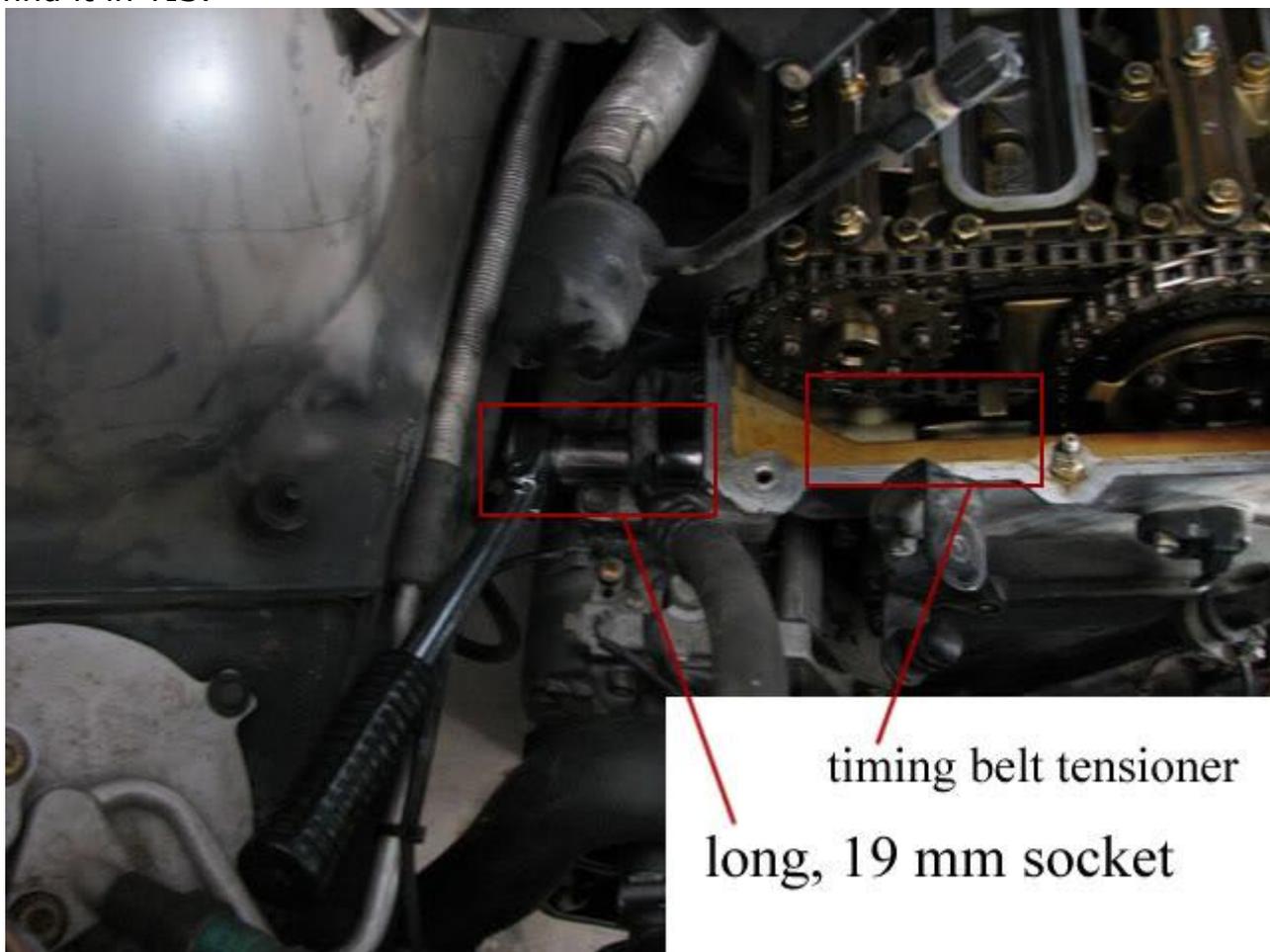
(Photo from unknown in the original thread)

I searched Fest to look for similar threads, and while there are, none seemed to be a pointed question to this particular failure situation. So, I thought to consolidate some observations and pose the question in this thread.

Aside discussing BMW using plastic in this key area, , we are talking about how to repair, is there a preventative action and is there a pattern as far as time or usage that contributes to this type of failure. Other factors like oil additives may impact internal plastic as well.

If anyone knows of a M62 specific DIY for the repair or maintenance, please share it. We've searched and only found DIYs for E36 models. A number of us will sort out how problematic this actually is for our motors and assemble a parts list and DIY to help folks out.

BTW, if someone has replaced the main chain tensioner on the M62TU, do you recall what the torque spec is for that tensioner? Bentley dosen't cover the Vanos V8 and I could not find it in TIS.



(Photo courtesey of plik)

If you're interested in reading more about this, here's the thread.

<http://forums.bimmerforums.com/forum....php?t=1216256>

Thanks in advance for any information you all may have to share with us. Another potential 100k maintenance item for our cars...

## **E39 Cabin Filter Housing Procedure**

*The following information is provided for reference purposes only and should be used at your own risk. In no event shall Beisan Systems, LLC or its members be liable for incidental, consequential, or special loss or damages of any kind however caused.*

## Cabin filter housing removal

### Left cabin filter housing removal



Remove housing cover by prying forward cover wire clip then pulling up on cover from front. Disconnect housing strut tower mount spring clip. Press in on clip ends and wiggle clip off.



Disconnect duct from filter housing.  
Pry 3 air duct bracket tabs off filter housing bracket (flathead). Rotate duct off filter housing.



Remove cabin filter housing and air duct from engine compartment.  
Pull right side of filter housing up and away from front fender. Note positioning of filter housing upper left rear frame under and behind cowl frame.  
Remove air duct by turning clockwise and pulling out.

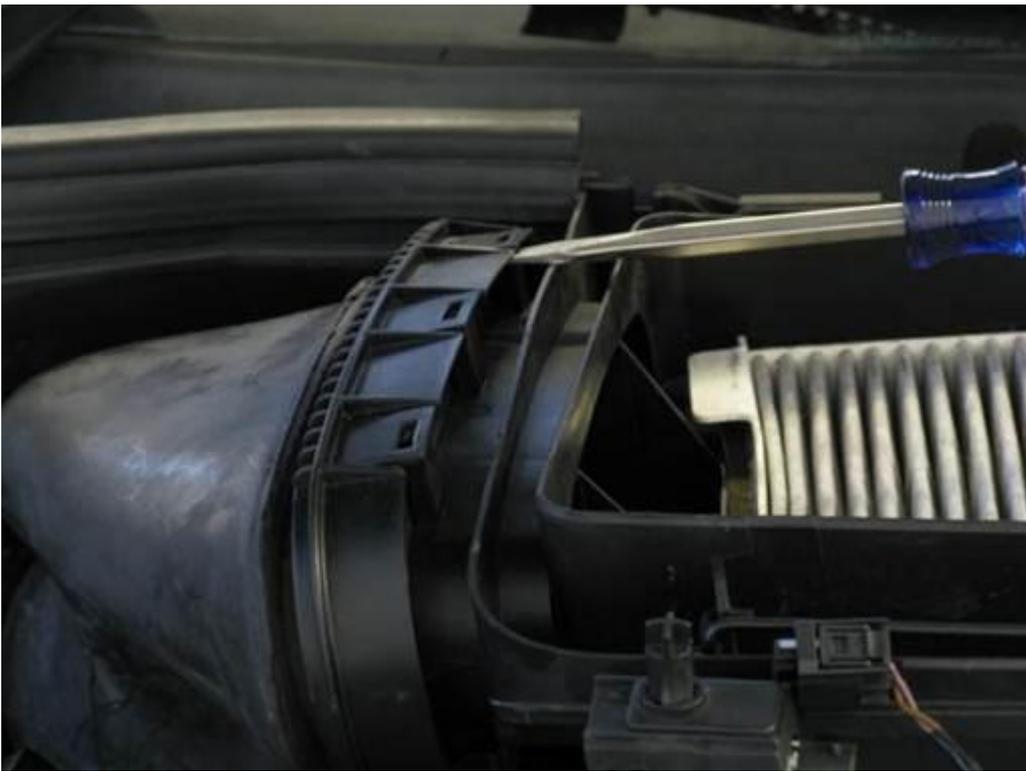


Left hand drive cars: Fill sides of DME box (under cabin filter housing) with cloth towels. This prevents tools and parts from falling to side of box and be trapped under box.

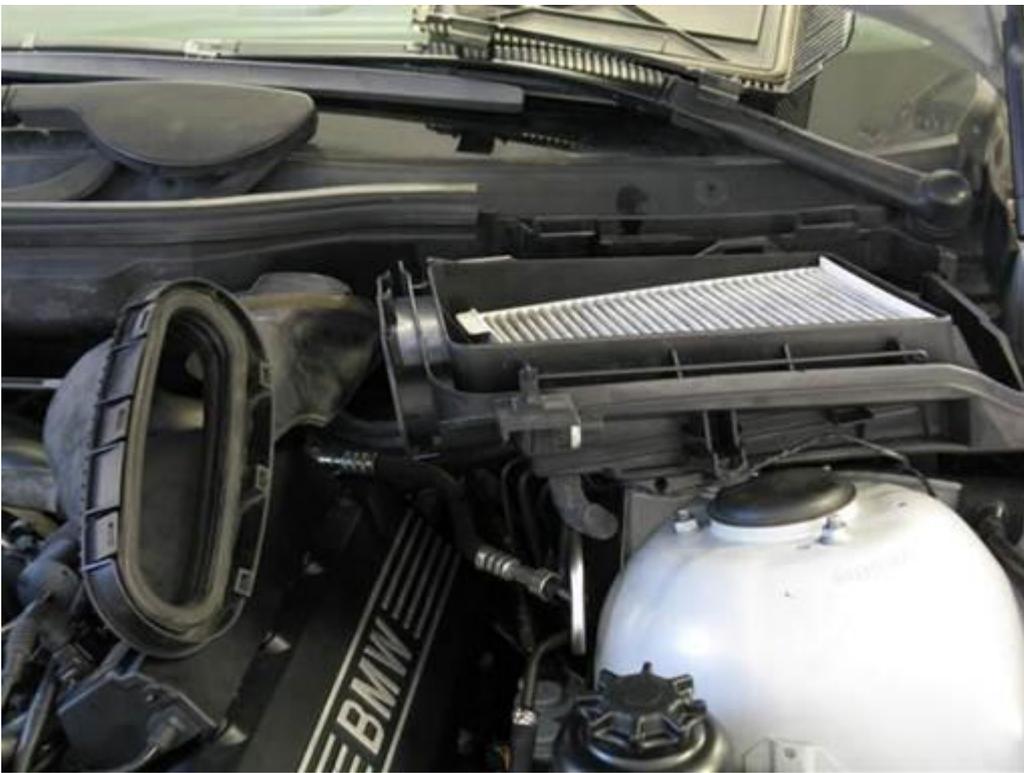
Right cabin filter housing removal



Remove housing cover by prying forward cover wire clip then pulling up on cover from front. Disconnect housing strut tower mount spring clip. Press in on clip ends and wiggle clip off.



Disconnect duct from filter housing.  
Pry 3 air duct bracket tabs off filter housing bracket (flathead). Rotate duct off filter housing.



Remove cabin filter housing and air duct from engine compartment.

Pull left side of filter housing up and away from front fender. Note positioning of filter housing upper right rear frame under and behind cowl frame.

Remove air duct by turning counter clockwise and pulling out.

### Cabin filter housing installation

#### Left cabin filter housing installation

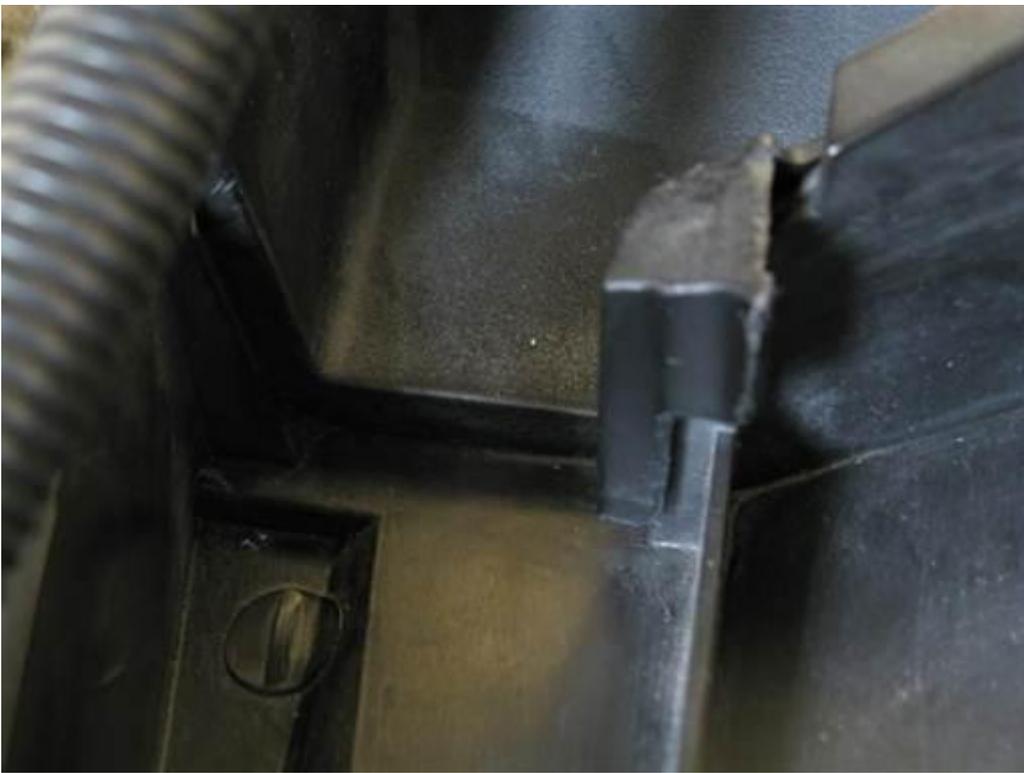


Install cabin air duct.

Install duct by rotating clockwise from installation position, inserting into firewall access, pressing in and turning duct counter clockwise to hook onto studs.

Note: For proper insertion, align duct foam boot to mate flush with firewall opening (angled).

Note: If mounting is difficult, spray lubricant on firewall rubber boot (water based cleaner).



Mount cabin filter housing.

Tilt housing right side up and insert housing air duct into fender access hole. Position housing rear left top frame behind cowl frame for proper alignment. Lift up on cowl frame as needed.

Place windshield fluid hose, running along fender, under housing weather strip.

Fully insert housing duct into fender, align housing rear slots with cowl tabs, and lower housing right side. Insert housing lower mount bracket onto strut tower mounting stud.



Install filter housing strut tower mount spring clip. Press in and wiggle clip onto strut tower stud.

Turn air duct to mate with housing. Slide duct bracket bottom onto housing then snap duct bracket top three clips onto housing tabs.

Install housing cover and snap on retaining wire clip.

Right cabin filter housing installation



Install cabin air duct.

Install duct by rotating counter clockwise from installation position, inserting into firewall access, pressing in and turning duct clockwise to hook onto studs.

Note: For proper insertion, align duct foam boot to mate flush with firewall opening (angled).

Note: If mounting is difficult, spray lubricant on firewall rubber boot (water based cleaner).



Mount cabin filter housing.

Tilt housing left side up and insert housing air duct into fender access hole. Position housing rear right top frame behind cowl frame for proper alignment. Lift up on cowl frame as needed.

Fully insert housing duct into fender, align housing rear slots with cowl tabs, and lower housing left side. Insert housing lower mount bracket onto strut tower mounting stud.



Install filter housing strut tower mount spring clip. Press in and wiggle clip onto strut tower stud.  
Turn air duct to mate with housing. Slide duct bracket bottom onto housing then snap duct bracket top three clips onto housing tabs.  
Install housing cover and snap on retaining wire clip.

## **M62TU Fan & Shroud Procedure**

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### Fan & shroud removal

#### Fan removal



Remove fan, belt static friction method.

Remove fan / fan clutch from water pump shaft.

Place open wrench on fan clutch nut (32mm combo wrench). Place wrench forward on nut to avoid hitting radiator upper hose. Strongly strike wrench side at top with heavy hammer to break nut seize (sledge hammer); left hand thread.

Note: Nut is left hand thread, thus unscrew by hitting wrench top from left to right (car front orientation).

Serpentine belt static friction on water pump pulley facilitates large enough opposing force to break nut seize. It is important to use a heavy hammer to produce a high instantaneous jerk. Several attempts will be needed before nut seize breaks. Rotate open wrench to reposition for better access.

If belt static friction method is not successful, attempt pulley holding tool method.



Remove fan, pulley holding tool method.

Remove fan / fan clutch from water pump shaft.

Position water pump pulley for holding tool access. Water pump pulley has 4 evenly spaced mounting bolts.

Position one of the bolts at just to right of top center (picture) (32mm combo wrench).

Install water pump pulley holding tool onto pulley bolts. Position holding tool at right, and place tool indent curve against fan clutch nut bottom. Mount tool end hole onto pulley bottom left bolt, and tool second hole onto pulley right bolt. Reposition fan clutch nut as needed for better holding tool access (32mm combo wrench) (picture).

Place open wrench on fan clutch nut (32mm combo wrench). Counter hold holding tool and break clutch nut seize (32mm combo wrench); left hand thread.

Note: Nut is left hand thread, thus unscrew by turning wrench from left to right (car front orientation).

If fan clutch nut seize difficult to break, apply lubricant to nut/shaft contact surfaces (spray lubricant).

Once nut seize is broken, remove tools and spin fan blades to unscrew nut; left hand thread.

When nut is close to shaft end, turn fan slowly while continuously holding fan blades. This will keep fan from falling and damaging radiator fins when fully disconnected.



Pull up on fan / fan clutch and remove from engine bay.

Shroud removal



Remove rivet at each top corner of fan shroud. Pry out rivet center pin (tack lifter), then fully pry out rivet from base (tack lifter).



Remove AUC (smell) sensor from fan shroud left bottom just below expansion tank.  
Push AUC to left and lift up on AUC left side to remove left mount.  
Push AUC to right and lift up on AUC right side to remove right mount.  
Allow AUC to hang from its electrical cable.



If present, remove coolant level sensor electrical connector at bottom of coolant expansion tank.  
Press in tab at connector bottom and pull off connector.



Remove retaining plastic clip at expansion tank bleed screw. Press in at both side tabs and lift up (2 flatheads).  
Note: Unscrew/re-screw expansion tank cap as needed to remove clip.





Remove expansion tank bleed screw (Philips).  
Dislodge expansion tank top from fan shroud.  
Reinstall expansion tank bleed screw (Philips).



Remove rubber seal between fan shroud top and car frame (hand).  
Note seal orientation for reinstallation.



Lift fan shroud up and to rear.

Unscrew overflow hose clamp at radiator right top (Philips).

Pry hose off radiator overflow neck (flathead).

Remove hose clamp from hose to keep from losing.

Note: If overflow hose clamp original (crimp type), pry open clamp to remove (small flathead) and replaced with adjustable hose clamp.



Pull expansion tank overflow hose out of fan shroud.

Pull up expansion tank and lay to side. Maintain overflow hose high to keep coolant from leaking.



Pull fan shroud up and out of engine compartment.  
Maneuver shroud as needed to bypass radiator lower hose.



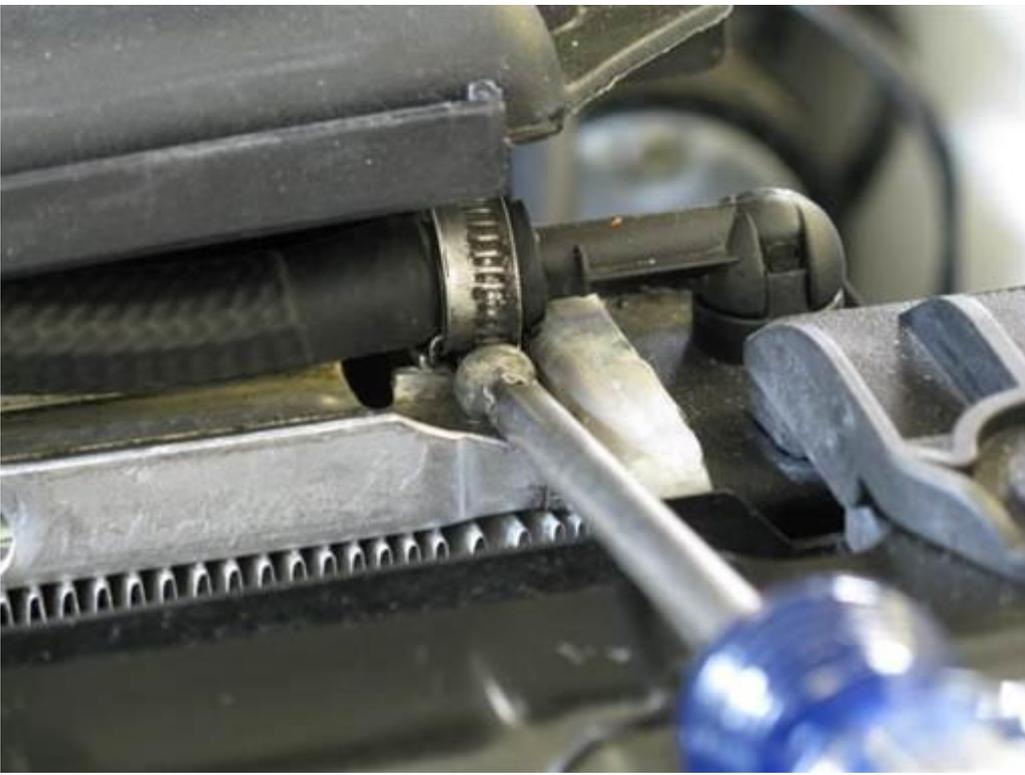
Lower expansion tank and lay expansion tank lower hose on AC compressor pulley.  
Maintain expansion tank overflow hose high to prevent loss of coolant.

## Fan & shroud installation

### Shroud installation



Insert fan shroud into engine compartment position.  
Pull up expansion tank and lay to side.  
Maneuver shroud as needed to bypass radiator lower hose.  
Align shroud by pulling up, forward, and dropping into position.



Install radiator overflow hose.

Lift fan shroud up and to rear.

Insert expansion tank overflow hose into shroud access slot and install expansion tank onto radiator. Lay overflow hose on top of radiator.

Insert overflow hose clamp onto overflow hose with clamp bolt head at bottom and facing forward (picture).

Mount overflow hose onto radiator overflow neck. Position hose clamp onto radiator overflow neck and tighten clamp (Philips). Note: Position clamp bolt at bottom of radiator neck to allow for proper fan shroud fitment.





Lift fan shroud up, pull forward, and drop down to mount into side and lower radiator frame slots.  
Note: Fan shroud should insert fully and align with car frame.



Remove expansion tank bleed screw (Philips).  
Insert expansion tank top into fan shroud.  
Reinstall expansion tank bleed screw (Philips).



Install expansion tank retaining plastic clip at expansion tank bleed screw. Push down clip until it snaps into place.

Unscrew/re-screw expansion tank cap as needed to facilitate access.



If present, install coolant level sensor electrical cable connector at bottom of expansion tank. Press in connector until it snaps in place.



Install AUC (smell) sensor onto fan shroud just below expansion tank.  
Insert AUC into bracket right side.  
Push AUC to left and insert AUC left side into bracket.

Note: AUC electrical cable connector was not previously removed.



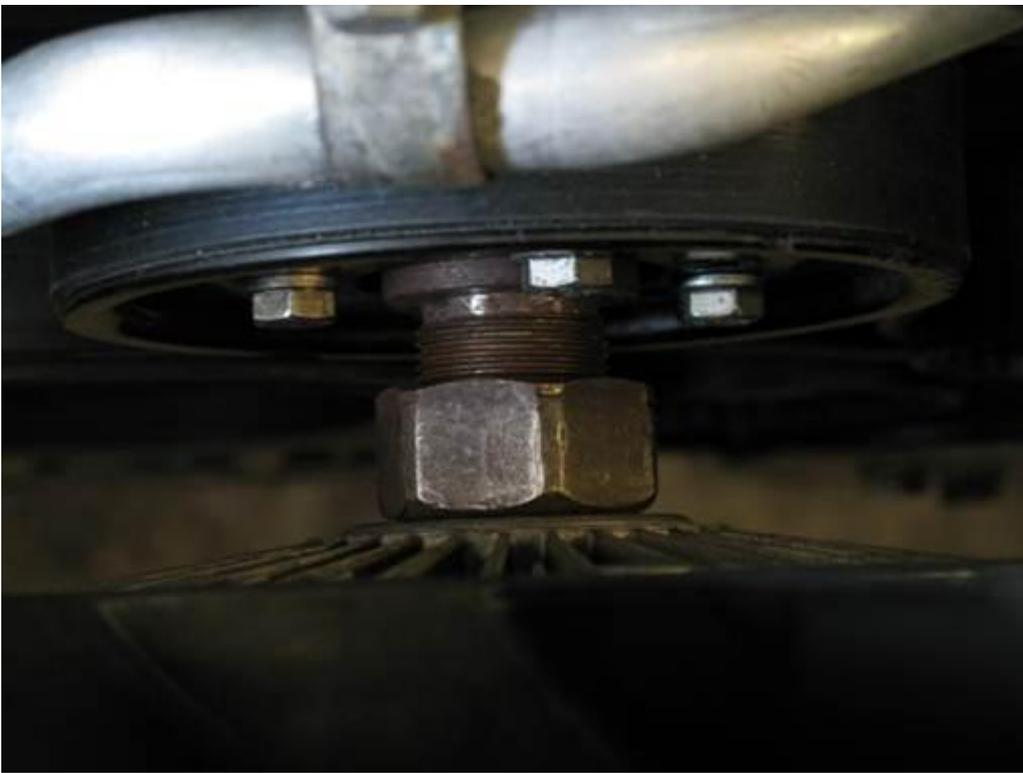


Install rivet at each top corner of fan shroud. Pry rivet center pin out, fully insert rivet base into shroud, then press in rivet center pin.



Install rubber seal between fan shroud top and car frame.

### Fan installation



Mount fan/clutch onto water pump shaft.

Insert fan/clutch into engine compartment at water pump.

Lift fan and mate (hang) fan clutch nut onto water pump shaft. Rotate fan to find best nut thread to shaft thread mate. At optimal fit, fan will hang on shaft without threading (picture).

With fan hanging independently on shaft, slowly turn fan blades to thread nut onto shaft; left hand thread. Fully thread nut onto shaft.



Place open wrench on fan clutch nut (32mm combo wrench) and lightly hit wrench top with heavy hammer, one time; left hand thread (sledge hammer).

Note: Serpentine belt static friction on water pump pulley facilitates large enough opposing force to tighten clutch nut. Fan opposing spin also tightens fan clutch nut.

## **M62TU Engine Air Intake Procedure**

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## Engine air intake removal



Press in on engine acoustic cover 4 mounting latches to release cover.



Lift up and remove engine acoustic cover.



Remove intake duct upper vacuum hose.  
Press in on retaining clip and pull off hose.



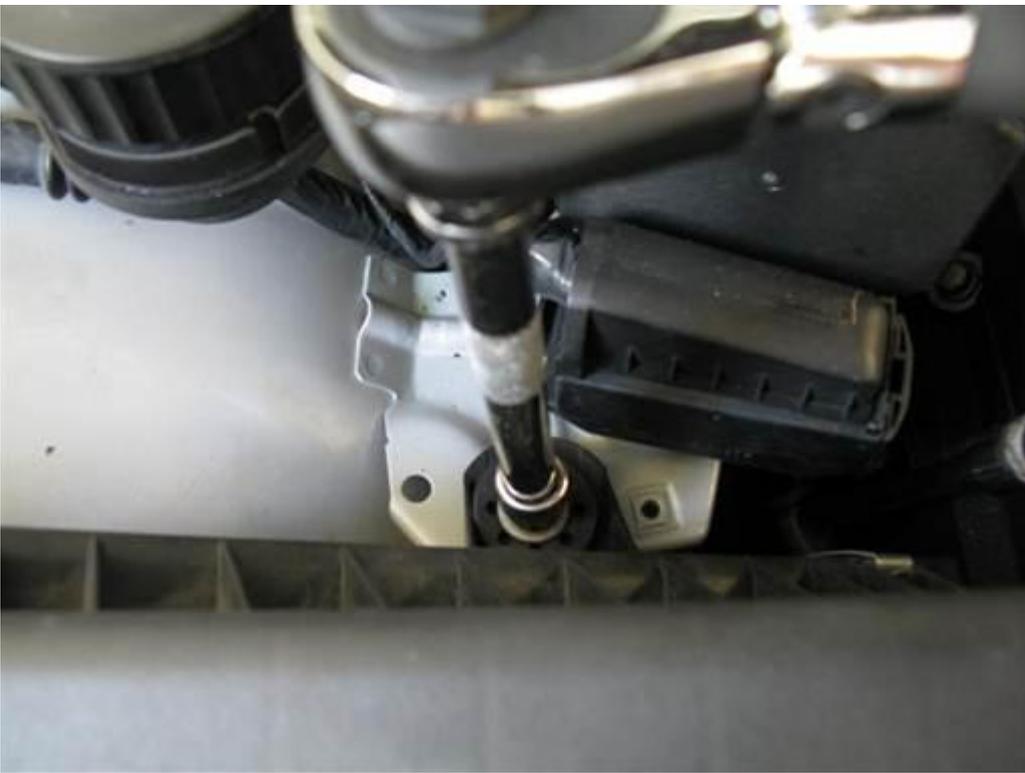
Remove intake duct lower vacuum hose.  
Pull off hose.



Remove MAF sensor electrical cable connector.  
Press in on connector side clips and pull off connector.



Disconnect MAF electrical cable from clip under intake boot.

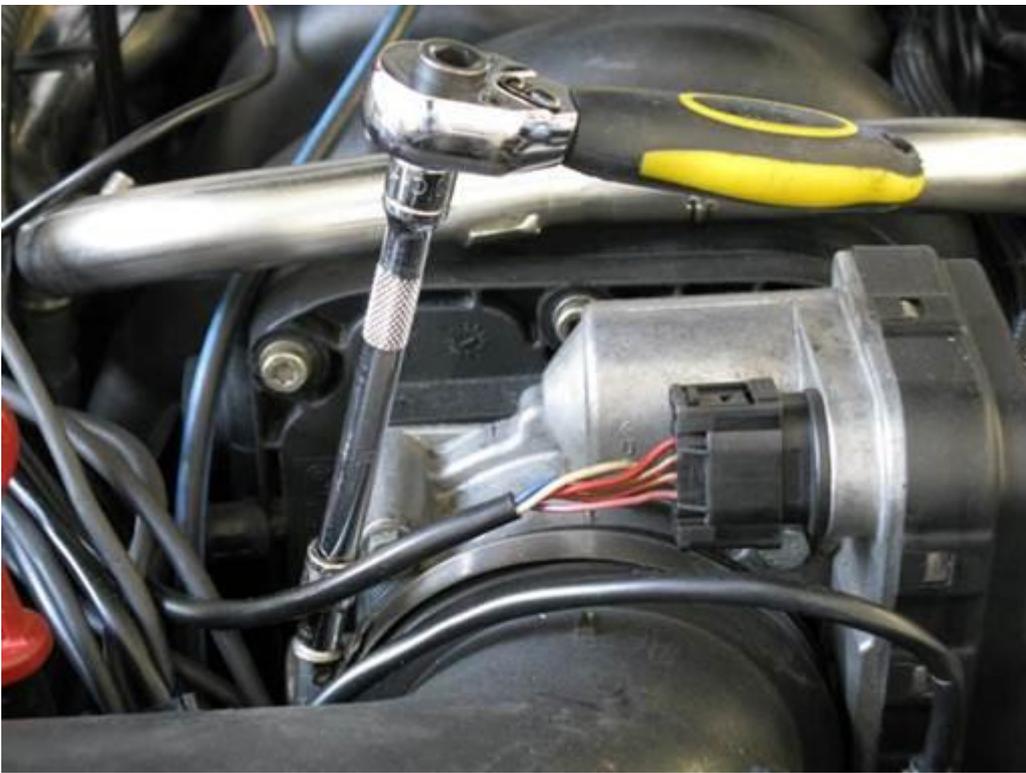


Remove air filter box mounting bolt at rear of air filter box (10mm socket 3/8" / 3/8" ratchet & medium extension).

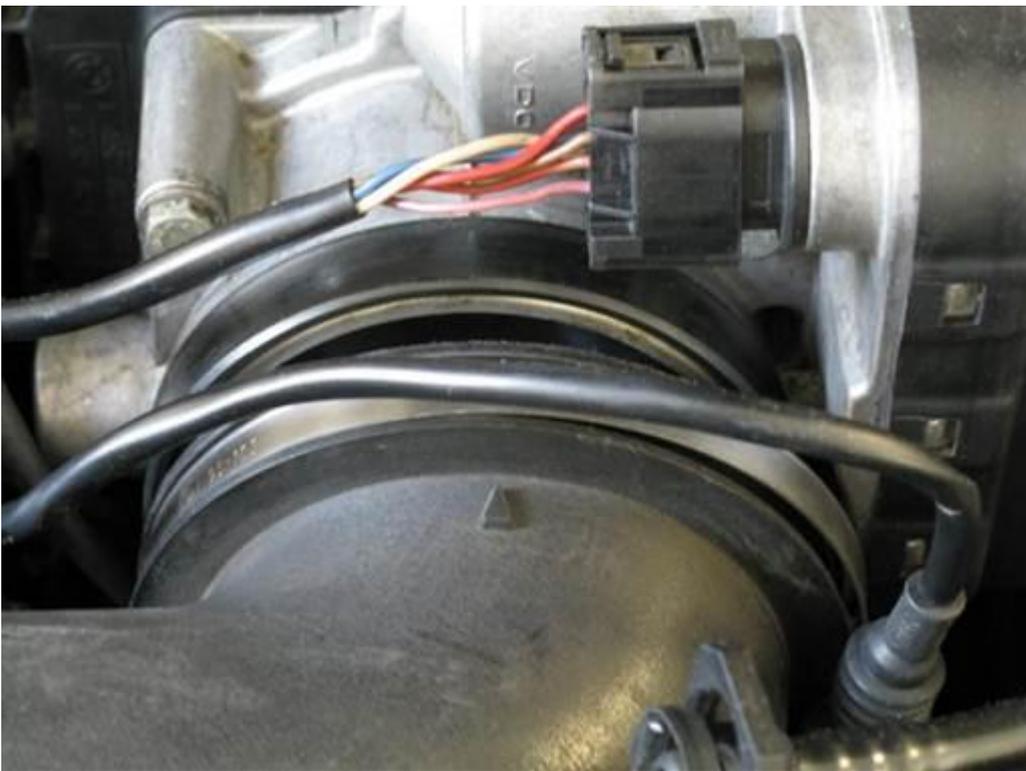


Remove intake resonator mounting bolt just to rear of MAF sensor (10mm socket 3/8" / 3/8" ratchet & medium extension).

Note: Leave bolt in bracket after unscrewing.



Loosen intake duct hose clamp at throttle (6mm socket 1/4" / 1/4" ratchet & medium extension).

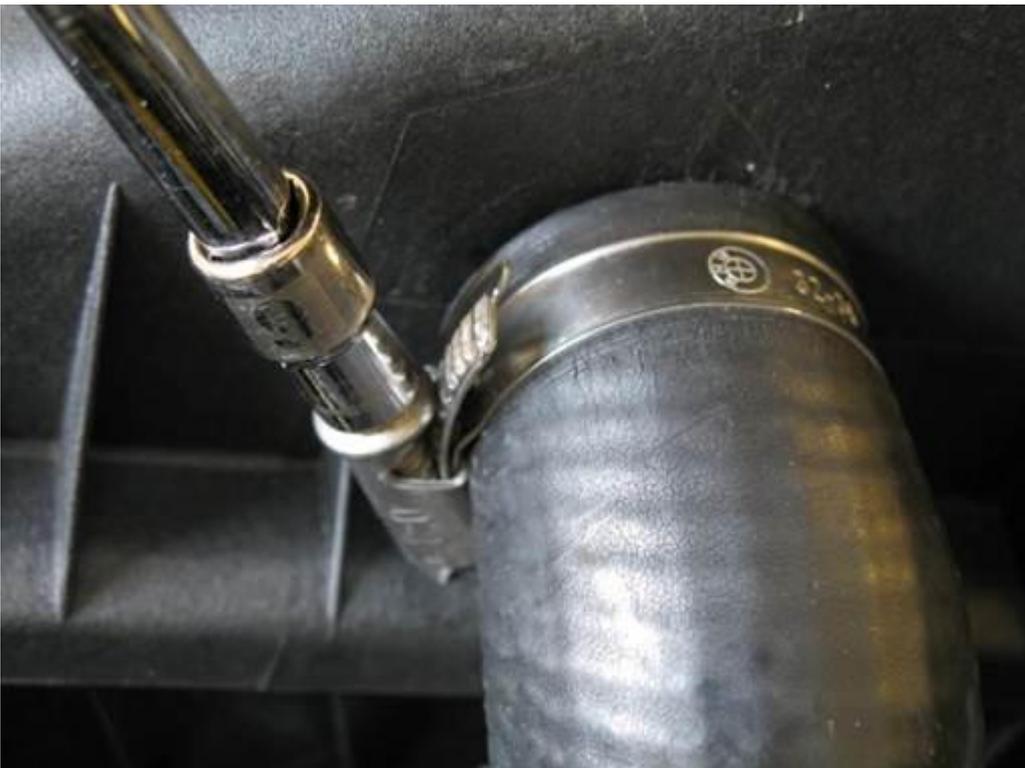


Pull intake duct from throttle.

7 series



Loosen air filter box plastic knob mounting clamp at fender side of air filter box (6mm socket 1/4" / 1/4" ratchet & extension).



Remove secondary air hose from air filter box at front of air filter box.  
Loosen secondary air hose clamp (6mm socket 1/4" / 1/4" ratchet & extension).  
Pull off secondary air hose from air filter box.



Lift up on air filter box and intake duct and remove from engine compartment. Wiggle air filter box to pull out mounts from fender.

### Engine air intake installation



Inset air filter box and intake duct into engine compartment.

Note: Insert intake resonator rear mounting bolt in resonator bracket hole for ease of installation. Resonator mounting bolt is longer than air filter box mounting bolt.



Insert air filter box 3 mounts into location.  
Insert Lower large air boot into duct.  
Insert upper plastic knob into rubber boot.  
Insert rear lower rubber knob into bracket.  
Wiggle air filter box and push down to fully mount.

7 series



Install air filter box plastic knob mounting clamp at fender side of air filter box (6mm socket 1/4" / 1/4" ratchet & extension).



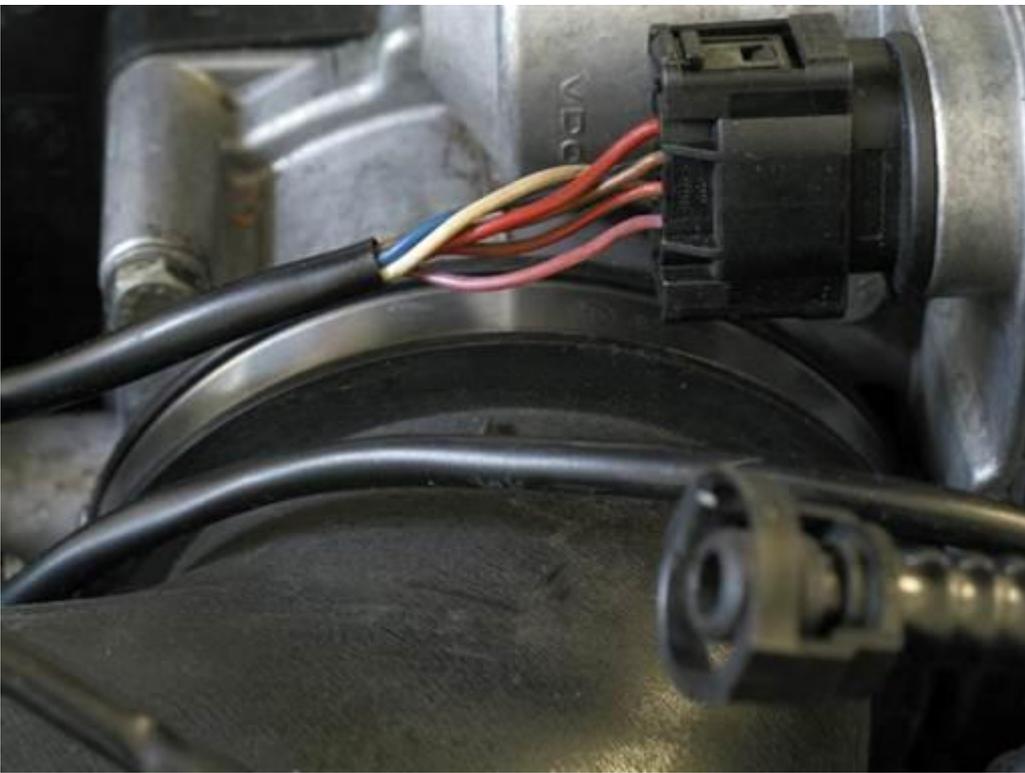
Install secondary air hose onto air filter box at front of air filter box.  
Insert secondary air hose onto air filter box hose neck.  
Install and tighten secondary air hose clamp (6mm socket 1/4" / 1/4" ratchet & extension).



Install air filter box mounting bolt at rear of box (10mm socket 3/8" / 3/8" ratchet & medium extension).  
Reposition box to align mounting bracket hole.  
Fully tighten, 10 Nm (7 Ft-lb) (10mm socket 3/8" / 3/8" torque wrench & medium extension).



Install intake resonator mounting bolt at rear of MAF sensor (10mm socket 3/8" / 3/8" ratchet & medium extension).  
Reposition intake duct to align mounting bracket hole.  
Fully tighten, 10 Nm (7 Ft-lb) (10mm socket 3/8" / 3/8" torque wrench & medium extension).



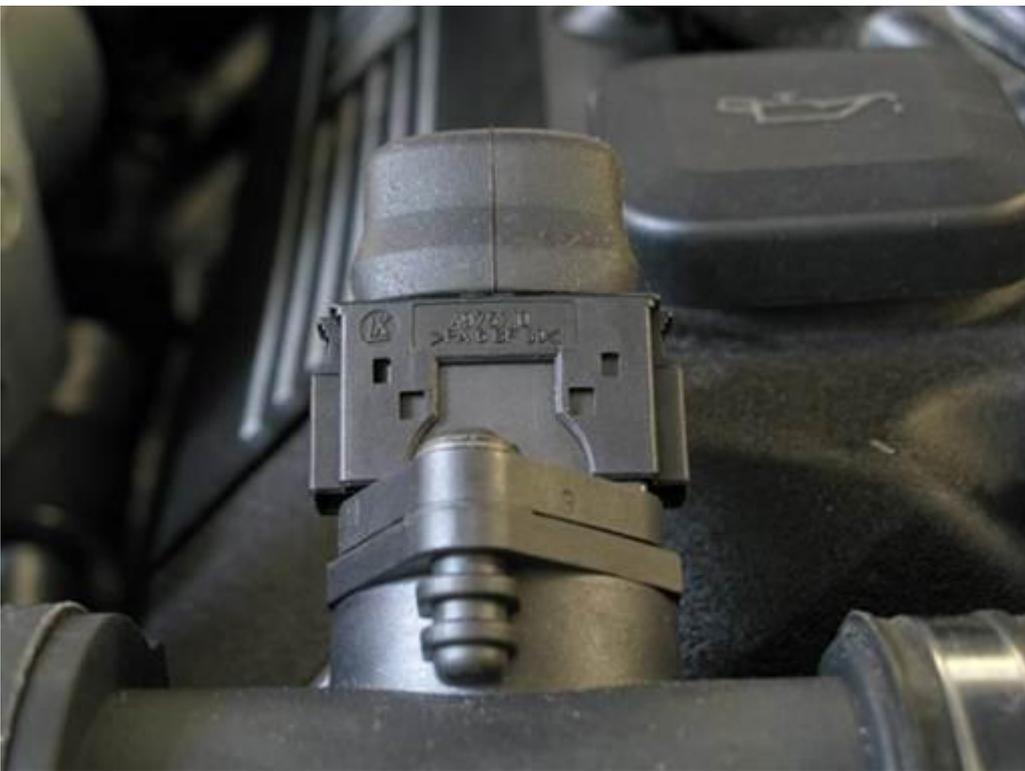
Install air duct end onto throttle.  
Verify duct is fully inserted onto throttle.



Position and tighten air duct hose clamp at throttle (6mm socket 1/4" / 1/4" long-arm ratchet & medium extension).



Install MAF electrical cable in clip under intake boot.



Install MAF sensor electrical cable connector.  
Press connector onto MAF until it snaps into place.



Install intake duct lower vacuum hose.  
Press hose onto fitting.



Install intake duct upper vacuum hose.  
Press hose onto fitting until clip snaps into place.